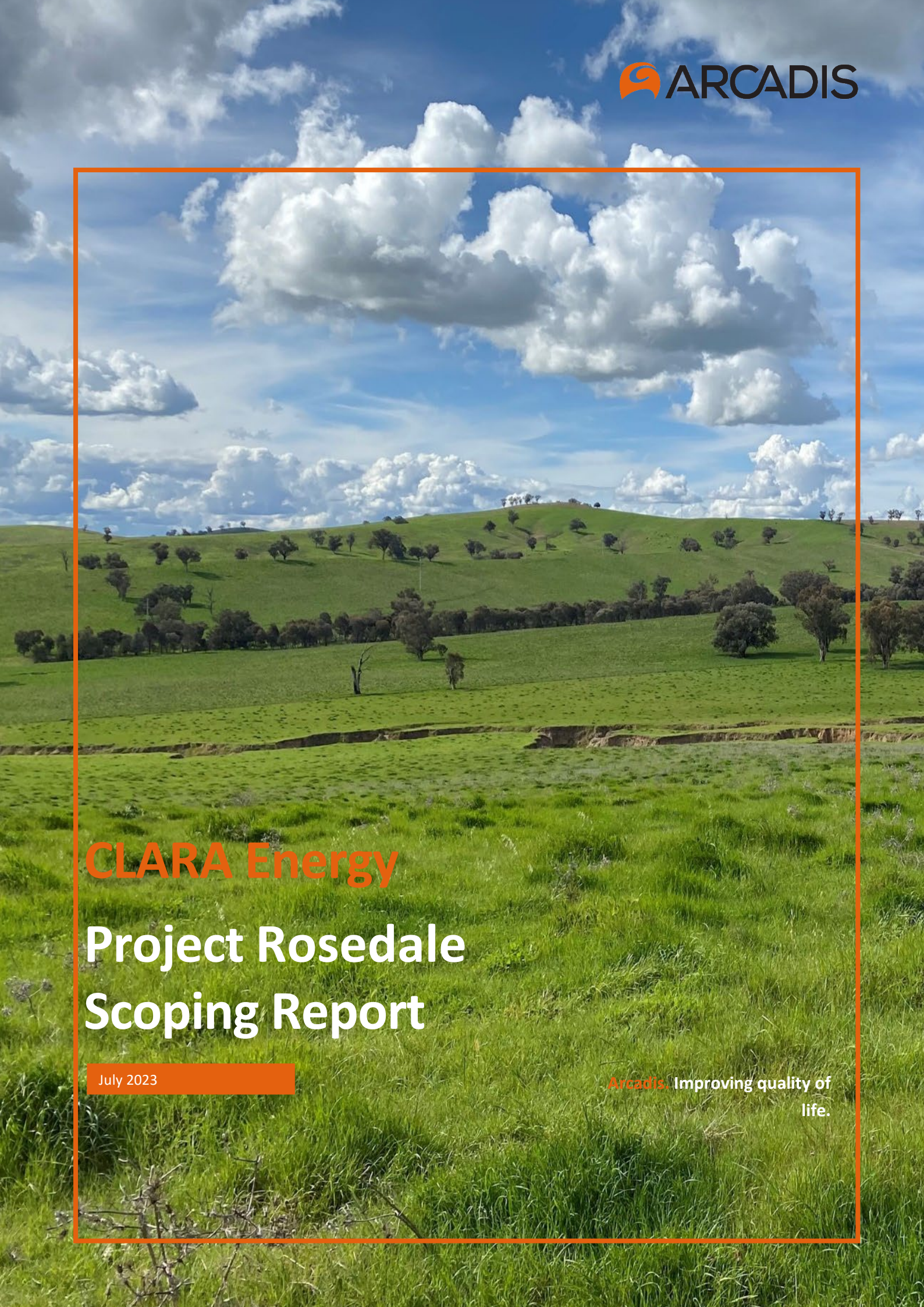

ARCADIS

CLARA Energy

Project Rosedale Scoping Report

July 2023

Arcadis. Improving quality of life.

Acknowledgement of Country

CLARA Energy acknowledges the traditional custodians of the land and waters, the people of the Wiradjuri nation, on which Project Rosedale is proposed. The Wiradjuri people are the people of the three bila (rivers) and their nguram-bang (Country) is the second largest in Australia. We pay our respects to their Elders past and present and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters of NSW.

Many of the transport routes we use today – from rail lines, to roads, to water crossings – follow the traditional Songlines, trade routes and ceremonial paths in Country that our nation's First Peoples followed for tens of thousands of years. CLARA Energy is committed to honouring Aboriginal peoples' cultural and spiritual connections to the land, waters and seas and their rich contribution to society.

Project Rosedale

Project Scoping Report

July 2023

Our Ref: ROS-ARC-RPT-EPA-001-5

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Revision	Date	Description	Prepared by	Approved by
1	23 March 2023	Draft 1	DH, RP, GP	SB
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4	19 June 2023	Draft 4	DH, GP	SB
5	26 June 2023	Draft 5	DH, GP	SB
6	24 July 2023	Draft 6	GP, DH	SB

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Acronyms and Abbreviations

Acronym	Definition
ACHAR	Aboriginal Cultural Heritage Assessment Report
AE	Alkaline Electrolysers
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
BAL	Basic Left Turn
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
CEEC	Critically Endangered Ecological Community
CEFC	Clean Energy Finance Corporation
CIA	Coleambally Irrigation Area
COP21	21st Conference of the Parties
DA	Development Application
DC	Direct Current
DCCEEW	Australian Department of Climate Change, Energy, the Environment and Water
DCPs	Development Control Plans
DP	Deposited Plan
DPE	Department of Planning and Environment
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
EHG	Environment and Heritage Group
EIS	Environmental impact statement
EIS	Environmental Impact Statement
Electrolysers	Hydrogen generation plant
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environmental Protection Licence
GDE	Groundwater Dependent Ecosystem
GIS	Geographical Information Systems
Gundagai LEP	*Gundagai Local Environmental Plan 2011*
ICNG	Interim Construction Noise Guideline

Acronym	Definition
ILUA	Indigenous Land Use Agreement
Km	Kilometre
LEP	Local Environmental Plan
LGA	Local Government Area
LSC	Land Soil Capability
LUCRA	Land Use Conflict Risk Assessment
m	Metre
MGSD	Minimum Gap Sight Distance
MIA	Murrumbidgee Irrigation Area
MNES	Matters of National Environmental Significance
MW	Megawatts
MWp	Megawatt peak
NPfI	Noise Policy for Industry
NSW	New South Wales
OEH	Office of Environment and Heritage
PADs	Potential Archaeological Deposits
PCT	Plant Community Type
PEM	Proton Exchange Membrane
Planning Systems SEPP	*State Environmental Planning Policy (Planning Systems) 2021*
POEO Act	*Protection of the Environment Operations Act 1997*
Project area	The parcels of land on which the Project will be located
Project footprint	The maximum disturbance footprint for construction and operation of the Project. This area will continue to be refined during preparation of the EIS.
PV	Photovoltaic
QLD	Queensland
Ramsar	Wetlands of International Importance
RET	Renewable Energy Target
RFS	Rural Fire Service
ROL	Road Occupancy Licence
SEE	State of Environment Effects
SEPP	State Environmental Planning Policy
SSAL	State Significant Agricultural Land
SSD	State Significant Development

Acronym	Definition
T&I SEPP	*State Environmental Planning Policy (Transport and Infrastructure) 2021*
TEC	Threatened Ecological Community
TfNSW	Transport for New South Wales
The Project	The CLARA Energy Project Rosedale
The Proponent	CLARA Energy Pty Ltd (ABN: 18 643 800828)
The Site	The parcels of land that the Proponent has fiscal interest in
tpd	Tonnes per day
µS	MicroSiemens
UNFCCC	United Nations Framework Convention on Climate Change
WM Act	Water Management Act 2000

Executive Summary

Overview of the Project

CLARA Energy (the Proponent) are proposing to develop Project Rosedale for the production of green hydrogen via electrolysers powered by an onsite solar photovoltaic farm (the Project). The Project would have capacity to generate 250 MW of solar energy, which would produce 25,000 kg per day (25 tonnes per day (tpd)) of green hydrogen. The Project would include the following key components:

- Solar electricity generation
- Water supply and treatment
- Supplementary power supply
- Hydrogen production by electrolysis
- Hydrogen liquefaction, compression and storage
- Wholesale distribution of hydrogen
- Access to the Project, internal roads and supporting infrastructure.

Project need

The reduction targets set by the State and Commonwealth aim to achieve net-zero emissions by 2050. To meet these targets, they will need to deliver large-scale projects that will facilitate the transition to renewable energy sources, such as green hydrogen. The Project would become one of the largest green hydrogen production plants in the world. The vision is to provide wholesale green hydrogen to the market, fueling fleets of heavy vehicles that transport freight around Australia and provide green hydrogen to other hard-to-abate energy sectors.

The development of green hydrogen projects aligns with federal, State and local commitments to increase renewable energy generation and reduce carbon emissions. The Project would produce up to 9,125 tonnes of green hydrogen per annum, powered by solar power.

Project location

The Project is in regional New South Wales (NSW) along the Hume Highway, at Mundarlo approximately 120 kilometres (km) west of Canberra, and approximately 50 km to the east of Wagga Wagga. The Project is located on Wiradjuri country and is in the Cootamundra-Gundagai Regional Council local government area.

The Project is bounded by Mount Adrah to the south and east, and the farming community of Mundarlo to the north and west. The surrounding area is characterised by cleared farming land, rolling hills and scattered vegetation.

The Site covers an area of approximately 5366 hectares (ha) and the Project area (i.e. the area that would be directly impacted by the Project) covers an area of approximately 1074 ha. There is one house within the Project area that is occupied under a short-term lease. There are four sensitive receivers (residential properties) within two km of the Project, two of these are located within the Site.

The Project is on land covered by the *Gundagai Local Environmental Plan 2011* (Gundagai LEP) and is zoned as RU1 Primary Production. The areas surrounding the Project support a mixture of agricultural and nature conservation use.

Statutory context

The Project is considered a State Significant Development (SSD) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and State Environmental Planning Policy (Planning Systems) 2021. CLARA Energy is seeking approval for the Project under Division 4.7 of the EP&A Act.

Purpose of this document

This Scoping Report supports an application made by the Proponent and submitted to the Department of Planning and Environment (DPE) for development approval under Part 4, Division 4.7 of the EP&A Act – with the first step to obtain Secretary's Environmental Assessment Requirements (SEARs) for the Project.

Key environmental issues

Preliminary environmental investigations have been carried out for the Project and indicate that the following matters will require further assessment:

- Hazard and risk
- Landscape and visual
- Property, land use and agriculture
- Biodiversity
- Traffic and transport
- Water access and use
- Groundwater
- Soils, surface water and flooding
- Bushfire
- Aboriginal heritage
- Social impacts.

Consultation

Community, agency and key stakeholder consultation has commenced throughout the development of the Project to-date.

The Proponent will continue to consult with the community and stakeholders during the preparation of the EIS. Feedback and participation from consultation and engagement activities would be used to further inform investigations being carried out for the environmental assessment of the Project.

It is expected that a range of consultation methods will be adopted, including meetings, emails, phone calls, media and advertising, community newsletters, website details and community events to provide information and seek feedback.

Next steps

Following receipt of the SEARs for the Project, the Proponent will prepare an environmental impact statement (EIS) for the Project, in accordance with the requirements of Division 5.1 of the EP&A Act and the State Significant Development Guidelines. The EIS will be publicly exhibited by the NSW Department of Planning, Industry and Environment, in accordance with the requirements of Part 4, Division 4.7 or the EP&A Act.

During public exhibition of the EIS, the community and stakeholders will be encouraged to have their say and make a formal submission.

1 Introduction

This chapter provides an overview of the CLARA Energy Pty Ltd (CLARA Energy) Project Rosedale (the Project), including the key features of the Project and an overview of this Project Scoping Report.

1.1 Overview

CLARA Energy (ABN: 18 643 800 828), whose registered office is at Level 13, 80 Collins Street, Melbourne, Victoria, 3000 (the Proponent) are proposing to develop Project Rosedale for the production of green hydrogen via electrolysers powered by an onsite solar photovoltaic farm.

The Project is on Wiradjuri country and is in the Cootamundra-Gundagai Regional Council local government area (LGA).[1] Figure 1-2 shows the regional context of the Project. The main objective of the Project is to provide wholesale green hydrogen to the market, fuelling fleets of heavy vehicles that transport freight around Australia, and to provide clean fuel to other hard-to-abate greenhouse gas emissions sectors.

The Project would have capacity to generate 25,000 kilograms (kg) per day of green hydrogen, through the supply of 250 megawatts (MW) of solar energy from photovoltaic arrays to power hydrogen electrolysers. The Project would consist of seven key components, being:

1. Solar electricity generation: Electricity used to power the production of hydrogen, generated using an on-site solar array
2. Water supply and treatment: Water sourced for the Project would be treated to a level suitable for hydrogen production by electrolysis and used for plant equipment cooling
3. Supplementary power supply: Options for supplementary power supply, including a battery energy storage system (BESS) and connection to the grid would be investigated to prolong the daily operating hours of the electrolysers and operating plant when solar exposure is at its lowest
4. Hydrogen production by electrolysis: Hydrogen would be produced from water using electrolysis. The electrolysers split the water molecules into hydrogen and oxygen using electricity
5. Liquefaction and compression of hydrogen: Once produced, the hydrogen would be processed through either a liquefaction or compression plant prior to storage and wholesale distribution
6. Hydrogen storage: Hydrogen would be stored on site in either liquid or gaseous form
7. Wholesale distribution: Liquid hydrogen would be distributed from the Project by tankers approved and licenced in accordance with NSW and Australian road safety laws for transport of liquid hydrogen.

Figure 1-1 provides an overview of the Project.

[1] An announcement was made on the 24th of August 2022 to demerge the two councils (Cootamundra and Gundagai).

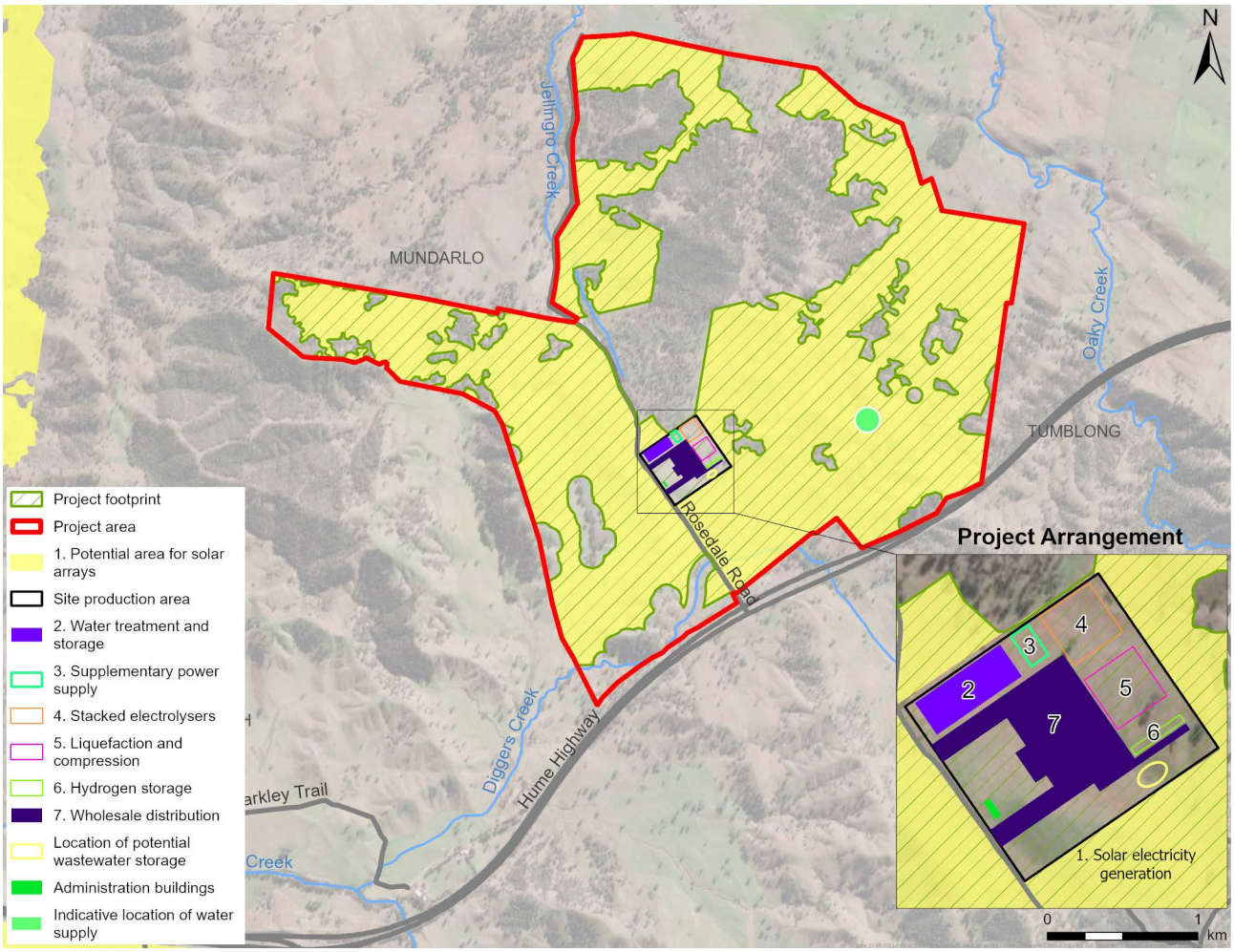

Figure 1-1 Project overview

The Project is characterised as State Significant Development (SSD) under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and State Environmental Planning Policy (Planning Systems) 2021. CLARA Energy is seeking Project approval for the Project (this application) under Division 4.7 of the EP&A Act.

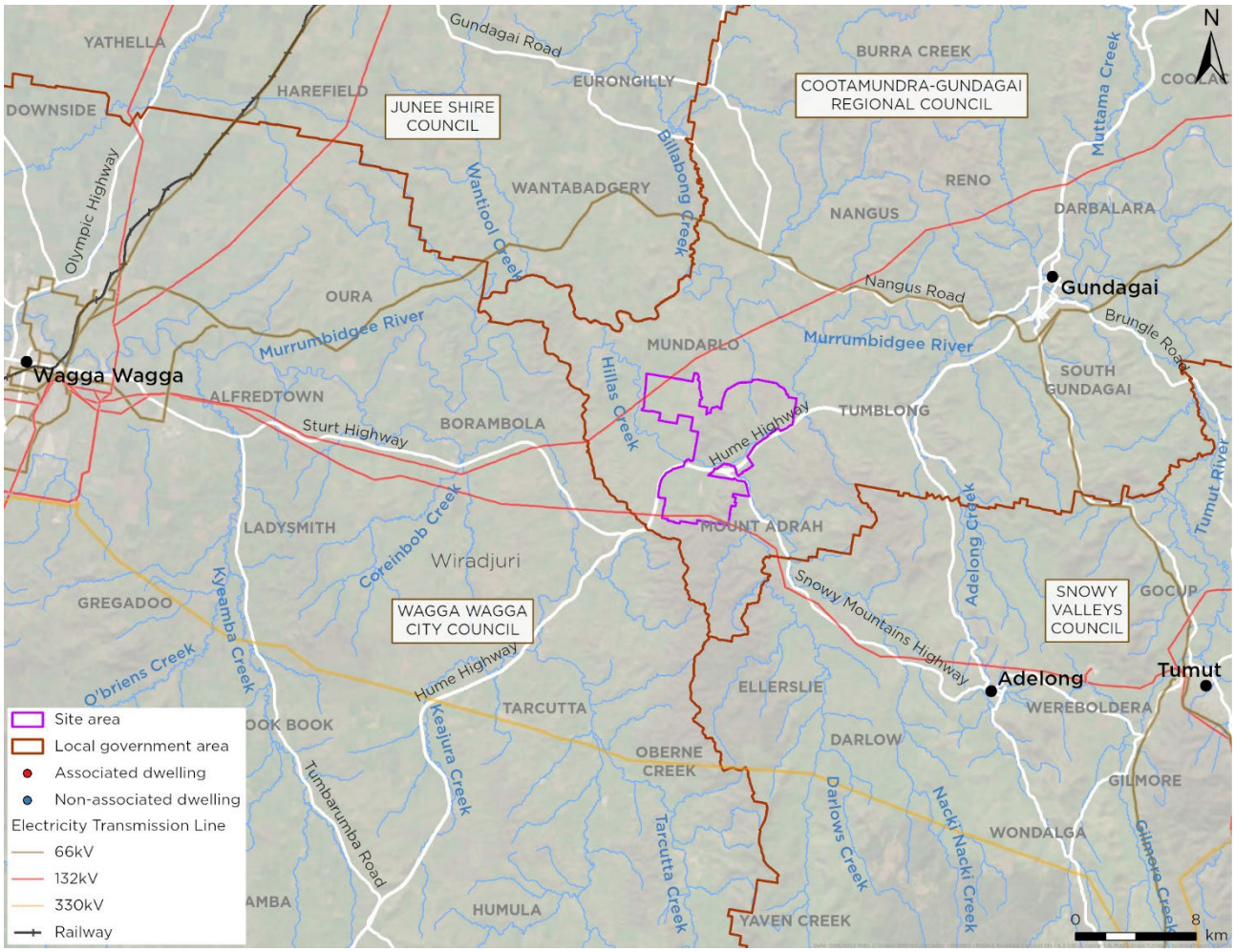

Figure 1-2 Regional context of the Site

1.2 Location

The Project is in regional New South Wales (NSW) along the Hume Highway, at Mundarlo about 120 kilometres (km) west of Canberra, and about 50 km east of Wagga Wagga.

The Site (the Site) is shown on Figure 1-3 and covers an area of approximately 5,366 ha. It includes the registered addresses listed in Table 1-1 and shown on Figure 1-3.

Table 1-1 Registered addresses of the Site

Address	Suburb
1 Old Hume Highway	Mundarlo, 2729
110 Scholz Road	Mount Adrah, 2729
232 Rosedale Road	Mundarlo, 2729
2448 Hume Highway	Mundarlo, 2729
2483 Old Hume Highway	Mundarlo, 2729

Address	Suburb
2542 Hume Highway	Mundarlo, 2729
2633 Old Hume Highway	Mundarlo, 2729
2689 Old Hume Highway	Mundarlo, 2729
2759 Hume Highway	Mount Adrah, 2729

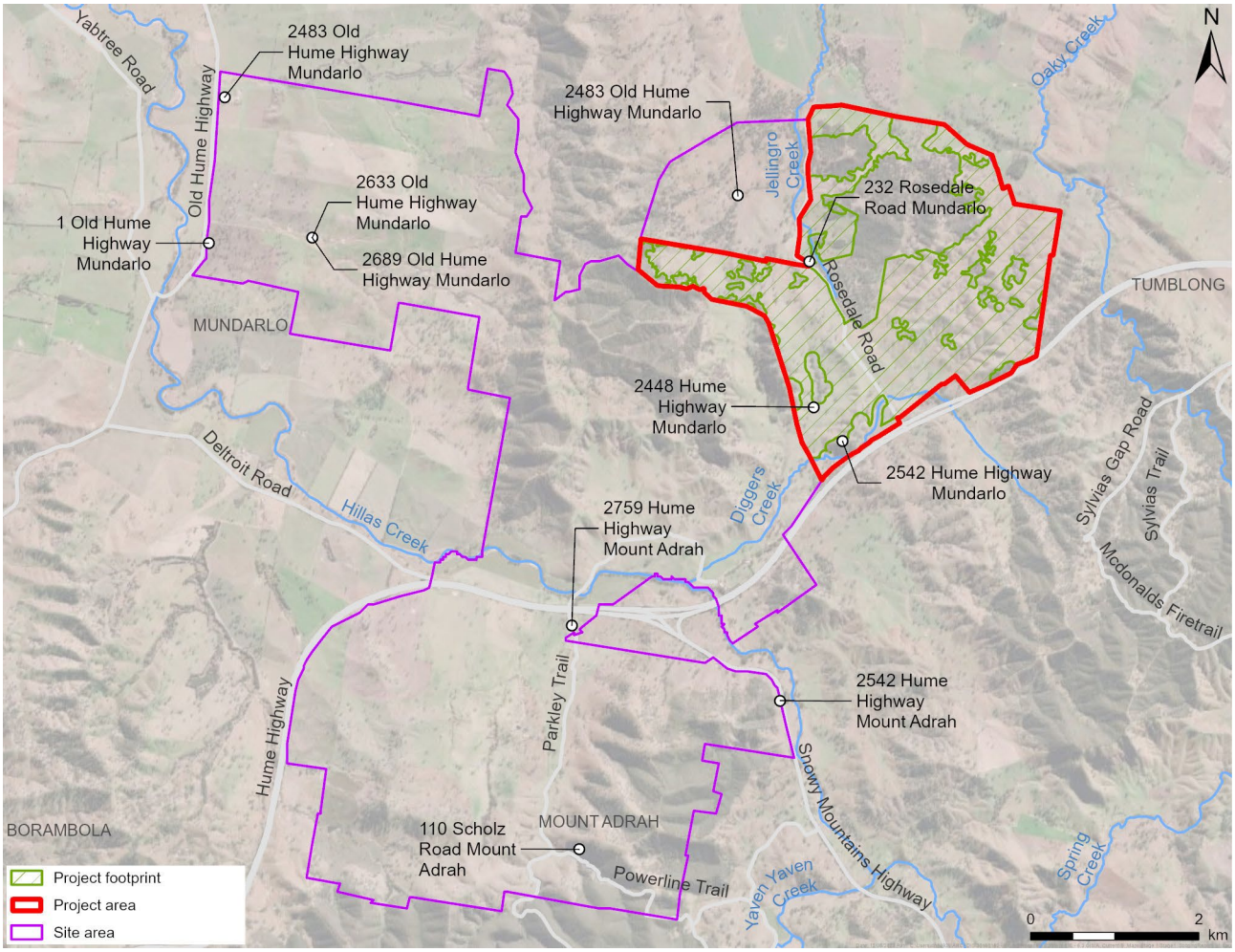

Figure 1-3 Site location

The Project will be located in the eastern portion of the Site, within the Project area, which covers an area of 1,074 ha. Land disturbance for construction of the Project would be limited to land identified within the Project footprint, which covers an area of approximately 706 ha. The Lot and Deposited Plan numbers of the Project area are shown in Figure 1-4 and Table 1-2. The Lot and DP numbers of the Site are provided in Appendix B.

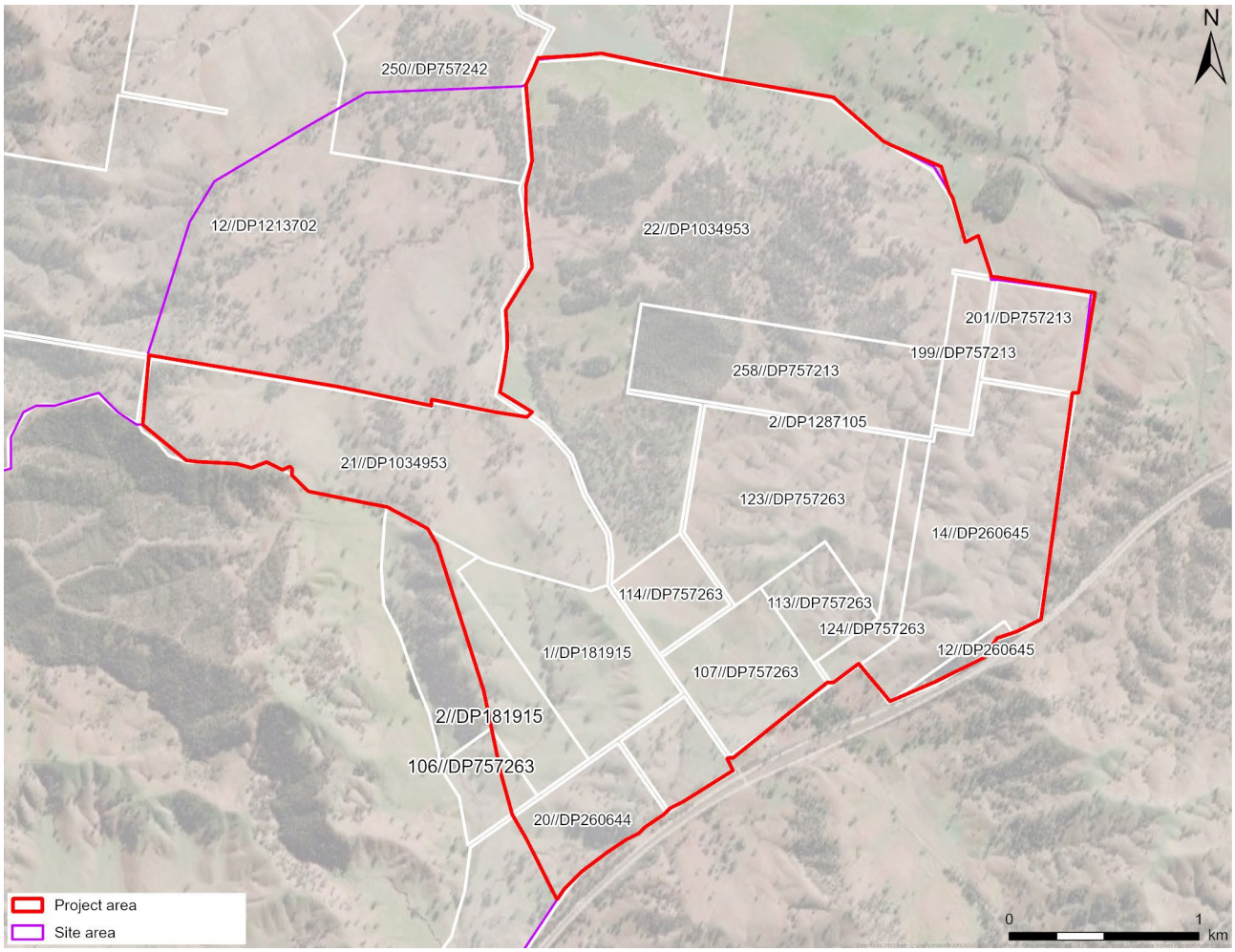

Figure 1-4 Lots and Deposited Plans of the Project area

Table 1-2 Lots and Deposited Plans of the Project area

Lot	Deposited Plan (DP)
106	757263
1	242411
114	757263
258	757213
107	757263
123	757263
1	248426
10	260645
12	260645
14	260645

113	757263
124	757263
199	757213
6	45513
22	1034953
21	1034953
11	777548
2	1096370
2	181915
1	181915
20	260644
201	757213
2	1287105

1.3 Project objectives

The objectives of the Project are:

- To produce and supply green hydrogen for heavy haulage transport and other hard-to-abate sectors
- To make a meaningful contribution to New South Wales and Australian greenhouse gas emission reduction targets
- To support the local and regional economy
- To enable ongoing agriculture within the areas proposed for solar arrays
- To reflect the values of the local Aboriginal and broader community
- To minimise environmental, social and cultural impacts.

1.4 Related development

There are no related developments associated with the Project. Any future development would be subject to a separate approval process.

1.5 Benefit sharing and agreements under consideration

To achieve positive local and regional community outcomes, CLARA Energy is committed to building strong relationships with key stakeholders and local communities and CLARA Energy is considering a range of community benefits and agreements to share the benefits of the Project. These may include, but not limited to:

- Negotiated agreements with landowners, including any terms of these agreements that are relevant to the assessment of the impacts of the Project
- Aboriginal community participation
- Community training and job provision.

Further detail regarding benefit sharing and agreements would be provided in the EIS.

1.6 Purpose and structure of this report

The purpose of this document is to support CLARA Energy's application to the Department of Planning and Environment (DPE) for development approval under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) – with the first step to obtain Secretary's Environmental Assessment Requirements for the Project.

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

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

The structure and content of this report are outlined in Table 1-3.

Table 1-3 Structure and content of this report

Chapter	Description
Chapter 1	**Introduction and background (this chapter)** Provides a broad overview of the Project, relevant background and history and summarises any related development.
Chapter 2	**Site features and surrounds** Provides an overview of the Site including an overview of the local and regional community, identification of important natural or built features and outlines the key strategies that would be adopted to avoid and mitigate impacts of the Project to the extent currently known.
Chapter 3	**Strategic context and justification** Provides an overview of the strategic context and need for the Project.
Chapter 4	**Project description** Provides a description of the Project including key components and alternatives considered.
Chapter 5	**Statutory context** Provides an overview of the statutory context and approval process.
Chapter 6	**Engagement** Provides an overview of the stakeholder engagement process that has been carried out for the Project to date, identifies key stakeholders and the consultation approach proposed during preparation of the EIS.
Chapter 7	**Proposed assessment of impacts**

Chapter	Description
	Identifies the matters requiring further assessment in the EIS and the proposed approach to assessing each of these matters.
Chapter 8	**Conclusion** Provides a conclusion and summarises the next steps for the Project.
Chapter 9	**References**
Appendix A	**Scoping summary table**
Appendix B	**Lot and DP tables and mapping**
Appendix C	**Constraints mapping**
Appendix D	**Preliminary Landscape and Visual Impact Assessment figures and tables**
Appendix E	**Social Impact Assessment Scoping Sheet**

2 Site features and surrounds

2.1 Site context

The Site is in the country of the Wiradjuri tribal group, one of the largest linguistic groups in NSW. Within Wiradjuri country, the presence of Aboriginal people has been dated back to 40,000 years ago.

The Site is in the Riverina Region, which covers an area of 80,545km^2 and has a population of about 172,000. The region has two regional cities (Wagga Wagga and Griffith). Wagga Wagga is the nearest major centre, situated about 50km to the west. Wagga Wagga has a population of around 68,000 (2021 census) and is known as a sports and recreation town that is increasing in population. The greatest number of people in the town are within the age group of 20 to 39 years old (potentially very relevant to employment/job requirements in the region). Aboriginal and/or Torres Strait Islander people made up 6.6% of the population at the 2021 census.

The dominant industries in the region are agriculture, forestry, and fishing, employing about 10,000 people (13.3% of the total workforce in the region). Healthcare and social assistance is the second largest employer with about 9,600 employees (12.8% of the total workforce in the region) (https://rdariverina.org.au/our-region)

The Riverina is known for two major areas of food production which rely on the Murrumbidgee Irrigation Area and Coleambally Irrigation Area, both sourcing water from the Murrumbidgee River and located to the west of the Site. Land use in the region is mostly agricultural, particularly dry land grazing for cattle and sheep. The Riverina is the largest citrus growing region in Australia and produces the largest supply of orange juice. Other produce grown in the Riverina include rice, cotton, wine, hazelnuts, walnuts and almonds.

The Hume Highway passes through the Site and is one of Australia's major intercity national highways, linking Sydney and Melbourne. It is a major freight route and critical part of Australia's transportation infrastructure.

