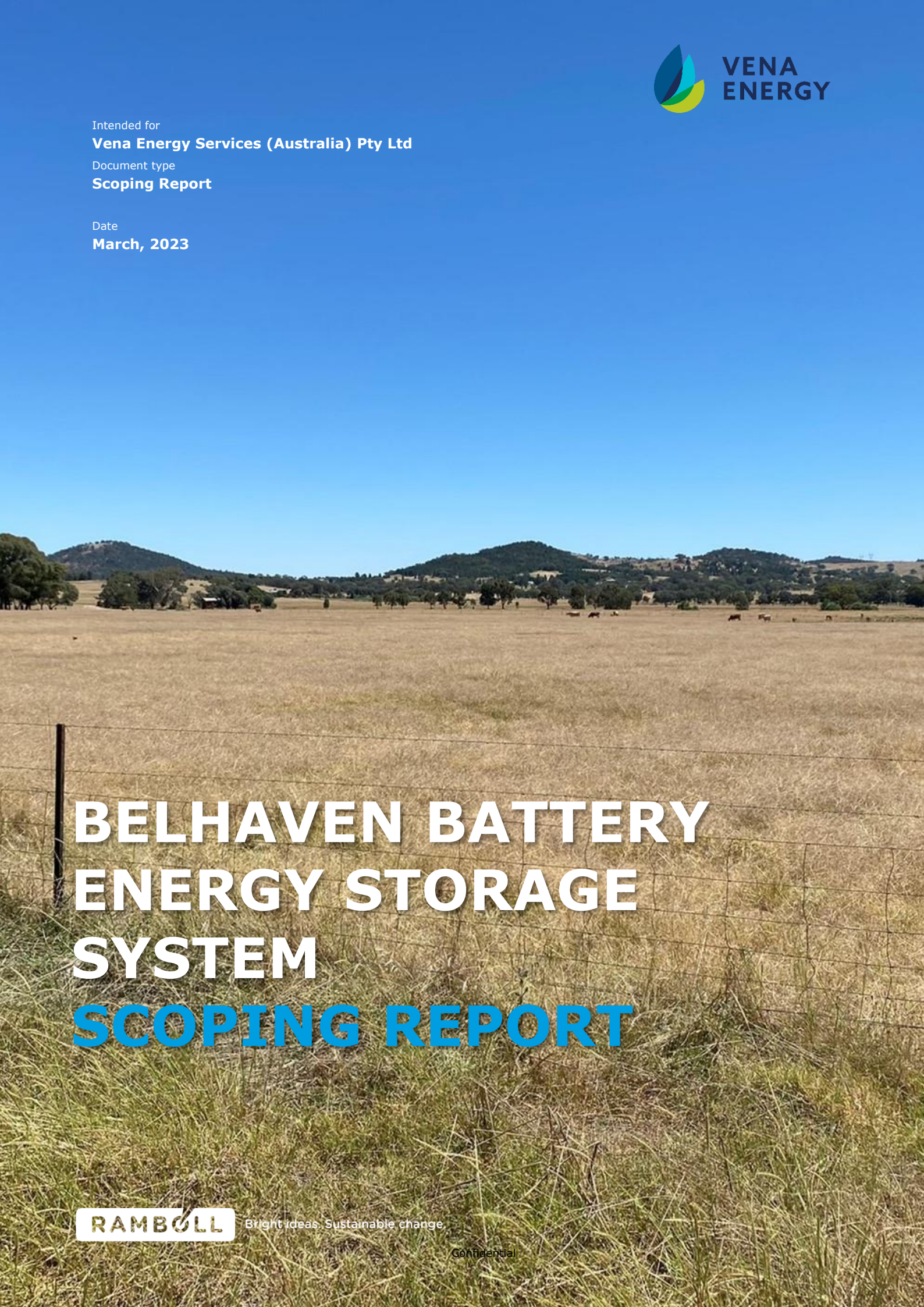

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Vena Energy Services (Australia) Pty Ltd
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BELHAVEN BATTERY ENERGY STORAGE SYSTEM
SCOPING REPORT

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BELHAVEN BATTERY ENERGY STORAGE SYSTEM
SCOPING REPORT

Project name	**Belhaven Battery Energy Storage System**
Project no.	**318001352**
Recipient	**Vena Energy Services (Australia) Pty Ltd**
Document type	**Report**
Version	**Final**
Date	**31/03/2023**
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1	07/02/2023	CB	JW	JW	Draft scoping report
2	24/02/2023	CB	JW	JW	Second draft scoping report
3	09/03/2023	CB	JW	JW	Final scoping report
4	31/03/2023	CB	JW	JW	Final for DPE submission

ACKNOWLEDGMENT OF COUNTRY

Aboriginal people have had a long and continuous association with the region for thousands of years. We would like to acknowledge and pay respects to the Traditional Owners of the Country which is encompassed by the project, the Wiradjuri people.

Prepared by

Ramboll Australia Pty Ltd

Applicant

Vena Energy Services (Australia) Pty Ltd

EXECUTIVE SUMMARY

Introduction to the project

Vena Energy Services (Australia) Pty Ltd (VEA) is proposing to construct and operate a battery energy storage system south of Wagga Wagga, in New South Wales (the project). The project would comprise a BESS with a total capacity of approximately 400MW with up to two hours of storage (400MW/800MWh) and would contribute up to 800MWh storage capacity to the National Electricity Market.

The project would be located at the corner of Redbank Road and Boiling Down Road and will be connected to the electricity network via a substation to be constructed within the site and then to the existing 330kV Transgrid substation located approximately 1.4 kilometres to the east of the site.

The project would include the following key components:

- electrical infrastructure including:
  - a BESS comprised of batteries installed in a building or enclosures/containers and associated ancillary infrastructure
  - power conversion stations, including inverters, transformers and switchgear
  - a project substation and control room within the developable footprint
  - underground and overhead electrical reticulation connecting the battery containers to power conversion stations, the power conversion stations to the substation, and an underground or overhead high voltage transmission line from the substation to Transgrid's electricity transmission network
  - other electrical infrastructure as required
- other permanent on-site ancillary infrastructure:
  - control room
  - site office
  - maintenance and spare parts storage facility including a maintenance workshop
  - onsite carparking area
  - weather stations
  - lighting and closed-circuit television
  - security fence around the site perimeter and vegetation screening where required
  - lightning protection
- access track network
  - access and egress points from public roads
  - internal access tracks
- temporary construction ancillary facilities
  - construction compounds
  - laydown areas
  - construction access tracks and associated infrastructure.

The project is expected to require up to 100 full-time employees during peak construction and would likely operate unmanned on a day-to-day basis, 24 hours per day, seven days per week. At the end of its operational life and according to equipment performance, equipment condition and project viability, VEA will consider whether to either repower or decommission the project. If the project was to be decommissioned, the land that is affected by the project would be appropriately rehabilitated.

Strategic context

The project is supported by strategic planning policies at local, state and federal levels of government. At a strategic level, the project provides an opportunity to:

- assist in meeting energy demand and improving energy security and stability for NSW
- contribute to NSW achieving net-zero emissions by 2050 as set out in the New South Wales Climate Change Policy Framework
- deliver on commitments in the Federal Government's Renewable Energy Target Scheme
- support Australia's commitments to reduce greenhouse gas emissions.

The project forms an important part of Australia's transition to renewable energy generation and would positively contribute to meeting federal and state targets.

Statutory context

The capital investment value would be over $30 million and the project is considered State Significant Development under Part 4 of the *Environmental Planning and Assessment Act 1979* and the State Environmental Planning Policy (Planning Systems) 2021.

Proposed assessment of impacts

This report presents a preliminary assessment of the potential impacts of the project to identify matters requiring further assessment in the environmental impact statement. Matters that have been identified as requiring further assessment for the environmental impact statement have been separated into 'key issues' and 'other issues'. This report has identified the following categorisation of assessment matters:

- key issues:
  - land use and soils
  - biodiversity
  - hazards and risks
  - noise and vibration
  - traffic and access
  - water quality, hydrology and flooding
  - Aboriginal heritage
  - social
- other issues:
  - landscape character and visual
  - historic heritage
  - air
  - waste and resources.

Cumulative impacts with other major projects (both existing and proposed) have also been considered.

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GLOSSARY AND ACRONYMS

Abbreviation / term	Definition
ABN	Australian Business Number
ABS	Australian Bureau of Statistics
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ACHAR	Aboriginal Cultural Heritage Assessment Report
AEMO	Australian Energy Market Operator
ADGC	Australian Dangerous Goods Code
AEP	Annual Exceedance Probability
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
ALR Act	*Aboriginal Land Rights Act 1983*
BAM	Biodiversity Assessment Method
BC Act	*Biodiversity Conservation Act 2016*
BCS	NSW Biodiversity, Conservation and Science Directorate
BDAR	Biodiversity Development Assessment Report
BioNet Atlas	Biodiversity and Conservation Division Atlas of Wildlife
BESS	Battery Energy Storage System
BESS footprint	Approximately 10 hectares of land within the development area that would be the footprint of the BESS
BAR	Basic Right Turn Treatment
Battery energy storage system	A technology developed for storing electric charge by using specially developed batteries
Biodiversity and Conservation SEPP	State Environmental Planning Policy (Biodiversity and Conservation) 2021
BOS	Biodiversity Offset Scheme
BSAL	Biophysical Strategic Agricultural Land
CBD	Central Business District
CCTV	Closed-Circuit Television
CLM Act	*Crown Land Management Act 2016*
Conveyancing Act	*Conveyancing Act 1919*
Con Act	*Contaminated Land Management Act 1997*
CEECs	Critically Endangered Ecological Communities

Abbreviation / term	Definition
CIA	Cumulative Impact Assessment
Code of Practice	*Code of Practice for the Investigation of Aboriginal Objects in New South Wales*
CTMP	Construction Traffic Management Plan
dB	Decibel
Development area	Approximately 25 hectares of developable land within the site, the proposed transmission line route corridor, south of Boiling Down Road connecting the BESS to the existing Transgrid substation and the associated substation fit out works
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DG	Dangerous Goods
DG Act	*Dangerous Goods (Road and Rail Transport Act) 2008*
DP	Deposited Plan
DPE	NSW Department of Planning and the Environment
DPI	Department of Primary Industries
EMF	Electromagnetic Field
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	NSW Environment Protection Authority
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPA	Environment Protection Authority
EPL	Environment Protection Licence
FPA	Flood Planning Area
FPL	Flood Planning Level
FM Act	*Fisheries Management Act 1994*
GIS	Geographical Information Services
GHG	Greenhouse gas
GW	Gigawatt
Heritage Act	*Heritage Act 1977*
ha	Hectare
ISP	Integrated System Plan 2022
KFH	Key Fish Habitat
km	Kilometre

Abbreviation / term	Definition
kV	Kilovolt
LSC	Land and Soil Capability
LUCRA	Land Use Conflict Risk Assessment
LGCs	Large-Scale Generation Certificates
LEP	Local Environmental Plan
LGA	Local Government Area
LGCs	Large-Scale Generation Certificates
LRET	Large-Scale Renewable Energy Target
LSPS	Local Strategic Planning Statement
m	Metre
MNES	Matters of National Environmental Significance
MOFFS	Wagga Wagga Major Overland Flow Floodplain Risk Management Study and Plan
MW	Megawatt
MWh	Megawatt Per Hour
Native Title Act	*Native Title Act 1993*
NEM	National Electricity Market
NDC	Nationally Determined Contribution
NES	NSW Electricity Strategy
NGER	National Greenhouse and Energy Reporting
NPfI	*NSW Noise Policy for Industry*
NPW Act	*National Parks and Wildlife Act 1974*
NSW	New South Wales
OEH	Office of Environment and Heritage
OSOM	Over Size and Over Mass
PCSs	Power Conversion Stations
PCT	Plant Community Types
PHA	Preliminary Hazard Analysis
PMF	Probable Maximum Flood
Proponent	Vena Energy Services (Australia) Pty Ltd (abbreviated to VEA)
SIA	Social Impact Assessment
Substation	A facility used to increase or decrease voltages between incoming and outgoing electrical transmission lines

Abbreviation / term	Definition
The project	The proposed Belhaven Battery Energy Storage System
The site	The land on which the project is located identified in **Figure 2-1** (233 Boiling Down Road, Rowan 2650 ("Belhaven") located on Lot 50, Lot 51 and Lot 54 in DP 757246)
Transmission line route corridor	The proposed transmission line route that would connect the project to the existing Transgrid 330kV substation 1.4 km east of the site.
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
PMST	Protected Matters Search Tool
POEO Act	*Protection of Environment Operations Act 1997*
RBL	Rating Background Level
RAPs	Registered Aboriginal Parties
RBL	Rating Background Level
Resilience and Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
RET	Renewable Energy Target
REZ	Renewable Energy Zone
RF Act	*Rural Fires Act 1997*
RFS	Rural Fire Service
Roads Act	*Roads Act 1993*
RNP	Road Noise Policy
Scoping Report Guideline	State Significant Development Guidelines – Preparing a Scoping Report (Appendix A) (Department of Planning, Industry and Environment, 2021c)
SEARs	Secretary Environmental Assessment Requirements
SC Act	*Soil Conservation Act 1938*
SEPP	State Environmental Planning Policy
SHI	State Heritage Inventory
SSD	State Significant Development
SSI	State Significant Infrastructure
SAL	Suburbs and Localities
TECs	Threatened Ecological Communities
Transport and Infrastructure SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
TfNSW	Transport for New South Wales
UNFCCC	United Nations Framework Convention on Climate Change

Abbreviation / term	Definition
VIS	Vegetation Information System
Wagga Wagga Spatial Plan	Wagga Wagga Spatial Plan 2013-2043
Wagga Wagga DCP	Wagga Wagga Development Control Plan 2010
Wagga Wagga LEP	Wagga Wagga Local Environmental Plan 2010
WM Act	*Water Management Act 2000*
Ramsar	Wetlands of International Importance Nationally Important Wetlands

1. INTRODUCTION

1.1 Project overview

Vena Energy Services (Australia) Pty Ltd (VEA) is proposing to construct and operate a battery energy storage system (BESS) south of Wagga Wagga, in New South Wales (NSW) (the project). The project would comprise a BESS with a total capacity of approximately 400 megawatts (MW) with up to two hours of storage (400MW/800MWh) and would contribute up to 800MWh storage capacity to the National Electricity Market (NEM). The regional context of the project is shown in **Figure 1-1**.

The BESS would be located at 233 Boiling Down Road, Rowan, approximately nine kilometres southeast of the central business district of Wagga Wagga, within the City of Wagga Wagga Local Government Area (LGA). The site is approximately 100 hectares, however, the development footprint for the BESS would comprise approximately 10 hectares of land south of Boiling Down Road, connected (most likely) via underground electrical reticulation to the existing 330kV Transgrid substation approximately 1.4 kilometres east of the site. The potential development area expected to accommodate the project within the site is approximately 25 hectares. This is land that is understood to be unconstrained land which avoids the drainage lines and riparian vegetation that cross part of the site. The development area also includes the transmission line route corridor that would connect the project to the existing Transgrid 330kV substation and the upgrade works within the substation to facilitate the grid connection for the project. A detailed description of the project is presented in **Chapter 4** and the indicative development area for the project is shown in **Figure 2-1**. The final layout of the proposed BESS, substation and grid connection will be investigated during the Environmental Impact Statement (EIS) and will be subject to detailed design in consultation with relevant stakeholders.

The project would generate approximately 100 jobs during the construction stage. Once operational, it is anticipated that the BESS will operate unmanned on a day-to-day basis.

VEA is seeking State Significant Development (SSD) consent under Section 2.6 and Schedule 1(20) of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP), and Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The project therefore requires approval from the NSW Minister for Planning.

A referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) for potential impacts to matters of national environmental significance (MNES) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), is unlikely. Refer to **Section 7.3.2**.

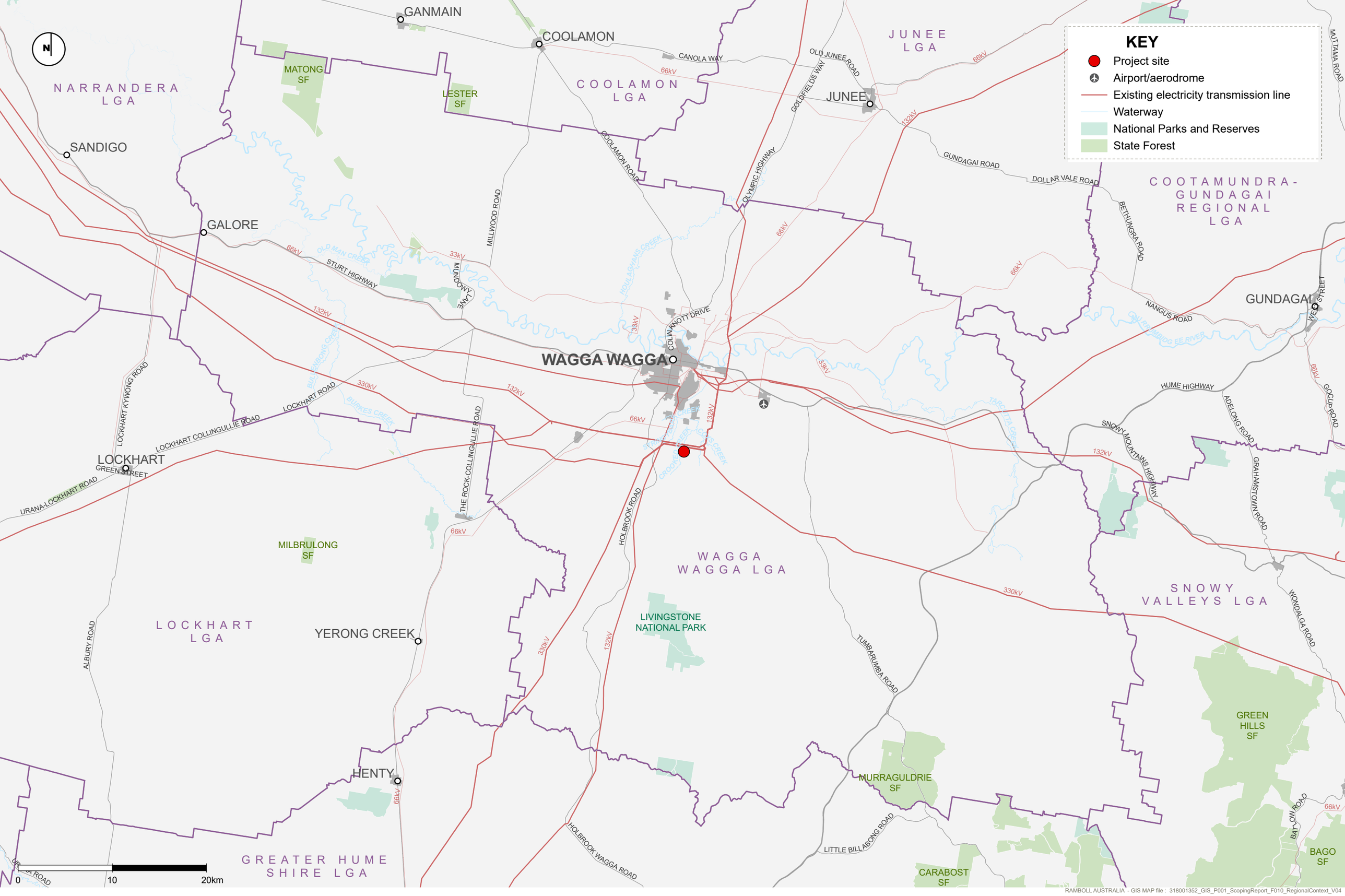

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Figure 1-1 | Regional context

1.1.1 Site information

A summary of contextual site information is provided in **Table 1-1**.

Table 1-1: Summary of site information

Item	Details
Local government area	Wagga Wagga Local Government Area
Suburb	Rowan
Property size	100 hectares (approximately)
Address	233 Boiling Down Road, Rowan 2650 ("Belhaven")
Lot details	Located on Lot 50, Lot 51 and Lot 54 in DP 757246

1.1.2 Project objectives

The project's objectives are to:

- provide stability to the grid and provide backup power during network interruptions and where renewable generation is intermittent
- store up to 800MWh of excess energy generated during times of low demand and discharging energy back into the grid during periods of peak demand
- contribute to the Integrated System Plan 2022 suggested need for 46GW/640GWh of dispatchable storage capacity, needed by 2050
- contribute to the Electricity Roadmap for NSW and the need of up to 2.3 gigawatts of storage throughout the network by mid-2030
- provide greater capacity for renewable energy generators and assist in meeting energy demand and improving energy security for NSW
- support Australia's commitments to reduce greenhouse gases (GHG) and contribute to NSW achieving net-zero emissions by 2050 as set out in the NSW Climate Change Policy Framework, and deliver on commitments in the Australian Government's Renewable Energy Target Scheme
- develop a project which minimises impacts to the environment and local community through the selection of an appropriate site and consideration of siting and orientation of infrastructure
- develop a trusted relationship with the community and provide for positive outcomes for the communities affected by the project, including through the provision of significant economic stimulus to the region through construction jobs, supplier contracts, and flow on benefits to local businesses.

1.1.3 Project background and history

VEA have been investigating the potential to develop a renewable energy project at the site since 2018. Options for alternative renewable energy projects (including a large-scale solar project) were investigated. VEA commissioned a range of technical consultants between 2018 and 2022 to investigate the potential constraints and opportunities for the site in relation to a potential large scale solar project.

The site subject to the large-scale solar option included eight lots in addition to the three that are subject to the current proposal and covered an area of approximately 398 hectares. As a result of ongoing consultation with Wagga Wagga City Council, adjoining landowners and other various stakeholders, together with responding to the constraints of the site, the project was refined, resulting in the proposed Belhaven Battery Energy Storage System Project that is the subject of

this scoping report. Ongoing refinement of the project with consideration of the above will continue through the development of the EIS.

1.2 Proponent

VEA is part of Vena Energy and is an independent power producer of renewable energy. VEA constructs and operates solar photovoltaic power, wind generated power, and energy storage projects in Asia Pacific. Relevant details for VEA are provided in **Table 1-2**.

Vena Energy is a leading renewable energy provider in the Asia Pacific, with a renewable energy portfolio of 35 GW and extensive local presence in the region, with 74 operational assets in Australia, India, Indonesia, Japan, Philippines, South Korea, Taiwan, and Thailand. Vena Energy expanded into Australia in 2016, forming VEA. Some early renewable projects undertaken in Australia include the Tailem Bend Solar Project in South Australia and Wandoan South BESS in Queensland.

VEA manages the development, construction, and operation of all of its projects, allowing it to manage risk and ensure whole of lifecycle investment in the success of its projects. This owner-operator model helps develop a trusted relationship with the local community and provides for positive outcomes for VEA and the communities affected by its projects.