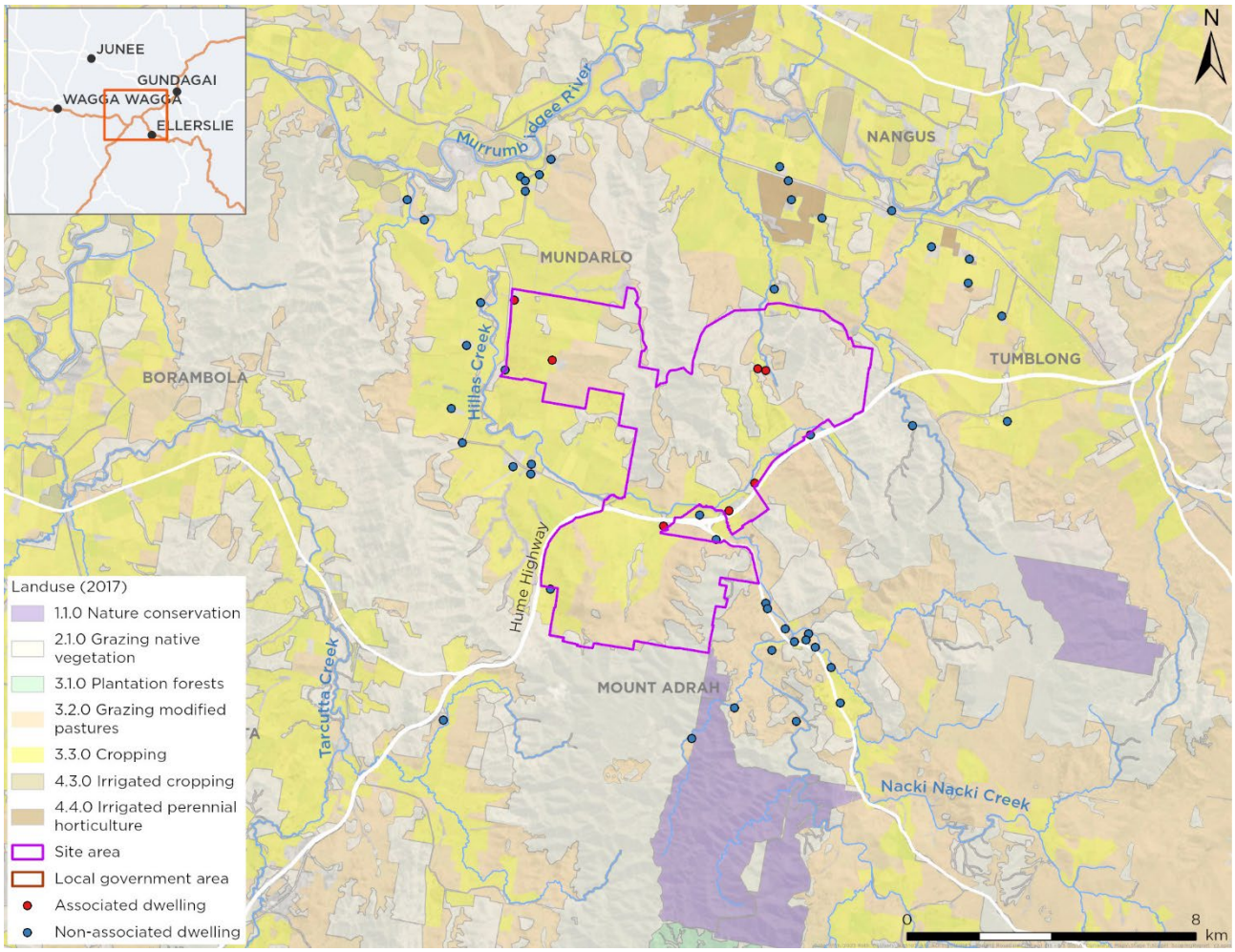

Figure 2-1 Land use of the Site and surrounds

2.2 Natural and built features

2.2.1 Features of the Site

The Site is approximately 5,366 ha in size and is mainly of rural character and comprises cleared farming land, rolling hills and scattered vegetation. The landscape of the Project area supports a series of hills, valleys and flats, with creeks and drainage lines coursing through the lower parts. Multiple farm dams are scattered throughout the Site, with 19 located within the Project area.

The existing landscape is generally hilly with changes in elevation from 220m Australian Height datum (AHD) to 450m AHD. There are two main creek systems (Diggers Creek and Jellingro Creek) with multiple smaller drainage lines that traverse the Site. The Aboriginal Site Predictive Model, prepared to inform the site analysis, identified the creeks as having the greatest archaeological potential.

2.2.2 Features of the Project area

The Project area is approximately 1,074 ha in size whilst the Project footprint is approximately 706 ha in size.

One house is located within the Project area, which is occupied under a short-term lease. Numerous sensitive receivers have been identified within a four km radius of the Project.

The Project would be primarily accessed from the Hume Highway and Rosedale Road. In the vicinity of the Project, the Hume Highway is two lanes in each direction with a wide vegetated median separating the northbound and southbound carriageways. The posted speed limit is 110 km per hour (km/h).

2.2.3 Solar energy projects in the region

The existing and approved solar energy developments within the region are listed in Table 2-1. The closest operational solar farm, Sebastopol Solar Farm, is located 44 km from the Project. The 110 MW solar farm was granted approval by the Minister for Planning in 2019. Mates Gully Solar Farm is a 160 MW proposed solar farm, which would be located approximately 30 km from the Project. The next closest solar energy development is located over 50 km from the Project.

Table 2-1 Existing and approved solar energy developments within the region

Project Name	Installed Capacity	Status
Sebastopol Solar Farm	110 MW	Operational
Gregadoo Solar Farm	47 MW	Approved
Charles Sturt University Solar	1.77 MW	Operational
Bomen Solar Farm	120 MW	Operational
Bomen 2 Solar Farm	2.5 MW	Approved
Bomen 3 Solar Farm	22 MW	Proposed
Wagga Wagga Solar Farm	26 MW	Operational
Junee Solar Farm	30 MW	Operational
Mates Gully Solar Farm	160 MW	Proposed
Illabo Solar Farm	80 MW	Proposed

3 Strategic context and justification

This chapter provides an outline of the strategic need and justification of the Project.

3.1 Project justification and need

NSW is undergoing an energy sector transformation that will change how energy is generated and used throughout the State. There is an increasing need to expand the generation of renewable energy as many of the State's largest coal-fired power stations begin to close.

The development of clean hydrogen projects aligns with federal, State and local commitments to increase renewable energy generation and reduce carbon emissions. The Project would produce up to 9,125 tonnes of green hydrogen per annum.

The Project would become one of the largest solar installations in Australia and one of the largest green hydrogen production plants in the world. The vision is to provide wholesale green hydrogen to the market, fuelling fleets of heavy

vehicles that transport freight around Australia and provide green hydrogen to other hard-to-abate energy sectors. The Project would provide a range of long-term benefits including:

- Hydrogen production and renewable energy generation to assist with fulfilling current obligations under State and federal renewable energy targets
- Reducing carbon emissions through provision of green hydrogen across hard-to-abate energy markets such as heavy haulage transport
- Energy security resulting from an increase in domestic fuel production capacity
- Reduction in climate-related financial risk of the State economy
- Provision of regional investment in the NSW renewable energy sector and provide a source of local employment.

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

- Capital investment of approximately $350-$450 million, subject to design development and technology selection.
- Employment generation
- Indirect benefits to local services through the construction and operation phases
- Mixed use agricultural activities within the Project area, involving activities such as grazing and lamb production (in tandem with solar photovoltaic generation).

3.2 National level strategic plans

3.2.1 Climate Change Policy

The Paris Agreement was agreed to under the United Nations Framework Convention on Climate Change (UNFCCC) at the 21st Conference of the Parties (COP21) in Paris in 2015. The Paris Agreement is a framework requiring all involved countries to take climate action from 2020 onwards, with the aim of achieving the following outcomes (UNFCCC 2018):

- Inhibit global average temperatures increasing by 2°C and aim to keep warming below 1.5°C above pre-industrial levels
- Set mitigation targets from 2020 and review every five years
- Increase transparency and accountability in countries' action plans and progress
- Promote action to increase resilience to climate impacts
- Support developing countries in implementing the Agreement.

The Australian Climate Change Policy facilitates Australia meeting its obligations under the Paris Agreement. As part of the Paris Agreement, the Australian Government has a 2030 target to reduce economy-wide emissions by 26-28 per cent below 2005 levels.

Green hydrogen is a flexible, safe, transportable and storable fuel that produces no carbon emissions when used and will play an important role in decarbonising the Australian energy sector. The production of green hydrogen is emerging as a major economic opportunity to aid in the transition to low-emissions sources of energy (COAG Energy Council 2019) and will help the Australian Government to meet economy-wide emissions targets.

The Project would help to reduce carbon emissions by producing wholesale green hydrogen powered by onsite solar photovoltaic arrays. The Project would eventually become one of the largest solar installations in Australia, and one of the largest green hydrogen production plants in the world. Development of the Project would assist Australia in meeting its commitments under the Paris Agreement and the Australian Climate Change Policy by providing green energy at-scale to the Australian market.

3.2.2 Australia's Long-Term Emissions Reduction Plan

The Australian Long-Term Emissions Reduction Plan (DCCEEW, 2022) is a comprehensive policy framework aimed at reducing greenhouse gas emissions and supporting the transition to a low-carbon future in Australia. The government aims to achieve net zero emissions by 2050 through the Plan by focusing on technology, driving down the cost of low emissions technologies, helping regional industries, and working collaboratively with other countries. To support this Plan, the Australian government has committed $1.2 billion to supporting clean hydrogen, including up to seven clean hydrogen industrial hubs.

The Project would directly support the Plan by becoming one of the largest green hydrogen production plants in the world, producing up to 9,125 tonnes of green hydrogen per annum powered by one of the largest solar installations in Australia. The Project would also support regional industry and economy being located in regional NSW and providing green energy jobs to the local community.

3.2.3 Australian Renewable Energy Target

The Renewable Energy Target is an Australian Government scheme designed to reduce emissions of greenhouse gases in the electricity sector and encourage the additional generation of electricity from sustainable and renewable sources. It is a part of what has been defined as Australia's "Direct Action" strategy. As part of the Direct Action strategy, the Australian government is focused on the development of both small scale and larger scale clean energy projects, including solar photovoltaic generators. The Project supports the Renewable Energy Target as the solar array has the capacity to produce 25,000 kg of green hydrogen per day, contributing to Australia's green energy security.

3.2.4 Australia's National Hydrogen Strategy

The Australian National Hydrogen Strategy (COAG Energy Council 2019) is a comprehensive plan for the development and deployment of hydrogen as a clean energy source. The Strategy aims to establish a competitive and sustainable hydrogen industry in Australia, while supporting the transition to a low-carbon energy future and promoting economic growth. The Project will support the Strategy through the generation and provision of green hydrogen to the transport industry and other hard-to-abate sectors, creation of jobs in the hydrogen industry, helping to reduce climate-related financial risk of the economy, contribute to increasing domestic fuel production capacity and decreasing reliance on international import of energy sources, thereby contributing to Australia's energy security.

3.2.5 Australia's National Hydrogen Roadmap

Australia is in a unique position to turn its significant natural resources including gas and renewables into a low-emission energy product and export it around the world. The Australian National Hydrogen Roadmap (CSIRO, 2018) provides a chart for navigating investment in and development of the hydrogen industry in Australia so the industry can grow in a sustainable and coordinated manner. The roadmap identifies key investment priorities including hydrogen production, storage and transport, and applications. The Project would provide wholesale green hydrogen to the market, fuelling fleets of heavy vehicles that transport freight around Australia and provide green hydrogen to other hard-to-abate energy sectors. The Project would support the key investment priorities as follows:

- Development of the less mature technology of electrolysis - the Project would have the capacity to produce 25,000 kg of hydrogen per day
- Develop capabilities in liquefaction materials for storage and transportation – the Project would include a plant for the liquefaction of hydrogen and would provide wholesale hydrogen in liquid form, based on client demand

- Develop engagement plans and undertake demonstration projects to showcase hydrogen and ensure the community understand all aspects of its use – this would be achieved through implementation of the Proponent's Community Engagement Strategy.

3.3 State level strategic plans

3.3.1 NSW Net Zero Plan Stage 1: 2020-2030

The NSW Government is focused on taking decisive and responsible action on climate change. To achieve the goal of net zero emissions by 2050, the Net Zero Plan Stage 1: 2020-2030 plan was created to fast track emissions reduction over the next decade by creating new jobs, cutting household costs and attracting investment. The Plan sets out four priority areas that will help the NSW Government achieve its goal.

Green hydrogen technology supports the first priority of the Plan, to *drive uptake of proven emissions reduction technologies*. Green hydrogen is widely acknowledged as an abundant, clean, versatile and convenient energy carrier and as a result, is now regarded as a key part of the energy transition to net zero and has the potential to transform large sectors of the economy, such as transport. The Project would be a major facilitator of green hydrogen uptake.

3.3.2 NSW Climate Change Policy Framework

The aim of the NSW Climate Change Policy Framework (NSW Office of Environment and Heritage (OEH), 2016) is to maximise the economic, social and environmental wellbeing of NSW in the context of a changing climate and current and emerging international and national policy settings and actions to address climate change. The long-term objectives of the Climate Change Policy Framework are to achieve net-zero emissions by 2050 and to ensure NSW is more resilient to a changing climate. The Project would become one of the largest green hydrogen production plants in the world, powered by one of the largest solar installations in Australia. Further, the green hydrogen would be used to supply hard-to-abate energy markets such as heavy haulage transport. Finally, the Project would create new jobs and economic opportunities in the State, particularly in a regional area, which will help to drive economic growth and support local communities.

3.3.3 NSW Hydrogen Strategy

The NSW Hydrogen Strategy sets out the plan for developing a successful green hydrogen industry in NSW. The Strategy aims to develop low emissions industries that sell clean fuels and products around the world. The Strategy also aims to provide up to $3 billion of incentives to support industry development. One of the key actions under the Strategy is the hydrogen hub initiative which provides $150 million in grant funding to further support the establishment and growth of hydrogen industries across NSW. The initiative is focused on developing hubs in the Hunter and Illawarra regions and aims to support the development of hydrogen hubs in other strategic locations across NSW. Further support may be made available by government for additional hydrogen hubs in other regions such as in the Wagga Wagga Special Activation Precinct.

Wagga Wagga was announced as a Special Activation Precinct in 2019 and has been identified as a strategic hydrogen location to establish a hydrogen hub targeting the freight and logistics, advanced manufacturing, recycling and renewable energy sectors. The Project area is close to this strategic location. The Project's production of green hydrogen for wholesale distribution would not conflict with other hydrogen projects within the area, rather, they will need to occur concurrently for NSW to achieve the targets set in NSW Net Zero Plan Stage 1.

The NSW Hydrogen Strategy sets out a series of stretch targets that, once achieved, will transform NSW into Australia's largest consumer of green hydrogen, create new jobs and position the State to become a hydrogen superpower. The Project would help to achieve the following 2030 stretch targets:

- Stretch target to produce 110,000 tonnes per annum of green hydrogen in NSW: the Project would produce approximately 9,125 tonnes of green hydrogen per annum
- Stretch target to develop electrolysis capacity of 700 MW within NSW: The Project would provide about 175 MW of electrolysis capacity
- Stretch target to fuel 10,000 hydrogen vehicles within NSW: The Project would generate enough hydrogen to fuel approximately 200 heavy vehicle round-trips between Melbourne and Sydney (i.e. 400 one way trips) on the Hume Highway per day
- Decrease hydrogen price under $2.80AUD per kg: The scale of the Project would help to increase market momentum by providing economies of scale, which, in addition to technology improvements, will lead to a reduction in the price of hydrogen.

3.3.4 NSW Circular Strategy Plan 2020-2023

The NSW Circular Strategic Plan 2020-2023 is a policy framework aimed at promoting a circular economy and reducing waste in New South Wales. The main goals of the plan include reducing waste, promoting resource efficiency, building a circular economy, encouraging innovation, supporting communities and engaging stakeholders. The Project would support the Plan by incorporating a circular design to maximise the value of resources and reduce waste. Active asset recycling of solar panels and electrolysers and using water recycling as a priority are three examples of the Project being able to deliver on this policy.

3.3.5 Hume Hydrogen Highway Initiative

The Hume Hydrogen Highway initiative is a joint initiative of the NSW and Victorian Governments. It aims to accelerate the development of a renewable hydrogen economy in NSW and Victoria, promote renewable hydrogen use by the heavy transport sector, leading to decarbonisation, build local knowledge, skills, infrastructure, and supply chains that will drive large-scale market activation and widespread commercial uptake of renewable hydrogen in the heavy transport sector and create new jobs and capital investment in NSW and Victoria. The Hume Highway Initiative supports the development of a minimum of four hydrogen refuelling stations along the Hume Highway in NSW and Victoria and approximately 25 hydrogen-powered long-haul heavy freight vehicles to adopt zero-emission technology, such as fuel cells.

While the Project is not seeking funding through the Hume Hydrogen Highway Initiative, it notes the Hume Hydrogen Highway Initiative requirement to demonstrate supply of 'renewable hydrogen' to be used in the refuelling stations it promotes. CLARA Energy has signed several letters of intent to supply green hydrogen to various applicants of the Hume Hydrogen Highway Initiative. CLARA Energy would be the largest wholesale supplier of green hydrogen on the Hume Highway corridor which is essential to enabling the goals within the Hume Hydrogen Highway Initiative to be met.

3.4 Regional and local level strategic plans

3.4.1 Riverina-Murray Regional Plan 2041

The Riverina Murray Regional Plan 2041 is an update to the Riverina Murray Regional Plan 2036 which provided the NSW Government's vision for land uses in the Riverina Murray region. The 2036 Plan establishes a framework to grow

the region's cities and local centres, supports the protection of high-value environmental assets and makes developing a strong, diverse and competitive economy central to building prosperity and resilience in the region. The 2041 Plan builds further on this framework and the future of renewable energy.

The Project would support the following objectives set out in the Plan:

- Objective 1: *Protect, connect and enhance biodiversity throughout the region* – design of the Project will be refined to ensure high value biodiversity features across the Project area are conserved
- Objective 2: *Manage development impacts within riverine environments* – design of the Project will seek to avoid impacts to riverine environments and improve riparian areas within the Project area
- Objective 12: *Strategically plan for rural industries* – as a wholesale supplier of green hydrogen located on the Hume Highway, the Project would provide green hydrogen to heavy haulage vehicles, thereby supporting the decarbonisation of transportation for rural industries and regional communities
- Objective 13: *Support the transition to net zero by 2050* – the Project would support the transition to carbon neutrality by becoming one of the largest green hydrogen production plants in the world, powered by one of the largest solar installations in Australia, producing wholesale green hydrogen for use in one of Australia's largest food bowls between its two most populous cities
- Objective 18: *Integrate transport and land use planning* – the Project would support transitioning the freight industry away from fossil fuels by establishing a large scale, wholesale green hydrogen production facility and distribution centre strategically located along the Hume Highway, Australia's busiest freight corridor.

3.4.2 Cootamundra-Gundagai Community Strategic Plan 2022: Our Place, Our Future

The Cootamundra-Gundagai Community Strategic Plan 2022: Our Place, Our Future (CGRC, 2022) identifies high level objectives for the region, developed by the community. The Plan is based on the principles of equity, access, participation and rights by addressing social, economic, environment and civic leadership issues. The Project would support the following objectives of the Plan:

- *A thriving region that attracts people to live, work and visit* – The Project would support and facilitate economic development and employment opportunities to the region
- *Our natural environment is valued and protected* – the design of the Project would be refined to ensure environmental impacts are minimised. Areas identified with high biodiversity values would be avoided and conserved. The Project overall would result in a cleaner environment through a reduction in carbon emissions in the area.
- *Responsive and adaptive community to climate change risks and impacts* – the Project would aim to be consistent with development control plans relevant to renewable energy technologies to reduce environmental impacts.

3.4.3 Cootamundra-Gundagai Regional Council: Rural Lands Strategy

The Cootamundra Gundagai Regional Council Rural Lands Strategy 2020 aims to maximise opportunities for rural lands within the Gundagai and Cootamundra regions. The Strategy encourages the maintenance of solar farms, to prevent the spread of weeds, through grazing. The Project would support Action 3.8 of the Strategy by ensuring consistency with the development control plan, including appropriate measures to minimise the spread of weeds and other pests and investigate opportunities to continue mixed use agriculture activities within the Project area.

4 Project description

4.1 Alternatives considered

CLARA Energy has a vision to build a combined solar and green hydrogen distribution network along the Hume Highway corridor; one of Australia's key haulage routes. A number of alternative sites were considered for the Project. The site selection process considered:

- Proximity to key transport routes to promote the transition to green energy for heavy transport vehicles
- Available area to accommodate a solar farm and areas with a good solar resource
- Access to water supply
- Environmental and planning constraints.

The Site was strategically selected as it sits on the Hume Highway, approximately halfway between Sydney and Melbourne. The Site would provide a strategic location for the distribution of wholesale green hydrogen to a network of refuelling stations between Sydney and Melbourne along the Hume Highway, Australia's busiest freight corridor.

4.1.1 Site selection

An initial analysis was carried out to confirm the suitability of the Site for the Project, which determined it would be suitable for the following reasons:

- Large portions of the Site have been cultivated for agricultural production and are relatively flat, minimising clearing and earthworks required for construction
- It is located approximately halfway between Sydney and Melbourne along the Hume Highway, a key haulage route on Australia's East Coast
- There are several fresh water sources on and near the site
- Preliminary environmental assessment indicates much of the Site has been intensively cultivated for agricultural purposes, and remaining areas of biodiversity value can largely be avoided, or impacts to them mitigated
- The land size of the Site allows for opportunities to create areas for biodiversity conservation for areas of high biodiversity value and improvement of riparian areas.

An initial assessment of the Site was undertaken to determine areas of low gradient (i.e. relatively flat areas) that would be suitable for the location of solar photovoltaic cells. The location of the areas initially identified as suitable for solar photovoltaic are shown in Figure 4-1. The initial assessment confirmed that the Site would be suitable for a solar farm of up to 800 MW peak (MWp) solar capacity, which, using technology available today would allow for production of 100 tonnes per day (tpd) of green hydrogen.

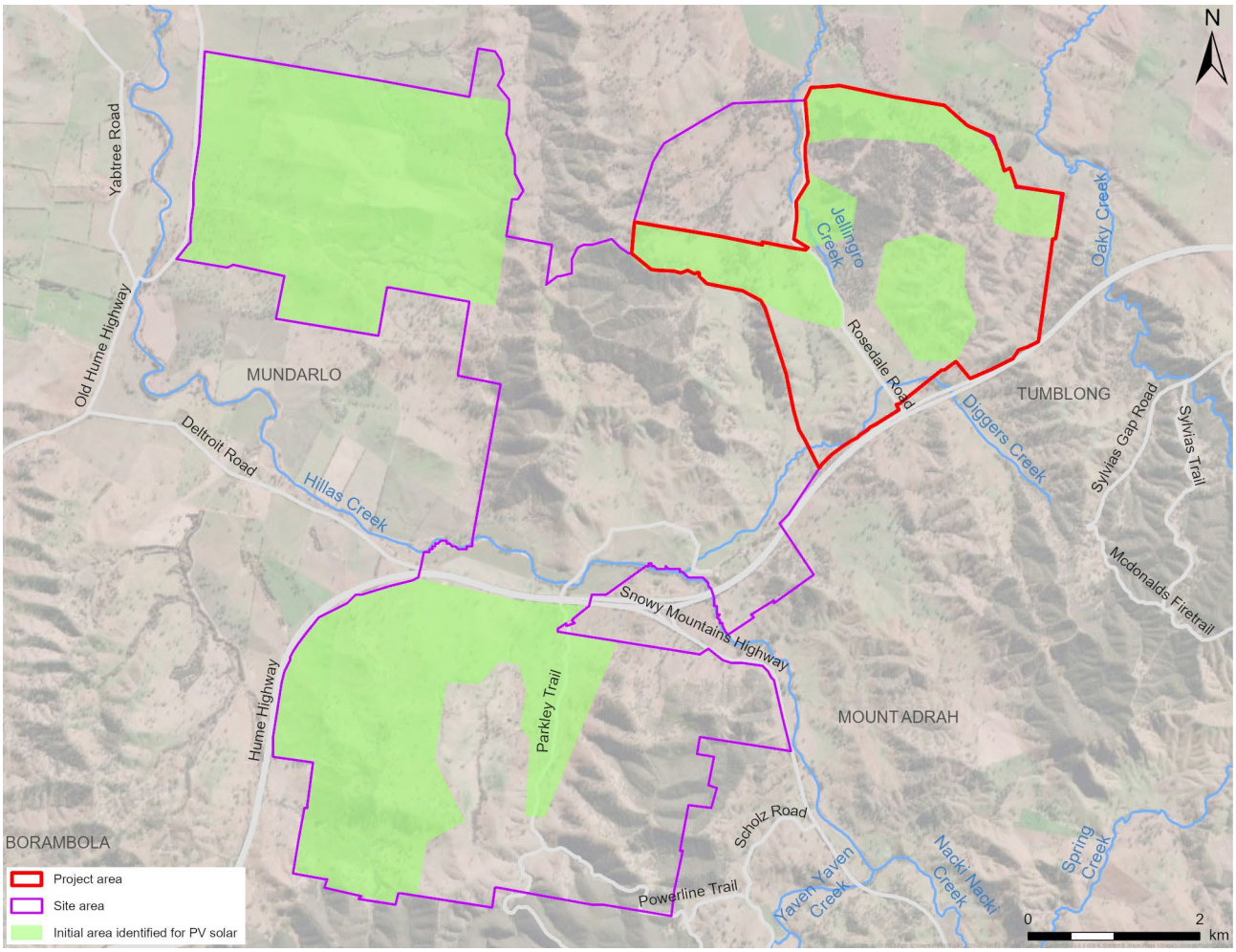

Figure 4-1 Indicative layout of areas within the Site initially identified as being potentially suitable for a solar farm

Access to water suitable for hydrogen generation was also taken into consideration during the assessment of the Site. The Site holds several water access licences that entitle licence holders to extract water from surface water and groundwater sources within the Site. The review also identified the possibility of acquisition of water access licences for the Murrumbidgee River. A review of these licences found that there is a substantial number of un-utilised licences indicating potential capacity within both the groundwater and surface water sources to satisfy the water demands of the Project.

4.1.2 Other alternatives considered

An alternative source of renewable energy generation considered for the Project was the use of wind turbines to generate electricity. The average windspeed at the Project area is around 3 metres per second (m/s). The minimum average windspeed generally considered suitable for wind power generation is 4 m/s, (low speed turbines are available however these are generally used for off-grid applications). On this basis, wind power generation in the Site was not considered optimal for the Project's renewable electricity generation.

4.1.2.1 Do nothing

Not proceeding with the Project would work against the NSW and Australian governments' commitments to reduce greenhouse gas emissions, to encourage expansion of renewable energy and provide energy security. The Project

would generate 25 tonnes of green hydrogen per day, which if used to fuel heavy vehicles travelling along the Hume Highway instead of diesel fuels could abate up to 654.5 tonnes [2] of carbon emissions per day (DCCEEW, 2023).

Long haul trucking would particularly be deprived of the benefits of hydrogen-powered fuel including faster refuelling, greater range, and lower weight batteries which can increase payload capacity. Government strategic plans recognise the opportunity the freight industry would have from green hydrogen and its ability to transform the sector from an emissions perspective. This Project would assist with meeting current and future demand for green energy sources, particularly in hard-to-abate industries, such as freight. These benefits would be foregone if the Project does not proceed.

The Project would also contribute to Australia's fuel security as it would facilitate the production of a fuel source in Australia, reducing the risk of volatility of imported fuels, such as diesel and other fossil fuels. Not proceeding with the Project would mean that Australia would remain exposed to potential volatility in international fuel markets.

4.1.3 Avoidance of impacts

Key constraints identified for the Site include:

- Biodiversity – Presence of threatened ecological communities on site and areas with high biodiversity values. Project design has sought to avoid impacts to areas identified as high biodiversity value. This will continue to be refined through the preparation of the EIS.
- Visual environment - Areas visible from two private domains and the Hume Highway. Visual impacts are likely to have social impacts within the community. The design of the Project will seek to avoid visual impacts and site solar photovoltaic arrays in areas of lesser visual impact. This will continue to be refined through the preparation of the EIS.
- Waterways and existing dams – Impact to waterways during construction and linkages between water features across the Project area. The Project could have potential impacts to water quality and water availability which are likely to be key social/community concerns. Design of the Project will seek to avoid impacts to waterways and sources for the water requirements for the Project will be further investigated during the preparation of the EIS to avoid impacts to local water supply.
- Bushfire – The Project area has parcels of bushfire prone land. Early and adequate planning relevant to location of facilities across the Project area will be considered during design development and preparation of the EIS.

The key constraints identified for the Project are shown in Appendix C .

The design of the Project has been developed considering the environmental constraints which have been informed by preliminary desktop assessments, including development of a predictive Aboriginal Site Predictive model, and supported by seasonal ecological surveys. The refined area for the potential location of solar photovoltaic arrays within the Project area is shown in Figure 4-2, which forms part of the Project footprint.

Design refinement and detailed design of the Project is ongoing. Assessments and community and stakeholder consultation undertaken to inform the EIS will be used to further refine the design, footprint and access requirements, to minimise environmental impacts, enhance biodiversity conservation within the Project area and provide benefits to customers of the Project and the local community.

[2] This calculation was based on the following assumptions:
- 8.6kg of hydrogen/100km (ICCT, 2022)
- An average fuel use of 65.6L/100km based on the vehicle types that can travel along the Hume Highway (ATA, 2018)
- Scope 1 emission factor of 70.2kg CO_2/GJ and Scope 3 emission factor of 17.3 kg CO_2/GJ (DCCEEW, 2023)

The design of the Project will continue to be developed in response to further information obtained during the environmental and social impact assessment processes and engagement with landowners, the community and other stakeholders.

Further detail on the context, features and environmental constraints of the Project are provided in Chapter 7. Assessments carried out for the EIS will identify measures to avoid, minimise or offset the impacts of the Project.

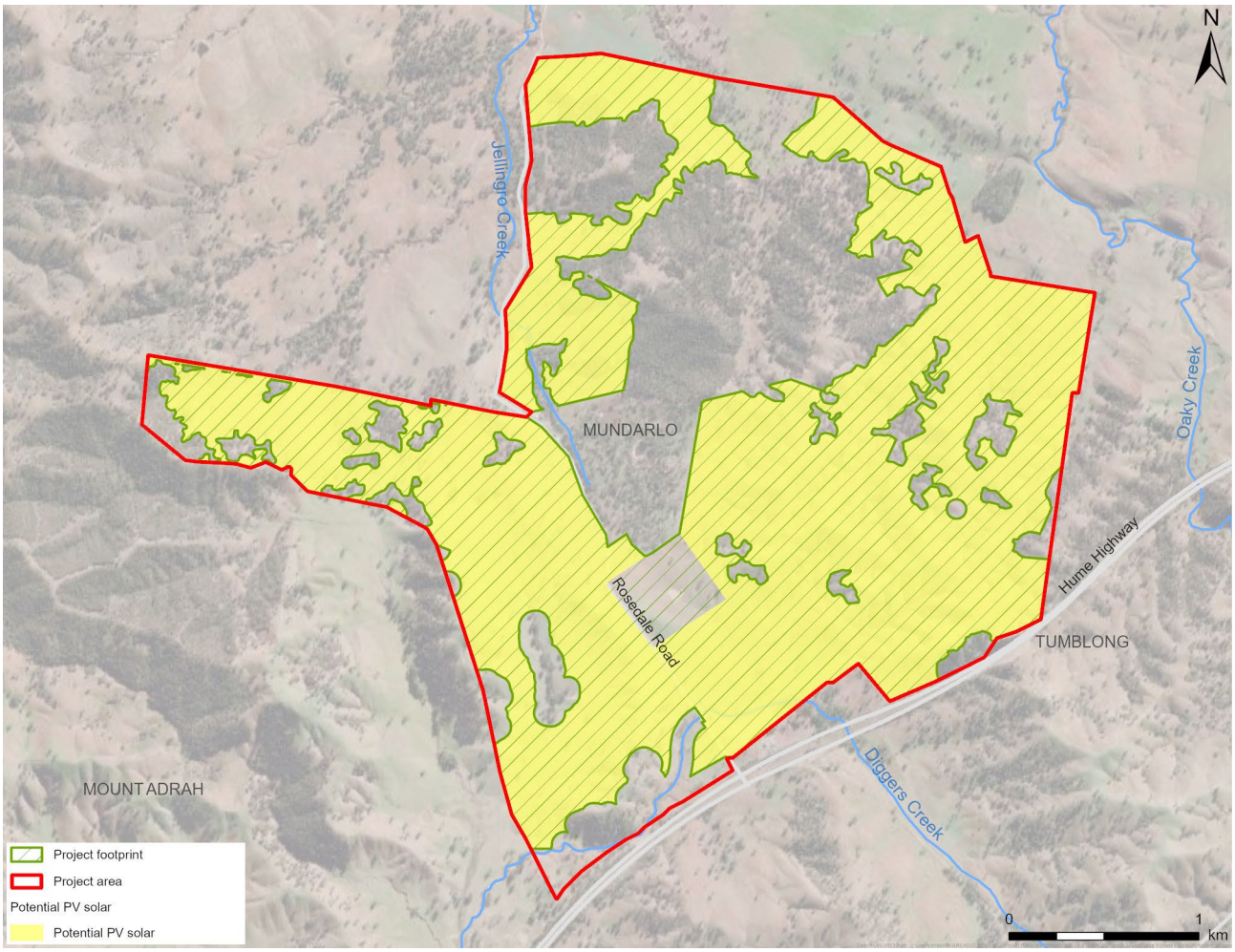

Figure 4-2 Potential solar photovoltaic array locations

4.2 Project description and key components

4.2.1 Project overview and components

The Project would produce green hydrogen for wholesale distribution using electricity generated by an on-site solar array. The Project would consist of seven key components:

1. *Solar electricity generation*: Electricity used to power the production of hydrogen, generated using an on-site solar array
2. *Water supply and treatment*: Water sourced for the Project would be treated to a level suitable for hydrogen production by electrolysis and use for plant equipment cooling

3. *Supplementary power supply*: A battery energy storage system (BESS) and /or connection to the grid would be investigated to prolong the daily operating hours of the electrolysers and operating plant in the winter and cloudy days
4. *Hydrogen production by electrolysis*: Hydrogen would be produced from water using electrolysis. The electrolysers split the water molecules into hydrogen and oxygen using electricity

$$2\,H_2O \rightarrow 2\,H_2 + O_2$$

5. *Liquefaction and compression of hydrogen*: Once produced, the hydrogen would be processed through a liquefaction plant prior to storage and wholesale distribution.
6. *Hydrogen storage*: Hydrogen would be stored on-site in liquid and gaseous form
7. *Wholesale distribution*: Green Hydrogen would be distributed from the Project by tankers approved and licenced in accordance with NSW and Australian road safety laws for the transport of liquid hydrogen.

The process flow diagram in Figure 4-3 shows the key elements of this technology. Figure 4-5 shows the indicative arrangement of the components of the Project within the site production area. The following sections provide more detail on each of the key components of the Project.

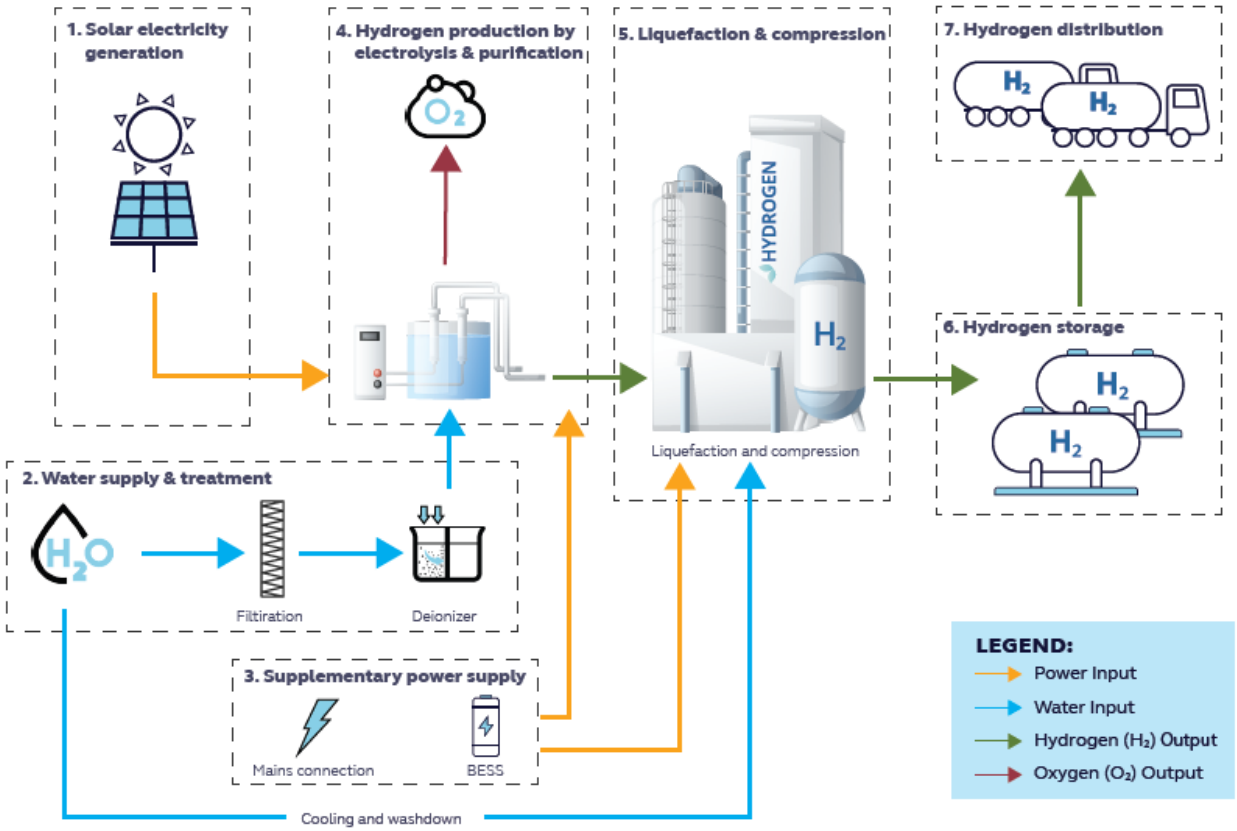

Figure 4-3 Key components of the Project and process flow

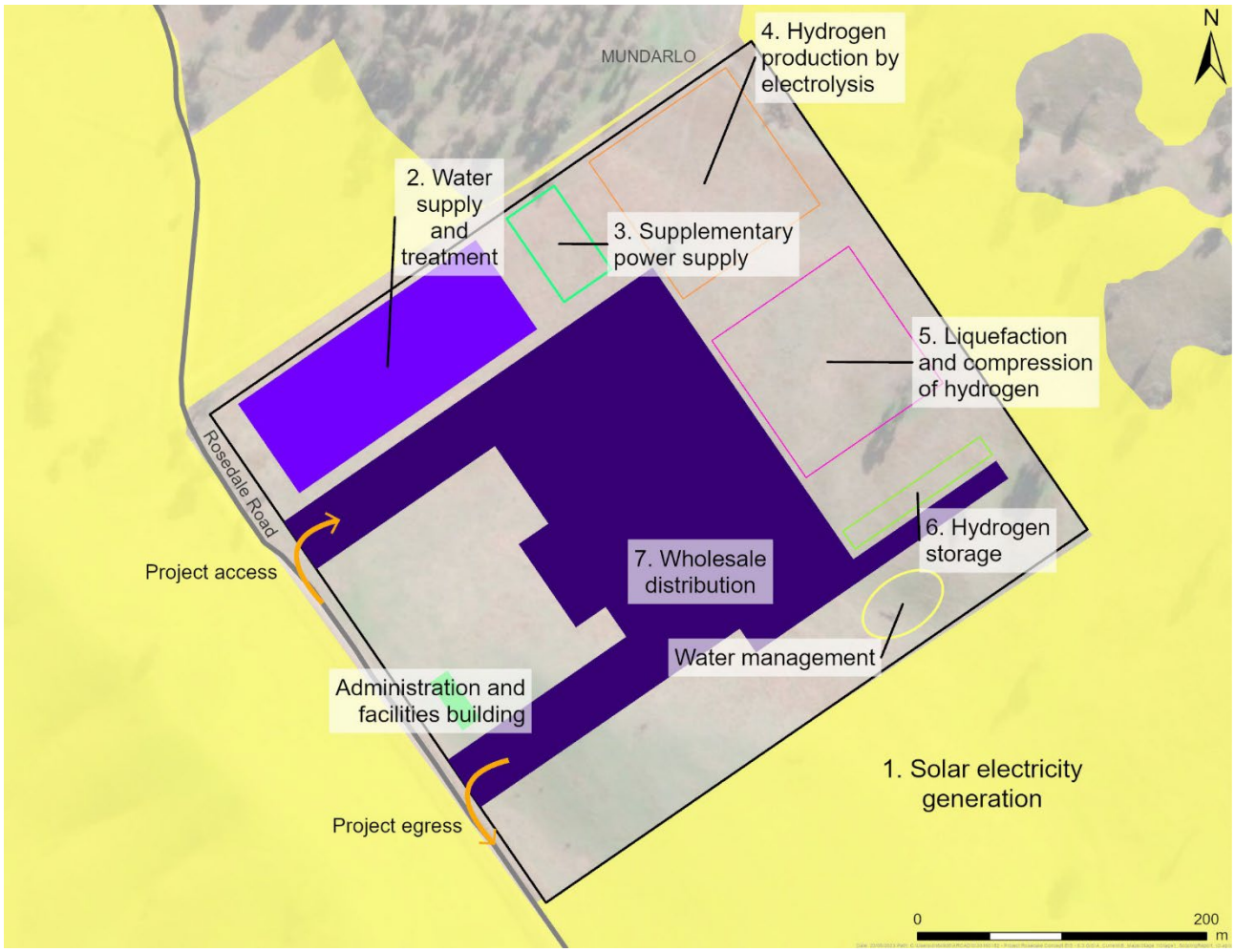

Figure 4-4 Indicative arrangement of key components of the Project within the site production area

4.2.1.1 Solar electricity generation

To generate the electricity production of green hydrogen, a solar array would be installed within the Project footprint, with a generation capacity of 250 MWp. The solar array would be sized in accordance with the energy demands for the electrolysers during the winter months when solar exposure is at its lowest with additional supplementary green power sourced from the grid to ensure continuous supply is met. Opportunities to use the excess energy generated by the solar arrays during the summer months for the Project will be investigated during the development of the EIS and design refinement. The Project would not export electricity to the grid.

Opportunities for the simultaneous use of land for solar photovoltaic energy generation and agriculture will be investigated within the areas used for the solar arrays.

4.2.1.2 Water supply and treatment

Water sources for the Project are being investigated and would likely include a combination of the following sources:

- Regulated licensed river water from the Murrumbidgee River
- Wastewater from Wagga Wagga and Gundagai treatment plants
- Surface water within existing licensing regimes
- Water from creek using existing water access licenses.

An indicative location for a water supply dam has been identified in Figure 4-5 for storing the surface water for use by the Project. Further investigations will be undertaken, if required, to determine the suitability of groundwater as a water source.

A water treatment plant would be located within the site production area to treat water for the Project to a level that is suitable for use within the electrolysers. It is likely that the water would require filtration and de-ionisation prior to use in the electrolysers. Production of hydrogen requires approximately 19 litres (L) of water per kilogram of hydrogen (taking into account losses in filtration).

Water would also be required on-site for cooling, washdown, and Project amenities. This water would not require treatment to the same level as the water required for the electrolysers. The treated water would then be piped to the electrolysers.

A preliminary estimate of total water demand of the Project would be approximately 100L of water per kilogram of hydrogen. Accordingly, the water treatment plant would be sized to treat about 2.5ML per day or 912.5ML of water per year.

Waste from the treatment plant processes that are not suitable for re-use would be either trucked off-site or temporarily stored in evaporative ponds prior to disposal offsite.

4.2.1.3 Supplementary power supply

A supplementary power supply would be installed to prolong the daily operating hours of the electrolysers and operating plant to counter short winter days, prolonged cloudy days and wet weather. Supplementary power supply may comprise:

- A battery energy storage system (BESS) of up to 12MW (or alternative technology) to prolong daily duration. The BESS would be located in the site production area.
- A connection to the grid to provide up to 40 MW from three phase power to supply constant power to the liquefaction and compression equipment and supplement power to electrolysers in the winter. The grid connection would ensure supply of renewable energy is delivered with certainty given the liquefication plant requires 24 hours per day, 7 days per week power. No grid export would be envisaged.

4.2.1.4 Hydrogen production by electrolysis

There are two primary electrolyser technologies generally used in the hydrogen production market. The type of electrolyser technology used for the Project would be either:

- Proton exchange membrane (PEM); or
- Alkaline electrolysers.

Alkaline electrolysers are a mature method for electrochemical hydrogen production, however proton exchange membrane electrolysers may have operational characteristics more favourable to flexible operation. Currently, proton exchange membrane technology is more expensive than alkaline electrolysers; however, considerable research and development is ongoing on both, which may change the competitive balance.

Hydrogen electrolysers, whether proton exchange membrane or alkaline technology, are generally self-contained, containerised systems that would be co-located within the Project area. Figure 4-5 shows examples of hydrogen electrolysers that may be installed for the Project.

The electricity produced by the solar arrays would be converted to alternating current (AC) via an inverter prior to being transported to the site production area. At the site production area, the AC electricity would then be converted back to direct current (DC) via an inverter for use by the electrolysers within the site production area.

Figure 4-5 Example of hydrogen electrolysers

4.2.1.5 Hydrogen liquefaction and compression

Once produced, the green hydrogen would be compressed in gaseous form to be piped into the liquefaction plant for temporary storage prior to distribution. Equipment to compress or liquefy the hydrogen would be located within the site production area.

The process required for liquefaction and storage would be powered by electricity from the grid. The Project would include a connection to the supplementary power supply to provide constant power for the ongoing operation of the liquefaction plant.

4.2.1.6 Hydrogen storage

Both liquid and gaseous green hydrogen would be stored on-site however only liquid hydrogen would be distributed. A dedicated storage area would be established within the site production area for the safe storage of green hydrogen. It is intended that the hydrogen storage facility would hold sufficient hydrogen to meet the wholesale needs of the retail supply chain and to allow for a continued supply of hydrogen to the market during maintenance and shut-down periods. Approximately 203 tonnes of green hydrogen is proposed to be stored at any one time.

4.2.1.7 Wholesale distribution

It is envisaged that trucks would enter the Project area from the Hume Highway via Rosedale Road and be filled with liquid hydrogen for transport to retail centres and large fleet depots. Areas for trailer and truck parking would be provided along with amenities for site workers, an administration building, storage and maintenance supplies area and a plant control room. Facilities would also be made available within the wholesale distribution area for green hydrogen-fuelled vehicles to refuel.

4.2.1.8 Access to the Project

Access to the wholesale distribution centre would be via the existing access to the Project area from the Hume Highway and Rosedale Road. Access to the Project may require minor upgrades to the intersection of the Hume Highway with Rosedale Road and minor upgrades to Rosedale Road. The timing and extent of road infrastructure upgrades required to support the Project would be determined during the preparation of the EIS. Figure 4-6 shows the access route to the Project from the Hume Highway.

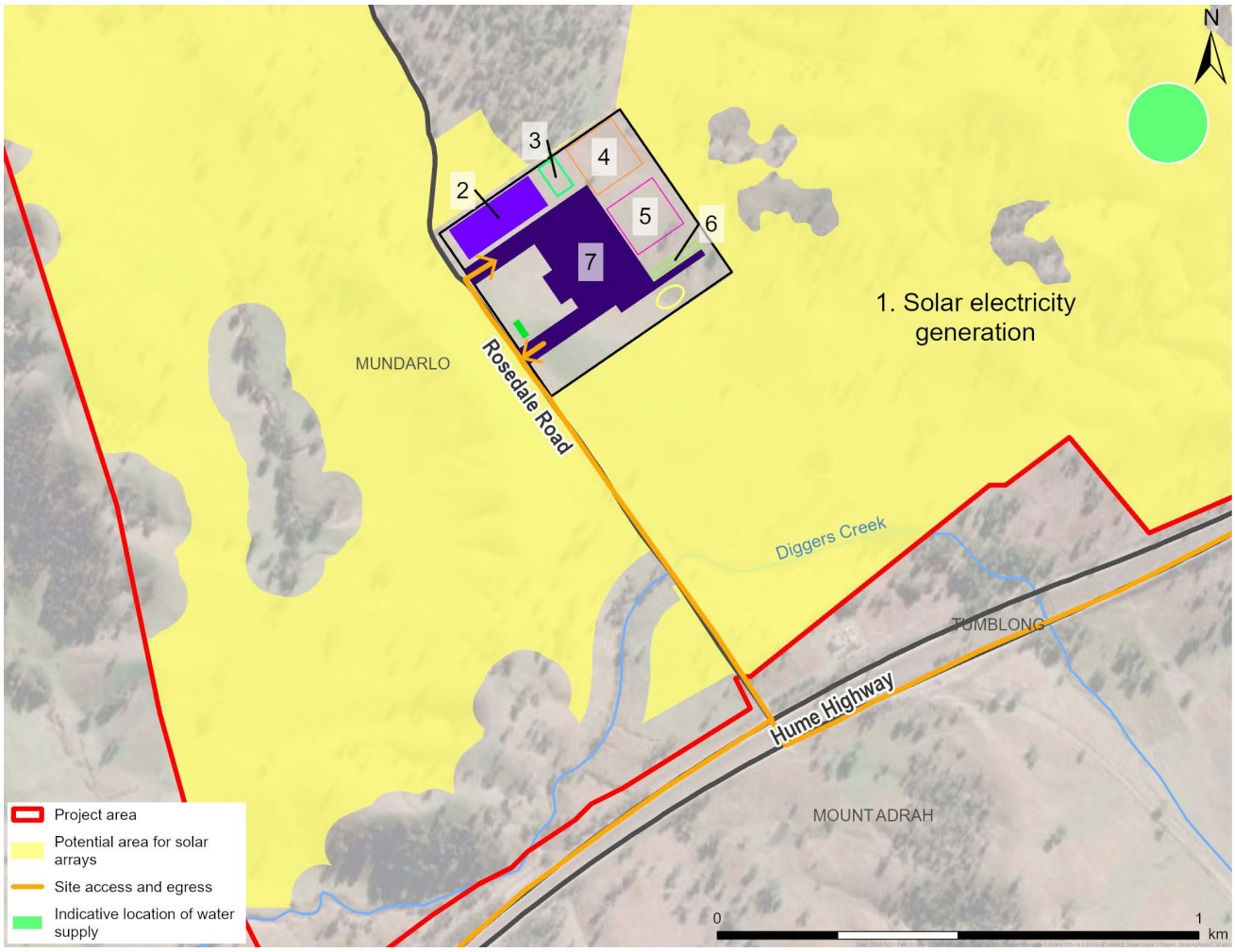

Figure 4-6 Access to the Project

4.2.1.8 Internal roads and supporting infrastructure

Other internal infrastructure would be required to support the Project, including internal roads, connecting power lines, water and wastewater storage, and hydrogen and water piping. Further detail on internal infrastructure would be confirmed in the EIS. A connection to the National Broadband Network would be made to connect the Project to the internet.

4.2.2 Summary of Project components

Table 4-1 summarises the key Project components. All Project components are subject to further design development and will be confirmed during design progression and in response to the studies carried out for the EIS.

Table 4-1 Project components and indicative capacity for the Project

No.	Component	Indicative capacity	Description
1	Solar electricity generation	250 MW	Solar arrays to be installed within the Project footprint to produce up to 250 MW of electricity for the purposes of green hydrogen production.

No.	Component	Indicative capacity	Description
2	Water treatment plant	2.5ML/day	Water treatment plant with capacity to treat water to a level suitable for hydrogen production. Additional water would be required for flushing of the treatment plant and plant/equipment cooling
3	Supplementary power supply		
	Grid connection	40 MW	Connection to the grid for the liquefaction and compression equipment would be installed to allow for continuous operation.
	BESS	12 MW	A battery energy storage system (BESS) is likely to be installed to provide some power to the system during times of peak demand, when solar energy is not available.
4	Hydrogen production by electrolysis	25 tpd	Electrolysers would be located within the site production area within the Project footprint. Sufficient electrolysers would be installed to produce up to 25 tpd of green hydrogen.
5	Liquefaction and compression	25 tpd for liquefaction	A liquefaction plant would be established on site for the liquefaction of green hydrogen. The plant is likely to be oversized to allow for peaks and troughs of green hydrogen production throughout the day.
6	Hydrogen storage	203 tonnes	Storage for up to 7 days of production of green hydrogen including parking of up to 8 tankers with 3.5t of liquid hydrogen. This volume would be confirmed during preparation of the EIS.
7	Wholesale distribution	25 tpd of green hydrogen	The distribution centre would be arranged to allow for the wholesale distribution of hydrogen via trucks and tankers.
8	Access to the Hume Highway	Access to cater for up to eight trucks and 20 light vehicles per day	Potential upgrade to the intersection with the Hume Highway and Rosedale Road may be required to cater for the Project. The need for upgrade would be confirmed during preparation of the EIS document.

4.2.3 Project delivery

An indicative high-level Project program for delivery of the Project is shown in Figure 4-7.

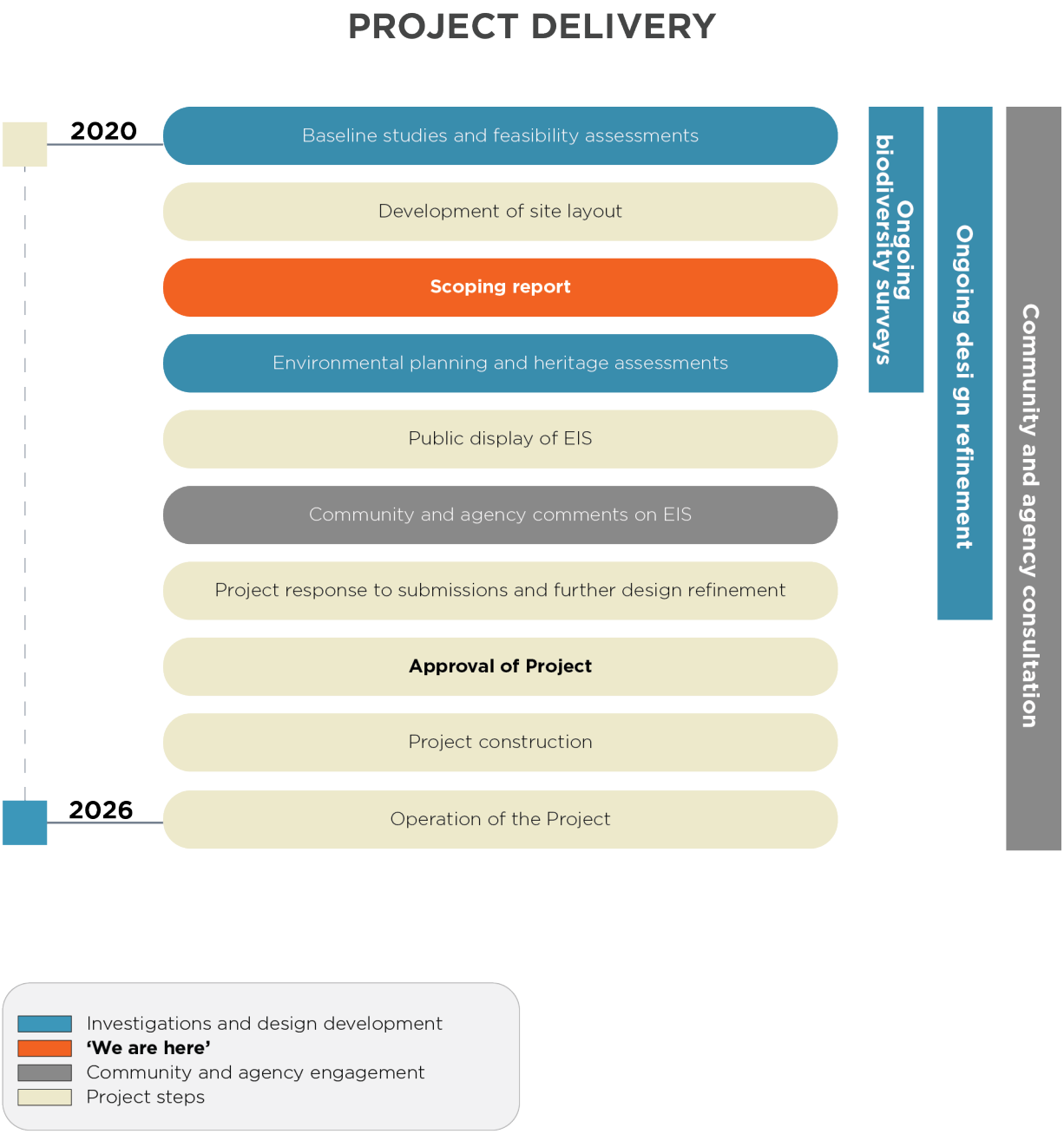

Figure 4-7 Flowchart for Project Delivery

4.2.3.1 Construction

It is expected that construction of the Project would commence in 2025 and take 12 to 18 months to complete. Site preparation is expected to commence in early 2025, pending environmental approvals, licensing and completion of the design and procurement processes. Construction would involve:

- Site establishment works, including establishment of a temporary site compound, construction of access tracks, boundary fencing, establishment of fire safety envelope setbacks and installation of environmental controls
- Upgrades to Site access and potential upgrades to Rosedale Road (if required)

- Establishment of ground surfaces for the electrolysers, liquefaction plant and storage areas, installation of drainage and stormwater management systems, and excavation and installation of foundations for buildings and plant
- Construction and installation of buildings and plant including delivery and installation of infrastructure and plant and erection of buildings
- Construction of solar arrays, including installation of piles to support solar arrays, installation of frames and mounting of solar photovoltaic modules and inverters, and installation of cabling and electrical works
- Installation of supporting infrastructure including piping for hydrogen and water transfer and electrical cabling
- Installation of BESS for supplementary power requirements (not grid connected)
- Installation of grid connection infrastructure for import of power to the production site (no grid export)
- Commissioning and demobilisation.

4.2.3.2 Operation

Operation of the Project would commence in 2026, with a production capacity of 25 tpd of green hydrogen. Standard operations would include:

- Hydrogen generation by electrolysers using solar energy, predominantly during daylight hours
- Liquefaction and compression of hydrogen 24 hours per day
- Supplementary power supply to be delivered by BESS or grid connection to account for short winter days and prolonged cloudy and wet weather
- Use of hydrogen-fuelled vehicles on site for the transport of green hydrogen and maintenance of the Project
- Distribution of liquid green hydrogen via truck from the wholesale distribution centre
- Agriculture within the areas of photovoltaic arrays.

The Project would operate 24 hours per day, 7 days per week. Peak operation of the electrolysers would occur during daylight hours. The liquefaction and compression plant would run continuously; however, they are likely to be ramped up during daylight hours and ramped down overnight. Wholesale distribution would occur 24 hours per day.

It is expected that approximately eight tankers would access the site each day to transport the green hydrogen to other distribution centres or for use on other sites. The Project would own these tankers, which would meet all Australian road safety standards and be appropriately licenced to carry liquid hydrogen. It is anticipated that some of the prime movers used to transport these tankers would be hydrogen-fuelled, and a refuelling point would be made available within the distribution area to allow for the refuelling of hydrogen-fuelled prime movers to haul the tankers. Vehicles used for site operations would also be hydrogen-fuelled and would refuel within the distribution area.

During operation, it is anticipated that about 20 full-time equivalent (FTE) workforce would be required during standard operation. Additional staff would be required for scheduled maintenance and servicing activities to maintain the photovoltaic solar array and hydrogen production facility.

4.2.3.3 Decommissioning

Decommissioning of the Project would occur at the end of its operational life, which is anticipated to be 40 years. It is intended that on cessation of operation of the Project, infrastructure associated with the Project would be removed. Key components would be recycled or refurbished to the greatest extent practicable. While the land use of the Project area post-decommissioning is not currently known, it is noted that the Project area could be readily returned to agricultural purposes as operation of the Project is not expected to alter the agricultural viability of the area, much of which would continue to be used for agriculture during the operation of the Project.

A decommissioning plan for the Project would be prepared in advance of decommissioning in consultation with the relevant regulatory authorities. The basis of the plan would be that the Project and associated infrastructure are to be decommissioned in line with the applicable legislative requirements and best practice guidelines existing at that time.

4.3 Capital investment value

The estimated capital cost of the Project is approximately $350-$450 million, subject to design development and technology selection.

5 Statutory context

Approval of the Project is being sought in accordance with Division 4.7 of the EP&A Act. An overview of the key statutory requirements for the Project are provided in Table 5-1.

Table 5-1 Statutory requirements for the Project

Matter	Legislation	Discussion
Power to grant approval	EP&A Act	The dominant purposes of the Project are the production of green hydrogen for wholesale distribution and electricity generation to support its production. The Project is therefore classified as State Significant Development as a 'chemical manufacturing and related industries' under Clause 10 and Clause 20, Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021. Under Division 4.2 of the EP&A Act, the consent authority for State Significant Development is the Minister. The applicant is seeking approval via a development application, in accordance with Division 4.7 of the EP&A Act.
Permissibility	Gundagai LEP	The Project is located on land zoned RU1 Primary Production under the Gundagai Local Environment Plan 2011 (LEP). Under the Gundagai LEP development that is not specified in item 2 (development permitted without consent) or item 4 (development that is prohibited) is permissible with consent. The Project meets the definition of *heavy industry* and *hazardous industry* under the Gundagai LEP; development of which do not fall under the permitted without consent or prohibited development. The development is therefore permissible with consent.
Other approvals – Approvals that should be substantially consistent with the approved Project	EP&A Act Section 4.42	Section 4.42 of the EP&A Act provides for a number of approvals that are to be applied consistently to approved SSD projects.
	Roads Act 1993	Development of any upgrades to the connection of the Project to the Hume Highway would require consent under section 138 of the *Roads Act 1993* (Roads Act).

Matter	Legislation	Discussion
		Road upgrades completed as part of the Project will be carried out in accordance with the requirements of the *Roads Act 1993*.
	Protection of the Environment Operations Act 1997	Operation of the Project will require an environment protection licence (EPL) under the *Protection of the Environment Operations Act 1997.* Operation of the Project will be in accordance with the requirements of the EPL, as issued by the EPA.
Other approvals – Approvals that are not required for the approved Project	EP&A Act Section 4.41	Section 4.41 of the EP&A Act specifies approvals that are not required for SSD projects under Part 4 Division 4.7 of the EP&A Act. These are listed below.
	Fisheries Management Act 1994 Section 201, 205 or 219	A permit under the *Fisheries Management Act 1994* to dredge or carry out reclamation work (section 201) or block fish passage (section 219) will not be required pursuant to Section 4.41 of the EP&A Act. The Project may require work in water land to facilitate the upgrade of internal road crossings or establish new crossings of mapped watercourses within the Project area. These works will be undertaken in accordance with the *Guidelines for riparian corridors on waterfront land* (DPI, 2012c) and *Guidelines for watercourse crossings on waterfront land* (DPI, 2012c). Impacts to waterways will be considered in the EIS in accordance with the methodology presented in Chapter 7.
	Heritage Act 1977 Section 139	An approval under Part 4, or an excavation permit under Section 139, of *the Heritage Act 1977* will not be required pursuant to Section 4.41 of the EP&A Act. The preliminary non-Aboriginal heritage analysis found that there are no listed heritage items within the Project area. A detailed assessment of potential impacts on non-Aboriginal heritage will be undertaken as part of the EIS as discussed in Chapter 7.
	National Parks and Wildlife Act 1974 Section 90	An Aboriginal heritage impact permit under Section 90 of the National Parks and Wildlife Act 1974 will not be required pursuant to Section 4.41 of the EP&A Act. No Aboriginal cultural heritage sites have been previously recorded within the Project area. An assessment of Aboriginal cultural heritage will be prepared as part of the EIS and will include consultation with the registered Aboriginal parties for the Project as outlined in Chapter 7.
	Water Management Act 2000 Sections 89, 90 and 91	A water use approval under section 89, a water management work approval under section 90 and an activity approval (other than an aquifer interference approval) under section 91 will not be required pursuant to Section 4.41 of the EP&A Act.

Matter	Legislation	Discussion
		Construction work near or within watercourses within the Project area may be required. These works will be carried out in accordance with DPE's various guidelines for controlled activities. Impacts to waterways and water resources will be considered in the EIS in accordance with the methodology presented in Chapter 7.
	Rural Fires Act 1997 Section 100B	A bushfire safety authority under section 100B will not be required pursuant to Section 4.41 of the EP&A Act. A bushfire threat assessment will be completed during the EIS as discussed in Chapter 7. Consultation with NSW Rural Fire Services (RFS), Fire and Rescue NSW and the local RFS fire brigade will be conducted during the preparation of the EIS.
	Local Land Services Act 2013	Clearing of native vegetation in a regulated rural area is authorised if it is carried out in accordance with a development consent under Part 4 of the EP&A Act. Assessment of the potential biodiversity impacts will be undertaken in accordance with the Biodiversity Conservation Act and discussed within the EIS.
Other approvals – Commonwealth legislation	*Environment Protection and Biodiversity Conservation Act 1999*	The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) establishes the Commonwealth's role in environmental assessment, biodiversity conservation and the management of protected areas. Under the EPBC Act, a referral is required to the Australian Government for proposed actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land (including leased land). Issues with respect to matters of national environmental significance (MNES) are discussed in section Chapter 7. A decision on the need to refer the Project is subject to further investigations, including the outcomes of biodiversity field surveys and design development.
	Native Title Act 1993	Searches of the National Native Title Register, the Register of Native Title Claims, and Native Title Applications Registration Decisions and Determinations, has not identified the Project area as within a registered or determined native title claim. An Aboriginal Cultural Heritage Assessment (ACHAR) will accompany the Project EIS.

Matter	Legislation	Discussion
Other approvals – Other NSW legislation	*Contaminated Land Management Act 1997*	This Act outlines the circumstances in which notification to the EPA is required in relation to the contamination of land. This may be relevant to the Project. Contamination is further discussed in Chapter 7. An assessment of contamination risk will be included in the EIS.
	Biodiversity Conservation Act 2016	Section 7.9 of the Biodiversity Conservation Act (BC Act) requires an application for SSD to be accompanied by a biodiversity development assessment report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. A BDAR is proposed to be prepared, as described in Chapter 7.
	Roads Act 1993	This Act provides for the construction and maintenance of public roads and regulates the carrying out of activities on public roads. A Road Occupancy Licence under section 138 of the Roads Act is required for any activity likely to impact on traffic flow on a classified road and would be required for construction of any upgrades required for the connection of the Project to the Hume Highway.
	Work Health and Safety Regulation 2017	The *Work Health and Safety Act 2011* provides a framework to protect the health, safety and welfare of all workers and others in relation to NSW workplaces and work activities. Chapter 9 of the Work Health and Safety Regulation 2017, which is created under the Act, identifies facilities that are classified as Major Hazard Facilities and those that are required to be licenced. The Project is required to be licensed under the Work Health and Safety Regulation as a major hazard facility and will be required to comply with the requirements of the Work Health and Safety Regulation. Operation of the Project will be in accordance with the requirements of the licence as issued by SafeWork NSW.

Matter	Legislation	Discussion
	Water Management Act 2000	The objects of the *Water Management Act 2000* are to provide for the sustainable and integrated management of the water sources of the state for the benefit of both present and future generations. To achieve this, Water Sharing Plans are developed under the act to define the rules for sharing the water resources of each regulated river valley between consumptive users and the environment. The Project may seek a water access licence under section 56 of the Water Management Act which would permit the extraction of water from a water source, in accordance with the relevant Water Sharing Plan.
Mandatory matters for consideration	EP&A Act	The matters identified below will be considered within the context of the development consent being sought.
	EP&A Act Section 1.3	Relevant objects of the EP&A Act are: (a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources, (b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment, (c) to promote the orderly and economic use and development of land, (e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats, (f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage), (g) to promote good design and amenity of the built environment, (j) to provide increased opportunity for community participation in environmental planning and assessment. The above will be considered in the EIS.
	EP&A Act	Under Section 4.15 of the EP&A Act the consent authority must consider the following relevant matters for consideration:

Matter	Legislation	Discussion
	Section 4.15	a. the provisions of: ii. any environmental planning instruments – namely: • State Environmental Planning Policy (Biodiversity and Conservation) 2021 • State Environmental Planning Policy (Resilience and Hazards) 2021 • State Environmental Planning Policy (Planning Systems) 2021 • Gundagai LEP 2013. ii. any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved) iii. relevant development control plans – It is noted that in accordance with Section 2.10 of the State Environmental Planning Policy (Planning Systems) 2021, Development Control Plans do not apply to SSD and are not a relevant consideration for the Project. iv. any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4 v. the regulations (to the extent that they prescribe matters for the purposes of this paragraph) that apply to the land to which the development application relates b. the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality c. the suitability of the site for the development d. any submissions made in accordance with this Act or the regulations e. the public interest. The above will be considered in the EIS and addressed based on the outcomes of environmental assessments to be undertaken, as described in Chapter 7.
	BC Act	Mandatory matters for considerations under section 7.14 and section 7.16 (serious and irreversible impacts on biodiversity values) of the BC Act will be considered in the biodiversity assessment provided with the EIS.
	Gundagai LEP	The EIS will consider all relevant provisions of the Gundagai LEP, including: • The relevant objectives and land uses for RU1 zone • Clause 4.2 Rural Subdivision

Matter	Legislation	Discussion
		• Clause 5.21 Flood planning • Clause 6.1 Biodiversity protection • Clause 6.2 Land protection • Clause 6.3 Water protection • Clause 6.5 Earthworks. These matters will be considered in the EIS.
	SEPP (Resilience and Hazards)	Under State Environmental Planning Policy (Resilience and Hazards) 2021 – the Project is defined as a *hazardous industry* and the matters listed in Clause 3.21 of the SEPP (Resilience and Hazards) must be considered, which include: (a) current circulars or guidelines published by DPE relating to hazardous or offensive development, and (b) whether any public authority should be consulted concerning any environmental and land use safety requirements with which the development should comply, and (c) in the case of development for the purpose of a potentially hazardous industry—a preliminary hazard analysis prepared by or on behalf of the applicant, and (d) any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application), and (e) any likely future use of the land surrounding the development. A Preliminary Hazard Analysis will be prepared for the EIS in accordance with Section 7.2.

6 Engagement

6.1 Engagement carried out to date

6.1.1 Community engagement

The key principles of the Proponent's Community Engagement Strategy are as follows.

- Openness and honesty – the Proponent will at all times seek to provide open and honest information about the Project during the Project's development and through the environmental approval process
- Approachable – the Proponent has at all times sought to make Project representatives available to the local community and key stakeholders to answer questions and provide information

- Meaningful, relevant and respectful – the Proponent will at all times seek to provide information in a manner that is meaningful and relevant to the community and respectful of community concerns.

The Proponent has identified the following broad groups with particular interest in the Project:

- Immediate neighbours (landholders in close proximity to the proposal (Mundarlo, Mount Adrah and Tumblong))
- Other neighbours to proposal (including residents of Mundarlo, Mount Adrah Tumblong, Borambola, Ellerslie, Gundagai, South Gundagai, Tarcutta and Wantabadgery
- Wider community in the Cootamundra- Gundagai Regional Council area
- Businesses in Cootamundra-Gundagai Regional Council area
- Community groups, including the Chamber of Commerce clubs, service organizations and special interest groups
- Local Aboriginal Community
- Local Council (Cootamundra- Gundagai Regional Council)
- Adjacent Council (City of Wagga Wagga)
- Government and non-government service and infrastructure providers
- Government regulators
- Elected representatives (and advisors).