Table 1-2: Details of the proponent

Item	Details
Proponent name	Vena Energy Services (Australia) Pty Ltd
Australian Business Number (ABN)	89 609 132 747
Postal address	Suite 2, Level 10 200 Mary Street, Brisbane QLD 4000

1.3 Document purpose

This scoping report has been prepared to support a request for Secretary Environmental Assessment Requirements (SEARs) that would guide preparation of an EIS as part of a development application under Division 4.1 of Part 4 of the EP&A Act.

This report has been prepared in accordance with:

- Preparing a Scoping Report Guidelines for State Significant Projects (Department of Planning, Industry and Environment, 2021c)
- Undertaking Engagement Guidelines for State Significant Projects (Department of Planning, Industry and Environment, 2021d)
- Social Impact Assessment Guideline for State Significant Projects (Department of Planning, Industry and Environment, 2021e)
- Cumulative Impact Assessment Guidelines for State Significant Project (Department of Planning, Industry and Environment, 2021f).

2. SITE AND REGIONAL CONTEXT

2.1 Regional context

The proposed project is located approximately nine kilometres southeast of the Central Business District (CBD) of Wagga Wagga, within the City of Wagga Wagga Local Government Area (LGA and the broader Riverina region of NSW. The Riverina region extends from the Snowy Mountains to the Murrumbidgee River catchment area. The site is approximately 380 kilometres southwest of Sydney and 350 kilometres northeast of Melbourne. The project location and surrounds are shown in **Figure 1-1.**

The region is home to the Wiradjuri people - the largest Aboriginal group in central NSW, by area and population. The people of the Wiradjuri country are known as "people of three rivers" being the Macquarie River (Wambool), Lachlan River (Kalari) and the Murrumbidgee River (Murrumbidjeri) which border their lands.

Major sources of employment within the broader area within the Riverina region include health care, agriculture, forestry and fishing, and manufacturing. Other important employment sectors in the region include education and training, public administration and safety, and construction (Australian Bureau of Statistics, 2021). Details of some surrounding population centres are presented in **Table 2-1**.

Table 2-1: Population centres in vicinity of the site (Australian Energy Market Operator, 2022)

Township	Urban population	Approximate distance from site	Direction from site
Wagga Wagga	48,263	The site is within Wagga Wagga, 9 km from Wagga Wagga CBD	Northwest
Junee	4,762	42 km	Northeast
Gundagai	1,925	67 km	Northeast
Tumut	6,154	75 km	Southeast
Narrandera	3,746	87 km	Northwest
Holbrook	1,288	54 km	South

Natural features near the project include:

- Lake Albert – approximately 2.8 kilometres north of the site
- Murrumbidgee Valley National Park – approximately 28.5 kilometres northwest of the site
- The Rock Nature Reserve – approximately 25 kilometres southwest of the site
- Livingstone National Park – approximately 14 kilometres south of the site
- Livingstone State Conservation Area – approximately 19 kilometres south of the site
- Ellerslie Nature Reserve – approximately 43 kilometres southeast of the site.
-

There are also several other protected areas further away from the site, primarily to the south and southeast.

The key features of the regional and local context of the site are summarised in **Section 2.4**

2.2 Local context

Wagga Wagga is the largest inland city in NSW, and is an important agricultural, military, and transport hub for Australia. The main sources of employment include healthcare and social assistance, construction, public administration and safety, education and training, and retail trade. Wagga Wagga Base Hospital is located in the city centre and Wagga Wagga Airport is located approximately 11 kilometres southeast.

Wagga Wagga is serviced by major roads including Sturt Highway (east west), the Olympic Highway and the Hume Highway (north and south via the Sturt Highway) providing connection to the NSW east coast, Canberra to the north and Melbourne to the south.

Wagga Wagga is located on generally gentle sloping to level land with some gentle rolling hills. There are several waterways in the area, with the largest being the Murrumbidgee River which flows east to west just north of the Wagga Wagga CBD. Development in Wagga Wagga includes commercial and industrial areas, however built structures are generally of low to moderate scale, with some higher density development areas largely surrounding the CBD.

Land immediately surrounding the project is largely characterised by open flat pastoral areas with scattered vegetation and some primary production and industrial areas. Developed areas associated with Wagga Wagga are primarily situated to the north, along with some (largely rural residential) scattered residences on the hills to the south and southwest of the site. Land uses surrounding the project include:

- farming and rural living: predominantly grazing with scattered rural dwellings and sheds present throughout the landscape, with a higher density of dwellings on the southern fringe of the city to the north
- industrial uses: primarily associated with aboveground transmission lines that run along Boiling Down Road and the existing Transgrid Wagga Wagga 330kV Substation, located 1.4 kilometres to the east of the site (**Plate 2-1**). The Gregadoo Waste Management Centre is also located east of the site
- residential areas: comprising large lot residential areas and low-density residential living within the southern suburbs of Wagga Wagga
- public and private recreation: including parks and sporting facilities around Lake Albert, approximately 2.8 kilometres north of the project.

Further detail on the social context of the project is provided in **Section 7.3.8.**

Plate 2-1: Transgrid Wagga Wagga 330kV substation

2.3 Site context

Details of the lots within the site are provided in **Section 1.1.1** and a summary of the key site features is provided in **Section 2.4**.

The site covers an area of approximately 100 hectares, comprising one private property ("Belhaven" at 233 Boiling Down Road, Rowan) across three allotments, as presented in **Table 2-2**.

Table 2-2: Lots within the site

Lot	Deposited Plan
50	757246
51	757246
54	757246

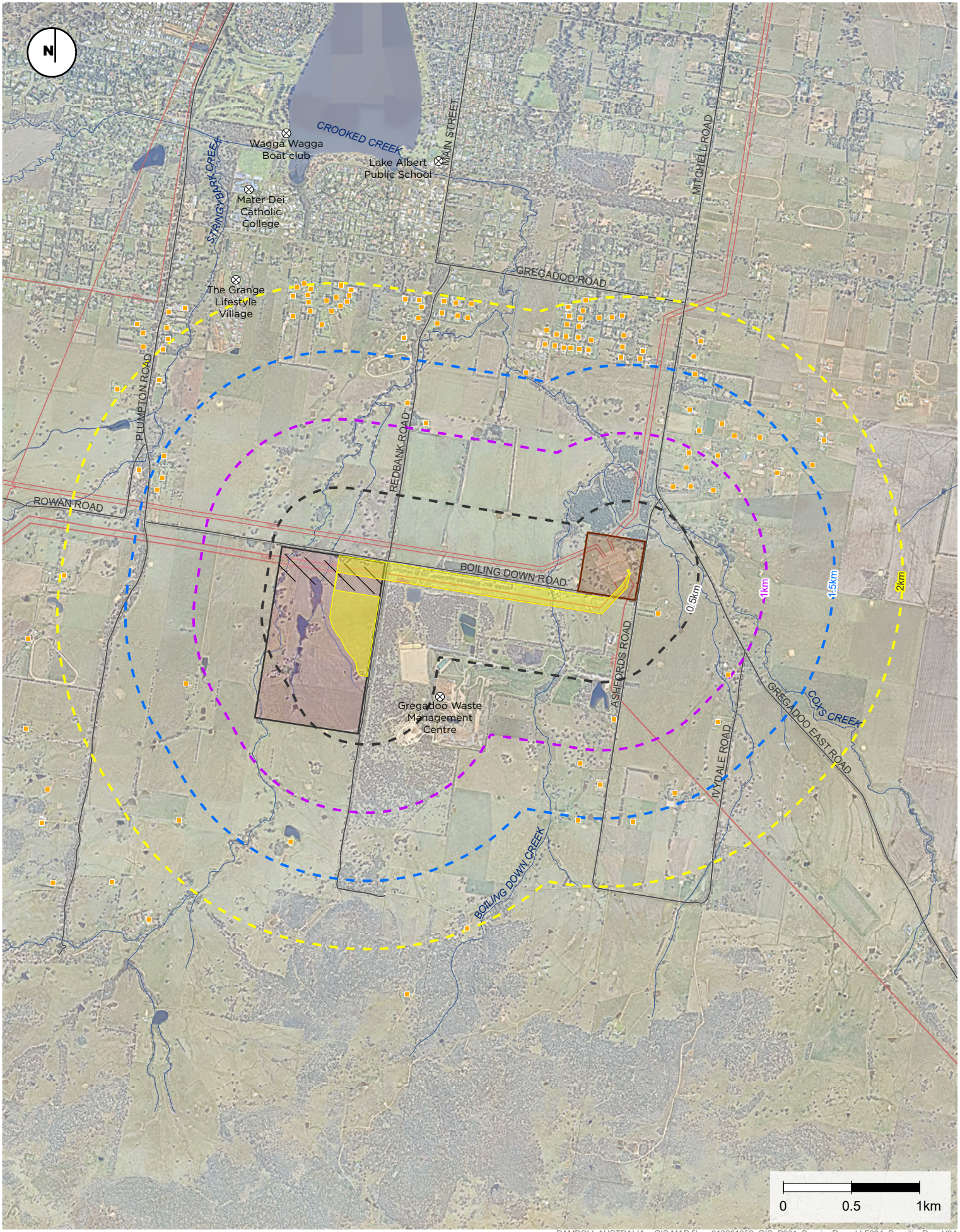
The site is private land currently used for grazing and most of the site has been cleared for agricultural development, with native vegetation restricted to scattered patches and paddock trees. The site has been used for low intensity grazing and cultivation for a significant period, likely from 1880s when European settlement became intensive. This is indicated by historical aerial imagery showing a similar landscape to that which currently exists, including level of tree cover and the extent of areas impacted by grazing and cultivation.

Discussions with past and present landowners, reveals that the site is principally grazing country and has primarily been used for cattle and sheep grazing, with opportunistic fodder cropping (i.e. cropping for grazing or hay production).

The only named drainage line that crosses part of the site is Crooked Creek. There are two unnamed ephemeral tributaries to Crooked Creek that also cross part of the site. Parts of Crooked Creek are associated with good quality riparian vegetation, although this is generally to the north of Boiling Down Road and would not be affected by the project. The watercourses that traverse the western portion of the site would be avoided.

The developable area (approximately 25 hectares of land within the development site) under investigation has been selected to avoid impacts to numerous mature trees that provide breeding habitat for species such as the Superb Parrot (*Polytelis swainsonii*), which is listed as 'vulnerable' under the EPBC Act and was found to occur within the site. Refer to **Section 7.3.2** for further information about biodiversity values within the site.

The site is generally flat with an elevation ranging from 220-240 metres above sea level. **Plate 2-2** to **Plate 2-8** show the typical landscape and land use characteristics of the site and surrounds. An overview of the site and the indicative development footprint of the BESS is provided in **Figure 2-1.**



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Aerial imagery from Nearmap capture date 01/02/2023

KEY

- Site boundary
- Indicative development area

Sensitive receiver

- Non-associated dwelling

Indicative development buffer

- 0.5km
- 1km
- 1.5km
- 2km

- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV TransGrid substation
- Waterway

Figure 2-1 | Project locality and sensitive receivers

Plate 2-2: View of the site from Boiling Down Road facing southwest

Plate 2-3: View of the site from Boiling Down Road facing south

Plate 2-4: View of riparian vegetation within the site (outside the developable area)

Plate 2-5: Existing farm dam within site

Plate 2-6: View north west across the site from Redbank Road

Plate 2-7: View north along Redbank Road towards intersection with Boiling Down Road with site to the west

Plate 2-8: View east along Boiling Down Road towards from existing site access

2.4 Summary of key site features

The key property, community, built and natural features of the site and broader locality are summarised below.

Property	
Local government area	City of Wagga Wagga
Land zoning	RU1 (Primary Production)
Crown Land	There are no crown land parcels with the site.
Native title	No native titles claims were identified in the region of the site. It is also unlikely that there are any land claims under the *Aboriginal Land Rights Act 1983* (ALR Act) as the site is freehold land.
Mining and exploration licences	The site is not subject to any exploration or mining licences.

The community	
Population centres	Wagga Wagga major regional city and is located approximately nine kilometres north of the site.
Sensitive receivers	There are eight sensitive receivers within one kilometre of the development area. The closest sensitive receiver is located within one kilometre of the transmission line route corridor. There are no sensitive receivers within a one kilometre of the development area within the site (i.e., the BESS footprint). Sensitive receivers within a two kilometre radius of the site boundary are shown on **Figure 2-1**.
Land use character and identity	Land immediately surrounding the site is predominantly characterised by agricultural land uses and large lot rural residences. Some special purpose land use exists in the area, the closest being the Gregadoo Waste Management Centre (a council operated major landfill), located to the east of the site (across Redbank Road).
Aborignal heritage	No registered sites are known within the site. The closest known site is a modified tree located 65 metres to the west of the site.

Built features	
Roads and rail	Major highways in the region include the Sturt Highway (A20), Olympic Highway and the Hume Highway. Other main roads near to the site include Redbank Road, Bakers Lane, Inglewood Road, Mitchell Road, Ashfords Road and Boiling Down Road.

Built features	
	Wagga Wagga Train Station provides regional train services via the TrainLink network connecting to Sydney and Melbourne.
Transmission lines	Two sets of overhead high voltage transmission lines run parallel to the north (132kV) and south (330kV) of Boiling Down Road, connecting to Wagga Wagga substation, with the southern line located within an easement affecting the site. Project EnergyConnect (SSI-9172452) proposed 500kV double circuit transmission lines will be positioned on the southern side of the existing 330kV lines, within the site.
Historic heirtage	There are no items listed on the State Heritage Inventory (SHI) within the project site or immediately adjacent. The closest items of state heritage significance are in the town of Wagga Wagga to the north of the site.

Natural features	
Area of biodiversity value	The site contains areas identified on the Biodiversity Value Map (NSW Environment and Heritage, 2023) which are associated with Crooked Creek which traverses the western portion of the site (Department of Planning and Environment, 2022b).
National parks and nature reserves	There are no national parks or state reserves within 10 kilometres of the site. The closest national park is Livingstone National Park located approximately 14 kilometres south of the site, and the Livingstone State Conservation Area approximately 19 kilometres south of the site.
Rivers and waterways	The only named drainage line within the project site is Crooked Creek. There are two unnamed ephemeral tributaries to Crooked Creek also within the site.
Topography	The site is generally flat with an elevation ranging from 220 metres to 245 metres above sea level.
Vegetation	Parts of Crooked Creek are associated good quality riparian vegetation.
Habitat	Some mature trees that provide breeding habitat for species such as the Superb Parrot, which is listed as 'vulnerable' under the EPBC Act occur within the locality. These have been identified during preliminary investigations and are to be avoided by the project.

3. STRATEGIC CONTEXT

3.1 Strategic plans and policies

The project is supported by strategic planning policies at local, state and federal levels of government. At a strategic level, the project provides an opportunity to:

- assist in meeting energy demand and improving energy security and stability for New South Wales
- contribute to New South Wales achieving net-zero emissions by 2050 as set out in the New South Wales Climate Change Policy Framework
- deliver on commitments in the Australian Government's Renewable Energy Target Scheme
- support Australia's commitments to reduce greenhouse gas emissions.

A high-level discussion of the key strategic plans and policies and alignment with the project is provided in **Table 3-1**.

Table 3-1: Project alignment with strategic plans and policies

Strategy, plan, or policy	Description and purpose	Project alignment
National and international context		
The 2015 United Nations Framework Convention on Climate Change (UNFCCC) "Paris Agreement"	The Paris Agreement is a legally binding international treaty to combat climate change. The goal of the agreement is to limit global temperature rise this century to well below two degrees Celsius and to attempt to limit temperature increase to 1.5 degrees Celsius compared to pre-industrial levels (United Nations Framework Convention on Climate Change, 2022). The Australian government has lodged an updated Nationally Determined Contribution (NDC) where, Australia commits to a more ambitious 2030 target and will reduce greenhouse gas emissions by 43% below 2005 levels by 2030, which is a 15 percentage point increase on Australia's previous 2030 target (DCCEEW, 2023).	The project would contribute to meeting Australia's commitments by providing greater capacity for renewable energy generators and resultant annual reduction in greenhouse gas emissions.
Large-Scale Renewable Energy Target Scheme	The Large-Scale Renewable Energy Target (LRET) incentivises the development of renewable energy power stations in Australia, through a market involving the creation and sale of certificates known as Large-Scale Generation Certificates (LGCs). The LRET involves the generation of an additional 33,000-gigawatt hours of additional renewable energy annually under the Renewable Energy (Electricity) Amendment Bill 2015 (Clean Energy Regulator, 2022b).	Once operational, the project would have approximately 800MWh storage capacity, therefore contributing to the LRET target.
Integrated System Plan 2022	The Integrated System Plan 2022 (ISP) provides an integrated roadmap for the development of the NEM over the next 20 years. The most recent ISP was released on 30 June 2022. The key objective of the ISP is to support Australia's highly complex and rapid energy transformation towards net zero emissions, enabling low-cost renewable energy and essential transmission to provide consumers with reliable, and secure and affordable power. The ISP identifies actionable and future projects that can achieve Australia's power needs (Australian Energy Market Operator, 2022). This includes the focus on renewable energy projects in Australia that can connect to existing transmission networks. The ISP notes that the most pressing need in the next decade (beyond what is already committed) is for dispatchable batteries, pumped hydro or alternative	The project would help to provide consumers with reliable, and secure and affordable power and meet the need for storage options to manage daily and seasonal variations in the output from solar and wind energy generation.

Strategy, plan, or policy	Description and purpose	Project alignment
	storage. Approximately 46 GW/640 GWh of dispatchable storage capacity is needed by 2050.	
State context		
Net Zero Plan Stage 1: 2020-2030	The Net Zero Plan Stage 1: 2020-2030 is the foundation for New South Wales's action on climate change and goal to reach net zero emissions by 2050. It outlines the New South Wales Government's plan to grow the economy, create jobs and reduce emissions over the next decade.	The project would contribute to meeting Australia's commitments through the storage of energy and contribute to grid stability and reliability as New South Wales develops a greater dependence on renewable energy.
New South Wales Electricity Strategy 2019	The New South Wales Electricity Strategy (NES) aims to address key challenges in providing "a reliable, affordable and sustainable electricity future that supports a growing economy". The strategy supports approximately $8 billion of private investment in the New South Wales electricity system over a 10-year period, including $5.6 billion in regional New South Wales. The plan also aims to generate 1,200 jobs, predominantly in regional New South Wales (Department of Planning, Industry and Environment, 2019).	The project is consistent with the NES as it provides storage of energy that, in combination with other renewable projects, is expected to assist with stabilising or managing the increase of the price of power.
New South Wales Electricity Infrastructure Roadmap 2020	The Electricity Infrastructure Roadmap is the New South Wales Government's plan to transform our electricity system into one that is affordable, clean and reliable. The roadmap emphasises the need for New South Wales to transition to renewable energy and aims to replace New South Wales's ageing coal-fired power stations with a coordinated portfolio of energy generation, storage and network investment. The roadmap is expected to help reduce New South Wales electricity emissions by 90 million tonnes by 2030 and support New South Wales to deliver on its net zero by 2050 ambitions (NSW Energy, 2020).	Firming capacity is required in the NEM to fill supply during network interruptions and where renewable generation is intermittent. Battery energy storage systems provide this function by storing excess energy generated during times of low demand and discharging energy back into the grid during periods of peak demand.
Regional context		
Riverina Murray Regional Plan 2041	The Riverina Murray Regional Plan 2041 is an update to the Riverina Murray Regional Plan 2036, which provided the New South Wales Government's vision for land uses in the Riverina Murray region. The updated regional plan is a 20-year land use plan with a targeted delivery focus on the next five years. The overarching regional document that informs the local strategies and plans. Planning for the Riverina Murray is	The project aligns with Objective 11: 'Plan for integrated and resilient utility infrastructure' by contributing energy storage infrastructure in a location that is co-located with other electricity infrastructure and

Strategy, plan, or policy	Description and purpose	Project alignment
	focused on its unique environment, which is strongly influenced by its vast waterways, its growing regional cities and riverfront communities and the diversification of the region's economy. The region is well placed to contribute to a net zero state.	responds to site specific constraints and opportunities. The project also demonstrates consistency with Objective 13: 'Support the transition to net zero by 2050' which requires greater renewable electricity generation, transmission and storage.
Local context		
Wagga Wagga Local Strategic Planning Statement – Wagga Wagga 2040	The Local Strategic Planning Statement (LSPS) sets the long-term strategic framework for planning and development in the City of Wagga Wagga LGA over the next 20-years. The LSPS maps the Northern Growth Area as the area that will be focused on for growth through urban release. The plan focuses on sustainable growth (Principle 3) and a growing economy supported by sustainable infrastructure (Principle 7). The plan highlights circular economy opportunities that will target maximising resource optimisation, reducing waste and promoting green energy options. The plan identifies renewable energy and tourism as two industries with specific potential in or around Wagga Wagga.	The site is located outside of the Northern Growth Area. However, the plan provides an avenue for consideration of growth outside of the priority areas. Although the LSPS does not identify or make comment on the Southern Growth Area, it is understood that strategic planning is currently underway for this area and Council is in receipt of two planning proposals to rezone land to the north and north west of the site for residential purposes (refer to **Section 7.3.1**). The project aligns with the vision for Wagga Wagga to continue to grow sustainably, protecting the natural environment and providing new opportunities for more diverse industries, including renewable energy.

3.2 Key risks or hazards

Known key risks or hazards in the area, that have the potential to affect the site are outlined below.

Flooding	A review of Wagga Wagga Major Overland Flow Floodplain Risk Management Study and Plan (MOFFS) (City of Wagga Wagga, 2021) shows the development site is subject to a peak flood depth of less than 150mm for all modelled flood extents (0.2 EY, 10/5/2/1/0.5/0.2% AEP and probable maximum flood (PMF), no constraints in terms of hydraulic hazard for 0.2/1/5% AEP events and that the indicative development footprint of the project is located outside the flood planning area (FPA) (refer to **Section 7.3.6**).
Bushfire	Based on bushfire prone land mapping, the site does not contain vegetation that is categorised as a bushfire hazard, however, the site is partially mapped within the vegetation buffer zone (refer to **Section 7.4.1**).
Contamination	No known contaminated sites have been identified within or near the (refer to **Section 7.4.1**).
Climate change	The site is projected to experience a 0.6 degrees Celsius increase in the daily average temperature in the near future (2020-39) and a 1.9 degrees Celsius increase in the far future (2060-79) (AdaptNSW, 2022). Rainfall is projected to change by -9 to +13 per cent per year in the near future (2020-39) and by -8 to +19 per cent per year in the far future (2060-79) (AdaptNSW, 2022). Average fire weather is projected to increase in summer and spring and severe fire weather days is projected to increase in summer and spring in the near future (2020-39) and far future (2060-79) (AdaptNSW, 2022).