6.1.2 Agency engagement

Agency engagement so far has included initial briefings with relevant government agencies. These briefings included an overview of the Project, discussion of the approvals process and sought preliminary feedback on issues to be considered in the EIS. Meetings were held with the following agencies:

- Environment Protection Authority (EPA) on 24/01/2023
- Environment and Heritage Group (EHG) on 31/01/2023
- Wagga Wagga City Council on 11/05/2023
- Cootamundra- Gundagai Regional Council on 25/07/2023.

Emails outlining the Project and requesting a meeting were sent to the following agencies, who declined the offer of a meeting to discuss the Project:

- Heritage NSW
- Department Planning and Environment (DPE) Water
- Water NSW.

A Planning Focus Meeting was hosted by the Department of Planning and Environment on 18 July 2023 to provide an overview of the proposal and the proposed assessment methodology for the assessment of environmental impacts within the EIS to government agencies with an interest in the assessment of the proposal and seek feedback from those agencies. Government agencies in attendance at the Planning Focus Meeting included:

- DPE – Planning & Assessment
- DPE – Hazards
- DPE – Environment and Heritage
- DPE – Regional
- Wagga Wagga City Council
- Cootamundra-Gundagai Regional Council
- Safework NSW
- Fire and Rescue NSW
- Environment Protection Authority
- NSW Health
- Department of Primary Industries – Agriculture
- Department of Primary Industries – Policy
- Local Land Services
- Crown Lands
- Riverina Water.

Feedback received during the Planning Focus Meeting has been taken into consideration in this version of the Scoping report.

DPE met with Transport for NSW, who were unable to attend the Planning Focus Meeting and feedback was provided to CLARA Energy on the proposed assessment approach, which has been incorporated into the assessment approach within this Scoping report.

6.2 Engagement to be carried out

A range of consultation methods will be implemented for the Project, as identified in Table 6-1. Engagement will be undertaken having consideration for the *Undertaking Engagement Guidelines for State Significant Projects* (DPIE, 2022).

Table 6-1 Summary of consultation methods for the Project

Key Stakeholder	Consultation Methods	Frequency
Landholders (immediate neighbours)	• Face-to-face/doorknocking/telephone discussions • Site visits/inspections • Negotiated access and other agreements as appropriate • Regular updates	• At key intervals throughout Project planning and development phases • Regular updates after planning approval received on construction progress
Other neighbours	• Site visits/inspections as required • Regular updates • Community information pop ups	• At key intervals throughout Project planning and development phases • Regular updates after planning approval received on construction progress
Wider community	• Regular updates • Community information pop ups	• At key intervals throughout Project planning and development phases • Regular updates after planning approval received on construction progress
Aboriginal engagement	• Site visits/inspections as required • Regular updates/briefings including employment and procurement opportunities	• Formal notification for the Aboriginal Cultural Heritage Assessment process will commence as part of the EIS • Regular updates after planning approval received on construction progress, procurement opportunities and involvement in development of Connecting with Country framework

Key Stakeholder	Consultation Methods	Frequency
Businesses	• Face-to-face/telephone discussions • Public meetings/displays • Presentations to business groups • Consultation with selected suppliers	• At key intervals throughout Project planning and development phases • Regular updates after planning approval received on construction progress • Regular briefings to provide an update on employment opportunities
Community groups, including clubs, service organisations and special interest groups	• Public meetings/displays Presentation to meetings	• At key intervals throughout Project planning and development phases • Regular updates after planning approval received on construction progress
Local Council	• Presentation/briefings • Regular updates	• At commencement of planning process to introduce Project and at key intervals throughout Project planning and development phases • Regular updates after planning approval received on construction progress
Government agencies • Environmental Protection Authority (EPA) • Environment and Heritage Group • Heritage NSW • Department Planning and Environment (DPE) Water • Water NSW • Transport for NSW • Department Primary Industries (DPI) Agriculture • Geological Survey of NSW • SafeWork.	• Presentation/briefings • Regular updates	• Scoping and SEARs application phase • Throughout EIS preparation • Once impact assessments available • Regular updates after planning approval received on Project progress
Elected representatives	• Presentation/briefings • Regular updates	• At commencement of planning process to introduce Project and at key intervals throughout Project planning and development phases

Key Stakeholder	Consultation Methods	Frequency
		• Regular updates after planning approval received on construction progress

6.2.1 Aboriginal community engagement

Formal notification for the Aboriginal Cultural Heritage Assessment process has commenced for the Project, in accordance with Stage 1 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010). This will involve the notification and registration of Aboriginal parties.

Further detailed consultation will be undertaken with the Registered Aboriginal Parties (RAPs) for the Project. Consultation will be undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW, 2010). Further details on the proposed heritage assessment are provided in Section 7.11.

Additional engagement will be undertaken with local Aboriginal stakeholder groups at key Project milestones, with briefings and presentations offered to identified groups. There will also be opportunities for Aboriginal groups to be involved in the development of a future Connecting with Country framework and the Project team will develop an Aboriginal Employment and Procurement guideline to ensure Aboriginal communities and businesses are provided with opportunities for employment.

6.2.2 Agency engagement

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

- DPE Water
- Rural Fire Service (RFS) and / or Fire and Rescue NSW
- Heritage NSW.

7 Proposed assessment of impacts

A review of the environmental, cultural and social matters relevant to the Project has been conducted to determine which issues need to be assessed as part of the EIS and the level of assessment that is required. This review has been undertaken with reference to the categories of assessment matters identified by the *DPIE Scoping Guideline* (DPIE, 2021a). Matters requiring further environmental assessment are identified in Sections 7.1 and 7.13.

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

- Matters requiring specific, further assessment in the EIS (refer to Section 7.1)
- Other impacts requiring standard assessment within the EIS (refer to Section 7.13)
- Any matters not identified in sections 7.1 to 7.13 do not require further assessment.

For the matters requiring further assessment in the EIS, Section 7.1 identifies whether detailed or standard assessment is required (as defined by Appendix D of DPIE Scoping Guideline). Appendix A presents a Scoping Table Summary showing the outcome of the scoping stage review of matters as required by DPIE (2021a).

7.1 Key environmental impacts

The following provides further detail on the existing environment of the Project area for each environmental aspect identified as requiring further assessment, based on the preliminary analysis undertaken to inform the Project Scoping Report and scope of the assessments proposed to be prepared for the EIS.

7.2 Hazard and risk

7.2.1 Existing environment

The Project area is located in regional NSW along the Hume Highway. There are four residential receivers located within a two-kilometre radius of the site. Motorists along the Hume Highway are in relatively close proximity to the Project area.

7.2.2 Scale and nature of likely impacts

Construction

The following hazards and risks have the potential to occur during construction of the Project:

- Accidental release of chemicals, fuels and materials associated with their onsite storage, use and transport, and the resultant impacts on construction workers and the environment. To manage this risk, all hazardous substances that may be required would be stored and managed in accordance with the *Work Health and Safety Act 2011* and the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005)
- Disturbance of contaminated soil and existing structures containing contaminated materials.

There is one residence located 500 m north of the Project area and one residence located adjacent to the Project area to the south. These properties may be impacted by hazards and risks during construction of the Project, should the hazard spread from the Project area.

Operation

The following operational elements of the Project have the potential to be hazardous:

- Gaseous and liquid hydrogen production
- Storage of liquid and gaseous hydrogen.

Design refinement of the Project is ongoing and will consider the potential for hazards and risk from the Project during siting of the key components of the Project to minimise risk.

7.2.3 Further hazard and risk assessment

The Project's proposed production and storage of gaseous hydrogen and liquid hydrogen (dangerous goods Class 2.1) exceeds threshold quantities described in the Department of Planning (2011) Guidelines "*Applying SEPP 33"* and is therefore classified as a potentially hazardous development. As per Clause 12 of the Applying SEPP 33 Guidelines, the EIS for the Project will include a Preliminary Hazard Assessment. The Preliminary Hazard Analysis will be conducted in accordance with the Resilience and Hazard SEPP requirements, following relevant DPE guidance, and will assess potential hazards within the Project area and transport movements to the Hume Highway, assessing a worst case scenario based on all the technology under consideration for the Project. The Preliminary Hazard Analysis will identify potential hazards associated with the Project and estimate the likelihood and consequences of them occurring, taking into account proposed controls. Discussion of risks will be undertaken with regard to the potential risk to people, property and the biophysical environment that may occur as a result of the accidental release of potential hazardous material and energy. Elements of risk will be assessed individually, and then potential interactions will be considered to account for knock-on effects. Additional risk mitigation measures will be incorporated into the Project design as required.

7.3 Landscape and visual

7.3.1 Existing environment

The existing landscape character of the Project area is predominantly rural in nature. The Project area largely consists of cleared farming land and native vegetation with a series of hills, valleys, and flats, with creeks and drainage lines running through the lower lying areas. Historically, the Project area has undergone extensive vegetation clearing, pasture improvement and grazing. Patches of roadside vegetation provide occasional visual screening between the road and the surrounding landscape. Further details of the assessment are provided in Appendix D.

Figure 7-1 Photograph of the Site from Rosedale Road

Potential visibility of the Project – photovoltaic solar array

The following preliminary assessment has been undertaken in accordance with the requirements of the Technical Supplement – Landscape and Visual Impact Assessment, Large-Scale Solar Energy Guideline, prepared by the NSW Department of Planning and Environment, 2022 (the 'DPE Technical Supplement').

This analysis assumes the entire area identified as potential solar development within the Project area would be occupied by solar infrastructure, which has been modelled at a maximum height of five metres.

Visibility of the site

A visual catchment of the site has been prepared to identify the theoretical area from which the photovoltaic solar array may be visible (refer to Figure 7-5). This visual catchment plan has been developed using a digital elevation model (landform data derived from LiDAR) combined with points on the site at the maximum height of the proposed solar farm (assumed solar panel height of five metres to represent a worst-case scenario) and identifies areas that would have a direct line of sight to these points. As this analysis does not take into account the screening effect of vegetation and buildings, that may offer visual screening, the area shown on this plan is a worst-case scenario for locations where there may be a view to the site.

The visual catchment (Figure 7-5), shows the visibility of the Project area:

- Extending north for up to four km
- Extending northeast to about two km where landform intervenes
- Extending to the south and southwest across the Highway
- Enclosed to the west by hills.

Views from private dwellings

As required by the DPE Technical Supplement, all dwellings within four km of the Project area have been identified. For these dwellings and roads, the Preliminary Assessment Tools from the DPE Technical Supplement have been used to identify those dwellings that would require detailed assessment in the EIS.

This was done by:

- Calculating the distance of each dwelling from the nearest point of the site
- Determining the relative height difference between the proposed development and each viewpoint
- Plotting each dwelling in the Preliminary Assessment Tool excel spreadsheet to determine the indicative vertical field of view (either 1, 2, 3 or 4+ degrees) (refer to Appendix D, Figure 8-8)
- Measuring the worst-case horizontal field of view of the proposed development from each viewpoint using the visual catchment map (not considering topography or vegetation) (refer to Appendix D, Figure 8-7)
- Compare the vertical and horizontal fields of view using the matrix in the DPE Technical supplement to determine whether detailed visual assessment is required (refer to Appendix D, Figure 8-9).

The results of the preliminary assessment are 8 of the 15 dwellings within four km of the Project area require detailed assessment (Figure 7-5). Appendix D2 provides the results and workings undertaken for the preliminary visual assessment.

Views from public roads and rail lines.

As required by the DPE Technical Supplement, all public roads and rail lines within 2.5 km of the Project have been identified.

For the Project area:

- There are no rail lines within 2.5 km
- The Hume Highway is within 1 km of the Project area, located to the southeast of the Project
- The Sturt Highway, Snowy Mountains Highway and Old Hume Highway are 2.5 km from the Project area and would not require assessment
- Rosedale Road and Sylvias Gap Road are local roads within 2.5 km of the site
- None of these roads are identified as scenic routes.

Representative views from the Hume Highway and Rosedale Road would be assessed in detail in the EIS. While the western end of Sylvias Gap Road is within 2.5 km of the site and within the visual catchment (refer to Appendix D, Figure 8-9), this part of the road is closed to public access and would not be assessed in detail in the EIS.

A visibility plan has been prepared that identifies the theoretical area visible from the Hume Highway (refer to Appendix D). This visibility plan has been developed using a digital elevation model (landform data derived from LiDAR). Viewsheds from locations along the Highway have been combined to identify areas that would be seen from these points. As this analysis does not take into account the screening effect of vegetation and buildings, that may offer visual screening, the area shown on this plan is a worst-case scenario for locations where there may be a view to the site. This plan shows areas to the south of the Project area, along the highway and some elevated areas in the centre of the Project area as visible. This mapping was used to guide some preliminary fieldwork to identify potential views to the Project.

Refer to Appendix D which provides the results and workings undertaken for the preliminary visual assessment.

The Preliminary Assessment Tools from the DPE Technical Supplement have been used to identify those roads that would require detailed assessment in the EIS. Refer to Appendix D2 which provides the results and workings undertaken for the preliminary visual assessment.

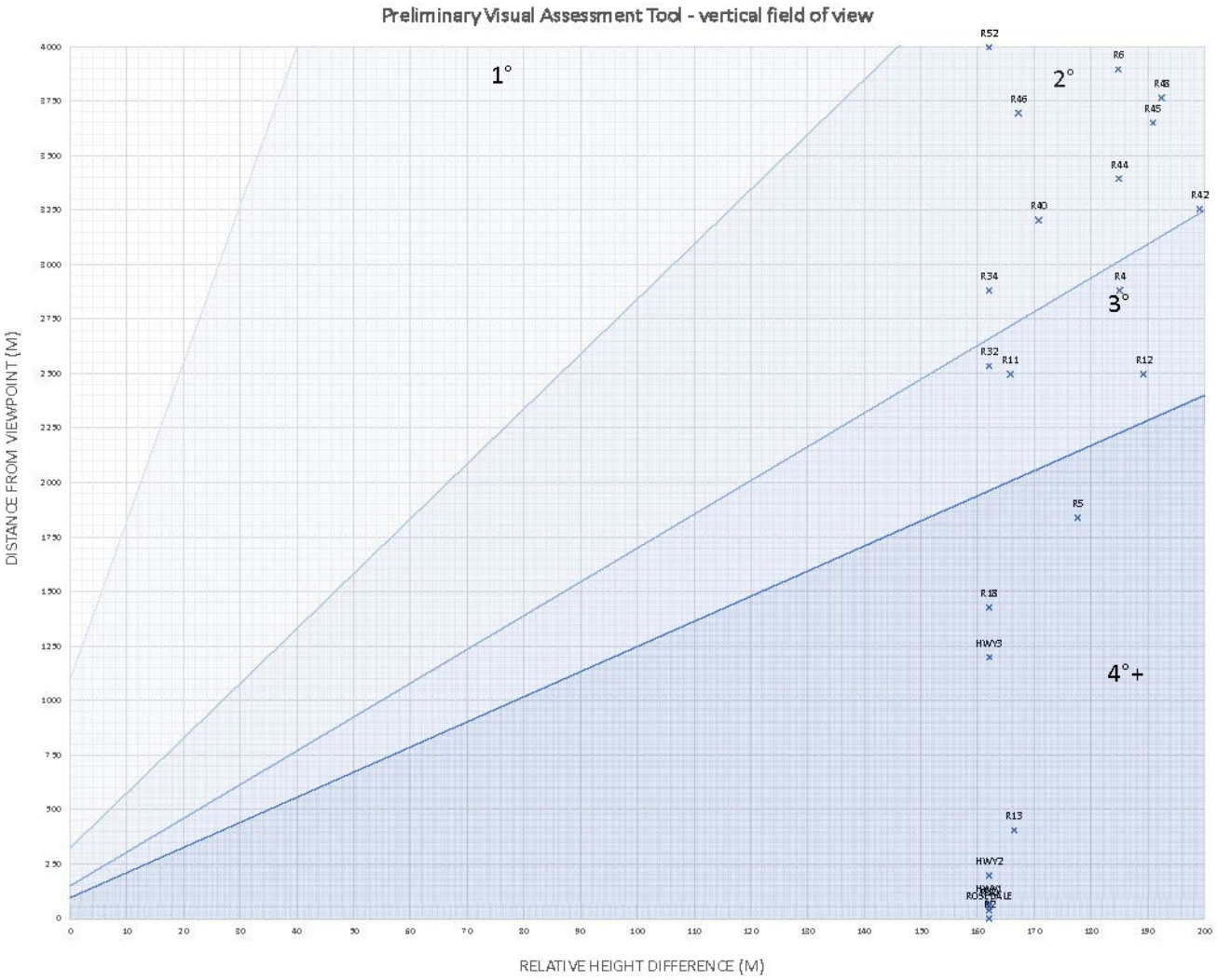

Figure 7-2 Preliminary assessment tool results – dwellings and public roads

Figure 7-3 Photograph towards the Site from the Hume Highway west of Rosedale Road

Figure 7-4 Photograph of view west towards the Site from the Hume Highway

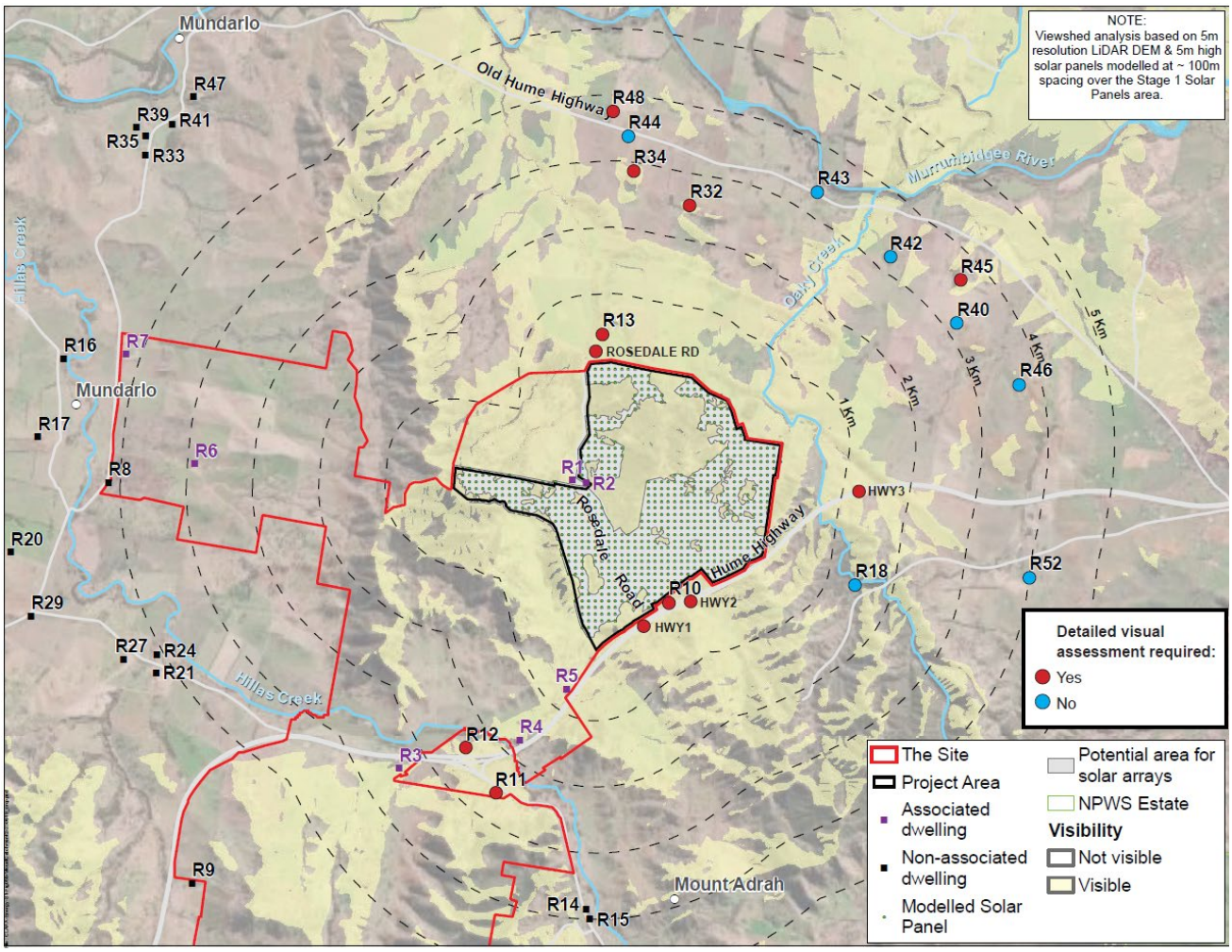

Figure 7-5 Visual catchment of the solar panel development area, with dwellings requiring further assessment highlighted

Potential visibility of the Project – Site production area

A visual catchment of the Project area has been prepared to identify the theoretical area from which the site production area may be visible (refer to Appendix D, Figure 8-11). This visual catchment plan has been developed using a digital elevation model (landform data derived from LiDAR) combined with points on the site at the maximum height of the plant within this area. As this analysis does not take into account the screening effect of vegetation and buildings, that may offer visual screening, the area shown on this plan is a worst-case scenario for locations where there may be a view to the facility.

The visual catchment of the site production area is relatively contained by surrounding landform. This analysis shows the visibility:

- Extending northwest for up to four km
- Extending southeast and southwest across the Hume Highway.

7.3.2 Scale and nature of likely impacts

As shown in this preliminary analysis views of the Project area are most prominent for motorists to the south and southeast of the Project area. The topography of the land encloses some views from the eastern and western side of the Project footprint from surrounding areas.

Overall, there are very few dwellings that are likely to have a moderate or higher visual impact due to the undulating landform which reduces the visual catchment of the project. Furthermore, some of the dwellings identified as requiring detailed assessment will be eliminated during detailed assessment as they will, in reality, have less visibility than identified in the preliminary tools due to the screening effect of the undulating landform on intervening fields and relative location of the project.

For example, dwelling R13 (identified in the preliminary visual assessment as having the potential for greater than 70-degree horizontal field of view and a vertical field of view of greater than 4-degrees), is likely to have a limited view to the Project area due to intervening landform and the relative location of the project within the vicinity of this dwelling. The actual horizontal and vertical field of view that would be affected due to the project is likely to be substantially less (refer to Figure 7-6 and Figure 7-7). Further detailed assessment will be undertaken during the EIS phase to confirm the impact level, for each of the dwellings identified as needing detailed assessment as required.

level, for each of the dwellings identified as needing detailed assessment as required.

Figure 7-6 View from project property boundary towards R13 showing the dwelling located beyond the undulating intervening landform

Figure 7-7 View in the vicinity of R13 showing the undulating intervening landform

Construction

Construction of the Project may cause temporary visual impacts on those who reside near or are travelling through the area. These impacts may result from:

- Establishment and presence of construction sites
- Construction vehicle movements both within construction sites and along haulage routes
- Potential removal of vegetation
- Parking and use of construction plant and equipment.

The potential temporary impact of work covered by the Project on individual sensitive receivers would depend on the phase of construction, their location and the severity of the impact. Temporary visual amenity impacts during construction would be greatest where residential/sensitive receivers have unobstructed views of the construction site.

Operation

The infrastructure associated with the Project would represent a change in landscape character and visual amenity from some areas. There is the potential for the Project to have landscape and visual amenity impacts that require mitigation due to the topographic variations across the Project area. This variation provides both opportunities to locate the infrastructure where it is not visible from either road users or residents, but also increase visibility from surrounding areas where infrastructure is proposed on higher ground. Overall, however, there are a low number of dwellings and local roads in the vicinity of the Project area. The Project area would be visible from some locations along the Highway, which is a very low sensitivity receiver.

The potential landscape character and visual amenity impacts that could occur during operation include:

- Visual impacts from the Highway and a small number of nearby dwellings due to the solar panel arrays and other new infrastructure
- Changes to landscape character associated with the solar panel arrays and other new infrastructure.

7.3.3 Further landscape and visual assessment

A detailed landscape character and visual assessment, and glare risk assessment will be produced as part of the EIS in accordance with the *Large-Scale Solar Energy Guidelines* (DPE, 2022b), Technical Supplement for Landscape and Visual Impact Assessment (DPE, 2022c) and Guideline for Landscape Character and Visual Impact Assessment, Environmental impact assessment practice note EIA-N0 (TfNSW, 2020), as appropriate.

7.4 Property, land use and agriculture

7.4.1 Existing Environment

The Project area has historically and is currently used for agricultural purposes (Figure 2-1). This has primarily been for sheep grazing on improved pasture and cropping to a lesser extent. As noted above, land within the Project area is zoned as RU1 Primary Production under the Gundagai LEP. Several residential receivers are located within four km of the Project area. There is no Crown land identified within the Site.

The Site is not mapped as Biophysical Strategic Agricultural Land (BSAL) and is a minimum of 3.5 km away from any land mapped as such. Figure 7-6 presents Land and Soil Capability across the Project area as mapped by the NSW Government. The mapping is based on an eight-class system with values ranging between 1 and 8 which represent a decreasing capability of the land to sustain various types of agricultural land use. Class 1 represents land capable of sustaining most land uses including those that have a high impact on the soil (e.g. regular cultivation), while Class 8 represents land that is not suitable for agricultural production (DPIE, 2021e). The Project area contains land broadly classified as:

- Class 4 – Moderate capability land
- Class 5 – Moderate-low capability land
- Class 7 – Very low capability land.

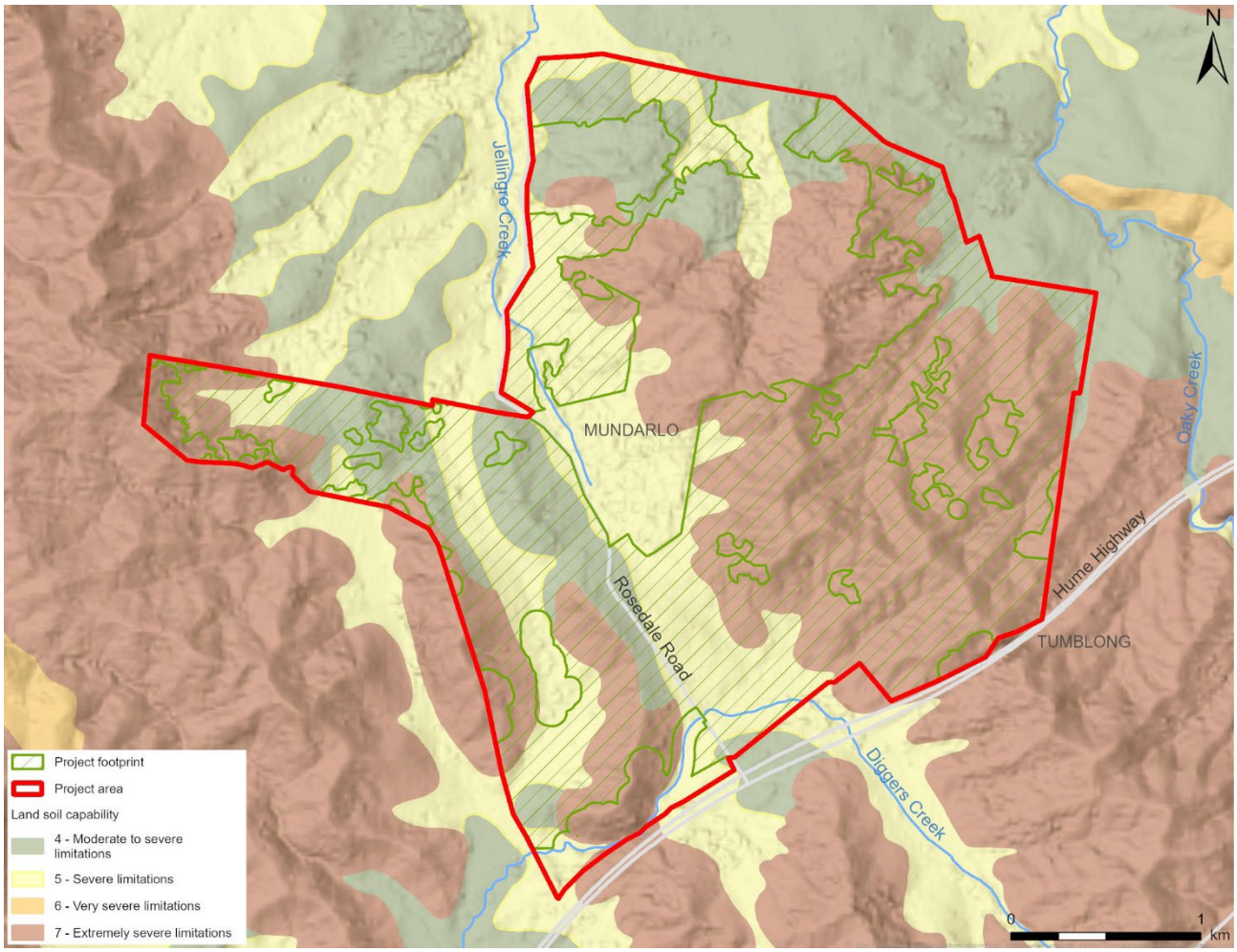

Figure 7-8 Land and Soil Capability and Strategic Agricultural land mapping

7.4.2 Scale and nature of likely impacts

Construction

Construction of the Project would reduce the amount of land available for agricultural use. There is the potential for the degradation of soils within the Project footprint during construction which may lead to the decline in agricultural viability of the site. Additionally, the introduction of infrastructure and impervious surfaces may increase run off, leading to degradation of the soils. It is noted that these impacts would be temporary and limited to the duration of the construction phase.

Mitigation measures would be put in place to minimise potential impacts on agricultural land viability. The Project will also investigate opportunities to reduce erosion along creek lines and waterways within the Project area, providing additional land stabilisation and improving the long-term viability of the area for agricultural use.

Operation

Once the Project is operational, there is unlikely to be any further impacts to agricultural land use. The Project would allow for agricultural operations to occur concurrently with operation of the photovoltaic solar array.

7.4.3 Further property, land use and agricultural assessment

An agricultural impact assessment will be carried out in accordance with Section 5.2 and Appendix A of the *Large-Scale Solar Energy Guidelines* (DPE, 2022b) to detail the agricultural capability of the Project area, assess potential impacts of the Project on agricultural land and identify potential mitigation measures.

Additionally, a Land Use Conflict Risk Assessment (LUCRA) will be completed in accordance with the Department of Industry's *Land Use Conflict Risk Assessment Guide* as part of the agricultural impact assessment.

7.5 Biodiversity

7.5.1 Existing Environment

Desktop investigations were completed for the Project area and its surrounds to determine the likely impacts to biodiversity which would result from the Project. A review of existing vegetation mapping and records for threatened biota within 20 km of the Project area was performed using the following databases:

- BioNet Atlas of NSW Wildlife, managed by the Department of Planning and Environment: Environment and Heritage Group
- Protected Matters Search Tool managed by the Commonwealth Department of Climate Change, Energy, the Environment and Water
- NSW State Vegetation Type Map – Version C1.1.M1 managed by the Department of Planning and Environment.

A total of five threatened flora species and 36 threatened fauna species listed under the BC Act were identified within 20 km of the Project area. Native vegetation within the Project area has been mapped as six Plant Community Types (PCTs) on State Vegetation Type Mapping (DPE, 2022). These have been included in Table 7-1 along with their associated BC Act Threatened Ecological Communities (TECs). Figure 7-7 shows the preliminary mapping of BC Act TECs within the Project area.

Table 7-1 PCTs and associated TECs within the Project area

Plant Community Types	Associated TECs
PCT 266 - White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakelys Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions (Critically endangered - BC Act).
PCT 268 - White Box - Blakelys Red Gum - Long-leaved Box - Nortons Box - Red Stringybark grass-shrub woodland on shallow soils on hills in the NSW South Western Slopes Bioregion	
PCT 277 - Blakelys Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	
PCT 347 - Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates in the Tarcutta - Gundagai region, NSW South Western Slopes Bioregion	

Plant Community Types	Associated TECs
PCT 343 - Red Stringybark - Red Box - Long-leaved Box - Inland Scribbly Gum tussock grass - shrub low open forest on hills in the southern part of the NSW South Western Slopes Bioregion	No associated TECs
PCT 290 - White Box - Blakelys Red Gum shrub/grass woodland on metamorphic hillslopes in the mid-southern part of the upper slopes sub-region of the NSW South Western Slopes Bioregion	No associated TECs

Review of the Protected Matters Search Tool identified records for a total of 11 threatened flora species and 30 threatened fauna species listed under the EPBC Act within 20 km of the Project area. An additional 13 fauna species listed as Migratory or Marine species were returned by the search. The following EPBC listed Threatened Ecological Communities were found to have potential to occur:

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (also listed under the BC Act)
- Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia
- Natural Temperate Grassland of the South Eastern Highlands.

A review of the Draft Land Categorisation mapping for the Project area identified that vegetation within the Project area is mapped as Category 1, Category 2 – Regulated and Category 2 – vulnerable regulated. It is noted that the Project is seeking approval under Part 4 of the EP&A Act, hence approval under the *Local Land Services Act 2013* (LLS Act) will not be required for the Project. The biodiversity assessment for the Project EIS will consider impacts of the Project across the Project area in accordance with the requirements of the BC Act.

The Project is located within the Murrumbidgee River catchment which supports a multitude of ecosystems, species and ecological communities across central and southern NSW. There are two main creek systems with multiple smaller drainage systems that traverse the Project area, these include Diggers Creek (4th order stream) and Jellingro Creek (1st to 3rd order stream). There are no wetlands, state forests, nature services, rainforests or drinking water catchments mapped within, the study area. Ellerslie Nature Reserve is to the immediate south of the Project; however, this is noted to be upstream of the study area and outside the boundary. Nature reserves are protected and managed in accordance with the *National Parks and Wildlife Act 1974* and the *Biodiversity Conservation Act 2016*.