3.3 Cumulative considerations

Wagga Wagga has attracted the interest of solar and other electricity generating related developments over the past decade given the proximity of major transmission lines and existing electricity substations within the region. These projects include:

- approved 100-megawatt Bomen Solar Farm (SSD-8835), approximately 15 kilometres northeast of the site
- approved 47-megawatt Gregadoo Solar Farm (SSD-8825 and SSD-8825-Mod-2) immediately northeast of the site
- proposed Maxwell Downs Solar Farm (SSD-45083695) 9.5 kilometres southwest of the site
- proposed 200-megawatt Uranquinty Solar Farm (SSD-12154491), approximately 14 kilometres west of the site
- recently proposed 160-megawatt Mates Gully Solar Farm and battery storage (SSD-43606694), approximately 27 kilometres east of the site
- proposed Project EnergyConnect (NSW – Eastern Section) undertaken by Transgrid and ElectraNet (SSI-9172452). This project comprises of approximately 375 kilometres of new 330-kilovolt double circuit transmission line and approximately 162 kilometres of new

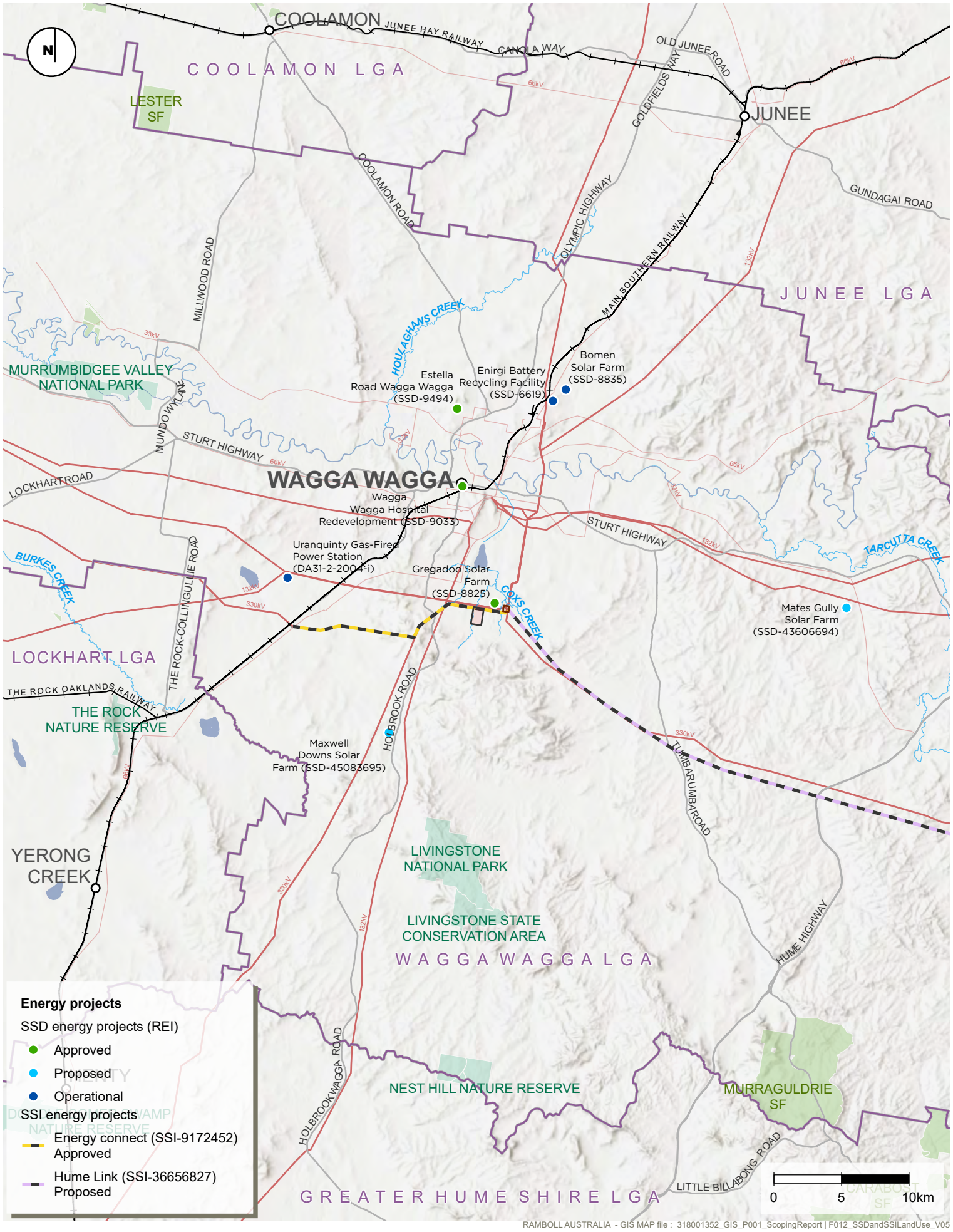
500-kilovolt double circuit transmission line and associated infrastructure between the existing Buronga substation and the existing Wagga Wagga substation (including the new Dinawan 330-kilovolt substation proposed approximately 30 kilometres south of Coleambally)

- proposed HumeLink undertaken by Transgrid (SSI-36656827). This project would include the augmentation of the existing Wagga Wagga substation 1.4 kilometres east of the site, a new Gugaa 500-kilovolt substation located 15 kilometres east of the Wagga Wagga substation, and a new transmission line circuit as part of the development of new high voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle.

These nearby SSD and State Significant Infrastructure (SSI) energy projects are shown on **Figure 3-1**.

The project is close to Wagga Wagga substation which will facilitate efficient connection to the NEM. Project EnergyConnect (SSI-9172452) includes the upgrade and expansion of the Wagga Wagga substation approximately 1.4 kilometres east of the site, and the proposed connection point for the project to the NEM.

Cumulative considerations within the context of these projects and other non-energy related projects have been included in **Chapter 7** of this report and will be investigated during the preparation of the EIS.



RAMBOLL AUSTRALIA - GIS MAP file : 318001352_GIS_P001_ScopingReport | F012_SSDandSSILandUse_V05

KEY

- Site boundary
- Existing electricity transmission line
- Existing 330kV Transgrid substation
- Railway
- Waterway
- LGA boundaries
- National Parks and Reserves
- State Forest

Figure 3-1 | Nearby SSD and SSI energy projects

3.4 Site selection and justification

A summary of the key technical, functional and environmental factors considered as part of the site selection is presented in **Table 3-2**.

Table 3-2: Key factors consideration in site selection

Factor	Considerations and justification
• **Technical feasibility**	
Suitability of land topography for the BESS and associated infrastructure	• The site has a slight north-western aspect and an elevation ranging from 220-245m above sea level. Suitable space is available for infrastructure and access for construction and operation. • Access to the site is available via Boiling Down Road, secondary emergency access is available via Redback Road. • Terrain is generally flat in areas proposed for development. • Further investigation is required to confirm requirements for public road upgrades for haulage routes.
Landholder discussions and property constraints	• The site comprises three parcels of land, owned by one landholder. Project infrastructure would be located on freehold land. • There are existing structures on site (but not within the potential developable area), including rural dwellings and sheds which will not be impacted by the operation of the BESS. • VEA has been in discussions with the landholder since 2018. • The land is predominantly cleared for agricultural purposes. The land can be appropriately rehabilitated and without significant impediment following the decommissioning of project infrastructure at the end of its practical life.
Availability and capacity of connection to the NEM	• The project is in proximity to existing electrical grid infrastructure including high voltage transmission lines traversing the site and the Transgrid Wagga Wagga 330kV substation approximately 1.4 km to the east of the site providing opportunity for efficient export of energy to the NEM. • Connection to the NEM would be available via an underground high voltage transmission line.
• **Site and environmental constraints**	
Renewable Energy Zones	• Although the site is not located in a nominated renewable energy zone (REZ), renewable projects are able to be developed in other parts of the state that have good connections to existing grid infrastructure. • Most existing solar and wind development in New South Wales is outside an REZ and continued development

Factor	Considerations and justification
	outside the REZs will be required to support the transition to renewable energy. • The site was selected given the proximity to Wagga Wagga substation and absence of any major red flags at the time of preliminary environmental investigations (details in this table).
Proximity to regional centres	• State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP) maps Wagga Wagga as a regional city that is important for the sustainability and growth of regional New South Wales. • The intention of mapping regional cities within the Transport and Infrastructure SEPP in the context of development applications for electricity generating works, is to make sure developments: ○ avoid significant conflict with existing or approved residential or commercial uses of land surrounding the development, and ○ avoid significant adverse impact on the regional city's capacity for growth, or scenic quality and landscape character. • The project is consistent with the objectives of the Transport and Infrastructure SEPP when considering the location of the site within Wagga Wagga as a regional city noting the following: ○ The project site is within the southernmost extent of the mapped region of Wagga Wagga so would not fragment land further south of the city centre. ○ The project has been refined since inception (i.e., removal of solar farm component and refined development footprint) to avoid potential land use conflict and not constrain Wagga Wagga City's capacity to accommodate population growth. The site is in proximity to other large-scale infrastructure including the Transgrid substation to the east and the council owned Gregadoo Waste Management Centre. ○ As part of Project EnergyConnect (NSW-Eastern Section) (SSI-9172452), additional large scale electrical infrastructure including 500kV double circuit transmission lines and associated towers will form part of the existing environment. ○ The project is within a 1 km buffer of the Gregadoo Waste Management Centre which protects the adjacent land from future

Factor	Considerations and justification
	urban encroachment and means that the site is not suitable for residential development itself. ○ The project is within a prescribed rural zone under the same Transport and Infrastructure SEPP, and electricity generating works are permissible on any land in a prescribed rural zone. • The above-mentioned infrastructure and nearby special land uses suggest existing constraints and conflicts for the site when considering opportunities for residential intensification. Instead, the site lends itself to the project and is in keeping with the surrounding infrastructure and planned infrastructure required to support Australia's transition to renewable energy. • The project proposes investment in the region for new dispatchable energy storage in proximity to existing transmission infrastructure, contributing to growth in the regional economy. • The project would allow for the appropriate rehabilitation and return of the site to rural or other suitable land use at the end of its operational life without limiting Wagga Wagga's capacity for future growth.
Important agricultural land	• Important agricultural land includes Biophysical Strategic Agricultural Land (BSAL), Critical Industry Clusters and land with soil capability classes 1, 2 and 3. The site is mapped as both Class 4 and Class 6 under the land and soil capability (LSC) assessment scheme developed by New South Wales Office of Environment and Heritage (OEH, NSW, 2012). The site is not mapped as containing BSAL. These land classes are discussed further in **Section 7.3.1.** • The potential loss of a small area of agricultural land is balanced by the economic benefits of the project in an area with available capacity on the existing electricity network. The site would also be appropriately rehabilitated to return the land to its pre-existing use after decommissioning of the project if opportunity to renew the infrastructure was not pursued by VEA at the end of the project life.
Visibility and topography	• Development of the project on primarily flat agricultural land means that preservation of rural and urban landscapes could still be achieved through appropriate mitigation measures such as the provision of vegetation screening in strategic locations within the site. • The site is located a significant distance from the scattered rural dwellings along the undulating landscape to the south, limiting visibility of the project.

Factor	Considerations and justification
	• The site and adjacent land benefits from existing remnant vegetation and roadside vegetation which provides natural screening and breaks in potential views to the project.
Biodiversity	• Large areas of the site are disturbed/grazing and improved pastures and native vegetation is restricted to patches of woodland and paddock trees. • Riparian vegetation associated with drainage channels within the site boundaries is generally sparse and comprised of mainly fragmented woodlands and are avoided by the project. • The site is highly modified due to intensive agricultural development, with the groundcover dominated by exotic species. As such, the site is considered highly degraded and unsuitable for many species. • The Superb Parrot has been found to occur in the locality and a potential habitat tree exists within the development site, however the developable footprint of the project has been refined to avoid this potential habitat tree. • A small patch of plant community types (PCT) Blakely's Red Gum within the northeast part of the site has also been avoided.
Aboriginal heritage	• Aboriginal heritage sites tend to be found along permanent water sources, along access or trade routes, or in areas that have good flora or fauna resources and appropriate shelter for Aboriginal occupation. • The only named drainage line within the project site is Crooked Creek. There are two unnamed ephemeral tributaries to Crooked Creek also within the project site. • There are no topographic features beyond the minor waterways that would have attracted Aboriginal occupation in the past. • Buffers around drainage lines within the site would be avoided by the project infrastructure.
Natural hazards – bushfire, flooding and land instability	• The site does not contain vegetation that is categorised as a bushfire hazard. Land to the east and land to the south of the site is identified as vegetation category 1 and category 2. • A review of Wagga Wagga MOFFS (City of Wagga Wagga, 2021) shows the development site is subject to a peak flood depth of less than 150mm for all modelled flood extents (0.2 EY, 10/5/2/1/0.5/0.2% AEP and PMF), no constraints in terms of hydraulic hazard for 0.2/1/5% AEP events and that the indicative development footprint of the project is located outside FPA.

Factor	Considerations and justification
	• The parts of the site impacted by higher order natural drainage channels including Crooked Creek are avoided by the project. • A detailed assessment of flood behaviour and the impacts of the project on flooding will be assessed in the EIS. • The location of the BESS is unlikely to contribute to an increase in risk of a natural hazard.

In consideration of the key factors outlined in **Table 3-2**, there have been ongoing refinements to the project throughout the early design and scoping stage.

As part of the ongoing refinement process, preliminary field surveys and a preliminary biodiversity assessment for the site was undertaken and included consultation with the Department of Planning and Environment Biodiversity and Conservation Division. Through this process, VEA identified that portions of the site were potential habitat for the Superb Parrot which is listed as vulnerable under the EPBC Act. Further, preliminary constraints assessment prepared by OzArk found that significant Aboriginal objects are unlikely to be identified in the site.

The project development footprint has been refined to:

- avoid remnant vegetation removal within buffer areas
- adopt a notable set back (180 metres) from the primary road frontage along Boiling Down Road to minimise impacts on visual amenity
- avoid important drainage channels and exclude riparian areas from the developable footprint
- concentrate development in areas where the vegetation has already been removed and avoid disturbance to the existing landform and vegetation within the eastern portion of the site.

The above-mentioned refinements have resulted in the project avoiding impacts on the hydrology, ecological values and potential impacts on amenity for the existing and surrounding land uses.

3.5 Project need

New South Wales is currently undergoing an energy sector transformation. The NEM (managed by the Australian Energy Market Operator (AEMO) is transitioning from a system dominated by a small number of large coal-fired generators to one of diverse renewable and distributed energy generation and storage. Modelling indicates that 14 GW (60 per cent of current coal capacity) may be withdrawn by 2030 and all coal generation could withdraw by 2040 (Australian Energy Market Operator, 2022).

The closure of large coal-fired power stations has the potential to put pressure on the future supply of energy, particularly when considering that electricity consumption in New South Wales is forecast to increase in the future (Australian Energy Market Operator, 2022). This highlights the urgent need to develop and connect new renewable energy infrastructure to the NEM, noting that more renewables are required to replace conventional generators due to their lower capacity factors due to the intermittency of the electricity that they produce (Australian Energy Council, 2017).

The project has undertaken due diligence, preliminary investigations and discussions with landholders and key stakeholders, including with Department of Planning and Environment

(Biodiversity and Conservation Division), Transgrid and Wagga Wagga City Council, refer to **Chapter 6** for further information about the consultation activities undertaken for the project. As part of early investigations, VEA carried out preliminary assessments of potential sites for the project as well as potential options for the required infrastructure. An indicative development footprint was identified and then significantly refined through consideration of constraints, technical feasibility, stakeholder consultation and potential impacts on the local community and environment.

The project is justified because:

- it is close to Transgrid's 330kV substation which will facilitate efficient connection to the NEM
- it would contribute to energy security, in line with Commonwealth and New South Wales Governments environment goals and energy targets
- it would help provide stability to the supply of energy to the NEM in a location that is near to existing infrastructure, at a time where older generation projects are retiring
- it would contribute indirectly to employment opportunities within Wagga Wagga
- it would not result in significant environmental, social or economic impacts.

The consequences of not proceeding with the project would include:

- loss of opportunity to reduce greenhouse gas emissions and move towards cleaner electricity generation
- loss of additional electricity storage and supply into the NEM
- loss of social and economic benefits created through the provision of direct and indirect employment opportunities during the construction and operation of the project, as well as flow on social and economic benefits.

4. THE PROJECT

4.1 Project overview

The project would comprise a BESS with a total capacity of approximately 400MW with two hours of storage (400MW/800MWh) and would contribute up to 800MWh storage capacity to the NEM.

The BESS will be connected to the electricity network via a substation to be constructed within the site and then to the existing 330kV Transgrid substation located approximately 1.4 kilometres to the east of the site. Connection to the Transgrid substation would likely be via an underground high voltage transmission line to be located either within an existing or new electricity easement on the southern side of Boiling Down Road.

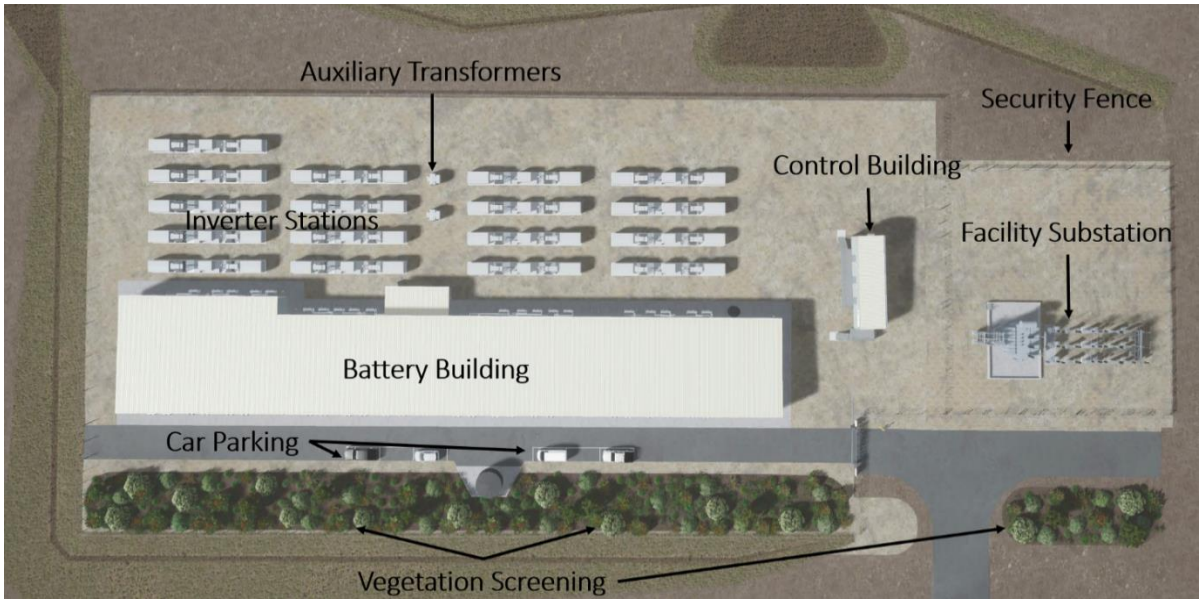
The project would be located at the corner of Redbank Road and Boiling Down Road.

The project would include the following key components:

- electrical infrastructure including:
  - a BESS comprised of batteries installed in a building or enclosures/containers and associated ancillary infrastructure
  - PCSs, including inverters, transformers and switchgear
  - a project substation and control room within the developable footprint
  - underground and overhead electrical reticulation connecting the battery containers to PCSs, the PCSs to the substation, and an underground or overhead high voltage transmission line from the substation to Transgrid's electricity transmission network
  - other electrical infrastructure as required
- other permanent on-site ancillary infrastructure:
  - control room
  - site office
  - maintenance and spare parts storage facility including a maintenance workshop
  - onsite carparking area
  - weather stations
  - lighting and closed-circuit television (CCTV)
  - security fence around the site perimeter and vegetation screening where required
  - lightning protection
- access track network
  - access and egress points from public roads
  - internal access tracks
- temporary construction ancillary facilities
  - construction compounds
  - laydown areas
  - construction access tracks and associated infrastructure.

At the end of its operational life, and according to equipment performance, equipment condition and project viability, VEA would consider whether to either repower or decommission the project. If the project was to be decommissioned, the land that is impacted by the project would be appropriately rehabilitated.

Key components of the project are discussed in more detail in **Section 4.2**. An example of a BESS project layout is presented in **Figure 4-1**. It should be noted that the locations presented are for illustrative purposes only and are subject to change, and will be investigated during preparation of the EIS, detailed design and in consultation with relevant stakeholders.



Source: Vena Energy 2022

Figure 4-1: Example BESS layout

4.2 Project components

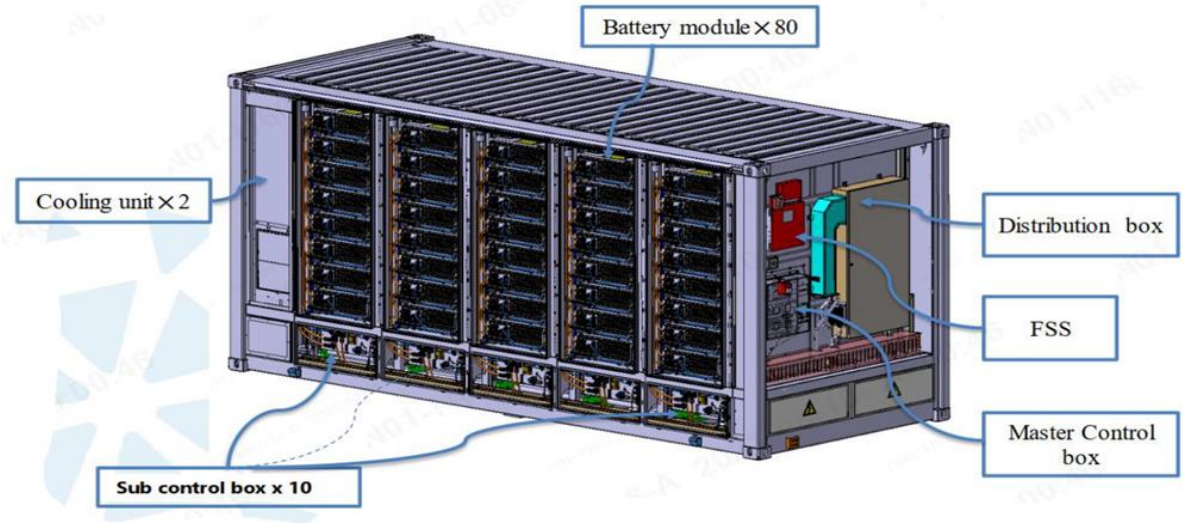
4.2.1 Battery energy storage system

The BESS would allow for the storage and export of energy within the NEM so that it can be used during times of peak demand. It would also provide various market ancillary services to the NEM, assisting in network stabilisation and facilitating higher volumes of renewable energy generation.

Battery modules are individual cells that hold the stored energy, and each module is controlled to charge and discharge the energy required. Modules are installed in racks, which in turn are connected in strings, and strings of batteries are connected to the inverter stations.

The BESS is expected to include a combination of buildings or containers housing the batteries, PCSs, and a range of cables providing a total capacity of approximately 400MW/800MWh. The specific height of structures within the battery area are not expected to exceed seven metres in height. Connections between the battery racks and inverter stations, and between the PCSs and the substation will be made with underground or above-ground cables or overhead conductors.

Layout and componentry are still being investigated and will be confirmed during detailed design. One example of a single battery storage container would be approximately 2.5 metres wide, 2.9 metres high and 6.1 metres long, however different battery suppliers provide different sized components. Another example is housing the batteries inside buildings being approximately 20 metres wide, 110 metres long and 7 metres high. An illustration of a battery storage container is in **Figure 4-2** and a BESS in a building configuration is presented in **Figure 4-3**.



Source: Contemporary Amperex Technology Co,. Limited

Figure 4-2: Example of a battery storage container

Source: Vena Energy 2022

Figure 4-3: Wandoan South BESS, a 100MW/150MWh BESS facility in Queensland, including project substation

Commercial scale battery storage is a relatively new technology that is rapidly evolving and decreasing in cost, and the final technology choice and battery storage capacity for the project is subject to final selection and detailed design.

4.2.2 Substation, reticulation, and grid connection

The substation compound will include switchgear and control building, housing protections, metering, control panels, power transformers, earthing/auxiliary transformers, outdoor switchgear, cable termination structures and security fencing.

Underground or above-ground cables would run from each PCS to the project substation, where the voltage would be transformed to align with the voltage of the transmission network. The project substation would be connected to the NEM via the existing Transgrid 330kV substation located approximately 1.4 kilometres to the east of the site.

The footprint of the BESS and project substation would have a combined area of approximately 10 hectares that would be sited within the indicative development area within the project site which is shown on **Figure 2-1**. The connection to the Transgrid 330kV substation would be via the proposed transmission line route corridor which would run to the south of Boiling Down Road to the existing substation as shown in **Figure 2-1**.

The works required to facilitate the grid connection for the project within the Transgrid substation would involve the installation of 330kV switchgear (circuit breakers, disconnectors and earth switch), overhead busbars and cable and a cable termination structure.

4.2.3 Permanent on-site ancillary infrastructure

In addition to the infrastructure described above, a compound area of approximately one hectare would be required to service the BESS for the life of operation. The compound would house the substation and control room along with the following ancillary infrastructure:

- an administration building including meeting facilities and amenities
- operations and maintenance workshop
- spare parts storage facility
- onsite car parking area to be located near the administration building.

In addition, the following ancillary infrastructure would be provided within the site:

- permanent lighting and CCTV
- security fencing and vegetation screen
- lightning protection.

The buildings would be single story structures up to 8.5 metres high. These structures would be set back from the road frontages and sited near the primary site access point to allow for ease of access for the workforce and provide sufficient area for the BESS and substation maintenance, however no infrastructure is proposed within the existing transmission easement. The final location and configuration would be subject to detailed design.

The compound area facilities would be connected to the local electricity supply to provide amenities for the administration and control buildings. On-going water requirements would be provided for within the compound area via rainwater tanks. Ongoing water requirements would include amenities (with appropriate pumps and filters), and firefighting requirements. When insufficient rainwater is received to fill the rainwater tanks, an alternative source through water tanker would be required.

On site sewerage treatment would be provided by either an aerated wastewater treatment system, a composting system or pump-out tank system. The sewerage treatment solution would be provided in accordance with Council requirements and preferences, and location of the system would be determined based on the detailed design for the project. Discussions with Council to date has indicated conventional septic would suffice given the modest and infrequent loads.

Lighting and CCTV would be installed for the duration of the operational life of the project and would include low level night-time lighting. Lighting would be required for safety, maintenance, and security purposes and would likely be provided in key locations around the compound area and potentially at other locations on site. Lighting outside of these key locations would only be switched on if maintenance activities are required at night.

Security fencing would be installed along the perimeter of the site along with a vegetation screen where required. Separate fencing would also be provided around high voltage electrical equipment such as the substation. The final fence dimensions will be investigated during detailed design however, the height of the fencing is not anticipated to be greater than about three metres. Signage will be clearly displayed identifying hazards present.

Lightning protection masts would be installed in the substation and may also be installed at some inverter stations and within the substation yard, with the final number and siting to be determined during detailed design and dependent on meteorological conditions at the site. The lightning protection masts are typically thin, tubular structures, and approximately 15 metres tall, with a concrete base and earthing.

The specific locations for the permanent onsite ancillary infrastructure would be confirmed during detailed design of the project and would be located entirely within the developable footprint.

4.2.4 Access track

The BESS would require an access track to enable both access to the site from the surrounding road network (Boiling Down Road and Redbank Road), and access between infrastructure within the site. Primary access will be from Boiling Down Road with a secondary emergency access from Redbank Road. All site access arrangements would be developed in consultation with Wagga Wagga City Council.

Internal access arrangements would allow for sufficient vehicle manoeuvring, including large vehicle deliveries within the site. All access tracks would be unsealed and approximately four metres wide. Gates would be installed where the internal access tracks meet the public roads to restrict access.

The access tracks would be appropriately designed, constructed, and maintained for the life of the project. The design of the access tracks, including access points from the public road network, is subject to detailed design.

4.3 Property and easements

The site would comprise one private property (233 Boiling Down Road, Rowan).

The high voltage transmission line (overhead or underground) connecting the project to Transgrid's 330kV substation would run east either within an existing or new easement, through the Gregadoo Waste Management Centre, south of Boiling Down Road for approximately 1.4 kilometres. An easement (or other agreement) for the transmission line would be required.

4.4 Construction

4.4.1 Overview

The project is expected to be delivered in the following phases:

- phase 1 – Detailed design and site investigations: Detailed design, including the design of electrical reticulation, geotechnical design, and other project elements
- phase 2 – Site preparation: Pre-construction activities such as site access, preparation and vegetation clearing, installation of environmental management measures (such as erosion and sediment controls) and protection mechanisms for watercourses and exclusion zones and utility provisions

- phase 3 – Main construction works: Onsite civil works including access tracks and permanent drainage works, BESS and electrical infrastructure construction, installation of electrical reticulation and ancillary infrastructure
- phase 4 – Commissioning: Activities to be undertaken prior to operation.

4.4.2 Temporary construction ancillary facilities

Several temporary construction ancillary facilities would be required during construction. These would typically include:

- construction compounds – inclusive of site offices, car parking and amenities
- laydown areas – suitable for plant and equipment
- construction access tracks and associated infrastructure such as gates and fencing.

During construction, part of the compound area would be used as a laydown area and would also house the facilities required for the construction stage, such as the site offices and associated buildings. The laydown area would be temporary in nature.

The locations of all temporary infrastructure will be determined following detailed site investigations which are scheduled to occur as part of the preparation of the EIS.

4.4.3 Haulage routes

Investigations into the suitable access route for construction, including any necessary road upgrades, would be undertaken in consultation with Wagga Wagga City Council and Transport for New South Wales (TfNSW). It is anticipated that materials would primarily arrive via the most effective route and transported to site by heavy vehicles up to B-double in size, however some oversize over mass vehicles may also be required.

The site will be accessed from Boiling Down Road. Wagga Wagga City Council has indicated in initial consultations that heavy vehicle movements on Plumpton Road should be avoided. Traffic and transport is discussed further in **Section 7.3.5** and will be investigated further in the EIS.

4.4.4 Construction program and workforce

The timing of construction would be dependent on project approval however it is expected to take up to approximately 12 months.

The project would likely require approximately 100 construction workers during peak periods, which are expected to be during phase 3 of the project when the main construction works would be undertaken (refer to **Section 4.4.1**). However, the construction program and workforce are subject to detailed design, construction methodology and scheduling.

Opportunities would be available for local construction workers to maximise the local work force onsite. Further details will be included in the EIS, including a consideration of the potential cumulative impacts associated with accommodation, infrastructure, and services as part of the social impact assessment. Due to the proximity to Wagga Wagga the approach to accommodating the construction workforce for the project would be to coordinate with commercial providers of temporary accommodation services such as motels, hotels and caravan parks, as well as smaller providers of short and long-term rental accommodation. The project does not propose the construction of an on-site accommodation camp. An accommodation strategy would be developed as part of the EIS.

4.5 Operation and decommissioning

The project would likely operate unmanned on a day-to-day basis, 24 hours per day, seven days per week. The operations and maintenance team would attend site as necessary for preventive and corrective maintenance during standard working hours unless responding to an alarm, fault, or major maintenance works. Ongoing monitoring and maintenance would be required, including maintenance of infrastructure, vegetation, and internal access tracks.

The project would require six to 10 staff on the basis of one full week each month. There will also be certain activities such as inverter or substation maintenance which could see an additional two to six people on site for two to three weeks during the year. A cleaner would also attend the site periodically week.

Most of the maintenance roles will be filled by electricians however there will also be a requirement for cleaners, pest control, grounds keeping/vegetation management.

The expected operating life is 20 years before major replacements or refurbishments would be required. At a point in time prior to the end of the projects operating life, and according to equipment performance, equipment condition and project viability, VEA would consider whether to either repower or decommission the project at the end of the project's life. The potential of the project to operate past the original life span will depend on the market conditions and the condition of the BESS equipment at the time.

Should it be determined that the project would be decommissioned, associated infrastructure would be decommissioned and removed for sale, recycling or disposal. Access tracks and hardstand areas would be remediated to prepare a suitable soil profile for subsequent sowing with an appropriate ground cover mix. Land affected by the project would be appropriately rehabilitated.

4.6 Project staging, timing and sequencing

The anticipated staging and timing of the project is summarised in **Table 4-1**.

Table 4-1: Project staging and indicative timing

Stage	Indicative timing
Planning and approvals process	In progress with the aim to be completed by 2024
Construction	2025-2026
Operations	2026-2046 (with the potential for extension if the facility is re-powered at the end of its operational life)
Decommissioning	At the end of its operational life

4.7 Alternatives considered

4.7.1 Do nothing

The 'do nothing' approach represents the option of not developing a BESS or another type of renewable energy project in a similar location, or investment in another renewable energy project. This option would avoid all the impacts of the project however, would also not deliver the potential benefits of the project (refer to **Section 3.5**). The 'do nothing' option is not discussed further.

4.7.2 Alternate renewable energy projects

Consideration was given to the type of development that would best suit the environmental conditions, whilst having regard to the local community and other environmental constraints.

A large-scale solar project was investigated as an additional use for the site. VEA commissioned a range of technical consultants between 2018 and 2022 to investigate the potential constraints and opportunities for the site in relation to a potential large scale solar project which would cover an area of approximately 398 hectares.

As a result of ongoing consultation with Wagga Wagga City Council, adjoining landowners and other various stakeholders, together with responding to the constraints of the site and potential land use conflicts, the large-scale solar project was not considered viable for the site.

4.7.3 Alternative layouts

Alternative layouts and locations for the BESS project have been considered, with refinements made to avoid or minimise environmental and social constraints such as removing all infrastructure from the previous larger site area which included land north of Boiling Down Road. The reduced development footprint and removal of the solar component was in response to the emergence of the Southern Growth Area, south of the city (described in **Section 7.3.1)** to help accommodate the city's targeted population growth. Avoiding the area to the north of Boiling Down Road also provides for maximum separation between the proposed BESS and residential land uses further north.

Project infrastructure has been located to the north-eastern part of the site to avoid remnant vegetation, creek lines and maintain proximity to the Transgrid substation and access to public roads.

The site is located within the one kilometre buffer zone from Gregadoo Waste Management Centre which would prevent residential development within the site itself (refer to **Section 7.3.1**)

Further refinements layout will be made during preparation of the EIS in response to the findings of detailed assessments and feedback from engagement, with the view to avoid or minimise environmental impacts.

5. STATUTORY CONTEXT

The key statutory considerations for the project under the EP&A Act and other relevant New South Wales and Commonwealth legislation are outlined in **Table 5-1**. The relevant statutory requirements for the project would be outlined in further detail within the EIS.

Table 5-1: Statutory requirements for the project

Matter	Requirements for the project
Power to grant consent	The project meets the threshold for SSD and is subject to assessment under Part 4 of the EP&A Act. Approval for the project would be sought under Part 4, Division 4.7 of the EP&A Act. Under Section 4.36(2) of the EP&A Act, a State Environmental Planning Policy (SEPP) may declare any development, or any class or description of development, to be SSD. Under the provisions of Clause 2.6(1) of the Planning Systems SEPP, a development is classified as SSD if: (a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the EP&A Act, and (b) the development is specified in Schedule 1 or 2. Schedule 1, Clause 20 of the Planning Systems SEPP determines 'electricity generating works' to be SSD if it meets the following criteria: Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power): (a) has a capital investment value of more than $30 million. 'Electricity generating works' means: a building or place used for the purpose of— (a) making or generating electricity, or (b) electricity storage. The project is a development for the purpose of electricity generation and exceeds the threshold for SSD with a capital investment value of more than $30 million. Under Division 4.2, Section 4.5 of the EP&A Act the consent authority for the project would be the Minister for Planning and Homes.

Matter	Requirements for the project
Permissibility	The permissibility of BESS developments in New South Wales is determined by the Transport and Infrastructure SEPP. Clause 2.36(1) of the Transport and Infrastructure SEPP provides that development for the purpose of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone (including RU1 Primary Production zone). The project site is located on land zoned as RU1 Primary Production under the Wagga Wagga Local Environmental Plan 2010 (Wagga Wagga LEP) and is permitted with consent. Clause 2.42 sets provisions that the consent authority must have regard to when determining a development application for electricity generating works using a solar or wind energy source on land in a regional city. A regional city means an area of land identified as "subject land" on the Regional Cities Map. The site is mapped on the Regional Cities Map - Wagga Wagga. While these provisions do not prohibit the development from being proposed in the area, a consent authority must not grant development consent unless it is satisfied that the development: (a) is located to avoid significant conflict with existing or approved residential or commercial uses of land surrounding the development (b) is unlikely to have a significant adverse impact on the regional city's— (i) capacity for growth, or (ii) scenic quality and landscape character. The consent authority must also consider measures proposed to be included in the development to avoid or mitigate conflicts referred to above. The potential land use conflicts are discussed in **Section 7.3.1** and will be investigated in detail in the EIS. The potential for the project to impact on landscape character and scenic quality are outlined in **Section 7.4.1**. **Section 3.4** sets out the site selection and justification of the project. Under Clause 2.7(1) of the Transport and Infrastructure SEPP, the provisions of the SEPP prevail where there are inconsistencies with other environmental planning instruments, including local environmental plans.

Matter	Requirements for the project
Other approvals	**Approvals not required for SSD** Clause 4.41 of the EP&A Act clarifies that development consent for SSD includes authorisations under the following statutory provisions, meaning that separate planning approval processes do not apply for: • a permit under section 201, 205 or 219 of the *Fisheries Management Act 1994* (FM Act) • an approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977* (Heritage Act) • an Aboriginal Heritage Impact Permit (AHIP) under section 90 of the *National Parks and Wildlife Act 1974* (NPW Act) • a bushfire safety authority under section 100B of the *Rural Fires Act 1997* (RF Act) • a water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000* (WM Act).
	EPBC Act Approval Any action which could have a significant impact on any MNES must be referred to the Minister for the Environment and Energy. The nine MNES protected under the EPBC Act are: • World heritage properties • National heritage places • wetlands of international importance (listed under the Ramsar Convention) • listed threatened species and ecological communities • migratory species protected under international agreements • Commonwealth marine areas • The Great Barrier Reef Marine Park • nuclear actions (including uranium mines) • a water resource, in relation to coal seam gas development and large coal mining development. A search of the Commonwealth Protected Matters Search Tool (PMST) was completed in January 2023. A referral to DCCEEW for potential impacts to MNES under the EPBC Act is unlikely.
	Environmental protection licence Under Section 48 of the *Protection of Environment Operations Act 1997* (POEO Act), an Environment Protection Licence (EPL) from the New South Wales Environmental Protection Authority (EPA) is required for scheduled activities listed in Schedule 1. 'General electricity works' is listed under Schedule 1 of the POEO Act. 'General electricity works', meaning the generation of electricity by means of electricity plant that, wherever situated, is based on, or uses, any energy source other than wind power or solar power. The project is therefore not a scheduled activity and would not require an EPL.

Matter	Requirements for the project
	Road approvals An approval is required under Section 138 of the *Roads Act 1993* (Roads Act) to permit the erection of a structure or carry out a work in, on or over a public road. These would be obtained prior to the commencement of relevant works. Any road upgrades required for the project and impact assessment of the upgrades would be assessed and identified in the EIS.
	Biodiversity Offsets Scheme Entry into the Biodiversity Offset Scheme (BOS) is automatically triggered for SSD projects. The biodiversity assessment which would be prepared to accompany the EIS would provide a discussion of the management and protection of listed threatened species of native flora and fauna and threatened ecological communities (TECs) and, where required, assess biodiversity offsets consistent with the BOS.
	Water access licences Water access licenses may be required for the project. Water sources for construction and operations would be identified and quantified within the EIS. Detailed investigations would be carried out as part of the EIS to determine whether proposed earthworks would impact on aquifers or groundwater. Relevant license and approvals would be obtained prior to the commencement of construction.
	Native title Under the *Native Title Act 1993* (Native Title Act), native title claimants can make an application to the Federal Court to have their native title recognised by Australian law. There are no known claims under the Native Title Act in the areas covered by the project or the transmission line connection.
	Crown land Under the *Crown Land Management Act 2016* (CLM Act), consent from the Land Division, Department of Primary Industries (DPI) is required for works over Crown Land. Preliminary searches do not indicate Crown land to be present within the site. This will be further investigated in the EIS and the Department of Planning and Environment (Crown Land) would be consulted during the assessment process.
	Lease of premises and subdivision Easements have been established on the site for the existing infrastructure associated with the high-voltage transmission lines operated and maintained by Transgrid. Any additional easements required by the project would be created under s88B of the *Conveyancing Act 1919* (Conveyancing Act).

Matter	Requirements for the project
	Dangerous Goods Dangerous goods transportation licences would be required under the *Dangerous Goods (Road and Rail Transport Act) 2008* (DG Act) for vehicles and drivers if more than 500 litres or 500 kilograms of dangerous goods are required to be delivered to the wind farm site. Dangerous goods required to be transported during construction and operations would be identified and quantified within the EIS, and all required licences and approvals obtained prior to the commencement of relevant construction activities.
	Heavy Vehicle National Law Approvals would be required should the project require the transport of any infrastructure by over-size over-mass (OSOM) vehicles. This would be further discussed in the EIS.
Pre-conditions to exercising the power to grant consent	No pre-conditions to exercising the power to grant approval have been identified for the project. An EIS would be prepared in accordance with relevant legislative requirements and guidelines.

Matter	Requirements for the project
Mandatory matters for consideration	**Environmental Planning and Assessment Act 1979** The project is consistent with the Section 1.3 objectives of the EP&A Act, which 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, d) to promote the delivery and maintenance of affordable housing, 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, h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants, i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State, j) to provide increased opportunity for community participation in environmental planning and assessment. Section 4.15 of the EP&A Act describes the matters for consideration in assessing SSD, which includes the provisions of relevant environmental planning instruments, proposed instruments that have been the subject of public consultation, development control plans, planning agreements and statutory regulations. The assessment of SSD must also consider the likely impacts of the development, suitability of the site, any submissions received, and the public interest. These would be considered in the EIS.
	Biodiversity Conservation Act 2016 The Minister for Planning and Homes is required to take into account the impact of the development on biodiversity values as assessed in the Biodiversity Development Assessment Report (BDAR). The Minister may (but is not required to) further consider under the *Biodiversity Conservation Act 2016* (BC Act) the likely impact of the proposed development on biodiversity values.
	National Parks and Wildfire Act 1974 Governance, care, control and management of national parks, nature reserves, Aboriginal areas and historic sites are detailed under the *National Parks and Wildlife Act 1974* (NPW Act). The objectives of the NPW Act include the conservation of nature, objects, places or features such as habitats, biological diversity, landforms and places of Aboriginal, social or historical value. These objectives are achieved by applying principles of ecologically sustainable development. Impacts to biodiversity and heritage values would be assessed in more detail as part of the EIS.

Matter	Requirements for the project
	Heritage Act 1977 The *Heritage Act 1977* (Heritage Act) provides for the conservation of environmental heritage items in New South Wales. It is used to regulate the impacts of development on the State's European and Aboriginal heritage assets. Administered by the New South Wales Heritage Office, the Heritage Act details the statutory requirements for protecting historic buildings and places and includes any place, building, work, relic, movable object or precinct, which may be of historic, scientific, cultural, social, archaeological, natural or aesthetic value. A heritage impact assessment would be included in the EIS.
	Fisheries Management Act 1994 The *Fisheries Management Act 1994* (FM Act) is in place to conserve fish stocks, habitats and threatened species, populations and communities, to preserve fishery resources for future generations. The FM Act requires consideration of proposed construction and operation of the project which may affect fish passage or cause adverse impact to threatened fish species. Crooked Creek within the project site is mapped as a key fish habitat (KFH). The project footprint maintains a buffer greater than 40 metres from the banks of the first order tributary that flows to Crooked Creek. The potential impacts of the project on fish passage and threatened fish species that would be assessed is the EIS.
	Rural Fires Act 1997 The *Rural Fires Act 1997* (RF Act) aims to prevent, mitigate and supress bush and other fires whilst protecting people, property and infrastructure from damage and having regard to the principles of ecological sustainable development. Consultation is required to be undertaken with the Rural Fire Service (RFS) and local Fire Brigades to determine the features required to minimise the threat of fire both to and from the project. Based on bushfire prone land mapping, the site does not contain vegetation that is categorised as a bushfire hazard, however land to the east and to the south of the site is identified as vegetation category 1 and category 2. Bushfire risk would be considered in the context of the RF Act at all levels of the development process, from project design through to decommissioning and would be assessed in more detail as part of the EIS.
	Contaminated Land Management Act 1997 The *Contaminated Land Management Act 1997* (CLM Act) establishes a process for investigating and where appropriate, remediating land that the EPA considers to be contaminated significantly enough to require regulation under Division 2 of Part 3. Under Section 60, a person whose activities have contaminated land or a landowner whose land has been contaminated is required to notify the EPA when they become aware of the contamination. Preliminary searches indicate the project does not contain land listed on the Contaminated Lands Register.