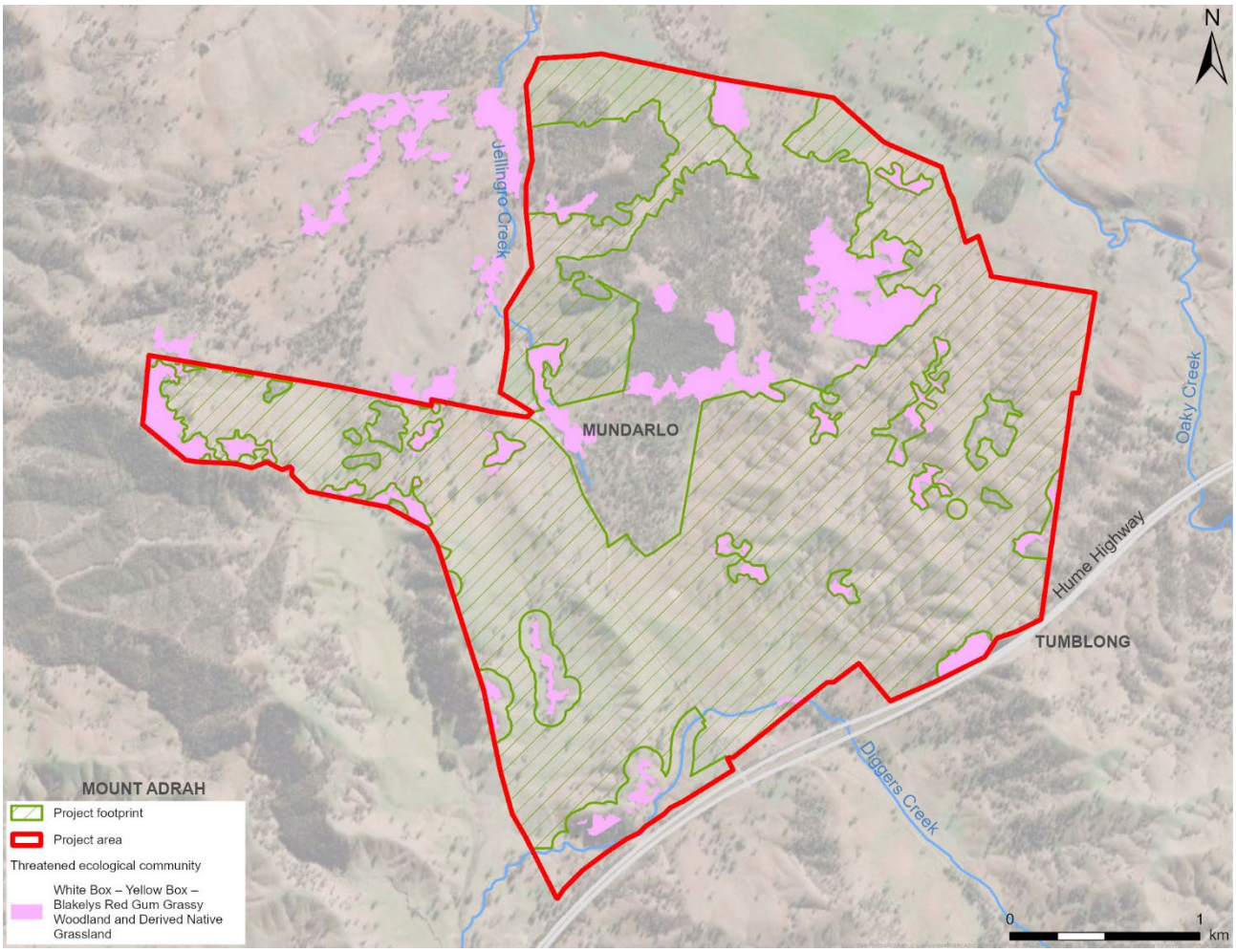

Figure 7-9 Preliminary mapping of TECs listed under the BC and EPBC Act

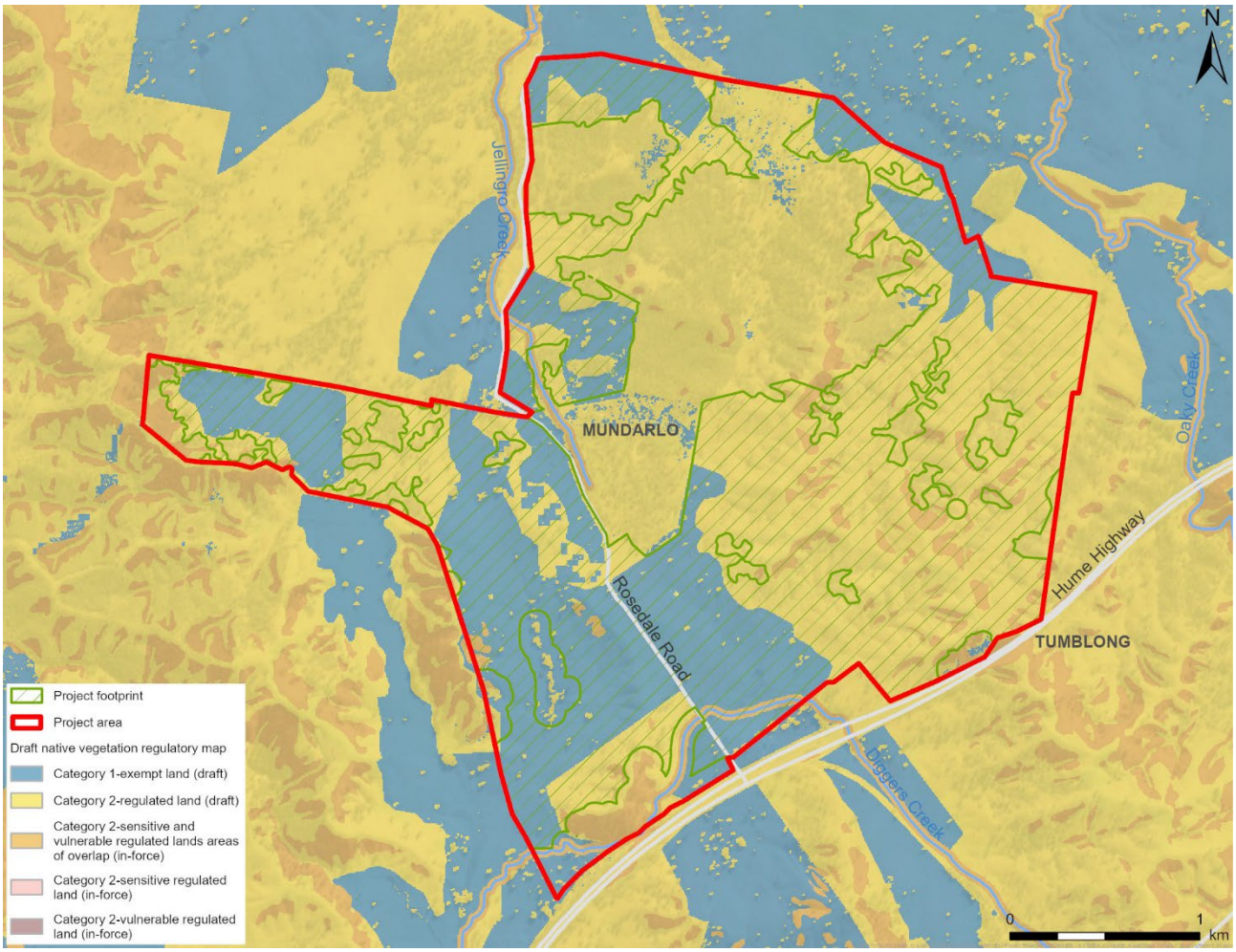

Figure 7-10 Draft land categorisation

7.5.2 Scale and nature of likely impacts

The Project's layout has been strategically designed to avoid impacts to biodiversity (Figure 7-7). Refinement of the layout will continue through preparation of the EIS in parallel with inputs from biodiversity investigations.

Construction

Construction of the Project would occur on land that consists largely of derived grassland and native pasture. Vegetation removal may be required to accommodate the key components of the Project and associated construction and operational infrastructure.

Potential construction impacts to biodiversity may include:

- Clearance of native vegetation
- Introduction and spread of noxious weeds and other invasive species
- Injury/mortality of fauna species during clearance.

Operation

Once the site is operational, there is unlikely to be any further substantial impacts to biodiversity. There is the minor risk of injury or mortality of fauna species from collisions with vehicles accessing the Project area, however this would be unlikely and measures to mitigate the risk will be investigated.

CLARA Energy is investigating opportunities to improve the biodiversity values of the site and management and restoration works associated with areas of biodiversity conservation would be on-going during operation of the Project.

7.5.3 Further biodiversity assessment

An assessment of the potential impacts to biodiversity matters within and surrounding the Project area will be completed as part of the EIS in the form of a Biodiversity Development Assessment Report (BDAR) in accordance with the Biodiversity Assessment Method (BAM) (DPIE EES, 2020). This biodiversity assessment of the Project area will be undertaken by a BAM accredited ecologist.

It is not currently envisaged that there will be a significant impact on Matters of National Environmental Significance, and therefore no requirement for assessment under the EPBC Act. This will be confirmed as early as possible in the EIS preparation.

The following government guidelines will be considered during the preparation of the BDAR, as relevant:

- Biodiversity Assessment Method (DPIE EES, 2020)
- NSW Biodiversity Offsets Scheme (Office of Environment and Heritage, 2017b)
- Threatened species survey and assessment guidelines at https://www.environment.nsw.gov.au/topics/ animals-and-plants/threatened-species/about-threatened-species/surveys-and-assessments (various)
- Framework for Biodiversity Assessment (NSW Office of Environment and Heritage, 2014a) (although now superseded, relevant aspects may still be considered for the Environmental Impact Statement).

The BDAR will be based on a desktop review of database searches, regional biodiversity mapping and any relevant existing site-specific reports, as well as site inspections and detailed targeted field surveys, as required. The assessment will be carried out for any threatened species, populations and ecological communities considered likely to be present on the Site.

The biodiversity assessment will include the following:

- Investigations for design to avoid impacts on TECs and any other threatened species (or their habitat), as far as practicable
- Identification and description of the flora and fauna species, habitat, populations and ecological communities that occur, or are likely to occur
- An assessment of any direct and indirect impacts of the Project on flora and fauna species, populations, ecological communities and their habitats, and Groundwater Dependent Ecosystems (GDEs)
- Assessment of the significance of the impacts of the Project on species, ecological communities and populations, and GDEs listed under the Commonwealth EPBC Act, the BC Act and the *Fisheries Management Act 1994* (FM Act) that occur or are considered likely to occur
- Identification of mitigation and offset measures, determined in accordance with the BAM.

7.6 Traffic and transport

7.6.1 Existing Environment

The Project area would be accessed from the Hume Highway and Rosedale Road. The Hume Highway is the main road corridor between Sydney and Melbourne. It connects inland cities and towns, while also acting as a major freight route. At the Project area, the Hume Highway is two lanes in each direction with a wide vegetated median separating the northbound and southbound traffic. The posted speed on the Hume Highway is 110 km/h. The intersection at the Hume

Highway and Rosedale Road, an at-grade intersection in the form of a two stage crossing, provides access to the Site and has been investigated for its appropriateness to be used as the access to the Project.

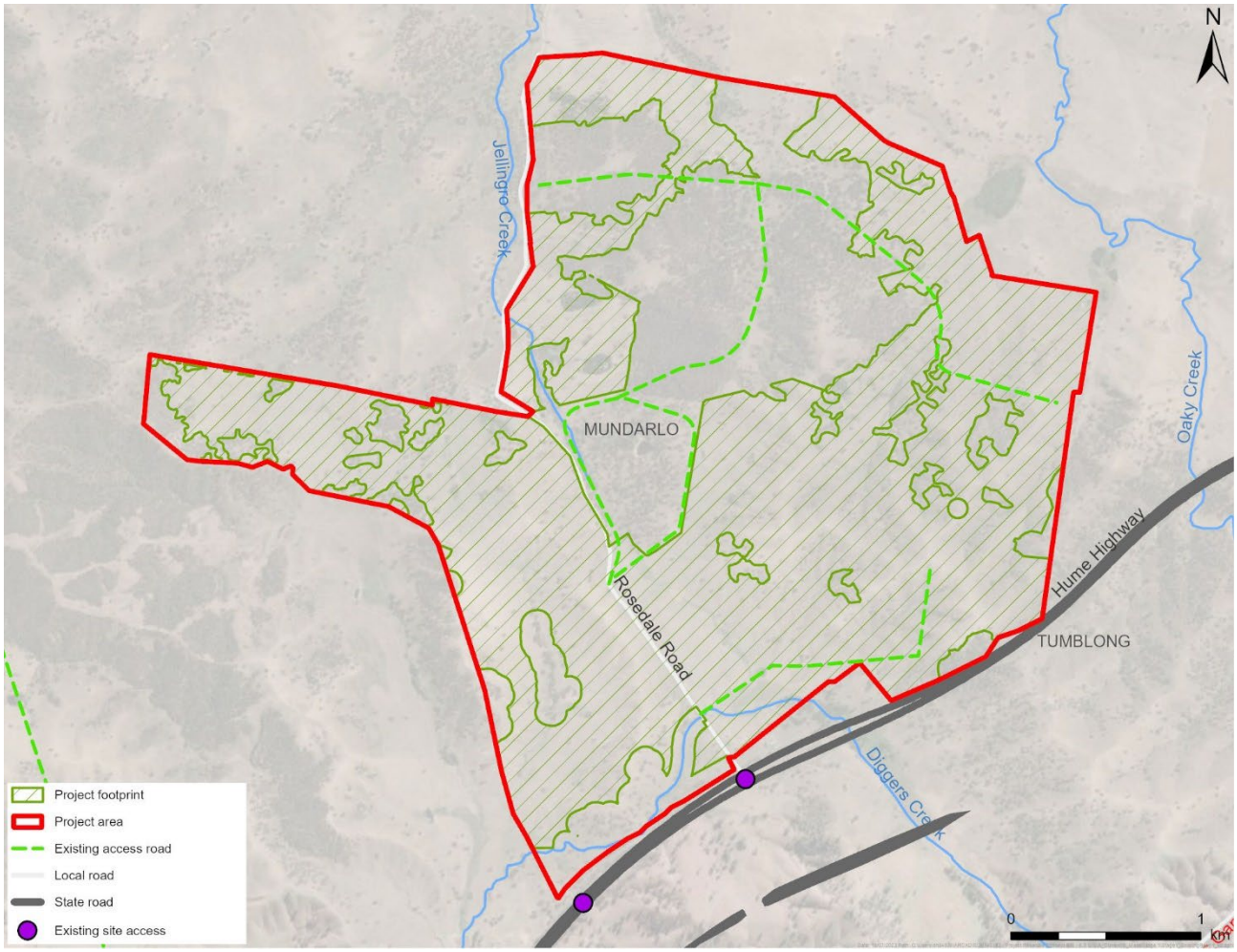

Figure 7-11 Road network and Project area access

7.6.2 Scale and nature of likely impacts

Construction

Construction vehicles would access the Project area via the existing access from the Hume Highway, via Rosedale Road. Minor upgrades to the Hume Highway/Rosedale Road intersection and to Rosedale Road may be required. There are several areas within the Project area that would be appropriate for parking and laydown areas, the locations of these would be confirmed during future design development and environmental impact assessments.

Operation

Operation of the Project would generate about eight truck movements per day and 20 staff vehicle movements. Most would be associated with the wholesale distribution of hydrogen. Traffic volumes generated by other elements of the Project would be relatively small, and mostly associated with staff movements and general maintenance.

It is envisaged that any upgrades required for construction will be suitable for operation. This will be confirmed during preparation of the EIS.

The potential impacts of the operational traffic from the Project on the surrounding road network include:

- Increased heavy and light vehicle traffic may impact traffic movements
- Potential road safety impacts.

7.6.3 Further traffic and transport assessment

A Traffic, Transport and Access Impact Assessment will be undertaken as part of the EIS. This assessment will be prepared with reference to the *Guide to Traffic Generating Development* (RMS, 2002), *Guide to Traffic Management – Part 3 Traffic Studies and Analysis* (Austroads, 2013) and *Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments* (Austroads, 2020) and will include:

- A review of baseline information and a description of the existing environment and access arrangements
- A determination of the existing operational performance of the surrounding road network
- A quantitative assessment of traffic generation during construction and operation of the Project, including consideration of the types of vehicles that may be used to transport the hydrogen tankers and traffic modelling to identify the performance of key intersections, road network function, site access arrangements and road safety
- An assessment of the traffic implications from construction and operation of the Project on road network capacity and amenity
- Provide management and mitigation measures, including the timing and need for upgrades to access to the Project area, to reduce the impact of the Project on local traffic and transport, as required.

7.7 Water access and use

7.7.1 Existing Environment

The following water characteristics and potential sources have been identified relevant to water supply for construction and operational uses of the Project:

- Several creeks and rivers, subject to the *Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources*, including:
  - Murrumbidgee River (regulated)
  - Hillas Creek (unregulated)
  - Diggers Creek (unregulated)
  - Jellingro Creek (unregulated)
  - Oaky Creek (unregulated).
- Nineteen privately owned dams within the Project area and the potential construction of new reservoirs within the Project area
- Treated wastewater from Wagga Wagga
- Groundwater managed under *NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020 – Lachlan Fold Belt.*

An initial water supply assessment has been undertaken to identify the viability of onsite water storage and supply (Arcadis, 2020). The assessment considered minor upgrades to existing dams within the Project area to provide the amount of water required for the Project. Yield assessments for water supply from the upgraded dams was estimated between 50-100 KL/day. The Project area has existing 'domestic and stock' water access licenses for approximately 25 ML of water per annum.

Water sharing plans set rules for sharing water between water users and the environment and bring water users into a single licensing system managed under the *Water Management Act 2000* (WM Act). There are three Water Sharing Plans relevant to the Project, these are:

- *Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016*
- *NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020 – Lachlan Fold Belt.*
- *Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources.*

The *Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016* has 1,000 ML available to trade, comprising 500 ML of permanent and 500 ML of temporary water licences. High priority access licences are available for this water source, that would provide high reliability access to water.

The *Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources* identifies Hillas Creek as part of the *Unregulated Murrumbidgee Below Burrinjuck Dam to Gogeldrie Extraction Management Unit*. Digger Creek, Jellingro Creek and Oaky Creek are not identified as unregulated water sources. It is noted that the Hillas Creek water source is classified as being of high economic significance to local communities due to their dependence on commercial water extraction particularly for irrigated agricultural production associated with orchards.

A search of the NSW Water Register online tool carried out on 17 February 2023 for the Hillas Creek catchment water source 2022-23 year found 23 water access licences:

- Five are 'domestic and stock' licence types with a total of 30 share units and 30 ML of water available
- 18 are 'unregulated river' licence types with a total of 1,513.1 share units and 1,513.1 ML of water available.

Water from the Mid Murrumbidgee Alluvium Water is mainly used for agriculture purposes including dairy, aquaculture, lucerne, winter crops of wheat, oats and barley, summer crops and horticulture. A search in the NSW Water Register online tool carried out on 17 February 2023 for the Mid Murrumbidgee Alluvium groundwater source 2022-23 year found 100 access licences:

- 93 are 'aquifer' licence type with a total of 42,871 share units and 42,871 ML of water available
- Three are 'domestic and stock' licence type with a total of 189 share units and 189 ML of water available
- Four are 'local water utility' licence type with a total of 4,912 share units and 4,912 ML of water available.

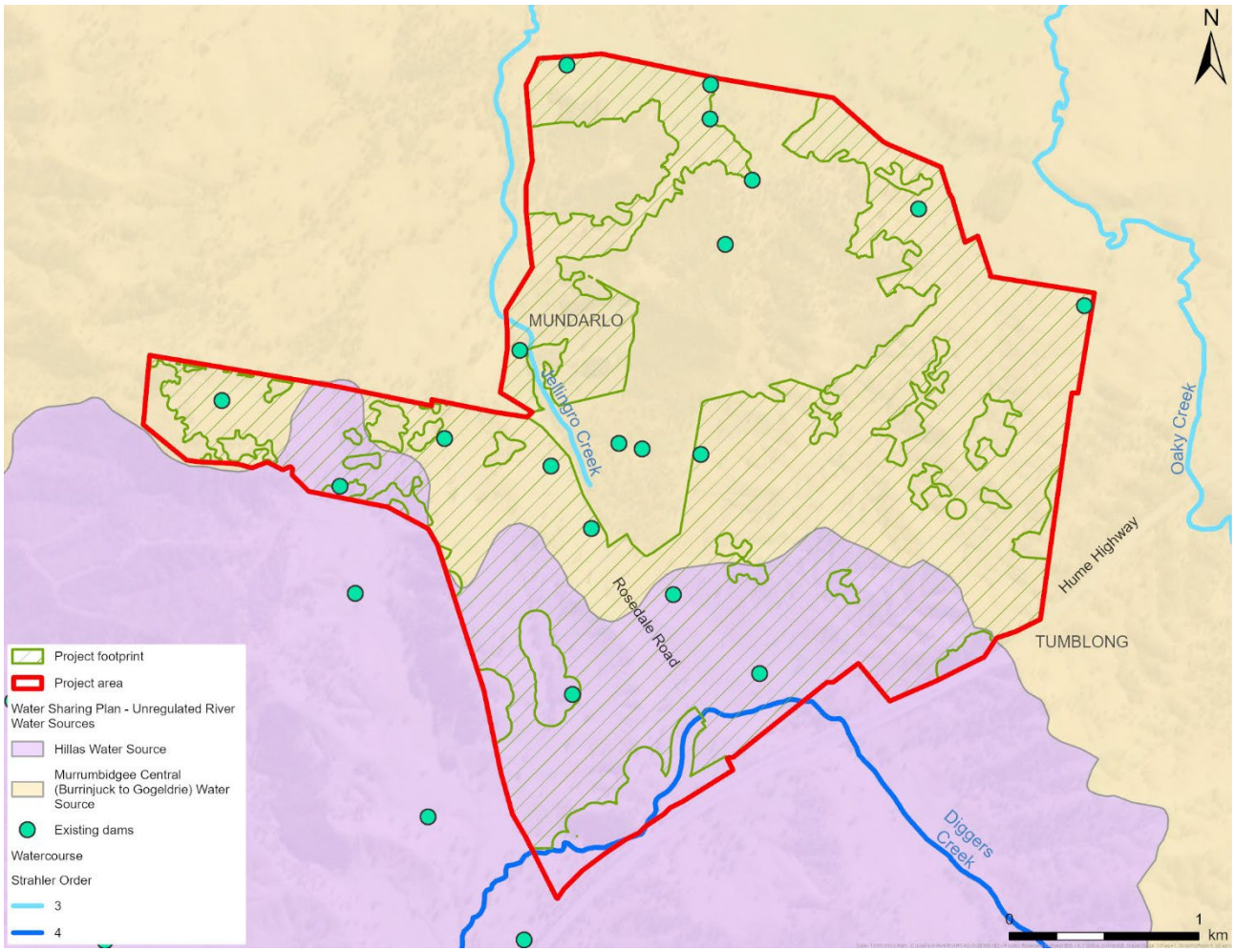

Figure 7-12 Surface water locations and features

7.7.2 Scale and nature of likely impacts

Operation of the Project has the potential to impact on surface and groundwater sources.

A preliminary estimate of water take required for operation of the Project is approximately 2.5ML per day or 912.5ML of water per year. A review of available water sources within the vicinity of the Site identified:

- A review of water available for trade within the Murrumbidgee Regulated River Water Source suggests that there are available high priority water access licences available that would satisfy the Project water demands from this water source
- A review of water available within the 'unregulated river' licence type for the Hillas Creek catchment water source suggests there is a theoretical capacity to satisfy the Project water demands from this water source in combination with the others defined
- A review of water available within the 'aquifer' licence type for the Mid Murrumbidgee Alluvium groundwater source suggests there is a theoretical capacity to satisfy the Project water demands from this water source in combination with the others defined.

Groundwater and/or surface water extraction for the Project has the potential to impact surface water flows and groundwater recharge through direct and indirect activities, should water take exceed the rate of recharge. All water taken for the Project would be in accordance with the requirements of the Water Management Act 2000 and any relevant water Assessment of the potential impacts to groundwater and surface water associated with the Project are

discussed in Section 7.8 and 7.9. The scope and extent of these assessments would be dependent on the water source(s) identified as most appropriate for the Project.

7.7.3 Further water access and use assessment

An assessment of the water take and licencing requirements for the Project will be undertaken during the EIS and will confirm the water source(s) for the Project. This will include:

- A detailed and consolidated site water balance, including:
  - Description of works and activities that may intercept, extract, use, divert or receive surface and/or groundwater
  - Daily model of the site operations over a defined time period illustrating water supply reliabilities and water use over time
  - Details of all volumetric water demand for the Project, direct and indirect, and the source
  - Demonstration that there is depth in the current water market for the required water entitlements for the Project and details of Water Access Licences currently held or that will be sought.

Assessment of potential impacts to surface water and groundwater are provided in the following sections.

7.8 Groundwater

7.8.1 Existing Environment

The Project area and surrounds are above the Mid-Murrumbidgee Alluvium groundwater source which is managed under the *Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources 2012*.

The *Murrumbidgee Alluvium Water Resource Plan Groundwater (GW9) Status and Issues Paper* (NSW DPI Water, 2017) stated the water bearing sands and gravels of the Mid Murrumbidgee Alluvium are divided into two main aquifer systems:

- A shallow aquifer system up to approximately 40 m deep
- A deep aquifer system up to approximately 90 m deep.

Yields from the shallow and deep systems have in general been reported as high as 40 and 150 litres per second (L/s), respectively. Salinity in groundwater samples from groundwater monitoring bores ranged from 150 MicroSiemens per centimetre (µS/cm) close to the rivers to about 950 µS/cm. The quality in the shallow aquifer is quite variable but is generally <1,660 µS/cm and fresh adjacent to the Murrumbidgee River.

Groundwater recharge of the Mid Murrumbidgee Alluvium primarily occurs through rainfall and irrigation infiltration and ground seepage from riverine and wetland environments. There are no major wetlands within the Project area, therefore groundwater recharge is likely to occur from irrigation, rainfall and riverine seepage from the Murrumbidgee River and its various tributaries and anabranches.

As noted above, water from this groundwater source is mainly used for agriculture purposes including dairy, aquaculture, lucerne, winter crops of wheat, oats and barley, summer crops and horticulture.

The Bureau of Meteorology's Aquatic Groundwater Dependent Ecosystem and Terrestrial Groundwater Dependent Ecosystem mapping shows several locations adjacent to the Project area with Groundwater Dependent Ecosystems present. Within the Project area, the Aquatic GDE for Diggers Creek is moderate potential Groundwater Dependent Ecosystems. There are three areas mapped as high potential for Terrestrial Groundwater Dependent Ecosystems located immediately downstream of the Project along Hillas Creek. Additionally, the junction of Hillas Creek and the

Murrumbidgee contains multiple Terrestrial Groundwater Dependent Ecosystem mapped areas. These Terrestrial Groundwater Dependent Ecosystems are recorded as ecosystem for River Red Gum herbaceous-grassy very tall open forest wetland or inner floodplain in the lower slope.

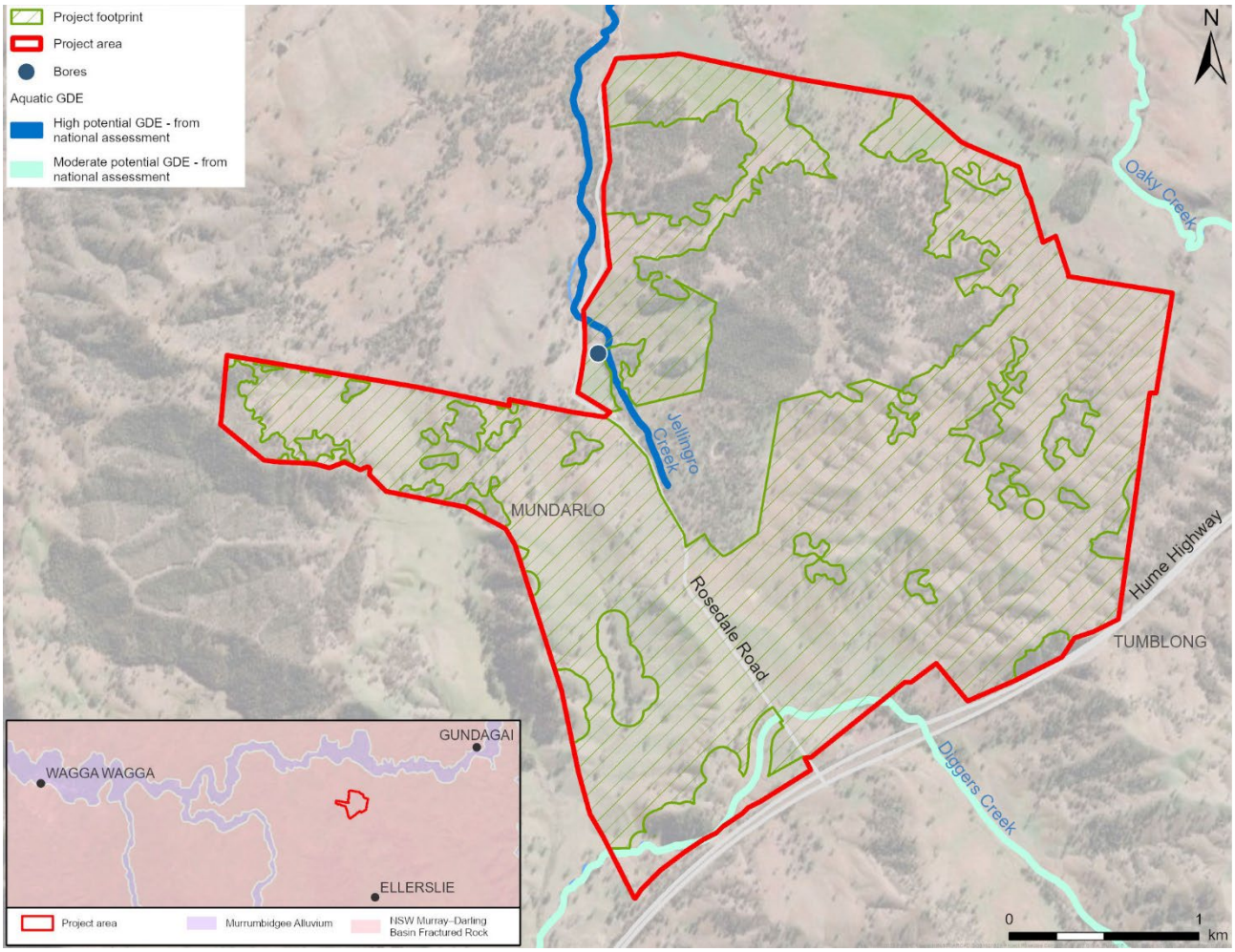

Figure 7-13 Groundwater constraints

7.8.2 Scale and nature of likely impacts

Construction

While groundwater is unlikely to be impacted during construction of the Project, there is potential for earthworks and soil compaction to restrict infiltration and aquifer recharge. The potential for spills and leaks from machinery to result in contamination of groundwater if not contained, is limited and will be managed with the implementation of standard mitigation measures.

Operation

As described in Section 7.7, potential impacts to groundwater during operation would include the potential drawdown if extraction for the Project exceeds the rate of recharge of the aquifer. This could also subsequently impact the health of GDEs in the area. This would only occur if groundwater was identified as a source of water for the Project, which would be confirmed during the water balance exercise to be carried out for the EIS, as described in Section 7.7.

Operation of the Project has the potential for spills and leaks from operating machinery resulting in contamination of groundwater, if not contained.

7.8.3 Further groundwater assessment

Should groundwater be identified as an option for the source of water for the Project, an assessment of potential groundwater impacts will be carried out during the EIS in accordance with the relevant guidelines, and will include:

- A description of groundwater conditions across the Project area under both wet and dry conditions
- Identification of works and activities associated with construction and operation of the Project that may intercept or extract groundwater
- Qualitative assessment of potential groundwater construction and operational impacts, including potential impacts to adjacent licensed water users, watercourses, riparian land, groundwater dependent ecosystems, and ground water levels.

7.9 Soils, surface water and flooding

7.9.1 Existing Environment

Soils

Soils in the Project area are primarily Kandosols and Kurosols. Kandosols have low to moderate agricultural potential and poor drainage qualities. Kurosols generally have very low agricultural potential due to the highly acidic nature of the soil. The topography across the Project area ranges from ~230m Australian Height Datum (AHD) up to 450m AHD. Slope gradients across the Project area vary, with areas of cleared farmland comprising gentle slopes, and ridgelines through the centre comprised of moderate slopes. Soils are generally stabilised due to extensive grass ground cover with isolated mature trees; however, there are some areas of erosion adjacent to waterways.

A review of problematic soils was conducted for the Project area using all available imagery and State mapping. There are no mapped saline soils or acid sulfate soils in the Project area.

A search of the NSW Environment Protection Authority (EPA) contaminated land record found no records of contaminated sites within the Project area. While there are no contaminated soils mapped in or adjacent to the Project area, there is potential for soils to be affected by agricultural practices such as cattle dips, pest plant spraying, chemical and fuel storage, and machinery storage facilities.

Existing extractive licences were reviewed through the *Protection of the Environment Operations Act 1997* licence register which did not identify an active or superseded licence for quarrying activities within the Project area. There does not appear to be a licence regulating the quarrying activity occurring within the Project area.

Waterways and existing dams

There are two main creek systems with multiple smaller drainage systems that traverse the Project area:

- Diggers Creek (4th order stream)
- Jellingro Creek (1st to 3rd order stream).

Mapping indicates that Diggers Creek flows into Hillas Creek within the Project area and then into the Murrumbidgee River approximately 5 km to the north. On the eastern extent of the Project area, Jellingro Creek flows north into the Murrumbidgee River. Within the Project area there is estimated to be 19 private dams/ water storage features, placed primarily within smaller drainage catchments. Figure 7-13 shows the existing waterways and dams across the Project area and how these interact with the Project footprint.

There are no wetlands, state forests, or drinking water catchments mapped within the Project area. It is noted that several waterways on site are being actively eroded due to loss of vegetation cover, weed encroachment and previous agricultural activity. The photos below provide examples of this erosion.