Matter	Requirements for the project
	Soil Conservation Act 1938 The *Soil Conservation Act 1938* (SC Act) allows for conservation of soil resources and erosion management. Notices can be issued under Section 15A to control erosion or degradation. The construction of the project would follow best practice methods and a management plan would be prepared to guide soil management during construction to minimise sedimentation of downstream waterways. This would be documented further in the EIS.
	State Environmental Planning Policy (Resilience and Hazards) 2021 Part 3 of Chapter 3, 'Hazardous and Offensive Development', applies to any development which falls under the policy's definition of 'potentially hazardous industry' or 'potentially offensive industry'. As the project is for a BESS facility with a maximum capacity of approximately 800 megawatt hours, the EIS would include a preliminary risk screening in accordance with *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP) and Applying SEPP 33 (Department of Planning, 2011). If the preliminary risk screening indicates the development is "potentially hazardous", a preliminary hazard analysis (PHA) would be prepared in accordance with Multi-Level Risk Assessment (Department of Planning, 2011). The EIS would include an assessment of potential hazards and risks including but not limited to bushfire, electromagnetic interference and human health (electromagnetic field (EMF)). These potential hazards are discussed in **Section 7.4.1**.
	State Environmental Planning Policy (Biodiversity and Conservation) 2021 The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP) consolidates State Environmental Planning Policy (Koala Habitat Protection) 2020 and State Environmental Planning Policy (Koala Habitat Protection) 2021. The Wagga Wagga LGA is listed under Schedule 1 of State Environmental Planning Policy (Koala Habitat Protection) 2021 as areas to which the SEPP applies. As such, the environmental assessment would need to consider impacts to koala habitat as part of the EIS.
	Wagga Wagga Local Environmental Plan 2010 The relevant provisions of the Wagga Wagga LEP for consideration include: • Clause 2.3 – Zone objectives and land use table • Clause 5.10 – Heritage conservation • Clause 5.21 – Flood planning • Clause 7.3 – Terrestrial biodiversity • Clause 7.5 – Riparian lands and watercourses • Clause 7.6 – Groundwater vulnerability. The requirements outlined in the above clauses would be considered in the EIS as they relate to the project.

6. ENGAGEMENT

6.1 Community and Stakeholder Consultation Plan

VEA is committed to genuine engagement with the local community and stakeholders to support the building of strong relationships and establish a socially sustainable project. VEA will continue to engage with neighbours and broaden the consultation effort to include the wider local Wagga Wagga community and stakeholders throughout the EIS as more detailed information becomes available as assessments and investigations are completed.

Consultation during the development of the EIS will aim to:

- consult proactively with stakeholders using clear and consistent key messages
- continue to engage with key stakeholders to identify potential issues and opportunities
- communicate the progress of the project and key findings or outcomes of assessments
- enable stakeholders to have input into the preparation of the EIS, project planning and investigate opportunities for benefit sharing
- implement response and feedback strategies to address stakeholder concerns and use these to inform the evolution of the project.

Consultation initiated to date has been, and the engagement principles to be followed during the preparation of the EIS will be conducted in accordance with the following guidelines:

- Undertaking Engagement Guidelines for State Significant Projects (Department of Planning, Industry and Environment, 2021d)
- Social Impact Assessment Guideline for State Significant Projects (Department of Planning, Industry and Environment, 2021e)
- Aboriginal Cultural Heritage Consultation Requirements for Proponents (Department of Environment, Climate Change and Water NSW, 2010b)
- Clean Energy Council's Best Practice Charter for Renewable Energy Projects (Clean Energy Council, 2018a).

6.2 Consultation objectives

The objectives of stakeholder and community engagement are to:

- identify and engage with the local community and key stakeholders
- build a foundation of strong relationships and community support
- ensure stakeholders are informed, consulted and involved
- wherever possible, activities would continue to be conducted with emphasis on stakeholder collaboration and empowerment
- uphold the four principles set by the Clean Energy Council (accepted rules of conduct) of community engagement which include openness, inclusiveness, responsiveness and accountability
- provide an accessible complaints management process as a mechanism for feedback.

6.3 Stakeholders

Stakeholders may be affected groups or individuals that:

- live, work, or recreate near the project
- have an interest in the proposed action or change
- use or value a resource associated with the project
- are affected by the project.

6.4 Engagement to date

6.4.1 Scoping phase consultation activities

Neighbours
The approach undertaken for the community engagement during the scoping phase has been to contact and have phone as well as face to face discussions about the project with all four adjoining landholders, the closest of whom is located approximately 1.2 kilometres from the site.

Discussions have included an overview of the proposed development, including details of the indicative development footprint and its location, the planning approvals process for SSD and an invitation for these landholders to provide feedback and discuss individual concerns, interests or issues.

No issues of concern were raised by any neighbour during these discussions and the principal matter of interest raised was how VEA would manage land surplus to its requirements.

Consultation with three of these landholders commenced in late 2018 and have been continuing as the project has evolved and been refined. Discussions and meeting with the fourth neighbour began in January 2023 following a change in ownership of a property.

Aboriginal groups
Through contacts provided by Wagga Wagga City Council's Aboriginal Community Development Officer, preliminary consultation has been undertaken with seven local Aboriginal stakeholders, including co-Chairs of Mawang Gaway, Elder and Wiradjuri representatives. Discussions were had with all seven Aboriginal stakeholder representatives and an overview of the project and project site location was emailed to each, with an invitation to comment or provide feedback and an offer to meet.

An overview of the project and development site location was also emailed to Wagga Wagga Local Aboriginal Land Council.

Wagga Wagga City Council
Initial consultation with the Wagga Wagga City Council about a potential solar farm development in this locality commenced in late 2018.

Following the outcomes of preliminary investigations and ecological surveys, and after the limitations imposed by COVID-19, in April 2022 VEA had a face-to-face pre-lodgement meeting with Council's planning representatives to discuss the project. Engagement with Council since April has been regular with numerous phone discussions and face to face meetings with Council staff.

A project update and briefing meeting was held on 10 November 2022 to outline the project refinement to BESS project.

Discussions with Council since November 2022 have included conversations with planning staff, senior strategic land use planner and engineers, covering roads, water, sewerage and stormwater services.

Other Stakeholder engagement

Details of consultation undertaken with the state agencies and elected representatives during the scoping phase is outlined in **Table 6-1.**

Table 6-1: Summary of scoping phase consultation activities undertaken

Stakeholder	Date	Method	Engagement activities
State Government Departments			
New South Wales Department of Planning and the Environment (DPE)	9 June 2022	Meeting (virtual)	Initial pre-lodgement meeting with presentation of the then proposed solar project.
	26 August 2022	Email	Identified potential project re-design in light of Council's Southern Growth Area.
	13 November 2022	Email	Confirmed the project refinement (dropping solar and proposing standalone BESS).
New South Wales Biodiversity, Conservation and Science Directorate (BCS)	14 February 2019	Meeting	Meeting to discuss potential biodiversity impacts of the project.
	12 December 2019	Letter / email	Discussion with BCS on approach to biodiversity assessment (candidate species).
Transgrid	22 April 2022	Email	Initiation of request to lodge a connection enquiry.
	28 October 2022	Email	Discussion on utilisation of an existing electricity easement to construct a 330kV underground cable from the Wagga 330kV substation to the development site.
Other			
State Member for Wagga Wagga	19 December 2022	Email	An introductory letter on the project was emailed with the offer to meet and provide a briefing on the project.
Federal Member for Riverina	19 December 2022	Email	An introductory letter on the project was emailed with the offer to meet and provide a briefing on the project.

6.4.2 Engagement outcomes

Council

The key outcome of consultation with Council has been a change to the project and specifically, the refinements described in **Section 4.7.3** (removal of the solar farm component of the project that was originally under consideration). The principal driver for this decision was the emergence of the Southern Growth Area, south of the city, to help accommodate the city's targeted population growth.

After consideration, and in consultation with Council, VEA determined development of a solar farm in this locality would create the potential for future land use conflicts associated with future urban encroachment. Conversely the development of a standalone BESS, in the location as proposed,

would be located in an area secure from residential encroachment and positioned within the one-kilometre buffer surrounding the Gregadoo Waste Management Centre.

Other outcomes of the consultations with Council undertaken since April 2022 included a preference that Plumpton Road is not used as the heavy vehicle route during construction and the need for the EIS to consider flooding. Council also noted that it would expect hydrological and water quality impacts to Lake Albert will be an issue of particular interest to some in the local community.

Neighbours
All discussions with neighbours have been cordial and to date, no issues of concern have been raised. As noted above, the principal matter of interest raised was how VEA would manage land surplus to its requirements, and potential opportunities for neighbours to utilise this land. VEA has made a commitment to maintain regular consultation as the project progresses and to ensure that impact assessment methodologies will be robust and provide opportunity for these neighbouring landowners to be involved in the process.

Aboriginal groups
All local Aboriginal stakeholder representatives were appreciative of the early consultation, expressed an interest in working with VEA on the project, and confirmed their expectation that an Aboriginal Cultural Heritage Assessment Report (ACHAR) be completed in accordance with relevant guidelines during preparation of the EIS. The value in providing cultural awareness training for construction contractors was also raised as an important consideration. At the request of one representative a face-to-face meeting was held in February 2023. VEA was kindly given a Welcome to Country and provided with a brief introduction on Wiradjuri culture.

Biodiversity, Conservation and Science Directorate
In response to correspondence outlined in **Table 6-1**, preliminary feedback was received from BCS around excluding candidate threatened species from the biodiversity assessment for the project. This has been considered in the proposed assessment level and approach outlined in **Section 7.3.2**.

6.5 Proposed engagement during EIS

Details of stakeholder consultation that would be undertaken during the preparation of the EIS is outlined in **Table 6-2**.

Table 6-2: Proposed environmental impact statement phase consultation

Stakeholder	Purpose	Method
Adjacent Neighbours	• regular project updates • identification of key environmental and social concerns • communication regarding how environmental and social concerns will be mitigated or managed	• face-to-face briefings, interviews and phone calls • newsletters and fact sheets • community drop-in sessions • website feedback forms and project information line
Aboriginal Stakeholders	• regular project updates • identify Aboriginal cultural heritage values of the	• consultation in accordance with the Aboriginal Cultural Heritage

Stakeholder	Purpose	Method
	study area and connection to place	Consultation Requirements for Proponents (DECCW 2010) • newsletters and fact sheets • community drop-in sessions • website feedback forms and project information line
Wagga Wagga City Council	• informing Council of project progress • discuss access options for the project and confirm Council requirements for road upgrades • consultation to inform the social impact assessment • communicate outcomes of assessments	• face-to-face/videoconference meetings • email and phone correspondence • briefing letters
Wider community	• regular project updates	• newsletters and fact sheets • community drop-in sessions or opportune participation in local community events (i.e. local shows or events) • website feedback forms and project information line
Department of Planning and Environment	• informing DPE of project progress • resolving of issues during EIS preparation • applying DPIE guidelines to engagement activities	• face-to-face/videoconference meetings • email and phone correspondence • briefing letters
Local service providers, business and industry associations	• regular project updates • identify key environmental, social, and economic concerns • gain an understanding of the local economy and resource availability (ie availability of accommodation for the construction phase)	• face-to-face briefings, interviews and phone calls • newsletters and fact sheets • community drop-in sessions • website feedback forms and project information line

Stakeholder	Purpose	Method
		• register for interested parties
Members of Parliament	• informing members of project progress, as required	• face-to-face/videoconference meetings • email and phone correspondence
Special Interest Groups	• regular project updates • identify key environmental, social, and economic concerns	• face-to-face briefings, interviews, and phone calls. • newsletters and fact sheets • community drop-in sessions • website feedback forms and project information line
Agencies	• informing agencies of project progress • resolving of issues during EIS preparation	• face-to-face /videoconference meetings • email and phone correspondence
Transgrid, AEMO	• progression of Grid Connection Application	• face-to-face /video conference meetings • email and phone correspondence
EnergyCo	• informing EnergyCo of project progress	• face-to-face /video conference meetings
Fire and Rescue New South Wales Rural Fire Service	• fire risk mitigation	• face-to-face /video conference meetings • Email and phone correspondence
Other development proponents	• understand and address potential cumulative impacts	• project briefings as required

7. PROPOSED ASSESSMENT OF IMPACTS

7.1 Scoping methodology

In accordance with the State Significant Development Guidelines – Preparing a Scoping Report (Scoping Report Guideline), the following factors were considered to identify matters requiring further assessment in the EIS:

- the **scale** and **nature** of the likely impacts of the project and the **sensitivity of the receiving environment** (refer to **Figure 7-1**)
- whether the project is likely to generate **cumulative impacts** with other relevant projects in the area
- the ability to **avoid**, **minimise** and/or **offset** the impacts of the project, to the extent known at the scoping stage. This includes consideration of factors that could be incorporated into the detailed design and potential for mitigation measures and landholder agreements to address residual impacts
- the **complexity of the technical assessment** including data and investigations required, methods and any uncertainties.

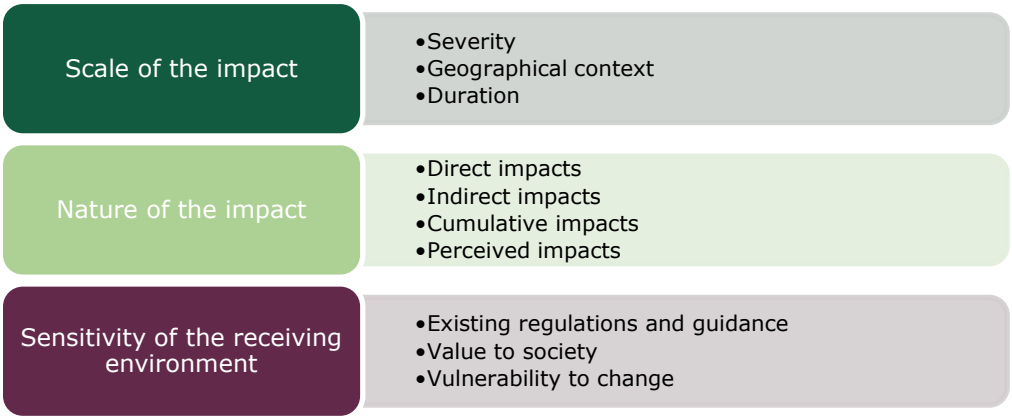


Figure 7-1: Key factors to consider during scoping – Appendix C of the Scoping Report Guideline

A scoping summary table for the project is provided in **Appendix 1**. The scoping summary table provides an overview of the expected issues and proposed assessment approach for the issues requiring further assessment in the EIS, and lists the relevant legislation, plans, policies, or guidelines that would be relevant to the proposed assessment. This table also highlights whether any specific community engagement would be undertaken and if a cumulative impact is anticipated.

Matters that have been identified as requiring further assessment for the EIS have been separated into 'key issues' and 'other issues'. These are presented in **Section 7.3** and **Section 7.4** respectively.

Key issues are those that have the potential to cause material impact based on the information that is currently available. Other issues are those that have been determined as unlikely to have a material impact based on existing available information. However, this may change through the preparation of more detailed assessments as part of the EIS, and as community and stakeholder engagement progresses.

This chapter also outlines those matters that have been identified to require no further assessment in the EIS. These are presented in **Section 7.6**.

7.2 Categorisation of assessment matters

Each matter and its proposed level of assessment (detailed or standard) is identified in **Table 7-1**. The matters considered in the assessment are consistent with those listed in Appendix B of the Scoping Report Guideline, with additional matters added as relevant to the project.

Additional or grouped matters are indicated in blue in **Table 7-1**. Specific matters have also been grouped or separated where relevant.

Table 7-1: Categorisation of assessment matters summary

Level of assessment	Assessment matter
Detailed	• amenity – noise and vibration • access – traffic, access to property (traffic and access) • biodiversity – terrestrial flora and fauna, aquatic flora and fauna • hazards and risks – bushfire, hazardous and offensive development, battery storage, EMF • heritage – Aboriginal • land – stability, land capability, topography, land use (private property and public land), land contamination • social – way of life, community, accessibility, culture, health and wellbeing, surroundings, livelihoods.
Standard	• air – atmospheric emissions, gases, particulate matter • amenity – visual • biodiversity – conservation areas • economic – natural resource use, livelihood • hazards and risks – dangerous goods • heritage – historic • water – hydrology, flooding, water quality, water availability • waste and resources.
Matters requiring no further assessment	• access – parking, port and airport facilities, road and rail facilities • amenity – odour • built environment – public infrastructure, design quality • economic – opportunity cost • hazards and risks – coastal hazards, dams safety, groundwater contamination, land movement, environmental hazards • heritage – natural • land – soil chemistry, biosecurity • social – decision-making systems.

7.3 Key issues

7.3.1 Land use and soils

Existing environment

Land use

The project site is located approximately nine kilometres southeast of the CBD of Wagga Wagga. Land immediately surrounding the site is predominantly characterised by agricultural land uses and large lot rural residences. There are some special purpose land uses in the area, the closest being the Gregadoo Waste Management Centre (a Council operated major landfill), located to the east of the site (across Redbank Road). This landfill accepts the majority of the solid wastes produced within the Wagga Wagga region. To the north of Gregadoo Waste Management Centre is Transgrid's Wagga Wagga 330kV substation and the approved Gregadoo Solar Farm.

There are four adjoining residential properties sharing a boundary with the site, including two that are directly adjacent, separated only by public roads (including Gregadoo Waste Management Centre and one residential property). There are eight sensitive receivers within one kilometre of the development area. The closest sensitive receiver is located within one kilometre of the transmission line route corridor. There are no sensitive receivers within a one kilometre of the development area within the site (i.e., the BESS footprint). Sensitive receivers within a two kilometre radius of the site are shown on **Figure 2-1**.

The site, and land to the north and west of the site is zoned RU1 Primary Production. Land immediately to the south of the sites is zoned RU1, then RU2. The land use zoning is shown in **Figure 7-2.**

Two sets of overhead high voltage transmission lines run parallel to the north (132kV) and south (330kV) of Boiling Down Road, connecting to Wagga Wagga substation, with the southern line occurring within the project site. Associated infrastructure including double circuit steel towers for the southern transmission line are within the site and impact landholdings to the east and the west., with the parallel running line impacting landholdings to the north. Subsequently, the site is constrained by a 100-meter-wide easement to the south of Boiling Down Road. This electrical infrastructure is owned and operated by Transgrid (**Figure 7-2**).

As part of Project EnergyConnect (NSW-Eastern Section) (SSI-9172452), additional large scale electrical infrastructure including 500kV double circuit transmission lines and associated towers will form part of the existing environment. This would introduce a 180 meter easement between the potential developable area and Boiling Down Road.

There are no National Parks or state reserves within 10 kilometres of the site. The closest National Park is Livingstone National Park located approximately 14 kilometres south of the site, and the Livingstone State Conservation Area approximately 19 kilometres south of the site.

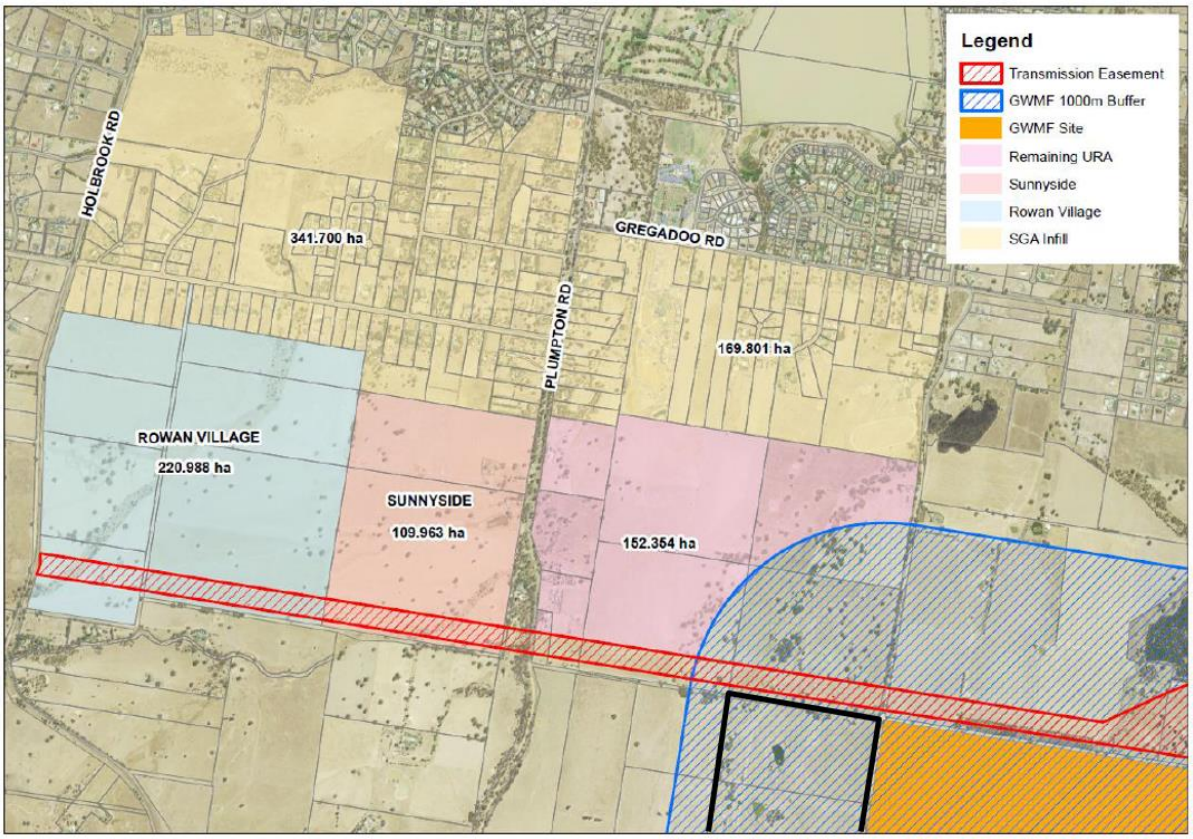
Lake Albert is a local recreational natural feature located approximately 2.8 kilometres north of the site within the southern suburbs of Wagga Wagga, Lake Albert.

Future land use potential – Southern Growth Area

Land use changes may occur in the coming years, as part of the Wagga Wagga Southern Growth Area. Council is in receipt of two planning proposals LEP21/0001 known as "Sunnyside" and LEP21/0006 known as "Rowan Village". The proposals intend to rezone land to the north and

northwest of the site for residential purposes and reduce the minimum lot size. As of the Council meeting resolution on November 7 2022, Planning Proposal LEP21/0001 (Sunnyside) is being prepared to be submitted to New South Wales Government for a Gateway Determination.