Example of erosion in the Project area – Hillas Creek

Example of erosion in the Project area

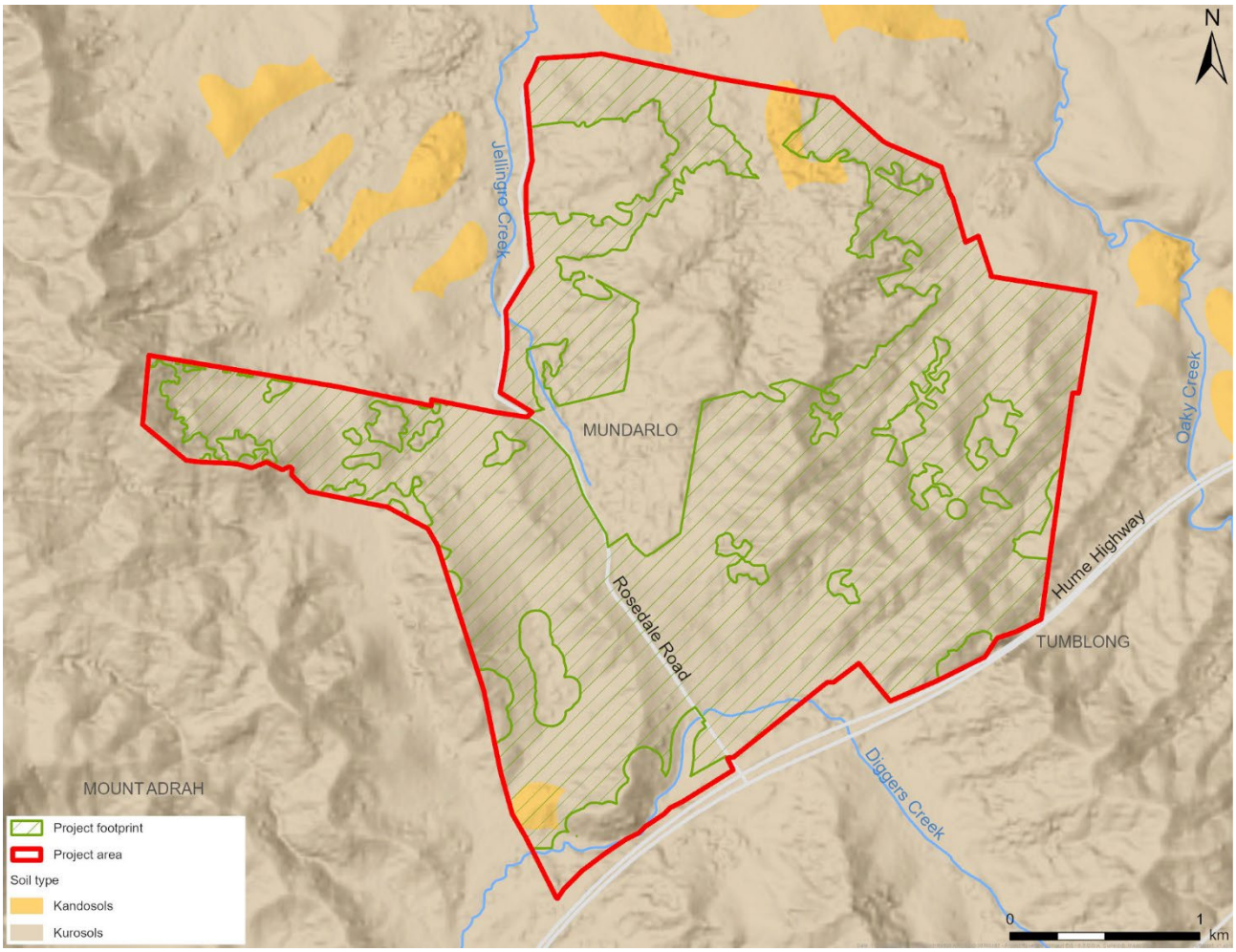

Figure 7-14 Soils of the Project area

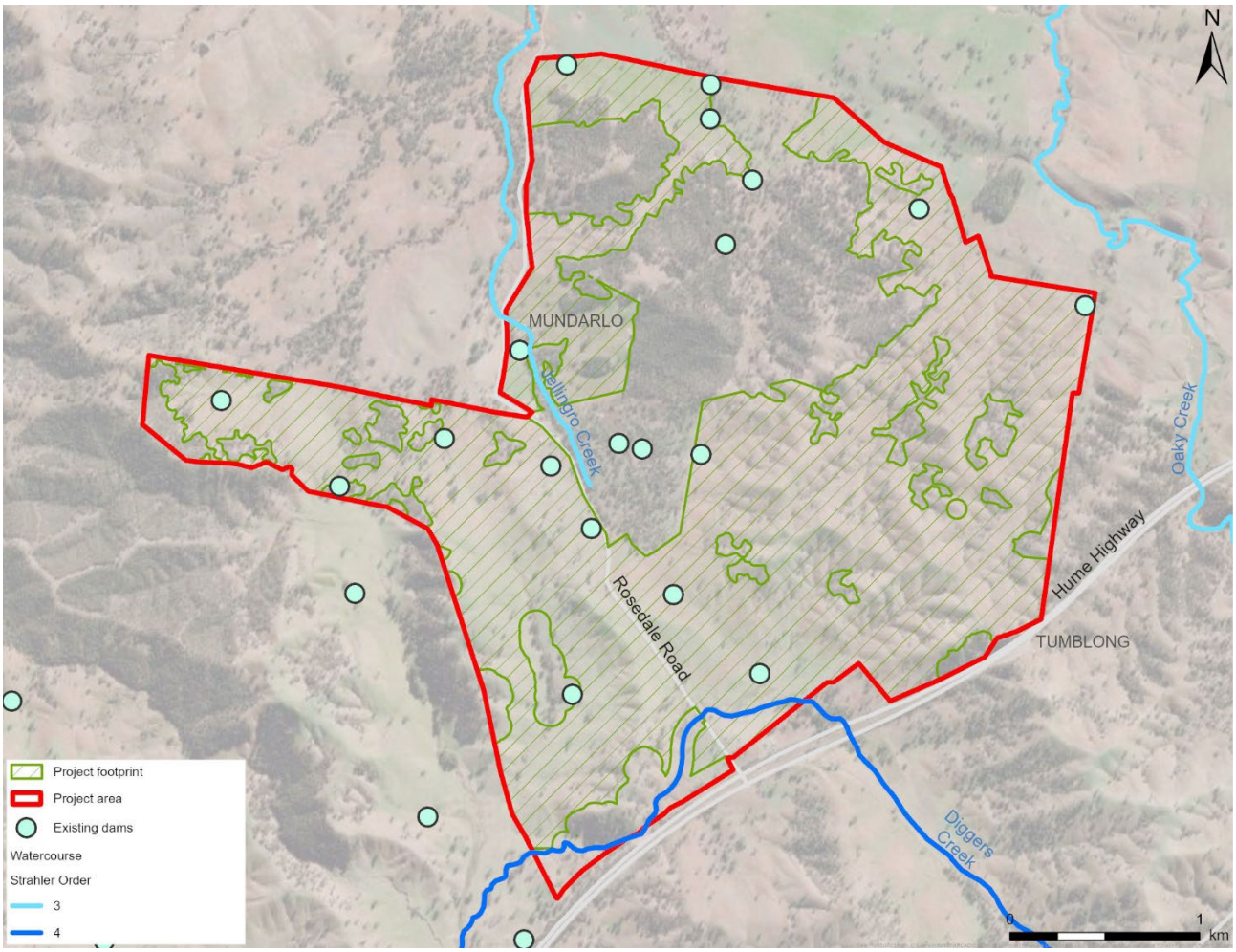

Figure 7-15 Existing watercourses and dams across the Project area

Flooding

The nearest area mapped as flood affected is located approximately 4 km downstream (north) of the Project area, along the Murrumbidgee River and is mapped under the *Junee Local Environmental Plan 2012*. As there is no available flood mapping for the Project area or surrounds, site photographs, topography, elevation, creeks/drains and aerial imagery have been used to inform a preliminary review of flood risk associated with the Project area.

The flood risk review identified that indicators of flood risk across the Project area stem from changes in elevation at 220 m AHD to 450 m AHD and an annual rainfall of between 400 mm and 800 mm. The primary concern for flooding across the Project area is flash flooding and dam failure and riverine flooding. Anecdotal comments from the landowner during a site inspection suggest the creek systems flow at high velocities for shortened periods.

7.9.2 Scale and nature of likely impacts

Construction

Construction of the Project may result in impacts to soils and waterways associated with construction activities. Given the topography of the site and earthmoving activities required during construction of the Project, there would be potential for erosion and sedimentation to occur. Potential impacts to surface water quality through pollution of stormwater runoff with sediment and/or fuels and other hazardous materials from construction of the Project may occur if not properly managed. Construction of the Project would be undertaken in accordance with industry standard

procedures and all relevant guidelines, which would minimise the potential impacts to soils and surface water during construction.

Operation

There is limited potential for impacts to soils during operation of the Project, as there would not be any ongoing ground disturbance. Operation of the Project has the potential for spills and leaks from operating machinery resulting in contamination of soil and groundwater, if not contained.

Operation of the Project would require the storage and use of chemicals, such as refrigerants and chemicals used in maintenance, as well as the storage and treatment of wastewater onsite. There is the potential for accidental discharge or release to the environment, resulting in contamination of groundwater or soils. The potential for these impacts would be mitigated and managed through the implementation of environmental controls.

Infrastructure associated with the Project would increase the impervious areas of the Project area which can alter the surface water flows in the Project area. Flows will need to be assessed to ensure appropriate controls are in place to minimise impacts, such as erosion and scour, within the Project area. Ongoing operation of the Project may include on-site dams/reservoirs to capture and reuse overland flows within the Project area. The need for discharge to surface water from operational sources, such as the wastewater treatment plant, would be determined during preparation of the EIS and any impacts on downstream waterway flows will be investigated and mitigation measures identified.

Project infrastructure would be located above areas of potential flooding.

7.9.3 Further soils and surface water assessment

Further assessment of the potential impacts to soils, surface water and flood behaviour will be completed for the Project during the EIS. This will involve:

- Desktop review of available information associated with the catchment to characterise the existing flood conditions in the Project area and the surrounding areas. Parameters to be considered would include topography, presence of flow paths and watercourses, climatic data including historical rainfall information, flood depths and levels, flood hazards and hydraulic categories
- Desktop review of publicly available data and web-based information searches for surface water and identification of sensitive receiving environments
- Undertaking surface water quality testing to determine the current quality of watercourses within the Project area
- Assessment of potential soil, surface water and flooding construction and operational impacts.

7.10 Bushfire

7.10.1 Existing Environment

A large proportion of the Project area has been mapped as bushfire prone land under the Gundagai LEP. As shown in Figure 7-14, large portions of the Project area have been classified as Vegetation Category 1, that is, land considered to be at the highest risk for bushfire. This presents significant constraints to the Project, if not managed appropriately. The Project area also contains Vegetation Category 2 (lower risk). As shown in Figure 7-14, the Project footprint mostly excludes the areas mapped as Vegetation Category 1.

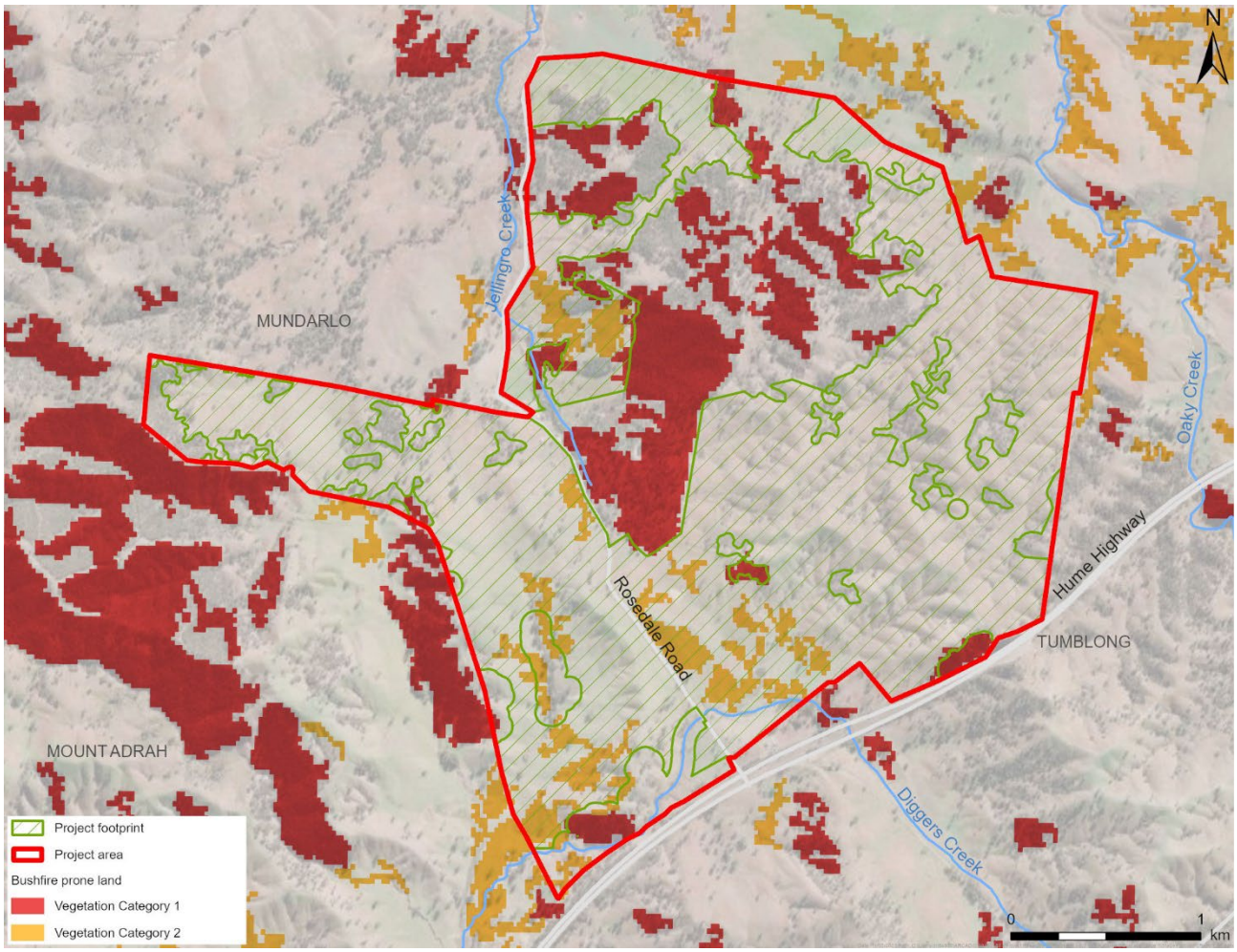

Figure 7-16 Bushfire prone land mapping

7.10.2 Scale and nature of likely impacts

There are substantial parts Project area classified as high-risk bushfire prone areas. These tend to be associated with remnant native vegetation which will be mostly avoided in the Project design. However, there will inevitably be some residual bushfire risk which will require appropriate management through the application of Asset Protection Zones, allowance for firefighting access and monitoring and maintenance of Project infrastructure.

7.10.3 Further bushfire assessment

The potential to increase risk of bushfire would be assessed in the EIS in accordance with the *Planning for Bushfire Protection Guideline 2019* (RFS, 2019). Consultation with the Rural Fire Services would occur during preparation of the EIS and emergency protocols would reflect advice from relevant agencies and may include:

- Establishment of an Asset Protection Zone (APZ) and perimeter roads to serve as a fire breaks while providing access
- Strategic placement of access gates along the perimeter fence lines
- Management of vegetation cover (including grass height), including through agricultural practices
- Automated monitoring of panels and electrical connections.

7.11 Aboriginal heritage

7.11.1 Existing Environment

The Project area is within the boundary of the Wagga Wagga and Brungle / Tumut Local Aboriginal Land Councils. A search of the NSW Native Title Vision website indicates that no determined or registered Native Title claims exist over the Project area. The north-eastern portion of the Project area (encompassing approximately 221 ha) is within the Indigenous Land Use Agreement (ILUA) of the Tumut Brungle Area Agreement (NIA1998/001) (Figure 7-15).The ILUA was registered on 21 June 1999 and encompasses the entire Brungle / Tumut Local Aboriginal Land Council boundary. The Tumut Brungle ILUA relates to the mining operations of Adelong Consolidated Gold Mines NL (ACG) and would not apply to construction or operation of the Project.

A search of the DPE administered Aboriginal Heritage Information Management System (AHIMS) database on 14 March 2022 returned 34 results for Aboriginal sites within an approximate 10 km (east–west) by 6 km (north–south) extent around the Project area. There are no Aboriginal sites recorded in the Project area. The closest site is located approximately 3.3 km north of the Project area boundary on the north side of the Old Hume Highway.

A predictive model for the Project area has been developed based on the results of regional studies and nearby previous assessments that suggest the edges of elevated hill crests, natural benches mid-slope, and elevated landforms near waterways could be potential locations for occupation sites within the Project area (OzArk, 2022). In a regional study of the Wagga Wagga district, Kelleher Nightingale (2008) noted that ‘drainage lines and associated alluvial/colluvial deposits’ had a moderate to high archaeological sensitivity. Additionally, archaeological sensitivity was found to increase where slopes raised above floodplains (Kelleher Nightingale, 2008). It is anticipated that landforms of this description are limited to the areas surrounding Hillas and Diggers Creeks, which are outside of the Project footprint, as shown in Figure 7-15 (OzArk, 2022).

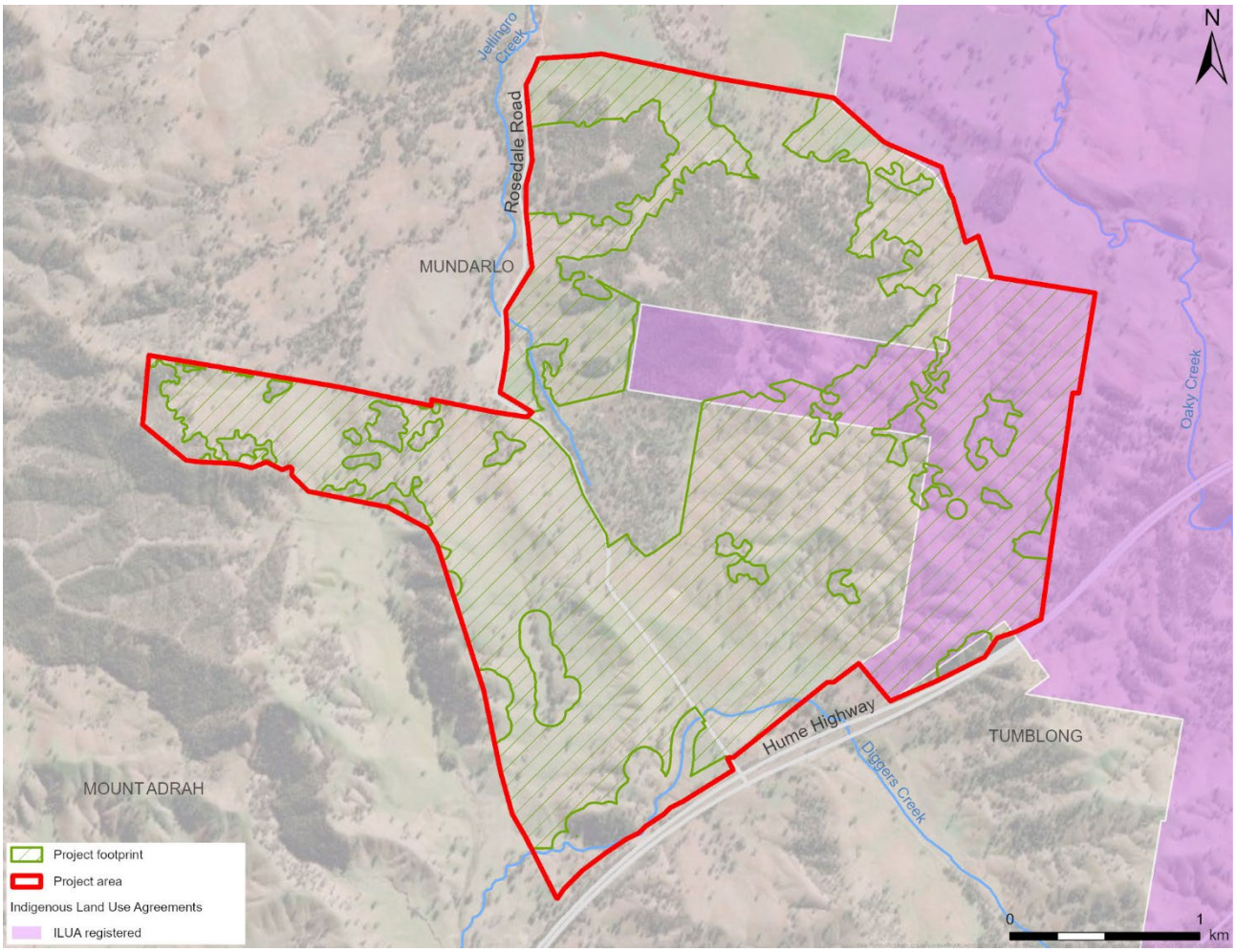

Figure 7-17 Aboriginal heritage constraints

7.11.2 Scale and nature of likely impacts

Construction

Construction of the Project has the potential to impact currently unidentified Aboriginal heritage sites. The potential for other archaeological site types and intangible cultural sites to occur within the Project area will be established through further archaeological investigation and consultation with Registered Aboriginal Parties, which will also provide valuable information on the cultural heritage values of the study area and broader region.

Operation

Aboriginal heritage would not be directly impacted during operation of the Project, as ground disturbance/ excavation would be restricted to the construction phase of the Project.

7.11.3 Further Aboriginal heritage assessment

A full Aboriginal Cultural Heritage Assessment Report (ACHAR) will be prepared for the EIS in accordance with the following Aboriginal heritage assessment guidelines:

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

- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010).

7.12 Social impacts

7.12.1 Existing Environment

An area of social influence (social locality) for the Project has been defined using Australian Bureau of Statistics (ABS) geographic areas as the Gundagai Statistical Area Level 2 (SA2). The social locality includes the nearest regional town to the Project which is Gundagai.

The social locality reflects that the Project has potential to impact surrounding landholders and service centres. Those most likely to be impacted by the Project are the landowners and local community closest to the Project footprint. The community of Gundagai is likely to experience direct and indirect social impacts associated with the construction workforce and accommodation during the construction of the Project.

Key socio-economic indicators from the 2021 Census for the social locality are provided below.

Table 7-2: Socio-economic baseline indicators

Population	In 2021, the social locality was home to approximately 3,715 residents, living in 1,721 dwellings with an average household size of 2.1 persons per dwelling compared to 2.4 across RNSW. About 4% of the population in the social locality identified as Aboriginal and/or Torres Strait Islander, compared with 6.6% of the population across RNSW.
Median age	At the 2021 Census, the median age of the social locality was 44, similar to RNSW with a median age of 43.
Age profile	There were 845 people over the age of 65 living in the social locality in 2021. This equalled about 23% of the overall population, similar to RNSW with 22%. The social locality had a similar population makeup to RNSW but with slightly higher proportions of residents aged under 20 and 55 to 74 years compared to RNSW.
Language spoken at home	At the 2021 Census, 4.5% of residents in the social locality spoke a language other than English at home, lower than 6.6% across RNSW.
Need for assistance	At the 2021 Census, approximately 5.1% of residents in the social locality required assistance with core activities, compared to 6.8% across RNSW.
Household type	At the 2021 Census, there were 395 lone person households, or 30% of all households, compared to 28% across Greater RNSW. There was a similar proportions of family households (68% in the social locality and 69% across RNSW).
Household size	On Census Night 2021, about 86% of dwellings in the social locality were occupied, leaving 212 unoccupied dwellings, compared to 89% occupancy across RNSW. In the social locality at the 2021 Census, 21% of dwellings were rented which was lower than RNSW with 27%. Amongst rented dwellings, 23% were making rent payments greater than 30% of household income, significantly lower than RNSW, which recorded 36%. Amongst mortgaged dwellings, 9% were making repayments greater than 30% of household income, significantly lower than RNSW, which recorded 13%.

Income	The median household income in the social locality was $1,449, compared with $1,460 across RNSW.
Work	About 56% of the residents aged 15 and above in the social locality were in the labour force, of whom 2.5% were unemployed. RNSW recorded 56% and 4.6%, respectively. Most employed residents in the social locality were employed as Managers (21%), Labourers (21%), Technicians and Trades Workers (11%) and Professionals (11%). Employed residents were overwhelmingly employed in agriculture, forestry and fishing industries (20%), followed by manufacturing at 13%, health care and social assistance at 10% and accommodation and food services at 9%.

7.12.2 Scale and nature of likely impacts

The Department of Planning and Environment's (DPE's) Social Impact Scoping Tool has been completed to provide a preliminary consideration of potential social impacts that may arise from the Project (Appendix E). The potential social impacts identified are summarised below. Impacts have been considered separately for the construction period and once the Project is operational.

Construction

Positive:

The construction phase of the Project is likely to create social benefits for surrounding communities stemming from increased population due to an incoming temporary local workforce and additional economic activity associated with that workforce as well as project construction, benefitting livelihoods. This would arise from expenditure on local materials and labour as needed for project materials, as well as indirect expenditure created by additional income to local merchants. It would also create additional local employment opportunities, which would also drive indirect expenditure at local businesses, as workers purchase local goods and services. While impacts to livelihood are diffuse in how they are experienced, the benefits could be magnified and focussed through local procurement and employment policies, that would priorities the local sourcing of goods and workers to maximise the benefits of construction to the area. Opportunities could be explored through the development of mitigation measures to maximise the benefits of the Project for local employment.

Negative:

Construction activity on the Project may generate a range of localised disruptions from dust and noise, impacting local amenity and capacity for occupants surrounding the Project area to enjoy their surroundings. Visual disruptions are also possible, arising from temporary changes to the surrounding rural landscape as works are carried out. Vehicle movements and congestion or delays in traffic flows may arise as materials and construction workers access the Project area and this may generate localised noise impacts. There is also a possibility of some road network congestion impacts on local roads, which may cause delays for local residents and businesses undertaking their day-to-day activities. Most impacts arising from construction disruptive activities on the immediate surrounds could be mitigated and managed through design refinements or construction management planning.

Impacts to the wider community may arise from the introduction of a temporary workforce during construction, which could place additional demand on local housing and accommodation services, as well as local social infrastructure and facilities. This increased demand could present a risk of displacing existing residents from rental accommodation or impacts to housing affordability. The temporary construction workforce could impact upon community cohesion and may contribute to fear that works may engage in anti-social or unacceptable behaviours. The impact of temporary

construction works to local communities should be carefully considered as part of the detailed assessment of social impacts.

Operation

Positive

Once operational, the Project is likely to continue to generate economic activity for surrounding communities, benefitting livelihoods. This would include local employment in operations and maintenance, as well as indirect expenditure by those workers. New industries may support upskilling of the local workforce. There is potential for the Project to support a community benefit fund or local grants or other types of support for community initiatives which could enhance community cohesion. There is also potential for increased ongoing local investment from maintenance works and the development of spin-off industries. Opportunities to maximise these benefits could be considered as part of any mitigation measures.

Negative

Once operational, the Project will permanently alter the landscape near the Project area by introducing new structures that may be considered incompatible with the existing rural environment and permanently altering the visual amenity of surrounding properties that overlook the Project area. Some residents may feel less connected to their surroundings or feel a sense of loss as their environment changes. Landowners in the vicinity of the Project area may feel anxious that the Project may affect the value of their property and that this may affect their long-term wealth. There may be fear that the Project will increase bushfire risk, particularly given the recent bushfires in the area. Management of bushfire risks will be an important to addressing community fears.

7.12.3 Further social assessment

An assessment of the potential socio-economic impacts as a result of the Project will be carried out as part of the EIS. The socio-economic impact assessment will include:

- Description of the existing socio-economic profile for the communities and businesses surrounding the Project, including, social characteristics, including population and demography; families and housing; travel behaviour; socio-economic indicators
- Assessment of the potential impacts of the Project on the socio-economic values of the area, considering both positive and negative and well as direct and indirect impacts
- Identification of appropriate management and mitigation measures including measures to enhance the Project's benefits and to avoid, manage or mitigate its potential impacts.

7.13 Other impacts

This section provides an overview of other environmental matters for those environmental aspects that, based on existing information and description of the Project, would require limited or no further assessment in the EIS.

Existing environment	Potential impacts	Proposed investigation and assessment
Non-Aboriginal heritage		
A desktop review of heritage mapping has identified four non-Aboriginal	Impacts to listed Non-Aboriginal heritage are not anticipated.	A non-Aboriginal heritage assessment will be carried out as part of the EIS consistent with relevant Heritage NSW guidance and templates that will

Existing environment	Potential impacts	Proposed investigation and assessment
heritage sites within a five-kilometre radius of the Project area, including: • Hillas Creek Bridge, Mundarlo (Lot 94, DP 757242), local heritage item listed on the Gundagai LEP 2011, located immediately north of the Hume Highway approximately 3 km south south-west of the Project area • Hillas Hut and other buildings, listed on the State Heritage Register, located approximately 9 km to the north-west of the Project area • Nangus Station Group, local heritage item listed on the Gundagai LEP 2011, located 3.5 km north of the Project area • Stone Culvert, local heritage item listed on the Wagga Wagga LEP 2010, located 9.5 km south-west of the Project area • Lower Tarcutta Settlement Site, local heritage item listed on the Wagga Wagga LEP 2010, located approximately 11 km south-west of the Project area.		include: • A desktop assessment, including searches of relevant databases and historic research of the site and surrounds • Assessment of potential direct and indirect impacts to listed heritage items • Proposed mitigation measures to manage potential impacts based on best practice heritage management whilst seeking practical outcomes for the Project.
Noise and vibration		
The topography of the Project area ranges from approximately 270 AHD up to 420 AHD. Topographic features of the Project area may influence noise by the way they influence wind direction and speed, and attenuation of site generated noise. The noise environment of the Project area is likely to be typical of a mixed-use rural area. The main noise generator is likely to be road traffic and background noise varying in level	Given the distance of potential sensitive receivers to the noise sources and the topographical variations across the Project area, noise related impacts are anticipated to be low. However, temporary noise impacts could be experienced during construction and would need to be managed to minimise impacts. The main sources of operational noise relating to the Project would include hydrogen	A noise and vibration impact assessment will be carried out as part of the EIS. This will include: • Description of the existing ambient acoustic environment, including attended and unattended noise logging in line with requirements of the NSW EPA Noise Policy for Industry (NPI) and current EPA guidelines and consideration of meteorological data and topography of the area • Determine the construction and operational noise assessment

Existing environment	Potential impacts	Proposed investigation and assessment
due to traffic volumes and the distance from roads.	production and liquefaction e.g., compressors, water pumps and other process equipment, and venting of tanks or trailers. Some noise would be associated with grazing practices once reintroduced; however this would be largely consistent with the existing noise environment. For the reasons stated above, it is anticipated the Project would not have significant operational noise impacts to any sensitive receivers.	criteria in accordance with the NSW EPA Interim Construction Noise Guideline (ICNG) and the NPI, respectively • Assessment of the predicted construction and operational noise and vibration levels against the relevant criteria to determine compliance • Develop feasible and practicable management and mitigation measures, as required.
Economic		
Agriculture currently serves as the primary land use on the Site and within the region more broadly. In 2021, the agricultural industry within Gundagai generated a total gross value of 87.5 million (ABS, 2021). Around 58 per cent of the working age population in Gundagai were identified as employed during the 2021 census (ABS, 2021). The agricultural industry accounts for the largest proportion of employment within the region equalling 20.2 per cent (ABS, 2021).	Construction of the Project will generate both direct and indirect employment opportunities. This employment generation will diversify the current employment landscape within the region which is currently dominated by the agriculture industry. The project's intensification of site usage is expected to create a significant uplift in local and regional economic activity. The increased utilisation of the site will result in direct economic benefits through job creation and increased spending on materials and services. Indirectly, the Project will stimulate various sectors as increased site activity attracts more visitors and customers. The Project's positive economic contribution extends beyond its immediate activities, fostering a more resilient local and regional	An Economic Impact Assessment, including: • Review of project and strategic documentation • Consideration/modelling of existing economic activity(s) and employment generation on site (the base case) at a local and regional level • Consideration of likely economic uplift from the Project during construction and operation at a local and regional level • Consideration of likely employment generation from the Project during construction and operation at a local and regional level • Cumulative economic impacts with other projects.

Existing environment	Potential impacts	Proposed investigation and assessment
	economy. Both direct and indirect employment generation will be sustained throughout the operational phase of the Project. This ensures a sustained economic impact on the local and regional communities, providing job stability and contributing to long-term economic growth in the region.	
Air Quality		
The air quality profile of the Project area is likely typical of a mixed-use rural environment and is likely to have reasonably unaffected background air quality. The background air quality is likely to be largely influenced by nearby road traffic use on the Hume Highway. Numerous sensitive receivers have been identified within a 4 km radius of the Project. Air quality impacts dissipate over a smaller area than noise impacts, resulting in smaller buffer distances from existing sensitive receivers.	Emissions from construction vehicles and other fixed mobile plant and equipment are likely to be minor during construction and can be appropriately managed through equipment maintenance programs and ensuring that equipment is turned off when not in use. Operational air quality impacts are anticipated to be low due to the generally small area of potential impact associated with air quality and the low level of pollutants emitted to the atmosphere from hydrogen plants and other elements of the Project. The Project would result in improvements to regional air quality through the provision of wholesale hydrogen as a fuel source, allowing the transition of freight haulage vehicles to non-polluting hydrogen fuel alternatives.	An air quality assessment will be carried out as part of the EIS. This will include: • Characterisation of existing environment, including air quality, local meteorological conditions and sensitive receptor locations • Review and quantification of likely emissions during construction and operational activities • Quantitative assessment of potential impacts during construction and operation, including dispersion modelling to quantify potential impacts at local sensitive receptors • Develop feasible and practicable management and mitigation measures, as required.
Greenhouse gas emissions		

Existing environment	Potential impacts	Proposed investigation and assessment
Current greenhouse gas emissions within the Project area would be mostly attributed to the Hume Highway and agricultural activities.	During construction, emission sources would include on-site use of fuel by vehicles and equipment, production of construction materials, and electricity usage. Greenhouse gas emissions associated with construction activities are anticipated to be negligible. Indirect emission sources would include embodied energy in materials including solar panels. During operation, the Project would be powered via solar panels (zero-emissions electricity). It is envisaged that hydrogen trucks (either fuel cell electric vehicles (FCEV) or hydrogen internal combustion engine trucks) would be used to transport hydrogen within the Project area and to its destination markets hence emissions associated with transport of the hydrogen are not predicted. Considerable greenhouse gas emissions savings would result from the use of hydrogen as fuel and energy which would result in an overall net reduction in carbon emissions.	A greenhouse gas assessment will be undertaken as part of the EIS. This will include: • Identification and quantification of activities which are likely to be sources of greenhouse gas emissions during construction and operation • Identification of mitigation measures to minimise emissions.
Climate change adaptation		
A review of climate projections using the NSW and Australian Regional Climate Modelling (NARCliM) Interactive climate change projections map (NSW Government, 2020) at the Project area identified the following predictions in the near future (2020-2039) and far future (2060-2079):	Construction of the Project is expected to be carried out from mid-2025, completing construction of the Project in 2026. In this time, increases to average temperatures in the area and additional days over 35°C are anticipated, as well as seasonal dry periods that would	Operational climate change risk will be considered as part of the EIS, which will include: • A detailed review of climate data for the Project area and identification of possible climate related impacts

Existing environment	Potential impacts	Proposed investigation and assessment
• Daily annual average temperature is predicted to increase by up to 0.65°C in the near future and 2°C in the far future. In summer, this average temperature may increase by up to 1°C and 2.43°C, respectively. • Annual rainfall is predicted to decrease by 1.34% in the near future and increase by 2.39% in the far future. Seasonal variation in rainfall will become more extreme, with summer rainfall predicted to increase by up to 4.36% (near future) 12.48% (far future) and spring rainfall predicted to decrease by up to 10.38% (near future) and 11.59% (far future). • The number of hot days over 35°C is predicted to increase by up to an additional 1.4 days in the near future and substantially by up to an additional 22 days in the far future • The number of high fire danger is predicted to increase by up to 1.3 days annually. According to the *Western Enabling Regional Adaptation – Riverina Murray region report* (OEH, 2017), the main climate drivers of the Riverina Murray are drought, changing rainfall patterns (amount, seasonality and effectiveness), heatwaves and storm events. Of these drivers, drought, changes to rainfall and heatwaves are projected in the regional climate modelling; however, storm events associated with high winds have emerged recently as important regional climate events and are more difficult to predict.	likely result in greater dust generation due to the lack of dust suppression through rainfall. Minor health impacts may be experienced by construction workforce, however this would be managed through implementation of appropriate work health and safety measures. Climate change risks during operation may include: • Increased frequency and severity of extreme rainfall events, which may exceed the design capacity of the drainage system and lead to flooding of infrastructure • Increased average temperatures and the frequency of heatwaves, which may impact on the integrity of infrastructure • Increased potential of drought, leading to potential water supply instability.	• Identification and assessment of climate change risks, involving consideration of hazards, potential affected components, likelihood and consequence • Identification of potential adaptation responses.

Existing environment	Potential impacts	Proposed investigation and assessment
Waste management and circular design		
Overview of waste management Waste management and recycling is regulated in NSW by the NSW Environment Protection Authority through the *Protection of the Environment Operations Act 1997* (POEO Act), the Protection of the Environment Operations (Waste) Regulation 2014 (including the requirement to track certain types of waste) and the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act). The POEO Act defines waste as any substance that is discharged, emitted or deposited in the environment in such a manner as to alter the environment. This broad definition includes substances that are processed, recycled, re-used or recovered. The WARR Act aims to promote waste avoidance and resource recovery through (amongst other things) the establishment of the following waste hierarchy: • Avoidance of waste – the first priority in waste management includes actions to reduce the amount of waste generated • Resource recovery – the second priority in waste management involves opportunities for reuse (without further processing), recycling (processing waste materials to make the same or different products), reprocessing and energy recovery	The following waste streams could potentially be generated by construction of the Project: • Spoil material from general earthworks and excavation activities • Sediment laden and/or potentially contaminated wastewater, sewage and greywater from dust suppression, washdown activities and staff amenities • General construction waste (including concrete, scrap metal, plasterboard, cable and packaging materials) from general construction activities • Adhesives, lubricants, waste fuel and oil, engine coolant, batteries, hoses and tyres from the maintenance of construction plant, vehicles and equipment • Putrescibles, paper, carboard, plastics, glass and printer cartridges from activities at construction compounds and site office(s) • Green waste from vegetation clearance and grubbing. Quantities of waste to be generated would be investigated as part of the design development of the Project and would be	A waste management and resource use assessment will be carried out as part of the EIS, that will consider the following government guidelines as relevant: • Waste Classification Guidelines Part 1: Classifying Waste (NSW Environment Protection Authority, 2014) • NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (NSW Environment Protection Authority, 2014) • NSW Waste Reduction and Purchasing Policy (Environment Protection Authority, 1997). The assessment will include: • Identification of the waste streams likely to be generated during construction and operation of the Project • Identification of the expected resources required for construction and operation • Strategies for minimising the export of excavated materials off-site, maximising reuse opportunities and minimising the volume of excavated material disposal to landfill • Identification of end markets for waste materials generated and evidence that proposed disposal facilities have capacity to accept the identified waste classifications and volume • Strategies for reducing waste such as the use of recycled materials, bulk delivery of goods to minimise packaging and

Existing environment	Potential impacts	Proposed investigation and assessment
• Disposal – the least desirable option in the waste management hierarchy involves the disposal of waste in an appropriate manner so as to minimise the potential adverse environmental impacts associated with its disposal. By minimising consumption and encouraging the efficient use of resources, the WARR Act aims to reduce the generation and impacts of waste. <u>Overview of circular design</u> As defined in *Going circular in clean energy – Issues paper* (NSW Office of Energy and Climate Change, 2023), a circular economy "involves shifting away from a linear 'take, make, use and dispose' approach towards one that maximises the value of resources". The three driving principles are to eliminate waste and pollution, circulate and reuse products and materials, and regenerate nature. NSW is forecast to generate between 3,000 and 10,000 tonnes per year of waste solar photovoltaic panels and battery storage systems by 2025, with this number rising to between 40,000 and 71,000 tonnes per year by 2035. As outlined in Section 3.3, the NSW Circular Strategic Plan 2020-2023 aims to promote a circular economy and reduce waste in NSW. Additionally, the NSW Government created a $10 million fund, the Circular Solar Grants Program, to reduce landfilling of solar panels and battery systems with the aim of future-proofing the management of this growing waste stream and support program	adequately managed with the introduction of standard management measures. Wastes streams during operation of the Project would include: • Waste generated by site staff (ie food waste, paper, cardboard, sewerage) • Chemicals and refrigerants used in the liquefaction processes • Wastewater treatment chemicals and concentrates from water treatment processes. Key components of the Project would be recycled or refurbished to the greatest extent practicable. The Project will actively recycle solar panels and electrolysers assets. Decommissioning At the end of its operational life, decommissioning of parts or all of the Project will occur. A decommissioning plan for the Project and associated infrastructure will be prepared in advance of decommissioning in consultation with the relevant regulatory authorities. The basis of the plan will be that the Project and associated infrastructure are to be decommissioned in line with the applicable legislative requirements and best practice existing at that time.	arrangements with suppliers to return any unused construction materials • Identification of end-of-life reuse, refurbishment and recycling strategies Project elements, including photovoltaic panels and electrolysers that maximise high recovery methods.

Existing environment	Potential impacts	Proposed investigation and assessment
stewardship and circular economy research.		
Cumulative impacts		
Not applicable.	An initial search of the DPE Major Projects Register for the Gundagai LGA and the Gundagai Cootamundra and Wagga Wagga Councils Development Applications register identified that the closest operational solar farm, Sebastopol Solar Farm, is located 44 km from the Project. The 110 MW solar farm was granted approval by the Minister for Planning in 2019 and construction was complete in December 2019. The next closest solar energy development is located 30 km from the Project is the proposed Mates Gully Solar Farm. The only other proposed development within 50 km of the Project is the Inland Rail – Illabo to Stockinbingal project, located approximately 40 km to the north of the Project. Given the large distances between the Project and these proposed developments it is not likely the cumulative impacts would occur during either construction or operation of the Project.	A review of the DPE Major Projects Register and Gundagai Cootamundra Council and Wagga Wagga councils Development Application registers will be carried out to determine whether there are any proposed developments within the vicinity of the Project during the EIS preparation. If proposed developments are identified, an assessment of cumulative impacts would be carried for the Project in accordance with the requirements of: • The *Large-Scale Solar Energy Guidelines 2022* • The *Cumulative Impact Assessment (CIA) Guidelines for State Significant Projects 2022*.

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APPENDIX A SCOPING SUMMARY TABLE

Appendix A1: Scoping summary table

Level of Assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant Government Plans, Policies and Guidelines	Scoping Report Reference
Detailed	Hazard and risk	No	Specific	• Applying SEPP 33 Hazardous and Offensive Development Application Guidelines • *NSW Multi-level Risk Assessment Guideline* DPI, 2011b) • *NSW Risk Criteria for Land Use Safety Planning* (Department of Planning, 2011) • National Environment Protection (Assessment of Site Contamination) Measure 1999 (as revised 2013) • Managing Land Contamination: Planning Guidelines State Environmental Planning Policy 55 – Remediation of Land (Department of Urban Affairs and Planning & Environment Protection Authority, 1998) • Guidelines for Consultants Reporting on Contaminated Sites (NSW Office of Environment and Heritage, 2011) • Guidelines for the NSW Site Auditor Scheme (Environment Protection Authority, 2017) • Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (Environment Protection Authority, 2015) • Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005)	Section 7.2

Level of Assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant Government Plans, Policies and Guidelines	Scoping Report Reference
Detailed	Landscape and visual	Yes	General	• Large-Scale Solar Energy Guidelines (DPE, 2022b) • Technical Supplement - Landscape and Visual Impact Assessment, Large-Scale Solar Energy Guideline (DPE, 2022c)	Section 7.3
Detailed	Property, land use and agriculture	Yes	General	• The Land and Soil Capability Assessment Scheme: Second Approximation (OEH, 2013) • Land Use Conflict Risk Assessment Guide (DPI, 2011a) • Large-Scale Solar Energy Guidelines (DPE, 2022b)	Section 7.4
Detailed	Biodiversity	Yes	General	• Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia) • Commonwealth Department of the Environment and Energy – Nationally Threatened Ecological Communities and Threatened Species Guidelines (various) • Commonwealth Department of the Environment and Energy – Survey Guidelines for Nationally Threatened Species (various) • Biodiversity Assessment Method (DPIE Environment, Energy and Science, 2020) • NSW Biodiversity Offsets Scheme (Office of Environment and Heritage, 2017b) • Threatened species survey and assessment guidelines at https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/about-	Section 7.5

Level of Assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant Government Plans, Policies and Guidelines	Scoping Report Reference
				threatened-species/surveys-and-assessments (various) • Framework for Biodiversity Assessment (NSW Office of Environment and Heritage, 2014a) (although now superseded, relevant aspects may still be considered for the Environmental Impact Statement)	
Detailed	Traffic and transport	Yes	General	• Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2013) • Guide to Traffic Generating Developments Version 2.2 (RTA, 2002) • Former Roads and Maritime Services and Transport Coordination guidelines related to construction	Section 7.6
Detailed	Water access and use	Yes	General	• NSW Aquifer Interference Policy (DPI Water, 2012) • Section 3, 5, 60A & 60I of the *Water Management Act 2000* • Water Sharing Plans • Clause 24 of the *Water Management (General) Regulation 2018* • Guidelines for Groundwater Documentation for SSD/SSI Projects (DPE, 2022b) and other related guidelines and tools • *Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016* • NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020 – Lachlan Fold Belt	Section 7.7

Level of Assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant Government Plans, Policies and Guidelines	Scoping Report Reference
				• Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources	
Detailed - if selected as a water source for the Project Standard - if not selected as a water source	Groundwater	Yes	General	• Guidelines for Groundwater Documentation for SSD/SSI Projects (DPE, 2022a) and other related guidelines and tools • NSW Aquifer Interference Policy (DPI Water, 2012) • *Water Management Act 2000* Part 1, Division 1, Section 5(2d; 4c; 7a; 8a).	Section 7.8
Detailed	Soils, surface water and flooding	Yes	General	• Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) and Volume 2 (DECC, 2008) • Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC, 2004) • Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2018) • Using the ANZECC Guidelines and Water Quality Objectives in NSW (DEC, 2006) • Guidelines for Controlled Activities on Waterfront Land (NRAR 2018) • Policy and Guidelines for Fish Habitat Conservation and Management (DPI, 2013) and Fish Passage Requirements for Waterway Crossings (Fairfull & Witheridge 2003) • *Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016*	Section 7.9

Level of Assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant Government Plans, Policies and Guidelines	Scoping Report Reference
				• *Water Management Act 2000* Part 1, Division 1, Section 5(4a;5a; 6a; 7a; 8a)).	
Detailed	Bushfire	Yes	General	• Planning for Bushfire Protection 2019 (NSW Rural Fire Service, 2019)	Section 7.10
Detailed	Aboriginal heritage	Yes	Specific	• Code of Practice for the Investigation of Aboriginal Objects in New South Wales 2010 • Guide to investigating, assessing, and reporting on Aboriginal cultural heritage in NSW 2011 • Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010	Section 7.11
Detailed	Social impacts	Yes	Specific	• Social Impact Assessment Guideline (NSW Department of Planning, Industry and Environment, 2023) • International principles for Social Impact Assessment (International Association for Impact Assessment, 2003) • Australian Transport Assessment and Planning Guidelines (Australian Transport Council, 2018) • Environmental Impact Assessment Guideline: Socio-economic Assessment (Transport for NSW, 2021) • Practitioner's Guide to Movement and Place (NSW Government Architect and Transport for NSW, 2020) • Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment (Roads and Maritime Services, 2013)	Section 7.12

Level of Assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant Government Plans, Policies and Guidelines	Scoping Report Reference
Standard	Economic impacts	Yes	General	• -	Section 7.13
Standard	Non-Aboriginal Heritage	Yes	Specific	• NSW Heritage Manual (NSW Heritage Office and Department of Urban Affairs and Planning, 1996) • Statements of Heritage Impacts (NSW Heritage Office and Department of Urban Affairs and Planning, 1996) • Assessing Heritage Significance (NSW Heritage Office, 2001) • Levels of Heritage Significance (NSW Heritage Office, 2008) • Assessing Significance for Historical Archaeological Sites and Relics (NSW Heritage Branch, Department of Planning, 2009) • Investigating Heritage Significance (NSW Heritage Office, 2001) • How to Prepare Archival Recording of Heritage Items (Heritage Branch, 1998) • Photographic Recording of Heritage Items Using Film or Digital Capture (Heritage Branch, 2006) • Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977 (NSW Heritage Office, 1998)	Section 7.13
Standard	Noise	Yes	General	• Interim Construction Noise Guideline (ICNG), Department of Environment and Climate Change (DECC, 2009) • Draft Construction Noise Guidelines (Environment Protection Authority, 2021)	Section 7.13

Level of Assessment	Matter	Cumulative Impact Assessment	Engagement	Relevant Government Plans, Policies and Guidelines	Scoping Report Reference
				• BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise • Road Noise Policy (Department of Environment, Climate Change and Water, 2011) • Noise Policy for Industry (Environmental Protection Agency, 2017)	
Standard	Air Quality	Yes		• Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (EPA. 2017)	Section 7.13
Standard	Greenhouse gas emissions	Yes		• Transport for NSW's Carbon Estimate and Reporting Tool (CERT) (Transport for NSW, 2018)	Section 7.13
Standard	Climate change adaptation	No		• Climate Risk Assessment Guidelines (Transport for NSW, 2019) • Climate Change Impacts and Risk Management A Guide for Business and Government (Australian Government Department 7.117.11of the Environment and Heritage Australian Greenhouse Office, 2006) • AS/NZS 31000:2018 Risk Management – Principles and Guidelines • AS5334 – Climate Change Adaptation for Assets and Infrastructure • AS 5334-2013 Climate change adaptation for settlements and infrastructure – a risk-based approach	Section 7.13

APPENDIX B LOT AND DP MAPPING AND TABLES

Appendix B1: Lot and DP Table

Lot	Deposited Plan
1/11	DP758728
1/12	DP758728
1/7	DP758728
1	DP1096370
1	DP1287104
1	DP181915
1	DP242411
1	DP510236
1	DP630387
1	DP725882
10/11	DP758728
10/12	DP758728
10/7	DP758728
10	DP777548
104	DP757263
105	DP757263
106	DP757263
107	DP757263
11	DP1213702
Part of 12	DP1213702
11	DP777548
113	DP757263
114	DP757263
119	DP757263
12	DP260645
120	DP757263
121	DP757263
122	DP757263
123	DP757263
124	DP757263
126	DP757242
127	DP757242
127	DP757263
129	DP757263
130	DP757263
132	DP757263
133	DP757263
135	DP757242
136	DP757242
136	DP757263
137	DP757242
138	DP757242

Lot	Deposited Plan
139	DP757242
14	DP260645
141	DP757263
144	DP757263
145	DP757263
146	DP757242
148	DP757242
149	DP757242
15	DP757263
152	DP757242
157	DP757242
157	DP757263
158	DP757242
159	DP757242
162	DP757242
164	DP1107200
165	DP45430
166	DP45430
188	DP757242
189	DP757242
194	DP757242
196	DP757242
197	DP757242
198	DP757242
199	DP757213
2/11	DP758728
2/12	DP758728
2/7	DP758728
2	DP1096370
2	DP1287105
2	DP181915
20	DP260644
20	DP261892
200	DP757242
201	DP757213
201	DP757242
202	DP757242
203	DP757242
204	DP757242
205	DP757242
206	DP757242
209	DP757242
21	DP1034953
21	DP261892
21	DP757263
219	DP757242
22	DP1034953

Lot	Deposited Plan
22	DP261892
22	DP757263
221	DP757242
222	DP757242
223	DP757242
224	DP757242
225	DP757242
23	DP261892
230	DP757242
24	DP261892
247	DP757242
Part of 250	DP757242
25	DP261892
252	DP725066
253	DP725881
258	DP757213
26	DP261892
27	DP261892
28	DP261892
29	DP261892
3/11	DP758728
3/12	DP758728
3/7	DP758728
3	DP261892
31	DP757263
31	DP818302
32	DP757263
33	DP1229119
33	DP757263
33	DP818302
34	DP1229119
34	DP818302
35	DP1229119
4/11	DP758728
4/12	DP758728
4/7	DP758728
4	DP261892
4	DP757263
44	DP1229119
5/11	DP758728
5/12	DP758728
5/7	DP758728
5	DP261892
5	DP757263
50	DP842641
51	DP842641

Lot	Deposited Plan
52	DP757263
6/11	DP758728
6/12	DP758728
6/7	DP758728
6	DP261892
6	DP45513
6	DP757263
60	DP757263
61	DP757263
63	DP757263
68	DP757263
7/11	DP758728
7/12	DP758728
7/7	DP758728
7	DP261892
7	DP45513
7	DP757263
7	DP777548
76	DP757263
8/11	DP758728
8/12	DP758728
8/7	DP758728
8	DP45513
8	DP757263
8	DP777548
80	DP757263
81	DP757263
9/11	DP758728
9/12	DP758728
9/7	DP758728
9	DP45513
9	DP777548
94	DP757263
95	DP757263
96	DP757263
98	DP757263

Appendix B2: Lot and DP Mapping

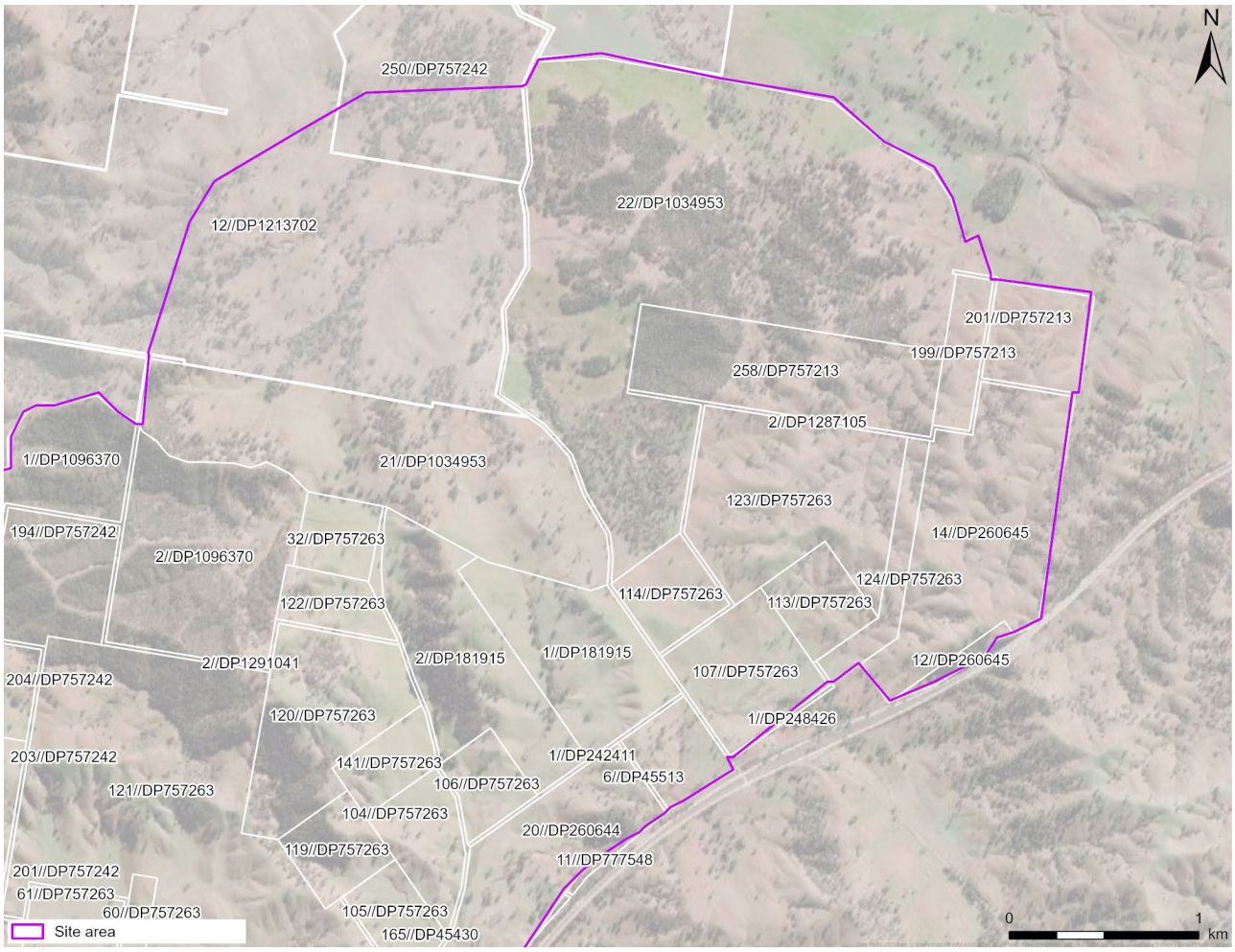

Figure 8-1 Lot and DP (1 of 3)

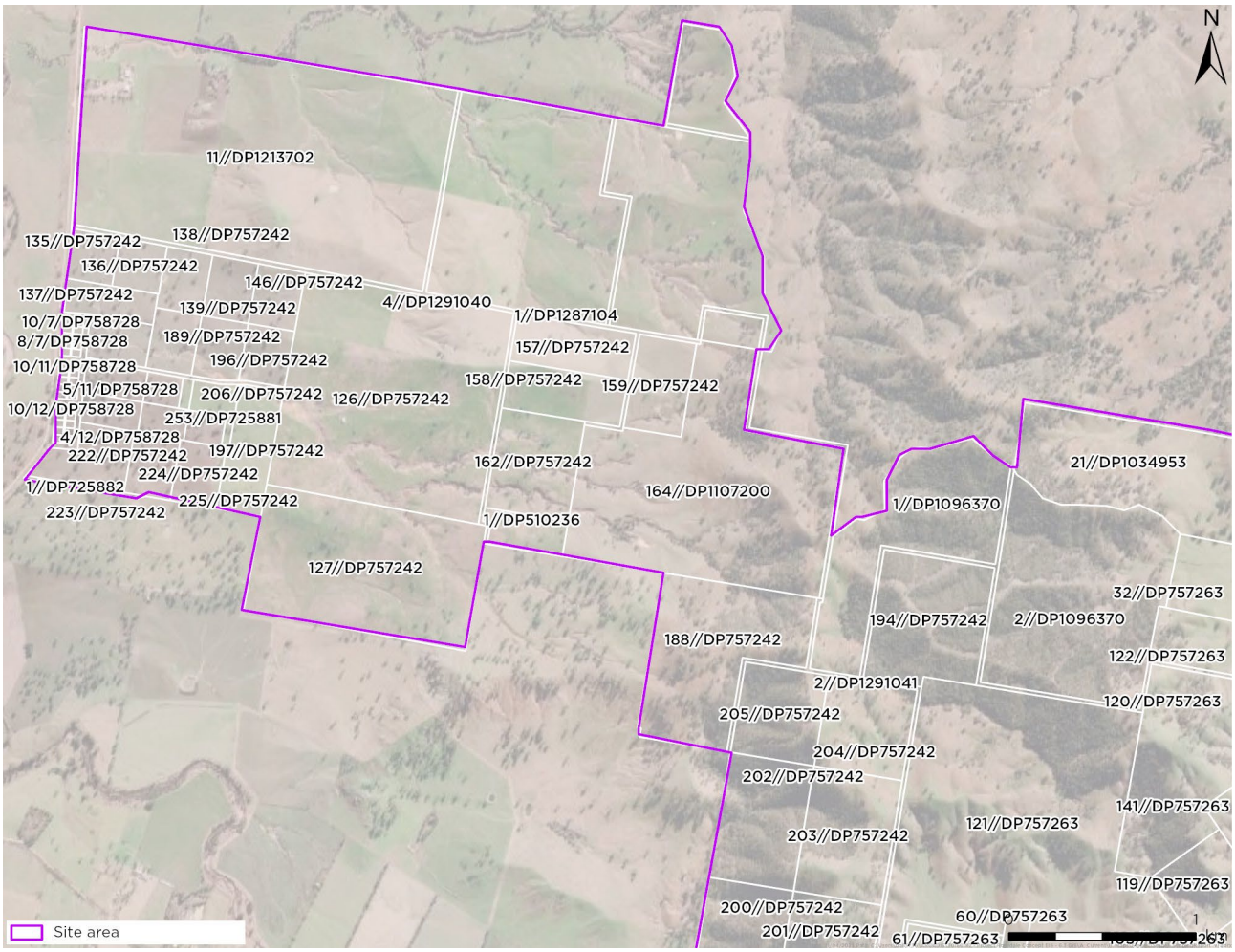

Figure 8-2 Lot and DP (2 of 3)

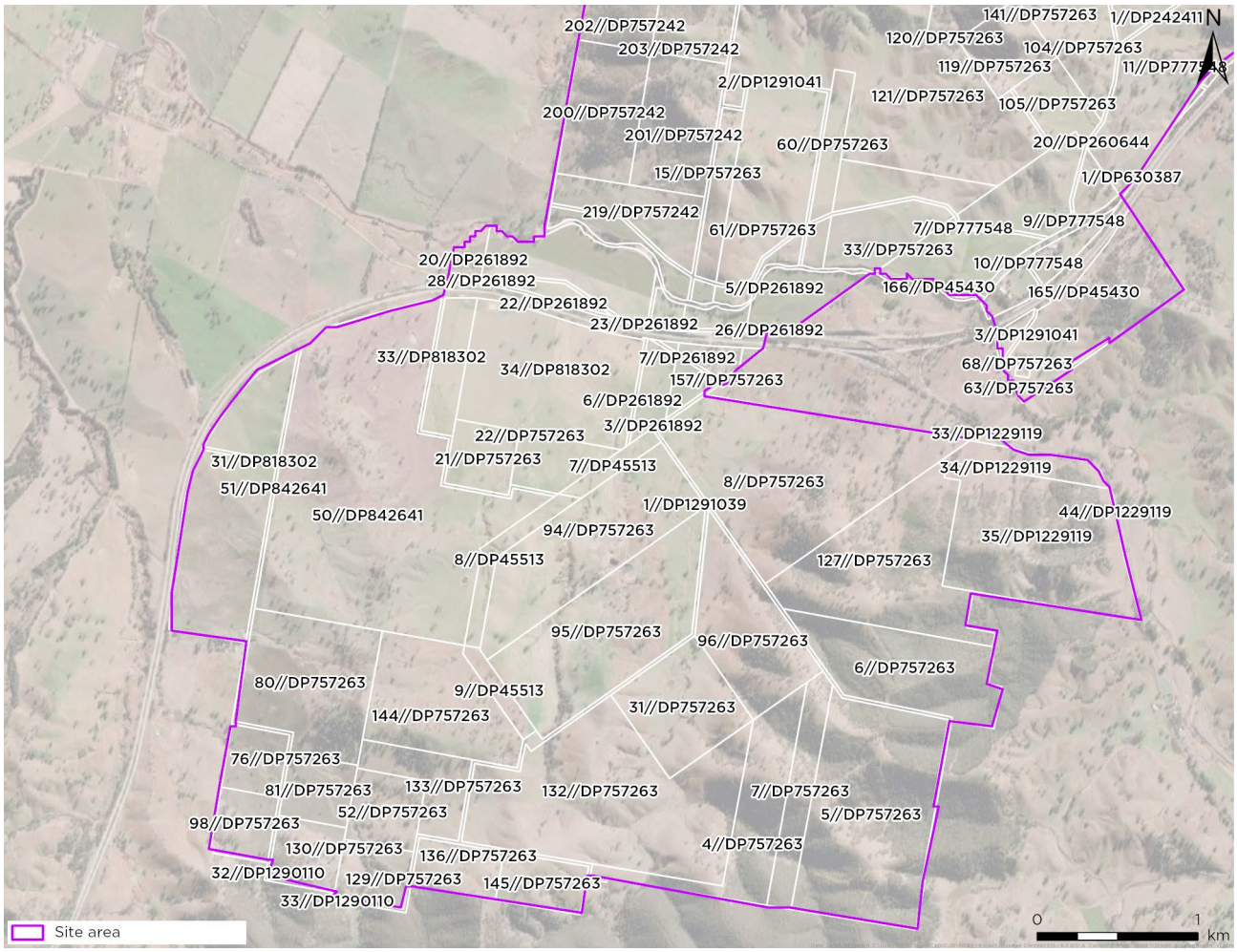

Figure 8-3 Lot and DP (3 of 3)

APPENDIX C CONSTRAINTS MAPPING

Appendix C1: Constraints mapping

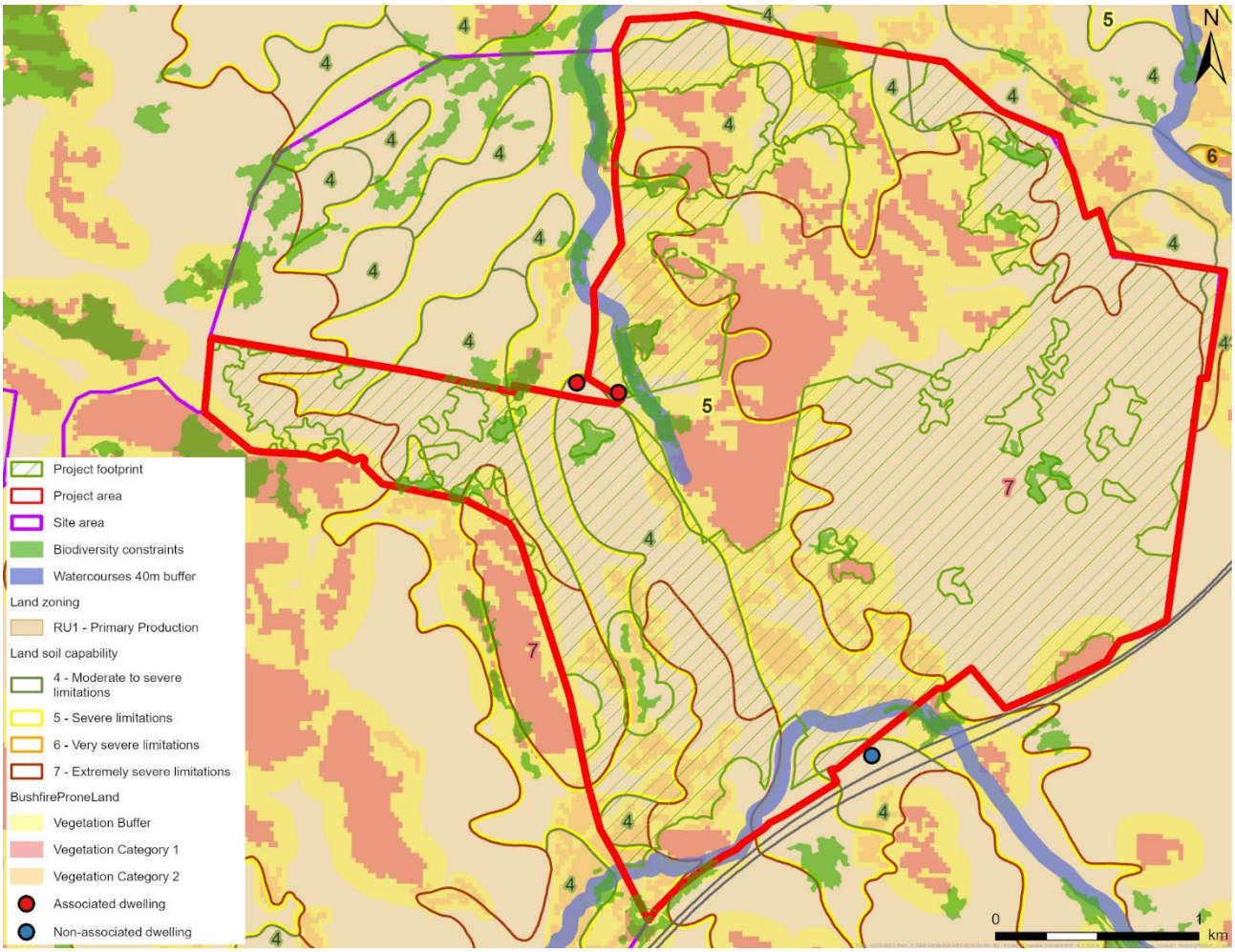

Figure 8-4 Constraints mapping

APPENDIX D PRELIMINARY LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Appendix D1: Preliminary Landscape and Visual Impact Assessment – Figures