The site is located within the one kilometre buffer zone from Gregadoo Waste Management Centre which would prevent residential development within the site itself (see **Plate 7-1**).



Source: Report submitted to the Ordinary Meeting of Council on Monday 22 August 2022 (Figure 2) (edited by Ramboll to outline extent of site in black)

Plate 7-1: Southern Growth Area planning proposals and Gregadoo Waste Management Centre with associated buffer area

Soils

The primary soil landscape mapped across the site is Redbank Transferral soils, with a lesser area mapped as alluvial sediments. The landscape of transferred soils is described as being very gently inclined long piedmont slopes and narrow drainage lines, with almost completely cleared tall woodland. The soils are moderately deep eutrophic brown chromosols on slopes, and moderately deep mottled subnatric brown sodosols in drainage lines. The soils have a high erosion hazard, localised foundation hazard, waterlogging, strong acidity, and low fertility soil. They are found primarily in the Lake Albert catchment (Planning Industry and Environment, 2023).

The alluvial sediments are described as gently undulating plains of alluvial sediments with moderately deep soils of mottled subnatric red sodosols and mottled mesonatric brown sodosols on plains, along with mottled subnatric brown sodosols near channel zones with localised streambank erosion, waterlogging, strong acidity, and locally hard setting soil (Planning Industry and Environment, 2023).

Biophysical Strategic Agricultural Land

The site is not mapped as Biophysical Strategic Agricultural Land (BSAL), which is described as land that has higher soil and water capabilities to enable high levels of productivity to be sustained.

Land and soil capability

As shown on **Figure 7-3**, the site has been rated both Class 4 and Class 6 under the LSC assessment scheme developed by New South Wales Office of Environment and Heritage (OEH, NSW, 2012). Class 4 land is characterised as land of moderate capability, with moderate to high limitations for high-impact land uses. This restricts land management options for regular high-impact land uses such as cropping, high-intensity grazing and horticulture. Class 6 is land is described as low capability land with high limitations for high-impact land uses, which would largely restrict land use to grazing, some horticulture, forestry and nature conservation.

Biosecurity

If not adequately managed, the project has the potential to introduce and transport weeds as a result of the increase in vehicle movements to and from the site during construction. This could lead to the further invasion of weeds to the local area, thereby resulting in changes to vegetation communities over time and associated loss of habitat for native species.

Contamination

A search of the contaminated land record of notices held by New South Wales Environment Protection Authority (EPA) for Wagga Wagga LGA did not identify any notices issued to properties within proximity to the site (NSW EPA, 2023a). A review of the list of notified contaminated sites for the month of January 2023 also did not identify any contaminated sites notified to New South Wales EPA within the suburb of Rowan, where the site is located, or suburbs immediately adjacent including Gregadoo and Gelston Park (NSW EPA, 2023b).

Crown land

The site is freehold parcels and does not comprise any Crown land (Crown enclosure permits, Crown licences, Crown leases, or Crown reserves). The site is also not mapped as having conservation values in relation to travelling stock reserves.

Native title

No native titles claims have been identified in the region of the site. It is also unlikely that there are any land claims under the *Aboriginal Land Rights Act 1983* as the site is freehold land.

Mining and exploration licences

There are no coal, petroleum or gas exploration or production tenements that affect the site.

Potential impacts

The potential land use conflicts resulting from the project would primarily relate to rural and residential amenity issues that could potentially impact the enjoyment of neighbouring land. These impacts would likely occur during the construction phase of the project and result from the proximity of the development to nearby sensitive receivers.

Potential impacts on soils would likely occur during construction and relate to the high erosion hazard, waterlogging and strong acidity of soils within the site that would require further consideration in the EIS and detailed design of the project. Also, land use conflict and amenity impacts include issues such as noise, dust, and air quality issues associated with the operation of

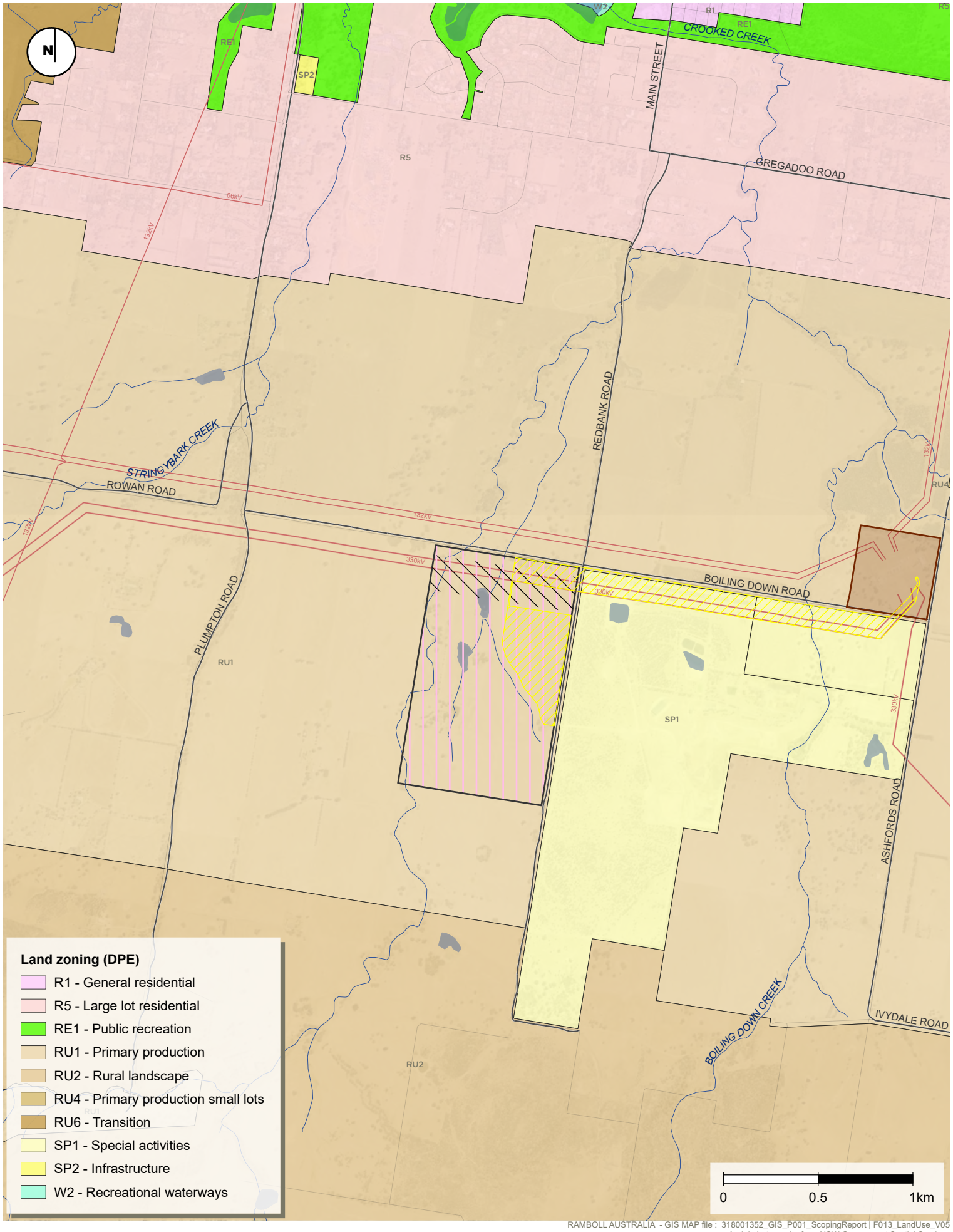
machinery and earthworks during construction, along with impacts to visual amenity during the construction, operation, and decommissioning of the project.

The impacts on visual amenity are discussed further in **Section 7.4.1** and the social impacts that may arise from land use conflicts are discussed in **Section 7.3.1**.

The land use conflicts that could arise from the project may also contribute to cumulative impacts due to the increased developments in the area including the nearby proposed Gregadoo Solar Farm project (SSD-8825 and SSD-8825-Mod-2), the Southern Growth Area and associated residential development and Project EnergyConnect (NSW-Eastern Section) (SSI-9172452), including 500kV double circuit transmission lines and associated towers.

The project has potential to impact on the existing soils and landform, with impacts primarily anticipated during the construction and decommissioning stages. Potential impacts may include soil erosion and weathering, impacts to ground stability, water pollution and introduction and spread of weed species largely as a result of excavation and use of heavy machinery, vegetation clearing, and road upgrades (if required) and use of access roads.

It is unlikely that the disturbance of soils within the site would impact on the neighbouring agricultural land uses during construction and decommissioning activities, provided the adequate implementation of standard management measures to minimise impacts of contaminated soil and erosion and sediment transport. A summary of the potential land impacts from the project is provided in **Table 7-2**.



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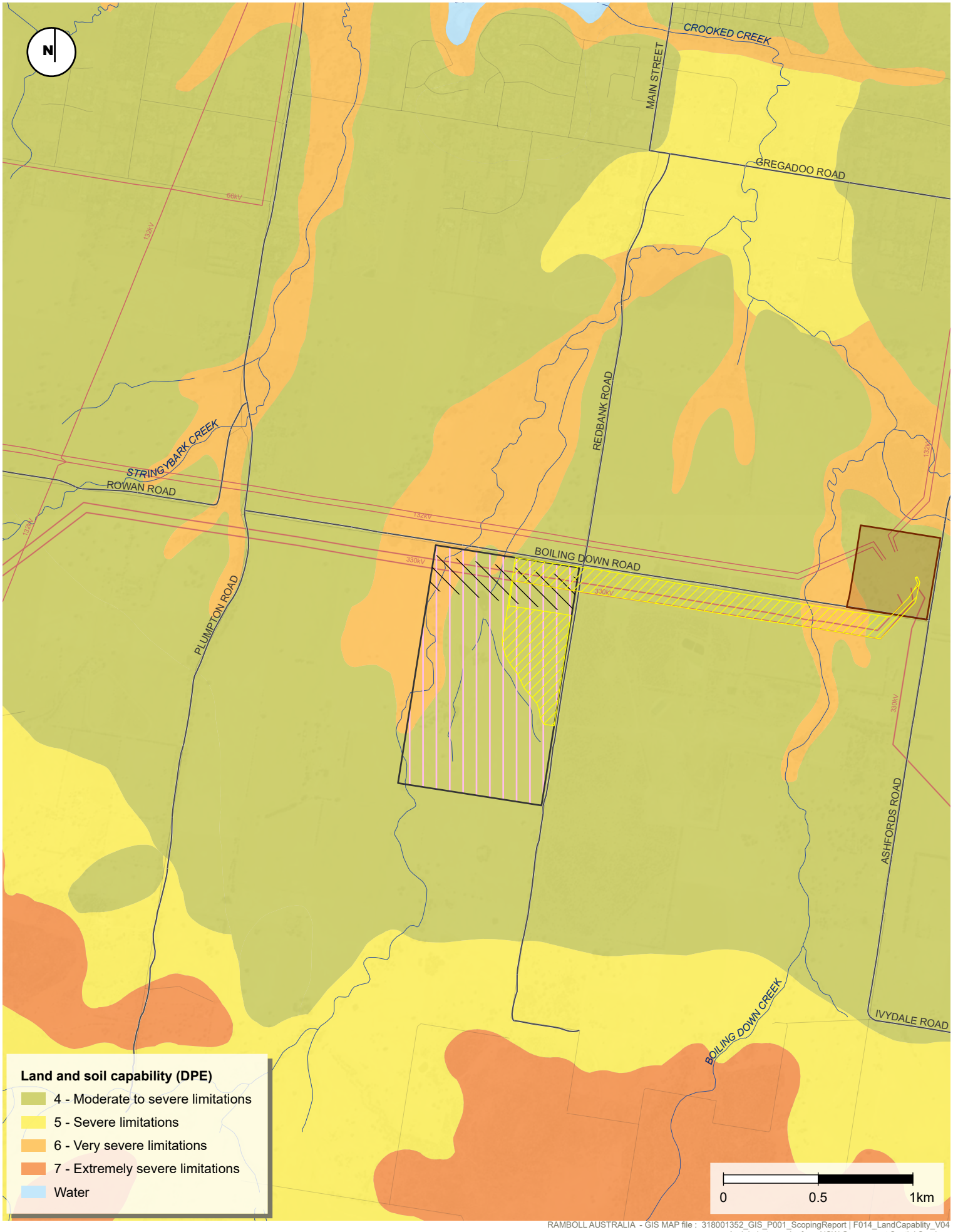
Aerial photography from NSW Government Spatial Services

KEY

- Site boundary
- Indicative development area
- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV Transgrid substation
- Waterway

Figure 7-2 | Land use and soils - Land zoning



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Aerial photography from NSW Government Spatial Services

KEY

- Site boundary
- Indicative development area
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- Existing transmission easement
- Existing 330kV Transgrid substation
- Waterway

Figure 7-3 | Land use and soils - Land capability

Table 7-2: Potential impacts – land

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Disturbance of soils / sediments	Low / Short term	Direct	Sensitive (environmental value)	N	• Avoid – avoid ground disturbance where possible. • Minimise – install sediment and erosion controls in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004).
Construction	Compaction of soils	Low / Short term	Direct	Sensitive (environmental value)	N	• Avoid – use dedicated access tracks where possible.
Construction and operation	Change in land use from agriculture to electricity generation	Moderate / Short term	Direct	Sensitive (social value) Sensitive (economic value)	Y	• Minimise – minimise the disturbance footprint of the project.
Construction and operation	Loss of rural and residential amenity and land use conflicts	Moderate / long term	Direct	Sensitive (social value)	Y	• Minimise – introduce screening to the project and measures to reduce land use conflict issues such as noise, dust, and air quality.
Construction	Introduction of weeds as a result of the increase in vehicle movements to and from the site	Low / Short term	Indirect	Sensitive (environmental value)	N	• Minimise – implement site hygiene protocols such as washing down vehicles before entering or leaving the site.

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Encouragement of pest animals to the local area as a result of potential increase in food sources associated with the construction activities and ground disturbance	Low / Short term	Indirect	Sensitive (environmental value)	N	• Avoid – remove food scraps from the site on a regular basis. • Minimise – keep food scraps in a contained area to prevent odours from attracting fauna.
Construction	Disturbance of unknown contaminated areas	Low / Long term	Direct	Sensitive (environmental value)	N	• Avoid – avoid ground disturbing activities where possible. • Minimise – implement an unexpected finds protocol for the management of contamination if encountered.

Assessment level and approach
The methodology for the land assessment would include:

- desktop review to define the existing environmental conditions of site including a review of relevant soil and geology mapping
- identification of any likely impacts to:
    - current land uses within and surrounding the site
    - Crown land
    - topography
    - soil quality and quantity
    - land stability and erosion potential
    - land and soil capability
    - biosecurity
    - land contamination
- identification of land management measures required for the project.

Considering a portion of the site is located on moderate capability land (LSC Class 4), the assessment may need to include a soil survey undertaken by a soil specialist to verify the quality and capability of the land. The results of the soil survey will then inform the site layout to avoid identified productive land where feasible.

A qualitative assessment of potential contamination risks at the site would be undertaken with consideration of past land uses and contamination risks that may be introduced as a result of the project. A land contamination assessment would assess the site suitability having regard to historic use of land for agricultural purposes and operations of the nearby waste management facility.

A Land Use Conflict Risk Assessment (LUCRA) in accordance with the Department of Industry's Land Use Conflict Risk Assessment Guide (Department of Primary Industry, 2011) would form part of the desktop assessment outlined above.

7.3.2 Biodiversity

Preliminary studies
EMM Consulting Pty. Ltd. (EMM) were engaged by VEA to conduct preliminary staged biodiversity assessments and site surveys for the site and surrounding (former project) area between 2018 and 2019. These studies have been used to understand the existing environment and constraints of the site and were used to directly refine the project to avoid impacts to areas of biodiversity value.

Existing environment

Desktop searches
A desktop biodiversity assessment was undertaken for the project site (and surrounding property) to identify any threatened biodiversity species, endangered populations, threatened ecological communities (TECs), migratory species, or their habitats within the site, particularly those listed under the BC Act, FM Act or the EPBC Act.

The desktop assessment involved review of the following:

- New South Wales Biodiversity and Conservation Division Atlas of Wildlife (BioNet Atlas) (10 kilometre radius)

- EPBC Act Protected Matters Search Tool (PMST) (**Appendix 2**).

A search of data from the BioNet Atlas website returned a total of 2,964 records of 454 species for a buffer area of 10 kilometres of the site.

A search of the Commonwealth PMST on 30 January 2023 indicated that there are no World Heritage Properties or National Heritage Places within the site. Search results listed four Wetlands of International Importance between 400 kilometres and 700 kilometres from the site.

The site is not listed within or near Great Barrier Reef Marine Park or Commonwealth Marine Area. An area of Commonwealth Land - Australian Telecommunications Commission occurs within 10 kilometres of the project. The results of the PMST search are provided in **Appendix 2.**

Crooked Creek, within the project site is mapped as a key fish habitat (KFH) according to the Department of Primary Industries - Fisheries Spatial Data Portal and Key Habitat Maps.

Field surveys

Preliminary site investigations, including field surveys and targeted fauna surveys, were undertaken by EMM in September 2018 and November 2018 respectively. The targeted surveys included surveys for the Superb Parrot, Major Mitchell's Cockatoo (*Lophochroa leadbeateri*), Squirrel Glider (*Petaurus norfolcensis*) and Koala (*Phascolarctos cinereus*).

In September 2019 a further assessment was then conducted to understand the biodiversity values of the site. This assessment included revised mapping of native vegetation (based on newly released PCT descriptions), mapping of paddock trees (including habitat trees), and targeted surveys for the Superb Parrot, Major Mitchell's Cockatoo, Squirrel Glider, Brush-tailed Phascogale (*Phascogale tapoatafa*) and Koala.

Landscape features

The site is generally flat with an elevation ranging from 220 metres to 245 metres above sea level. Most of the project site has been cleared for agricultural uses and native vegetation is restricted to patches of woodland vegetation. The site is highly modified due to intensive agricultural development, with the groundcover dominated by exotic species. As such, the site is considered highly degraded and unsuitable for many species.

Shallow drainage channels flow in a northern direction through the western portion of the site. These channels originate from first and second order streams to the south of the project site. Riparian vegetation associated with these channels is generally sparse and comprised of mainly of fragmented woodlands.

The project site contains a low diversity of native plant species and simple vegetation structure. Several native trees species (eucalypts) were recorded in woodland areas; however, these areas contained a very low coverage of native shrubs, grasses or forbs.

The groundcover throughout the project site is comprised mainly of exotic grasses and herbs, which are common in the western slopes region in landscapes that have been modified by agricultural development. The lack of shrubs and mid-storey species is mainly attributed to historical vegetation clearing and the long-term effects of cropping and livestock grazing.

Vegetation

The BioNet Vegetation Information System (VIS) was used to identify and map the extent of PCTs. PCTs were identified based on locality, site topography (landscape position), soil type and the dominant plant species present.

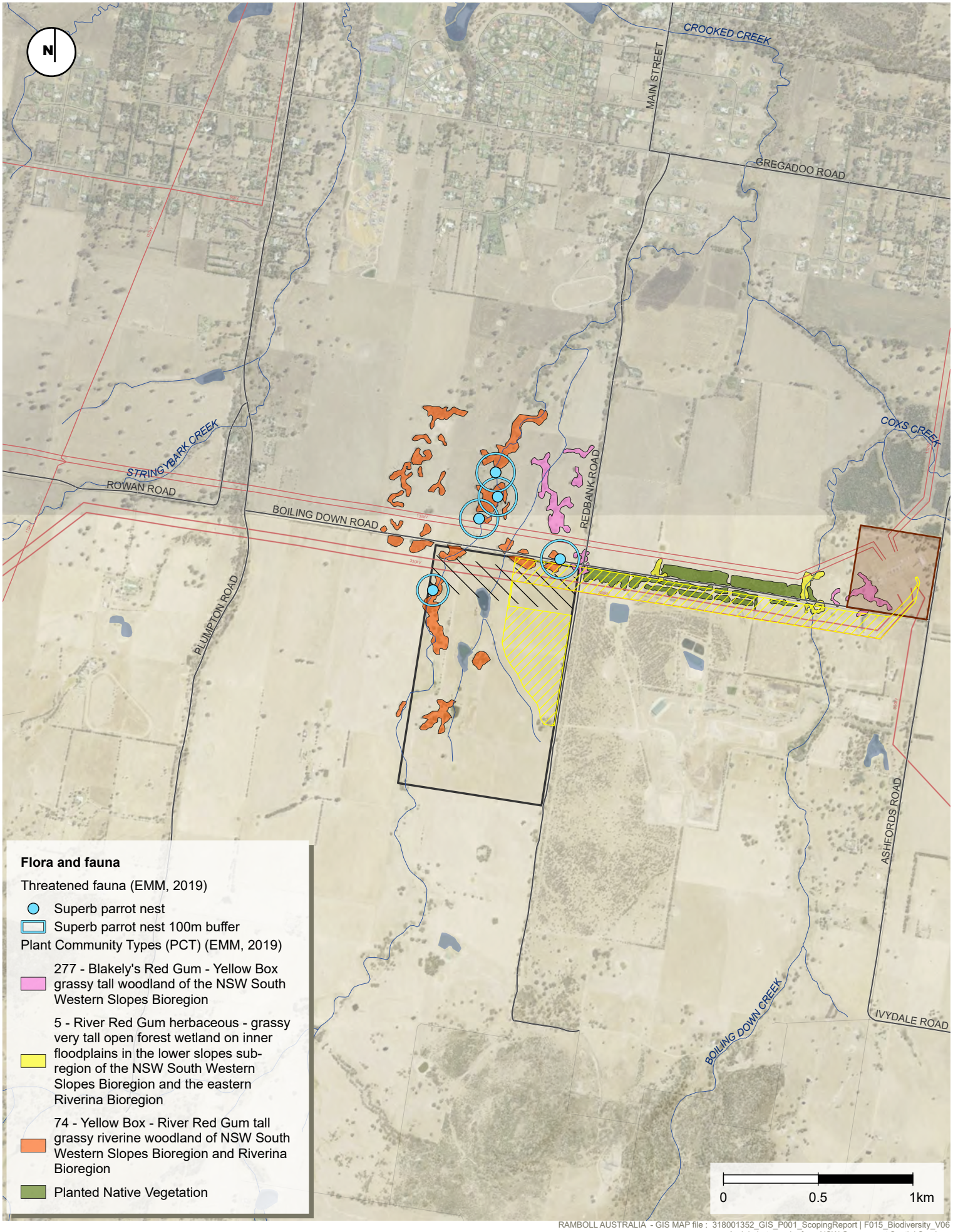
The BioNet VIS identified two PCTs across the project site:

- PCT 74 - Yellow Box - River Red Gum tall grassy riverine woodland of New South Wales South Western Slopes Bioregion and Riverina Bioregion; and
- PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the New South Wales South Western Slopes Bioregion.

The extent of each PCT within the project site is illustrated on **Figure 7-4** PCTs have also been assessed against the criteria for state and Commonwealth listed TECs. The extent of each PCT in the project site and the conservation value is in **Table 7-3.**

Table 7-3: Plant community types and vegetation zones

PCT	Condition class	Conservation value	Area (ha)
277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the New South Wales South Western Slopes Bioregion.	Poor	The dominant canopy species indicate that the vegetation is commensurate with White Box Yellow Box Blakely's Red Gum Woodland, which is listed as an endangered ecological community (EEC) under the BC Act. The vegetation is currently too degraded to represent White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, which is a critically endangered ecological community (CEEC) listed under the EPBC Act. The groundcover was found to be dominated by exotic species across the project site.	0.05 ha
74 - Yellow Box - River Red Gum tall grassy riverine woodland of New South Wales South Western Slopes Bioregion and Riverina Bioregion.	Poor	This PCT is dominated by River Red Gum, with occasional Yellow Box. As Yellow Box is not dominant, this PCT was found not to align with White Box Yellow Box Blakely's Red Gum Woodland, which is listed under the BC Act, or White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland, listed under the EPBC Act.	5.70 ha



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Aerial photography from NSW Government Spatial Services

KEY

- Site boundary
- Indicative development area
- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV Transgrid substation
- Waterway

Figure 7-4 | Biodiversity – PCT and native vegetation mapping and threatened fauna survey result

Threatened species

The Koala, Squirrel Glider, Brush-tailed Phascogale and Major Mitchell's Cockatoo were not recorded on the site in previous surveying conducted in 2018 and 2019. This may be due to the degraded nature of the woodland areas which are fragmented and have low connectivity with the surrounding landscape.

In previous surveying conducted in 2018 and 2019, one Superb Parrot breeding site was found on the site within the western lot boundary this is shown on **Figure 7-4**. There were four additional Superb Parrot breeding sites identified just north of the site. The Superb Parrot is listed as 'vulnerable' under the BC Act and the EPBC Act.

The Biodiversity Assessment Method (BAM) calculator was used to generate a list of candidate species credit species. The habitat requirements of each species have been assessed. The results are summarised in **Table 7-4**.

Table 7-4: Candidate species assessment

Scientific name	Common name	Survey required and timing
Candidate threatened flora species assessment		
Acacia ausfeldii	Ausfeld's Wattle	No - it is likely that the habitat is too degraded to support a population of this species.
Ammobium craspedioides	Yass Daisy	No - the habitat is considered to be too degraded to support a population of this species.
Austrostipa wakoolica	A spear-grass	No - the groundcover of the project site is dominated by exotic species and has been extensively modified by intensive agricultural development, the habitat is considered to be too degraded to support a population of this species.
Cullen parvum	Small Scurf-pea	No - the habitat is considered to be too degraded to support a population of this species.
Euphrasia arguta	-	No - the habitat is considered to be too degraded to support a population of this species.
Pilularia novae-hollandiae	Austral Pilwort	No - the habitat is considered to be too degraded to support a population of this species.
Swainsona recta	Small Purple-pea	No - the habitat is considered to be too degraded to support a population of this species.
Swainsona sericea	Silky Swainson-pea	No - the habitat is considered to be too degraded to support a population of this species.
Candidate threatened fauna species requiring further consideration		
Crinia sloanei	Sloane's Froglet	The project site contains limited habitat features suitable for this species, with habitat limited to ephemeral drainage channels and waterways. The species is now rare across NSW but can occur following rainfall.

Scientific name	Common name	Survey required and timing
		The potential for this species cannot be discounted, and surveys have not been able to reliably be undertaken conducted given prolonged drought conditions.
Delma impar	Striped Legless Lizard	No - the habitat is considered to be too degraded to support a population of this species,
Synemon plana	Golden Sun Moth	No - the habitat is considered to be too degraded to support a population of this species, No further survey required.

Potential impacts

Potential impacts to flora and fauna would most likely occur during the construction of the project when vegetation clearance and ground disturbance works would be undertaken. It is likely that all mature trees on the site would be avoided by the project. The site is considered highly degraded and unsuitable for many species.

The woodland patches within the site, whilst degraded, contain numerous mature trees that provide breeding habitat for species such as the Superb Parrot. The Superb Parrot is listed as 'vulnerable' under the EPBC Act and was found to occur within the site. The trees identified as containing nests or as suitable habitat trees have been excluded from the potential developable area and indicative development footprint of the project and a 100-metre exclusion zone has been adopted around those trees. Access to the site will be further investigated during the EIS to avoid or mitigate impacts to those trees. Areas of the PCT Blakely's Red Gum within the northeast part of the site, are located north of the existing transmissions easement and would be avoided by project.

The Superb Parrot is identified as a 'species credit species'; therefore, biodiversity offsets (species credits) are required to offset impacts to breeding habitat. If impacts to breeding habitat can be avoided, offsets will not be required.

The potential impacts of the project on fish passage and threatened fish species that would be assessed is the EIS.

A summary of the potential biodiversity impacts from the project is provided in **Table 7-5**.

Table 7-5: Potential impacts – biodiversity

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Removal of vegetation	High / Long term	Direct	Sensitive (environmental value)	Y	• Avoid – design the project to avoid high value vegetation. • minimise – minimise clearing of vegetation where practical. • Offset – vegetated areas that cannot be avoided in clearing works would be offset through the BOS as required.
Construction	Disturbance / loss of habitat	High / Long term	Direct	Sensitive (environmental value)	Y	• Avoid – design the project to avoid high value habitat. • Minimise – minimise removal of habitat where practical. • Offset – habitat that cannot be avoided in clearing works would be offset through the BOS as required.
Construction	Indirect impacts to fauna (light, noise, vibration)	Moderate / Short term	Indirect	Sensitive (environmental value)	Y	• Avoid – undertake pre-clearing surveys to identify and relocate fauna prior to commencing works if required. • Minimise – minimise light, noise and vibration emissions where practical through the implementation of best practice management.

Assessment level and approach
A BDAR would be prepared to meet the requirements of the BAM established under Section 6.7 of the BC Act.

The preparation of the BDAR would include the following methodology:

- desktop review of available background information, mapping, and publicly available databases
- field surveys of the site
- field surveys land subject to construction works outside the site such as road upgrade works
- continued refinement of project infrastructure to avoid and minimise potential impacts to biodiversity
- assessment of impacts to biodiversity values, determination of required biodiversity
- offsets for the project
- provision of management and mitigation measures to minimise identified impacts.

EMM consulted with BCS on behalf of VEA in December 2019 (BCS ref: DOC19/1087390) in relation to the approach to excluding candidate threatened species from the biodiversity assessment (refer to **Table 7-4)**. BCS stated that they agree that the micro-habitats required for eight threatened flora species and two threatened fauna species are substantially degraded, such that the species are unlikely to utilise the subject land, in accordance with Section 6.4.1.17 of the BAM. They highlighted that the site may provide habitat for Sloane's froglet (*Crinia sloanei*).

BCS suggested that the justification for excluding each species be clearly presented in the BDAR, including details of micro-habitat requirements and specific habitat constraints for each species (according to the Threatened Entity Species Data Collection), the survey method used to assess the presence of the constraint or micro-habitat, and any other information used to make the decision (as per Section 6.4.1.19 of the BAM).

7.3.3 Hazards and risks

Existing environment

Battery storage
The project includes a BESS, that has a capacity of approximately 400MW with two hours of storage. A preliminary hazard analysis (PHA) would be prepared for the project. The PHA also considers risks associated with storage of dangerous goods, EMF, and bushfires.

The major components of the BESS and associated infrastructure would be:

- batteries (most likely a lithium-ion technology)
- inverters
- transformers
- heating ventilation air conditioning
- fire protection.

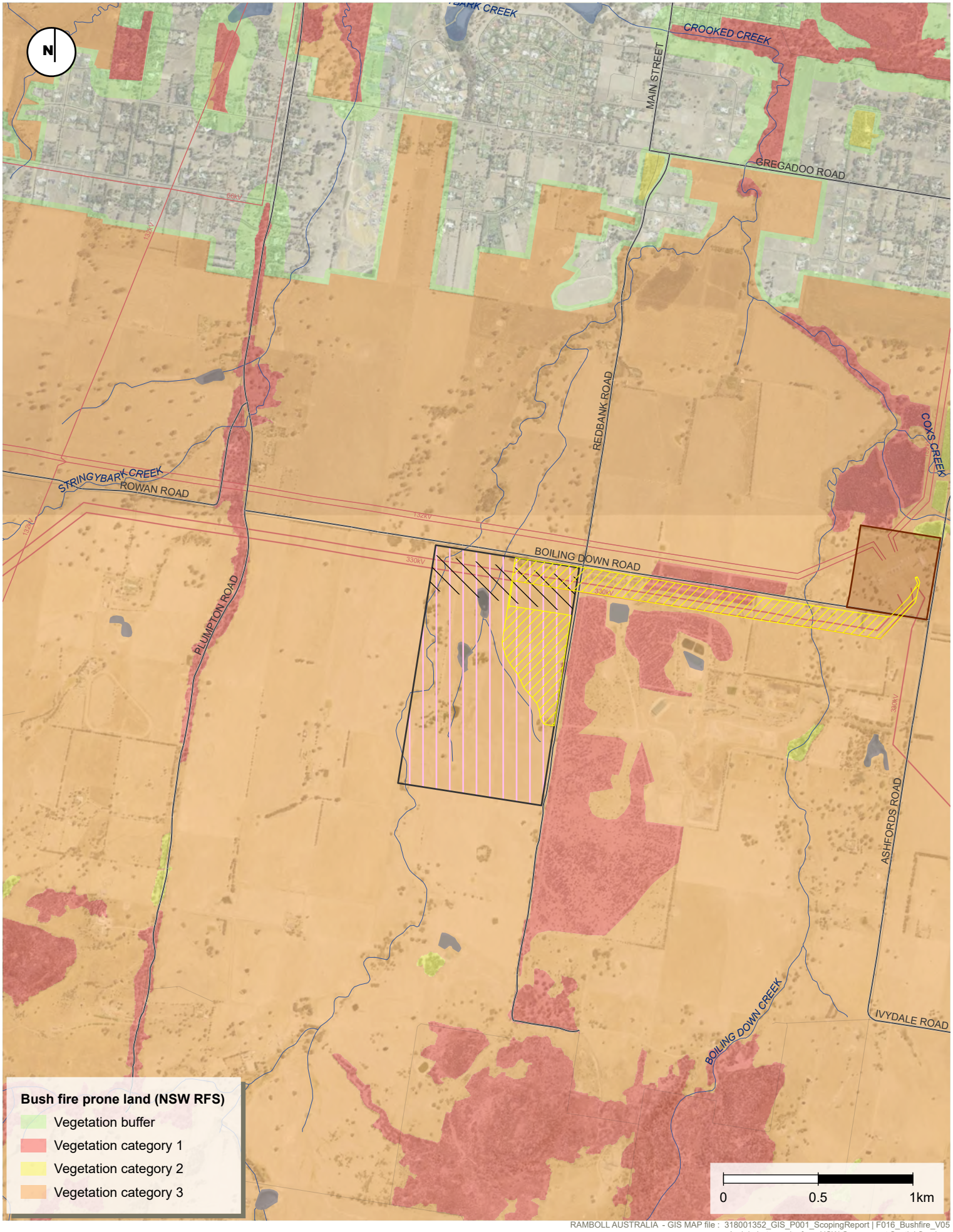
Electromagnetic fields
The project includes potential EMF sources such as cabling, substation, transformers, transmission lines and the BESS. The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is an Australian Government agency with the responsibility for protecting the health and safety of people and the environment from EMF. The ARPANSA website

notes that "*Most of the research indicates that ELF (extremely low frequency) EMF exposure normally encountered in the environment, including in the vicinity of powerlines, does not pose a risk to human health*". Generally, distances beyond 50 metres from a high voltage powerline are not expected to have higher than typical magnetic fields and for substations magnetic field levels at distances of five to 10 metres away are no higher than background levels in a typical home.

Bushfire

Based on bushfire prone land mapping, the site does not contain vegetation that is categorised as a bushfire hazard, however, the site is partially mapped within the vegetation buffer zone. Land to the east of the site is identified as vegetation category 1.

Category 1 vegetation is considered to be the highest risk for bushfire. This vegetation category has the highest combustibility and likelihood of forming fully developed fires including heavy ember production (NSW RFS, 2015). Bushfire prone land mapping is shown in **Figure 7-5.**



RAMBOLL AUSTRALIA - GIS MAP file : 318001352_GIS_P001_ScopingReport | F016_Bushfire_V05
Aerial photography from NSW Government Spatial Services

KEY

- Site boundary
- Indicative development area
- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV Transgrid substation
- Waterway

Figure 7-5 | Bushfire prone land mapping

Bushfire protection zones around the project infrastructure would be required to be established as part of the project.

Dangerous goods

'Hazardous materials' are defined in Applying SEPP 33 (Department of Planning, 2011), as substances that fall within the classification of the Australian Dangerous Goods Code (ADGC) and have a Dangerous Goods (DG) classification. The project may include the use of dangerous goods and/or hazardous substances which will be assessed in the EIS.

Potential impacts

A summary of the potential hazards and risks associated with the project is provided in **Table 7-6**.

Table 7-6: Potential impacts – hazards and risks

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Battery storage						
Operation	Failure of BESS safety features resulting in electric shock, fire, flash burns, explosion or exposure to hazardous chemicals and released gases	High / Short term	Indirect	Sensitive (environmental value)	N	• Avoid – locate BESS away from sensitive receivers where possible. • Minimise – design BESS in accordance with relevant guidelines and standards. • Minimise – operate and monitor the BESS in accordance with the relevant requirements.
Electromagnetic fields						
Operation	Short term exposure to very high levels of EMF can be detrimental to human health	High / Short term	Direct	Sensitive (social value)	Y	• Avoid – locate electrical infrastructure away from sensitive receivers where possible. • Minimise – design electrical infrastructure in accordance with relevant guidelines and standards.
Bushfire						
Construction	Potential for bushfire starting from construction activities or potential for construction to be affected by an external bushfire	High / Long term	Indirect	Sensitive (environmental value) Vulnerable to change	N	• Avoid – avoid operating machinery with the potential to spark near vegetated areas. • Minimise – management of the site to reduce available fuel loads during high fire danger periods. • Minimise – provision of onsite firefighting equipment and water source.

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Dangerous goods						
Construction and operation	Risks to public safety from incorrect transport, handling, storage and use of hazardous materials	Low / Short term	Indirect	Sensitive (social value)	N	• Avoid – minimise the quantity of hazardous materials kept onsite. • Minimise – transport, store and handle materials in accordance with guidelines.

Assessment level and approach

The Resilience and Hazards SEPP defines the process for determining if a development is "potentially hazardous", and, if it is, what level of assessment is required. Applying SEPP 33 (Department of Planning, 2011) and supporting guidelines define the assessment process.

The assessment approach for each matter to be considered in the hazards and risks assessment is outlined in **Table 7-7**.

Table 7-7: Assessment approach – hazards and risks

Matter	Assessment approach
Battery storage	A PHA would be undertaken for the project in accordance with Hazard Industry Planning Advisory Paper No. 6 –Guidelines for Hazard Analysis (Department of Planning, 2011) and Multi-Level Risk Assessment (Department of Planning, 2011). The assessment would consider risks from the BESS such as electric shock, fire, flash burns, explosion or exposure to hazardous chemicals and released gases.
Electromagnetic fields	An EMF assessment would be prepared to assess the potential impacts and risks to human health associated with the EMF generated by the electrical infrastructure.
Bushfire	The bushfire assessment would consider environmental factors that increase the risk of fire (fuel quantity and type, topography and weather patterns), as well as specific activities (such as hot works and construction activities) or infrastructure components that exacerbate combustion or ignition risks (such as transmission lines and other electrical components). The assessment would aim to demonstrate that the proposed project can be designed, constructed and operated to minimise ignition risks and provide for asset protection consistent with the New South Wales Rural Fire Service Guidelines – Planning for Bushfire Protection 2019.
Dangerous goods	Any dangerous goods required to be transported during construction and operations would be identified and quantified within the EIS and all required licences and approvals obtained prior to the commencement of relevant construction activities. This EIS would evaluate the likely risks to public safety, by focusing on the transport, handling and use of hazardous materials.

7.3.4 Noise and vibration

Existing environment

The land immediately surrounding the site is largely characterised by open flat pastoral areas with scattered vegetation and some primary production and special land uses and infrastructure such as Gregadoo Waste Management Centre and Transgrid substation. Developed areas associated with the City of Wagga Wagga are primarily situated to the north, along with some (largely residential) development on the hills that are located south and southwest of the site.

As discussed in **Section 7.3.1**, land use changes may occur in the coming years, as part of the Wagga Wagga Southern Growth Area, Project EnergyConnect (NSW-Eastern Section) (SSI-9172452) and Gregadoo Solar Farm (SSD-8825).

The site itself is generally flat with an elevation ranging from 220-245 metres above sea level. The site is currently zoned RU1 Primary Production, and the areas immediately surrounding the site are zoned RU1 Primary Production and SP1 Special Activities. Refer to **Section 7.3.1** for further detail about existing land uses within and surrounding the site.

The existing noise environment surrounding the site is characterised by low background noise levels typical of the predominant surrounding rural and lower density residential land uses, particularly areas to the east, south and west of the site. Sensitive receivers are primarily situated to the north of the site within the developed areas associated with the City of Wagga Wagga. Sensitive receivers identified within two kilometres of the site are shown in **Figure 7-6.**

The NSW Noise Policy for Industry (NPfI) provides guidance for determining residential receiver categories. Based on existing land uses surrounding the site, residences to the north of the site would generally be regarded as suburban and the residences to the east, south and west of the site would be categorised as rural.

The relevant background noise levels for rural residential and suburban residential receiver categories are provided in **Table 7-8.**

Table 7-8: Background noise levels for residential receivers

Receiver category	Location of receivers	Existing background noise levels (dB(A))		
		Daytime	Evening	Night-time
Rural residential	East, south and west of the site	<40	<35	<30
Suburban residential	North of the site	<45	<40	<35

Noise criteria

A summary of the noise criteria that would apply to construction and operational activities is provided in **Table 7-9**.

Table 7-9: Noise criteria that would apply to the project

Guidelines	Criteria
Construction activities	
Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009)	Noise management measures are required to be implemented where predicted or measured construction noise level ($L_{eq,15min}$) exceeds: • **During standard hours** (7am to 6pm Monday to Friday, 8am to 1pm Saturday): ○ Noise affected – rating background level (RBL) + 10 decibels (dB) ○ Highly noise affected – 75 dB • **Outside standard hours:** ○ RBL + 5 dB. ○
Construction road traffic	
Road Noise Policy (Department of Environment and Climate Change, 2011) (RNP)	Recommended that road traffic noise levels at sensitive receivers are limited to: • 60 dB $L_{Aeq,15h}$ during the daytime (7am to 10pm) • 55 dB $L_{Aeq,9h}$ during the night time (10pm to 7am). Where the above criteria are already exceeded, the RNP recommends limiting the increase in road traffic noise levels to no more than 2 dB.
Ancillary infrastructure noise	
NSW Noise Policy for Industry	The NPfI establishes project noise trigger levels as the lower of the following: • **amenity level**: a criterion established with reference to the land zoning of an area and with the aim of not increasing industrial noise levels in an area. In the area surrounding project, it is likely that the amenity level would be 35 dB at night • **intrusiveness level**: 5 dB above the RBL for each time of day. The minimum intrusiveness criterion that can apply is 35 dB at evening and night.

Vibration criteria

Vibration criteria that would apply to the construction of the project would include:

- **Cosmetic and structural damage to buildings**: German Standard DIN 4150-3
- **Human comfort**: NSW Assessing Vibration – A Technical Guideline (Department of Environment & Conservation, 2006).

Potential impacts

Construction noise and vibration

Noise and vibration sources emanating from site establishment works and preparation for construction may include:

- geotechnical investigations to confirm the ground condition
- construction of access tracks and installation of boundary fencing

- the establishment of a temporary construction site compound in a fenced-off area within the development footprint
- earthworks
- construction of access tracks and installation of boundary fencing
- site survey to confirm infrastructure positioning and placement
- geotechnical investigations to confirm the ground condition.

Upon completion of the site establishment and pre-construction activities described above, noise and vibration sources associated with construction will typically be related to the following activities:

- foundation works (dependent on technology type)
- installation of electrical and mechanical infrastructure.