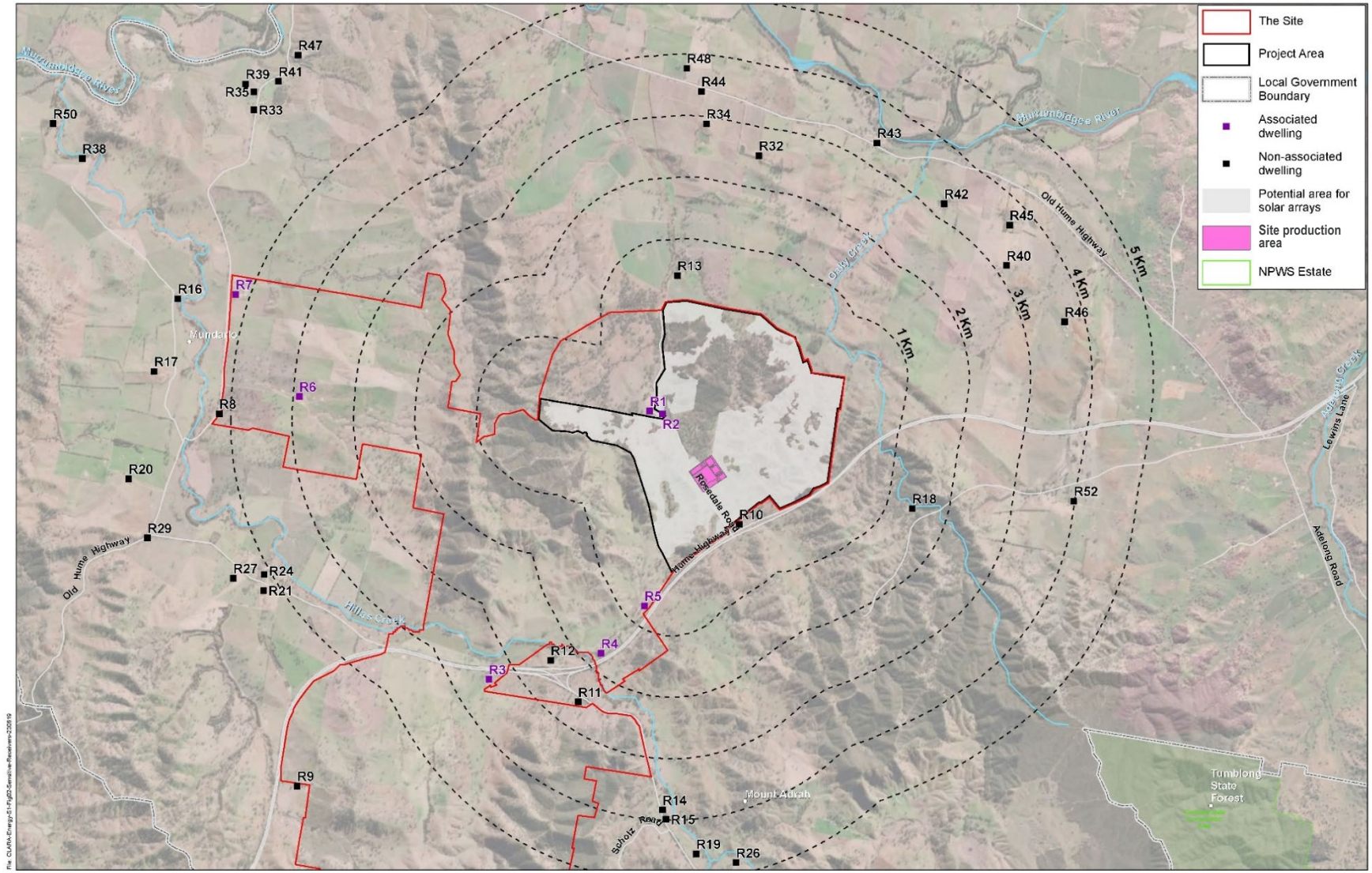

Figure 8-5 Location of the Project and study area

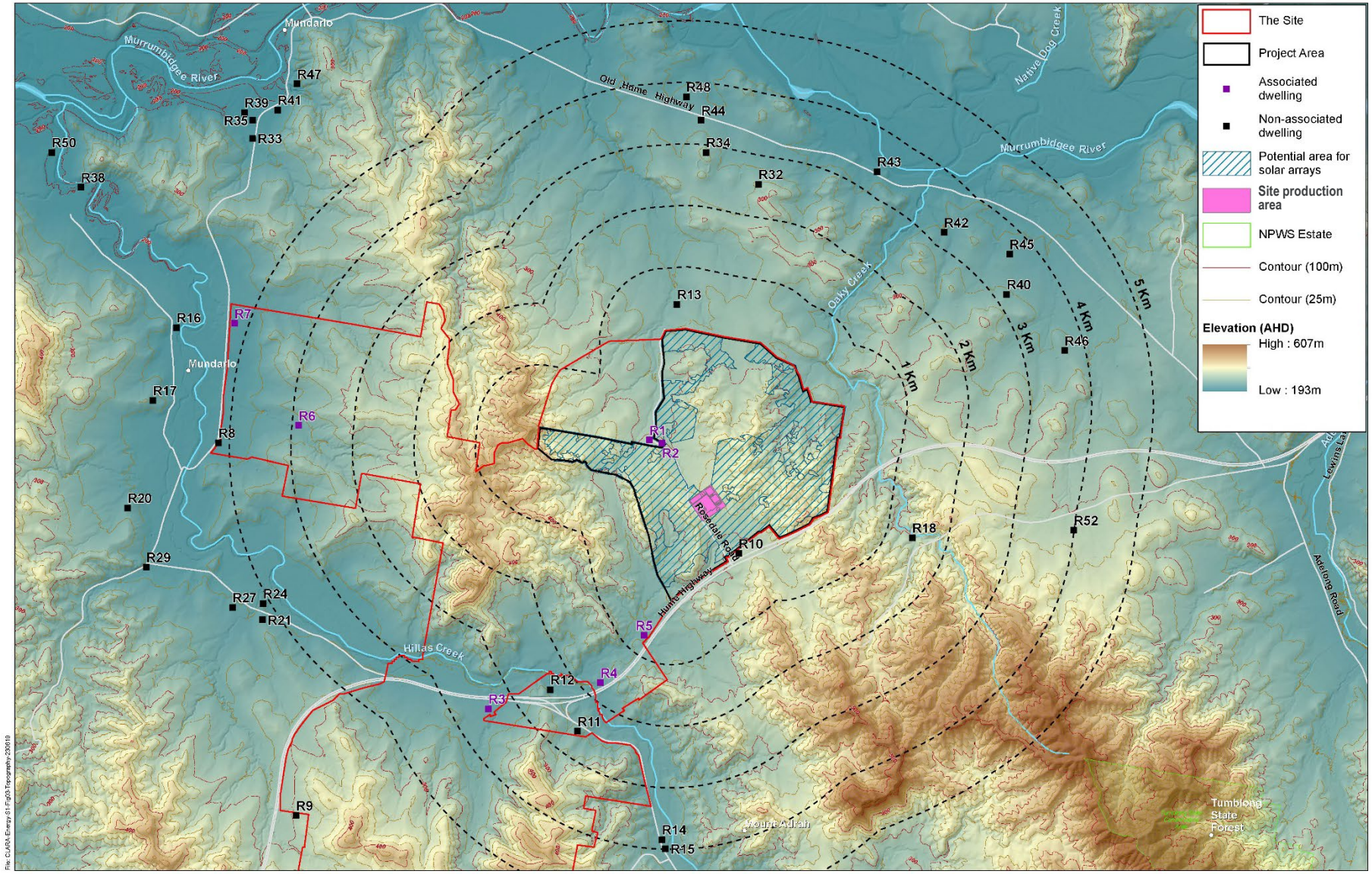

Figure 8-6 Topography of the study area

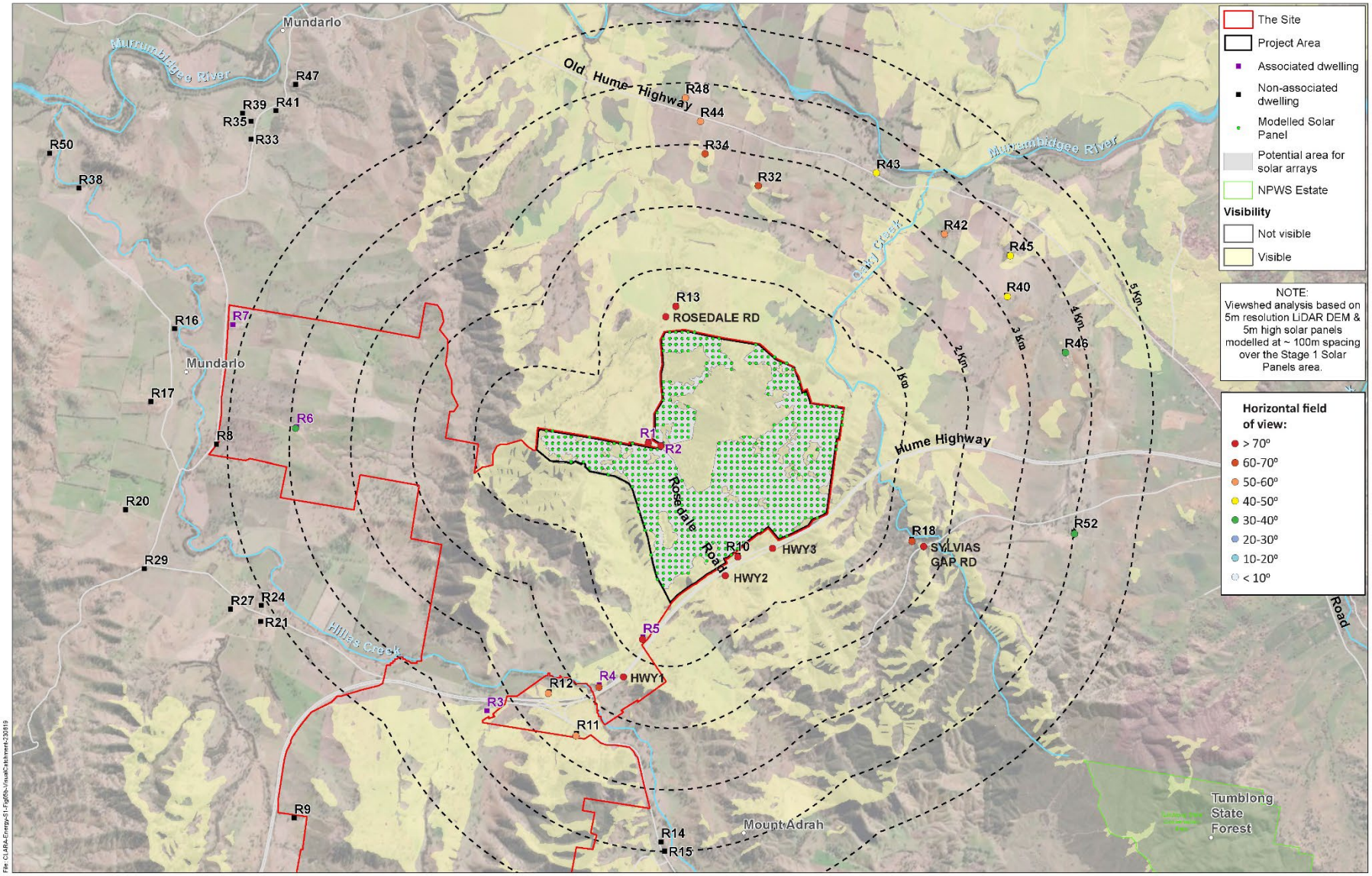

Figure 8-7 Visual catchment of the solar panel development area, with dwelling horizontal field of view noted

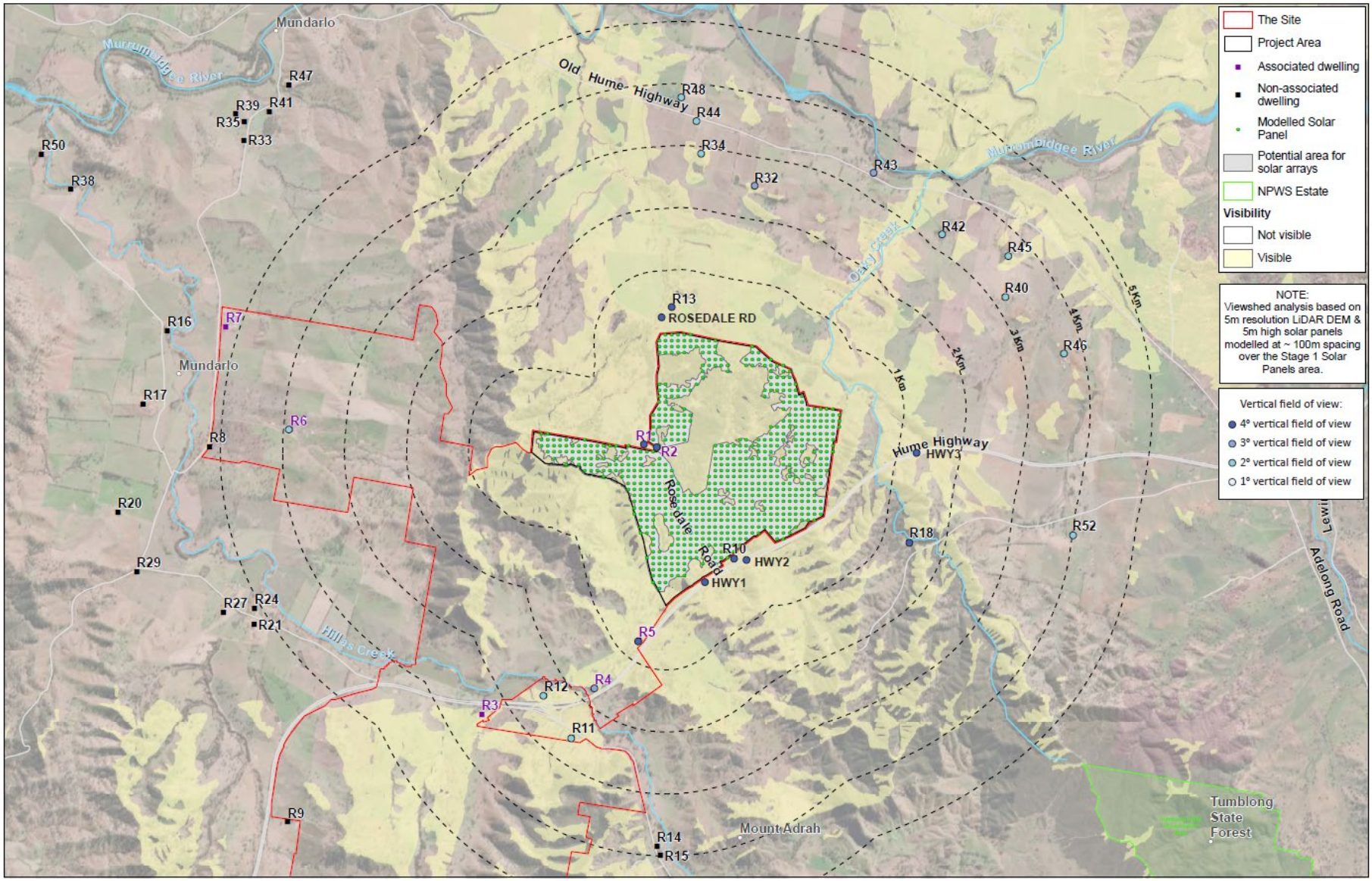

Figure 8-8 Visual catchment of the solar panel development area, with dwelling vertical field of view noted

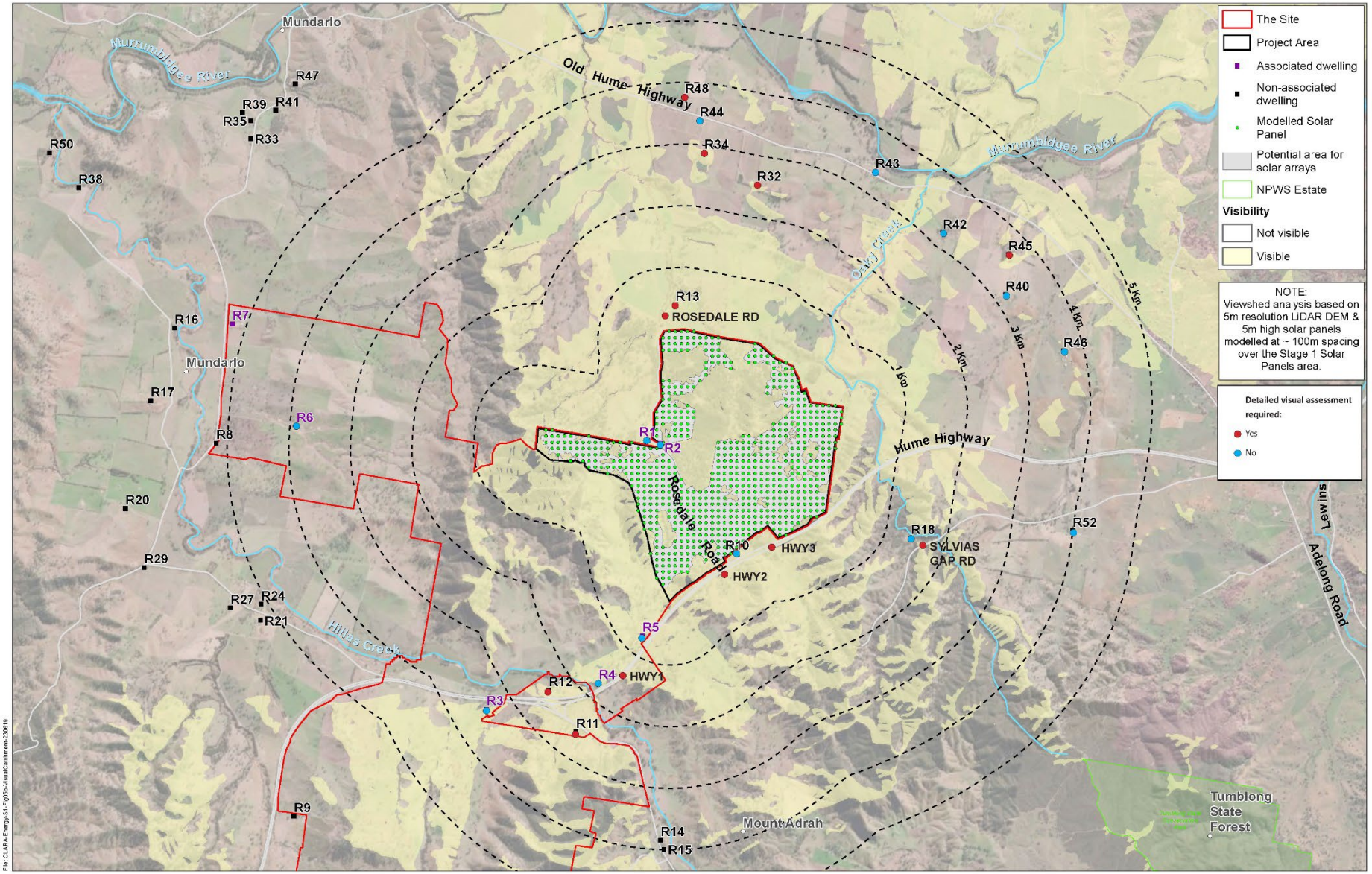

Figure 8-9 Visual catchment of the solar panel development area, with dwellings requiring further assessment highlighted

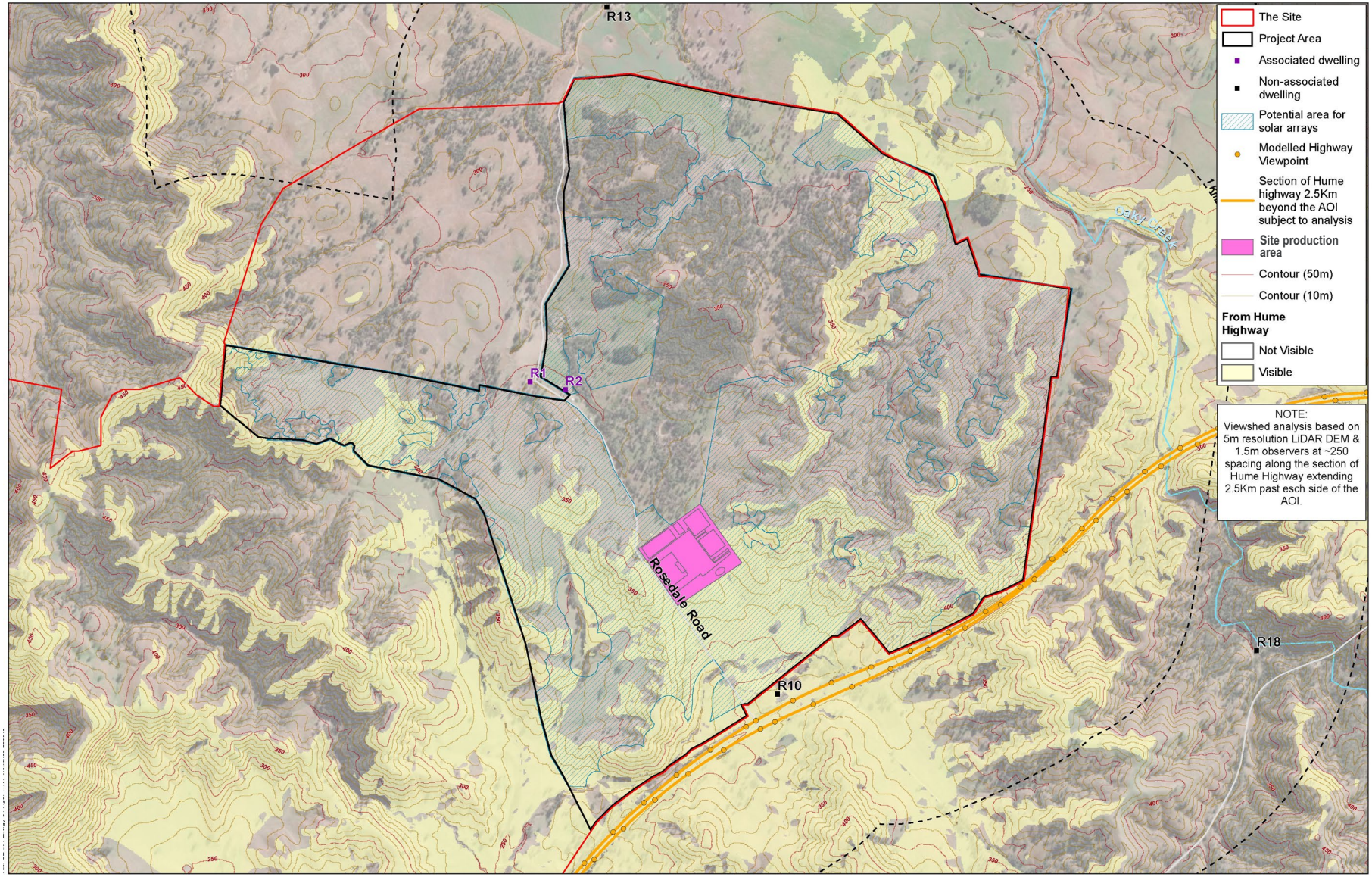

Figure 8-10 Visual catchment of the solar panel development area from the Hume Highway

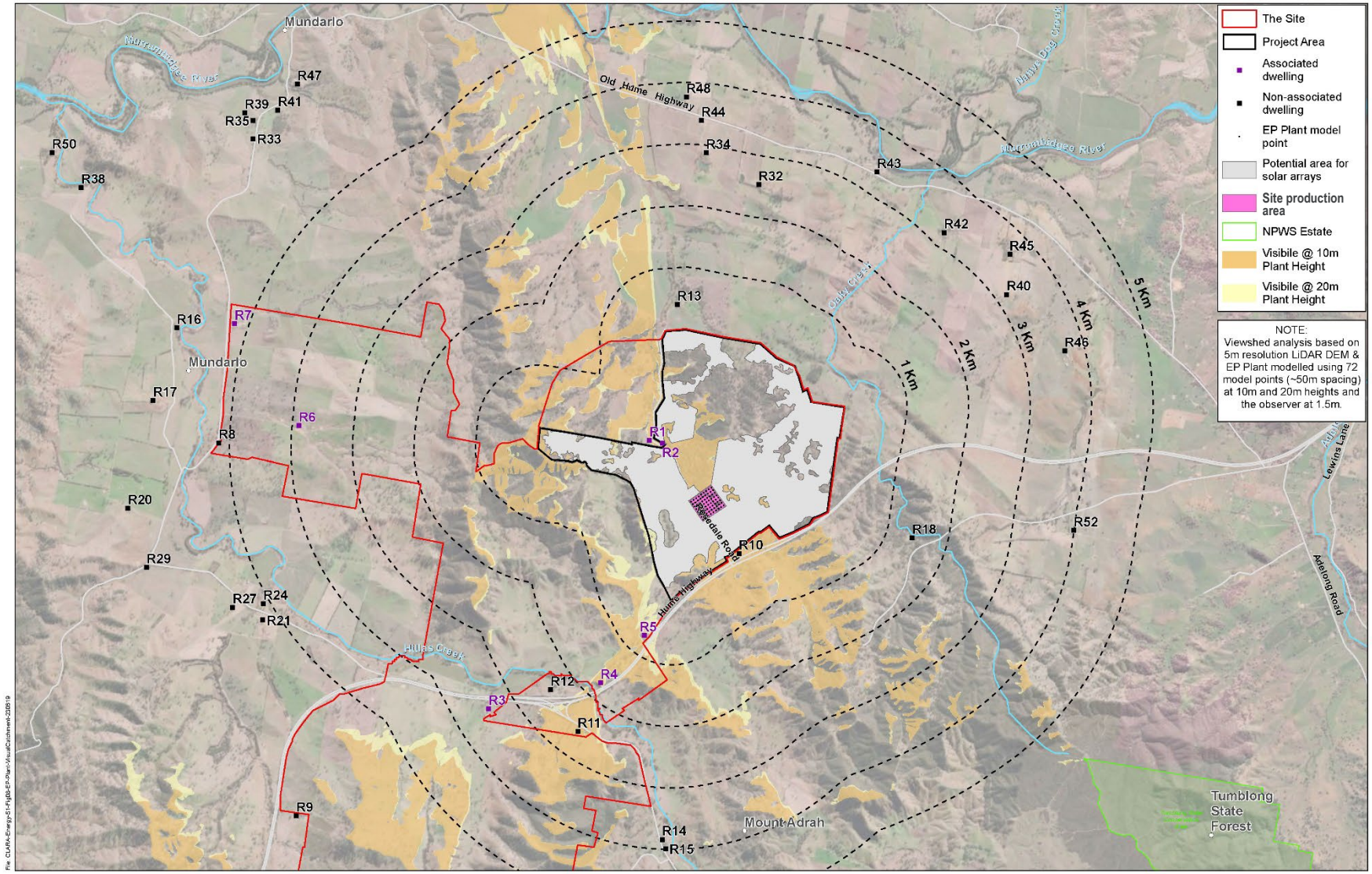

Figure 8-11 Indicative visual catchment of the EP Electrolysis Hydrogen Plant (based on landform only)

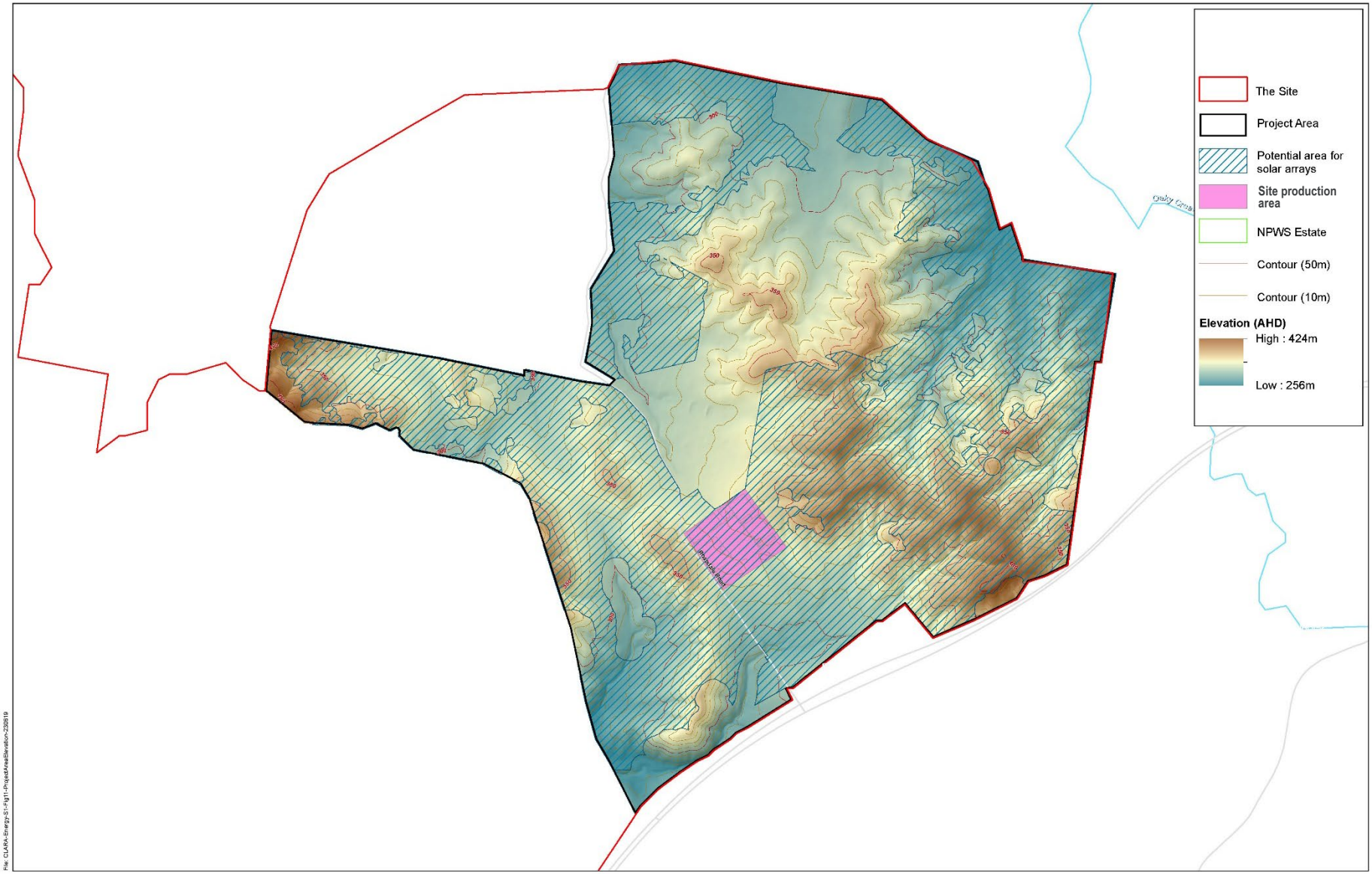

Figure 8-12 Project elevation plan

Appendix D2: Preliminary Landscape and Visual Impact Assessment – Tables

Table 7-2 Preliminary assessment tool workings

Tag	Address	Distance to Stage 1 site boundary (metres)	A Highest point of solar farm	B Viewpoint height (metres)	C Lowest point of solar farm	Relative height difference (metres)	Vertical field of view (VFV)	Horizontal field of view (HFV) (approx. degrees)	Detailed visual assessment required (Y/N)	Dwelling located in visual catchment (Y/N)
DWELLINGS										
R10	20 ROSEDALE ROAD TUMBLONG	57	427	312	265	162	4°	>70	Y	Y
R11	4609 SNOWY MOUNTAINS HIGHWAY MOUNT ADRAH	2,500	427	261	265	166	2°	50 to 60	Y	Y
R12	2602 HUME HIGHWAY MUNDARLO	2,500	427	238	265	189	2°	50 to 60	Y	Y
R13	2483 OLD HUME HIGHWAY MUNDARLO	406	427	261	265	166	4°	>70	Y	Y
R18	319 SYLVIAS GAP ROAD TUMBLONG	1,428	427	301	265	162	4°	60 to 70	Y	N
R32	OLD HUME HIGHWAY MUNDARLO	2,535	427	279	265	162	3°	60 to 70	Y	Y
R34	OLD HUME HIGHWAY MUNDARLO	2,881	427	282	265	162	2°	60 to 70	Y	Y
R40	555 OLD HUME HIGHWAY TUMBLONG	3,205	427	256	265	171	2°	40 to 50	Y	N
R42	747 OLD HUME HIGHWAY TUMBLONG	3,256	427	228	265	199	2°	50 to 60	Y	N
R43	834 OLD HUME HIGHWAY TUMBLONG	3,362	427	214	265	213	3°	40 to 50	Y	N
R44	OLD HUME HIGHWAY MUNDARLO	3,396	427	242	265	185	2°	50 to 60	Y	N
R45	555 OLD HUME HIGHWAY TUMBLONG	3,652	427	236	265	191	2°	40 to 50	Y	Y
R46	419 OLD HUME HIGHWAY TUMBLONG	3,695	427	260	265	167	2°	30 to 40	Y	N
R48	1190 OLD HUME HIGHWAY MUNDARLO	3,766	427	235	265	192	2°	50 to 60	Y	Y

Tag	Address	Distance to Stage 1 site boundary (metres)	A Highest point of solar farm	B Viewpoint height (metres)	C Lowest point of solar farm	Relative height difference (metres)	Vertical field of view (VFV)	Horizontal field of view (HFV) (approx. degrees)	Detailed visual assessment required (Y/N)	Dwelling located in visual catchment (Y/N)
R52	319 SYLVIAS GAP ROAD TUMBLONG	3,998	427	314	265	162	2°	30 to 40	Y	N
PUBLIC ROADS										
HWY1	HUME HIGHWAY, MUNDARLO - Location 1	75	427	297	265	162	4°	>70	Y	Y
HWY2	HUME HIGHWAY, MUNDARLO - Location 2	200	427	320	265	162	4°	>70	Y	Y
HWY3	HUME HIGHWAY, MUNDARLO - Location 3	1,200	427	315	265	162	4°	>70	Y	Y
ROSEDALE RD	ROSEDALE ROAD	40	427	265	265	162	4°	>70	Y	Y

Calculating relative height difference:

265 m or lower	A - B
265-427 metres	A - C
427 m or higher	B - C

APPENDIX E SOCIAL IMPACT ASSESSMENT SCOPING SHEET

Appendix E: Social Impact Assessment Scoping Sheet

Social Impact Assessment (SIA) Worksheet

Project name: Project Rosedale

Date: February 2023

CATEGORIES OF SOCIAL IMPACTS	POTENTIAL IMPACTS ON PEOPLE		PREVIOUS INVESTIGATION OF IMPACT		CUMULATIVE IMPACTS		ELEMENTS OF IMPACTS Based on preliminary investigation					ASSESSMENT LEVEL FOR EACH IMPACT				PROJECT REFINEMENT	MITIGATION / ENHANCEMENT MEASURES
what **social impact categories** could be affected by the project activities	What impacts are likely, and what concerns/aspirations have people expressed about the impact? Summarise how each relevant stakeholder group might experience the impact. **NB. Where there are multiple stakeholder groups affected differently by an impact, or more than one impact from the activity, please add an additional row.**	Is the impact expected to be **positive or negative**	Has this impact previously been investigated (on this or other project/s)?	If "yes - this project," briefly describe the previous investigation. If "yes - other project," identify the other project and investigation	Will this impact combine with others from this project (think about when and where), and/or with impacts from other projects (cumulative)?	If yes, identify which other impacts and/or projects	Will the project activity (without mitigation or enhancement) cause a material social impact in terms of its: You can also consider the various magnitudes of these characteristics					Level of assessment for each social impact	What methods and data sources will be used to investigate this impact?			**Has the project been refined in response to preliminary impact evaluation or stakeholder feedback?**	What **mitigation / enhancement measures** are being considered?
							extent i.e. number of people potentially affected?	**duration** of expected impacts? **(i.e. construction vs operational phase)**	**intensity** of expected impacts i.e. scale or degree of change?	**sensitivity** or vulnerability of people potentially affected?	**level of concern/interest** of people potentially affected?		Secondary data	Primary Data - Consultation	Primary Data - Research		
Livelihoods	**Additional local economic activity through project direct and indirect expenditure on goods could benefit livelihoods.**	Positive	No		Yes	The broader increase in economic activity and employment would likely all affecet local businesses	Yes	No	No	No	Unknown	Standard assessment of the impact	Required	Targeted consultation	Potentially targeted research		Local procurement strategy
Livelihoods	Additional employment on site during the construction period would benefit livelihoods.	Positive	No		Yes	The broader increase in economic activity and employment would likely all affecet local businesses	Yes	No	No	No	Unknown	Standard assessment of the impact	Required	Targeted consultation	Potentially targeted research		Local industry participation plan, focussing on local training and employment Partner with local training provider Engagement with LALC and Indigenous or
Livelihoods	Additional local expenditure by workers employed on site, benefitting local livelihoods	Positive	No		Yes	The broader increase in economic activity and employment would likely all affecet local businesses	Yes	No	No	No	Unknown	Standard assessment of the impact	Required	Targeted consultation	Potentially targeted research		Engagement or partnership with local business groups (e.g. chamber of commerce)
Way of life; Health and wellbeing	Noise from construction activities on site could potentially impact adjacent properties, noting the site's relatively remote location	Negative	No		Yes	Construction impacts (noise, dust and visual are concentrated close to the site, but would likely all be experienced by those receivers)	No	No	Yes	Yes	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Construction Management Plan
Way of life; Surroundings; Health and wellbeing	Dust from construction activities on site could potentially impact adjacent properties, noting the site's relatively remote location	Negative	No		Yes	Construction impacts (noise, dust and visual are concentrated close to the site, but would likely all be experienced by those receivers)	No	No	Yes	Yes	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Construction Management Plan
Surroundings; Way of life	Visual impact of temporay structures required during construction phase could potentially impact adjacent properties, noting the site's relatively remote location	Negative	No		Yes	Construction impacts (noise, dust and visual are concentrated close to the site, but would likely all be experienced by those receivers)	No	No	Unknown	Yes	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Construction Management Plan
Way of life	Potential concestion impacts on local roads (depending on point of access)	Negative	No		Yes	Construction impacts (noise, dust and visual are concentrated close to the site, but would likely all be experienced by those receivers)	Unknown	No	Unknown	Yes	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Construction Management Plan/Construction Transport Management Plan
Livelihoods; Access; Way of life	Reduced availability of housing could result in impacts to local residents' livelihoods, way of life; and access though increased coss and reduced access to housing	Negative	No		Yes	Workforce impacts are likely to impact lower income community members more (those who rely on social services and rely on more affordable housing). May be exacerbated through combination with other infrastructure projects in region.	No	Yes	No	Yes	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Develop an Accommodation Strategy in conjunction with Council
Access; Way of life; Health and wellbeing	Reduced access to social infrastructure caused by greater demand by temporary workforce	Negative	No		Yes	Workforce impacts are likely to impact lower income community members more (those who rely on social services and rely on more affordable housing). May be exacerbated through combination with other infrastructure projects in region.	No	Yes	No	Yes	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Community Engagement. Develop an Accommodation Strategy in conjunction with Council
Livelihoods	Additional employment on site oncee operational would benefit livelihoods.	Positive	No		Yes	The broader increase in economic activity and employment would likely all affecet local businesses	Yes	Yes	No	No	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Local industry participation plan, focussing on local training and employment Partner with local training provider
Livelihoods	Additional expenditure by permanent employees on site on site oncee operational would benefit livelihoods.	Positive	No		Yes	The broader increase in economic activity and employment would likely all affecet local businesses	Yes	Yes	No	No	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Engagement or partnership with local business groups (e.g. chamber of commerce)
Livelihoods	Additional expenditure by visitors to site (e.g. drivers refueling) ould yiled economic activity	Positive	No		No	Not required	Yes	Yes	No	No	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Partnership with local business groups (e.g. Chamber of Commerce)
Way of life; Surroundings	Structures on site will peranently alter the visual landscape for surrounding properties, potentially impacting their way of life and enjoyment of surroundings	Negative	No		No	Not required	No	Yes	Yes	Yes	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Robust engagment with neighbours Landscape plan
Livelihoods	Farm stay provider adjacent to site may have livelihood impacted by reuction in natural views from property.	Negative	No		No	Not required	No	Yes	Yes	Yes	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Robust engagment with neighbours Landscape plan Bush management and regeneration plan
Community; Decision-making systems	As a new land use, the proposal may elicit fears around possible ongoing environmental impacts	Negative	No		No	Not required	Unknown	Unknown	No	Yes	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Community Engagement
Livelihoods; Decision-making systems	Fears and anxieties around introduction of manufacturing land use and impact on local agriculture	Negative	No		No	Not required	Unknown	Unknown	No	Yes	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Robust engagment with neighbours and wider community Explore possible agricultural uses within site
Community; Decision-making systems	Fears and anxities of change to local character driven by development	Negative	No		No	Not required	Unknown	Unknown	No	Yes	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research		Early and comprehensive community engagement throughout process
INSERT NEW ROWS ABOVE THIS ROW																	

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