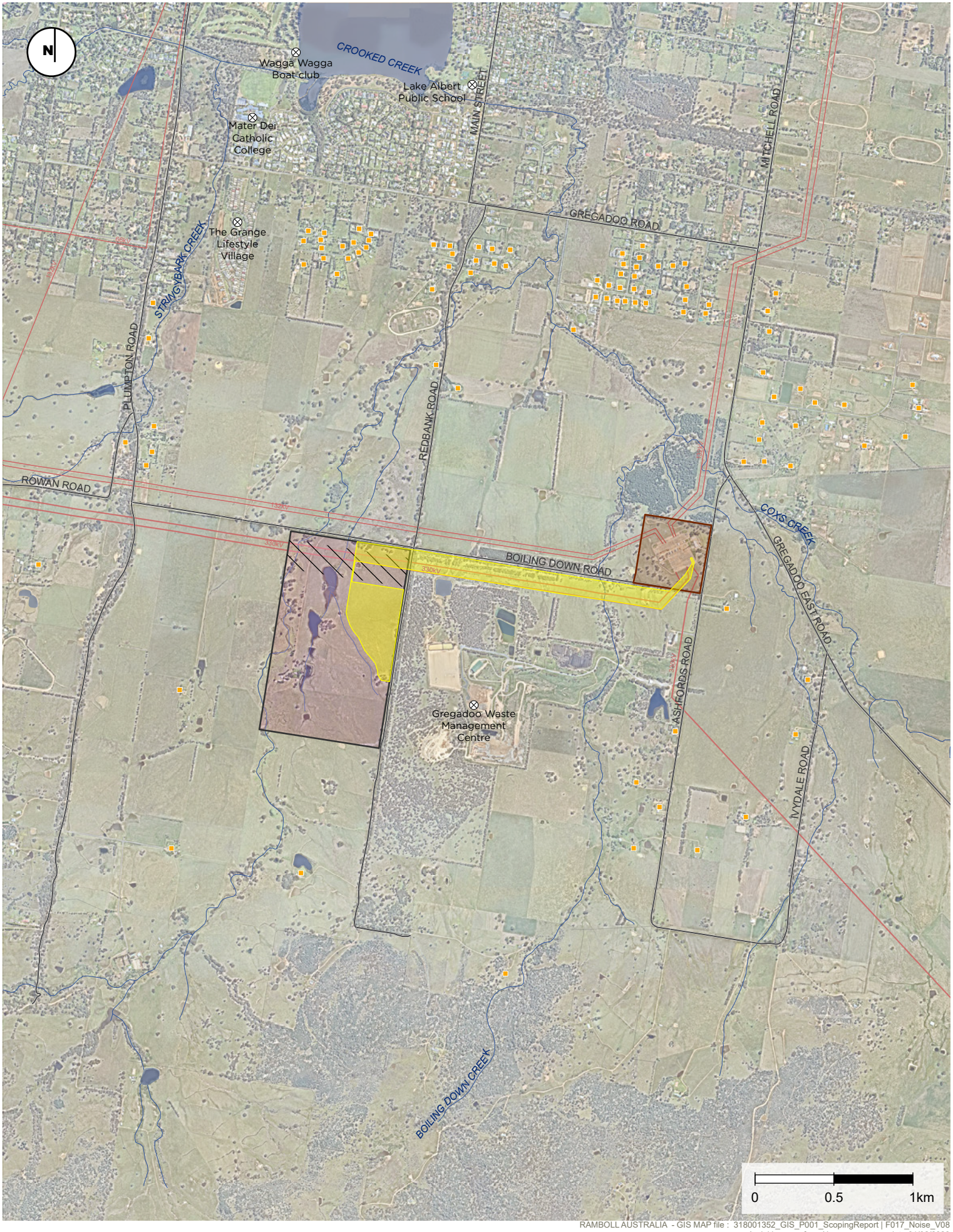
The surrounding receivers may experience temporary impacts during construction given the nature of the surrounding area and likely low background and ambient noise levels, particularly during higher noise generating activities such earthworks. Noise impacts will be managed in accordance with the relevant guidelines.

Operation

Operational noise generating infrastructure may include but are not limited to:

- BESS
- vehicles
- PCS
- substation.

Despite operating 24 hours, impacts during operation are likely to be minor and largely associated with the operation of electrical infrastructure such as the substation and BESS, and repair or maintenance works that may be required throughout operation. There may be some noise generated by vehicle movements along the haulage route, however predominantly light vehicles would be required to access the site aside from some heavy vehicles that may be required for repair and maintenance works.



RAMBOLL AUSTRALIA - GIS MAP file : 318001352_GIS_P001_ScopingReport | F017_Noise_V08
Aerial imagery from Nearmap capture date 01/02/2023

KEY

- Site boundary
- Indicative development area
- Sensitive receiver
  - Non-associated dwelling
- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV Transgrid substation
- Waterway

Figure 7-6 | Noise and vibration – sensitive receivers identified within two kilometres

A summary of the potential noise and vibration impacts from the project is provided in **Table 7-10**.

Table 7-10: Potential impacts – noise and vibration

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Noise and vibration impacts from the operation of construction equipment and machinery	Moderate / Short term	Direct	Sensitive (social value) Sensitive (environmental value)	Y	• Avoid – locate site compounds away from sensitive receivers. • Minimise – use best available technologies to reduce noise and vibration emissions.
Construction	Noise impacts from road traffic	Low / Short term	Direct	Sensitive (social value) Sensitive (environmental value)	Y	• Avoid – planning site access routes to minimise the impact on sensitive land uses as much as is feasible. • Minimise – restricting deliveries to site to daytime hours where possible.

Assessment level and approach

A noise and vibration assessment would be completed for the project in accordance with:

- Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009)
- NSW Road Noise Policy (Department of Environment, Climate Change and Water, 2011)
- Noise Policy for Industry (Environment Protection Authority, 2017)
- Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006)
- British Standard BS7385.2 – 1993 Evaluation and Measurement for Vibration in Buildings, Part 2 – Guide to damage levels from ground borne vibration
- DIN 4150: Part 3-1999 Structural vibration – Effects of vibration on structures 1999.

The noise and vibration assessment would include the following methodology:

- undertake an initial desktop review to identify noise sensitive receivers from aerial photography
- establish the need to undertake noise monitoring to determine ambient and background noise levels
- establish project noise goals for the construction and operation of the project
- identify the likely principal noise sources during construction and operation, and their associated noise levels including construction traffic noise
- assess the potential noise, vibration and sleep disturbance impacts associated with construction, operational and decommissioning aspects of the project using a noise prediction method
- provide feasible and reasonable noise and vibration mitigation and management measures where noise or vibration objectives may be exceeded.

The noise and vibration assessment would have regard to potential future rural-residential developments in proximity to the site as described in **Section 7.3.1**. Cumulative impacts with other projects and existing activities in the locality would also be considered.

7.3.5 Traffic and access

Existing environment

Surrounding road network and haulage route

Haulage routes during construction, operation and decommissioning are expected to comprise a combination of higher volume state roads and low volume local roads closer to the site. A potential haulage route and work access route is presented in **Figure 7-7**. The haulage route may include the following roads:

- Sturt Highway
- Bakers Lane
- Inglewood Road
- Mitchell Road
- Ashfords Road
- Boiling Down Road.

The site would be accessed off Boiling Down Road. Wagga Wagga City Council has indicated in initial consultations that heavy vehicle movements on Plumpton Road should be avoided.

Heavy vehicle movements associated with the construction of the project would emanate from the Sturt Highway (from Sydney, Newcastle or possibly Melbourne ports for the bulk of equipment). Heavy vehicles would travel via Bakers Lane, Inglewood Road, Mitchell Road and Ashfords Road, onto Boiling Down Road and approach the site access from the east, thereby avoiding Plumpton Road.

Determination of the most efficient access route for construction traffic, including any necessary road upgrades, will be completed in consultation with Wagga Wagga City Council and TfNSW.

Potential upgrade requirements

Minor roads along the proposed haulage route tend to be unpaved dirt roads, including Boiling Down Road on which the primary site access is located. Sightlines at most intersections have sufficient sight distance of oncoming traffic and hazards. Turning bays are not found along the haulage route however minor roads typically widen at the intersection such that left and right turns can queue independently and simultaneously.

Based on the most recently available traffic data obtained from Wagga Wagga City Council and factoring in a two per cent annual traffic growth rate, rural roads along the haulage route likely have sufficient spare capacity to accommodate traffic generated by the project (SCT Consulting, 2022), however these projected volumes will be confirmed in the traffic and transport assessment to be undertaken as part of the EIS.

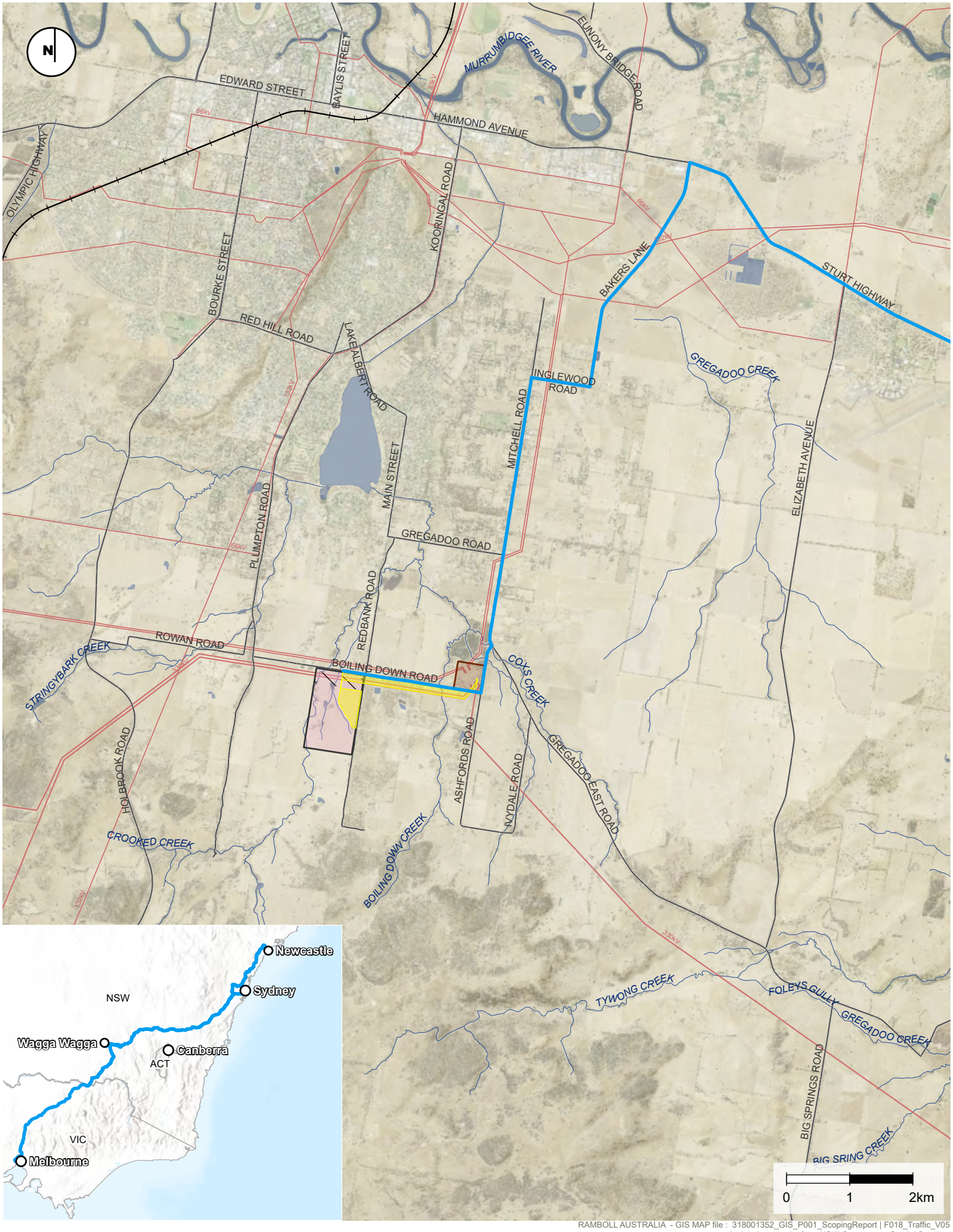
Road upgrades along the haulage route are committed to in the development of Gregadoo Solar Farm, a recently approved development which will be located just north of the Gregadoo Waste Management Centre. Gregadoo Solar Farm is expected to share the same haulage route as the project aside from the length of Boiling Down Road where access to the site is proposed. These upgrades are discussed further in the following sections. Although the project is not dependent (or seeking to rely on) road upgrades or other works associated with the Gregadoo Solar Farm, it is anticipated that the project would be subject to similar upgrade requirements set by the relevant authorities.

Public and active transport

Wagga Wagga Train Station provides regional train services via the TrainLink network connecting to Sydney and Melbourne, and a local bus network operates throughout the suburbs surrounding Wagga Wagga Train Station. Neither of these services reach the site. The rail line does not intersect with the proposed haulage or worker access routes. Bus route 965 runs on some sections of the Sturt Highway that are proposed to be used as part of the haulage route.

Wagga Wagga City Council is in the process of constructing several cycleway links throughout the area, however these active transport routes also do not reach the site. A section of the Forest Hill Link runs on sections of Bakers Lane, Inglewood Road and Mitchell Road that are proposed to be used as part of the haulage route.

There are no footpaths along on Boiling Down Road or Redbank Road and there is likely little to no pedestrian activity. Similarly, there is no dedicated cyclist infrastructure, and any cyclists using these roads are required to cycle in the traffic lane. It should also be noted that Boiling Down Road is unsealed.



RAMBOLL AUSTRALIA - GIS MAP file : 318001352_GIS_P001_ScopingReport | F018_Traffic_V05
Aerial photography from NSW Government Spatial Services

KEY

- Site boundary
- Indicative development area
- Proposed potential access route
- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV Transgrid substation
- Railway
- Waterway

Figure 7-7 | Traffic and Transport – proposed access route

Potential impacts

Construction

Average daily traffic generation during construction of the project is anticipated to be:

- up to 20 passenger vehicles per day (20 in and 20 out)
- during a two-month peak construction period:
  - up to 40 heavy vehicles (including B doubles) per day (40 in and 40 out)
- for the balance of the constructions phase:
  - up to 10 heavy vehicles per day
- up to five OSOM vehicles (in total) during the construction phase.
- peak hour traffic generation is anticipated to be:
  - a maximum of 20 light vehicle during the morning and evening peak hour (20 in and 20 out)
  - a maximum of four heavy vehicle during the peak hour (four in and four out).

It is likely that most of the construction workforce would be transported to site via bus (this has been accounted for in the above estimate traffic movements).

Peak heavy vehicle trips are expected to occur during civil and structural works, associated with the delivery of materials, plant and equipment. Deliveries of batteries and enclosures are anticipated to occur in batches.

Road upgrades were specified as part of the Development Consent for the Gregadoo Solar Farm, which included sealing Boiling Down Road a minimum length of 30 metres from its intersection with Ashfords Road. This upgrade could be completed by the time the construction phase for the project commences, however further road upgrades may be required.

The intersection level of service along the haulage route and worker access route is unlikely to be impacted by the project due to the low traffic volumes expected when combining the projected future existing traffic volumes along these routes and the traffic expected to be generated by the project during construction. However, a review of queuing will be undertaken in the EIS to confirm that queueing by turning vehicles associated with the project would not impact existing intersection operations.

Most rural intersections are priority controlled with basic left / right turn treatments, however those intersections that do not have turning bays will be assessed against the warrants using peak hour traffic volumes with the addition of the construction vehicles associated with the project. Intersection upgrades were specified as part of the Development Consent for the Gregadoo Solar Farm, including an upgrade of the intersection of Mitchell Road and Ashfords Road, and an upgrade of the intersection of Ashfords Road and Boiling Down Road. However further road upgrades may be required for the project, which will be identified in the EIS.

An initial review of the proposed new access points on Boiling Down Road and Redbank Road indicate that safe intersection sight distance would not be a significant issue considering the fairly straight alignment of these two roads, however this will also be further assessed as part of the EIS. Sturt Highway, Inglewood Road and parts of Bakers Lane and Mitchell Road are TfNSW approved B-double routes, however the project may require transportation of project infrastructure, such as transformers, using OSOM vehicles. Turning requirements at intersections will therefore need to be assessed as part of the EIS.

The project is unlikely to impact on existing bus operations when combined with future existing traffic conditions based on a two per cent annual growth rate. However, impacts to public/school transport will assessed further in the EIS when expected traffic volumes associated with the project will be confirmed. The project is also not anticipated to impact on rail corridor or level crossings as the rail line does not intersect the haulage or worker access routes.

Due to the rural nature of the area surrounding the site, condition of the existing roads, and distance from the City of Wagga Wagga, local active transport (such as walking and cycling networks) demand is unlikely to be high. The project is therefore not anticipated to generate significant impacts to active transport. However, there is a potential for temporary disruption to active transport associated with road or intersection upgrades that may be required along the haulage route. Impacts to active transport will be further assessed in the EIS.

The effect of the short-term increase in traffic associated with project construction is not expected to substantially impact on local road safety, however there is still a risk associated with construction traffic interacting with general traffic, with elevated risk when construction vehicles are entering and leaving the site. A review and safety assessment of crash data along the haulage route and worker access route will be undertaken as part of the EIS to determine if there are any accident clusters or existing safety issues for the project to be aware of.

Operation

Site traffic demand would decrease after construction is complete and operations commence. Once the project is operational, it would likely operate unmanned on a day-to-day basis. The project would require six to 10 staff on the basis of one full week each month. There will also be certain activities such as inverter or substation maintenance which could see an additional two to six people on site for two to three weeks during the year. A cleaner would also attend the site periodically. Most of the vehicles accessing the site would be light vehicles, aside from some heavy vehicles that may be required to undertake maintenance activities and repairs. It is likely there would be minimal impact from operational traffic.

Traffic demand during decommissioning is unknown at this stage, however it is expected to either be lower or equivalent to the construction period. Impacts associated with traffic and access are therefore anticipated to be either similar or less than those expected during construction with similar or reduced mitigation measures required. Potential impacts resulting from decommissioning of the project will be assessed in further detail in the EIS.

Cumulative impacts

The Gregadoo Solar Farm is the development most likely to contribute to cumulative impacts in association with the project, due to both its location, being immediately northeast of the site, and that it shares a similar haulage route to what would likely be required for the project.

As part of the consent for this development, road upgrades were specified to minimise the impact of construction traffic on the existing road environment. The upgrades include the following along the haulage route:

- upgrade of the intersection of Mitchell Road and Ashfords Road, including providing a Basic Right Turn Treatment (BAR)
- upgrade of the intersection of Ashfords Road and Boiling Down Road, including sealing Boiling Down Road a minimum length of 30 metres from its intersection with Ashfords Road.

These road upgrades could be completed by the time the construction stage for the project commences, however this will be confirmed in the traffic and transport assessment to be prepared as part of the EIS.

The project may result in cumulative impacts from concurrent construction periods if the combined construction traffic volumes require further road or intersection upgrades, or if management of the combined construction traffic is required to keep impacts within acceptable limits. Cumulative impacts may also occur if the construction stage of one project commences immediately after construction is completed for a separate project due to construction fatigue, especially given both projects share the same haulage route. In the same way, the operation of the Gregadoo Waste Management Centre would likely coincide with the project haulage routes. Potential impacts will be assessed in further detail in the EIS.

Several action items relating to Sturt Highway were outlined in the Wagga Wagga Integrated Transport Strategy and Implementation Plan 2040, which was released by council in August 2017 to provide efficient, safe and low impact freight movement. These include the investigation of an alternate heavy vehicle route from the Sturt Highway to the Olympic Highway and review of heavy vehicle current usage of existing northern infrastructure, along with the preservation of a heavy vehicle bypass corridor south of the Sturt Highway within council strategies. The heavy vehicle bypass corridor to be preserved south of Sturt Highway may potentially be on the alignment of Boiling Down Road, which would change the environment of the site access. However, the status and timings of the above action items is unknown, and they are noted in the strategy as being medium-term actions (6-15 years). They are therefore unlikely to contribute to cumulative impacts resulting from the project.

A summary of the potential traffic and access impacts from the project is provided in **Table 7-11**.

Table 7-11: Potential impacts – traffic and access

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Increased traffic on the local road network	Moderate / Short term	Direct Cumulative	Sensitive (environmental value)	Y	• Minimise – implementation of traffic controls.
Construction	Temporary disruptions to traffic movements on the local road network	Moderate / Short term	Direct Cumulative	Sensitive (environmental value)	Y	• Minimise – implementation of traffic controls.
Construction	Upgrades to roads and intersections required to accommodate OSOM vehicles	Low / Short term	Direct	Sensitive (environmental value)	Y	• Minimise – design of road and intersection upgrades will be undertaken in consultation with road authorities and councils.

Assessment level and approach

The traffic and transport impact assessment approach for the EIS will include:

- review of local council traffic and road policies
- conducting traffic surveys to assess existing road usage at key intersections
- assessment of existing traffic and transport network through:
    - traffic volumes along the haulage and worker access routes
    - review and safety assessment of crash data (along the haulage route)
    - safe intersection sight distance assessment at site access points
    - assessment of critical intersections using Austroads intersection warrants
    - review of public transport / school transport services
    - review of active transport facilities
    - review of existing parking provisions and property access
- quantitative assessment of construction traffic impacts including potential requirements for OSOM vehicles, to confirm the impacts on traffic and transport conditions and property access, and the requirement for any mitigation measures such as roadway or intersection upgrades. The assessment will also include consideration of the regional haulage route to be determined for the project. The assessment would provide details of the OSOM route from port to site. Potential cumulative impacts associated with other developments will also be assessed in further detail
- qualitative assessment of operational traffic impacts, due to the minimal impacts expected during the operational phase, and qualitative assessment of decommissioning traffic impacts due to the traffic volumes or future conditions being unknown for this stage of the project.

The traffic and transport assessment in the EIS will identify mitigation measures which will include the development of a Construction Traffic Management Plan (CTMP) in consultation with TfNSW and council. The CTMP would include any other required mitigation measures that may be identified in the EIS.

7.3.6 Water quality, hydrology and flooding

Existing environment

Hydrology

The project is situated within the Murrumbidgee catchment area, with the Murrumbidgee River flowing east to west approximately eight kilometres north of the site beyond the Wagga Wagga CBD, where it eventually confluences with the Murray River at Balranald, approximately 380 kilometres northwest of the site.

There are several Wetlands of International Importance (Ramsar) (also deemed Nationally Important Wetlands) located upstream of the site following the Murrumbidgee River. These include:

- Banrock Station wetland complex, approximately 600-700 kilometres upstream of the site near the township of Kingston on Murray on the River Murray floodplain
- Hattah-kulkyne lakes, approximately 400-500 kilometres upstream of the site in north-western Victoria about 480 kilometres northwest of Melbourne near the Murray River
- Riverland, approximately 500-600 kilometres upstream of the site adjacent to the Murray River between Renmark and the Victorian and NSW borders
- The Coorong, and Lake Alexandrina and Albert Ramsar Wetland, approximately 600–700 kilometres upstream of the site at the mouth of the Murray River.

- The only named drainage line within the project site is Crooked Creek. There are two unnamed ephemeral tributaries to Crooked Creek also within the site. Crooked Creek discharges to Lake Albert approximately 2.8 kilometres north of the site. The origin of these channels is first and second order streams south of the site. Hydrological features including the above-mentioned waterways within the site and local surrounding area are presented in **Figure 7-8**.

Flooding

A review of Wagga Wagga MOFFS (City of Wagga Wagga, 2021) shows the development site is subject to a peak flood depth of less than 150mm for all modelled flood extents (0.2 EY, 10/5/2/1/0.5/0.2% AEP and PMF), no constraints in terms of hydraulic hazard for 0.2/1/5% AEP events and that the indicative development footprint of the project is located outside the flood planning area

Crooked Creek is mapped as a floodway in the 0.2% and 1% AEP events.

The Flood Planning Level (FPL) is the height used to set floor levels for houses in flood prone areas. Typically, the FPL is defined as the 1% AEP flood level plus 0.5 metres freeboard, however Council has determined that a freeboard of 0.3 metres for residential FPL is appropriate in areas affected by overland flow in Wagga Wagga. The project would need to ensure that the earthworks required to establish the FPL would not impact flood behaviour.

The project infrastructure and associated works are not proposed within land mapped as the Flood Planning Area and greater than 40 metres from the top of bank of a first order drainage line that flows into Crooked Creek.

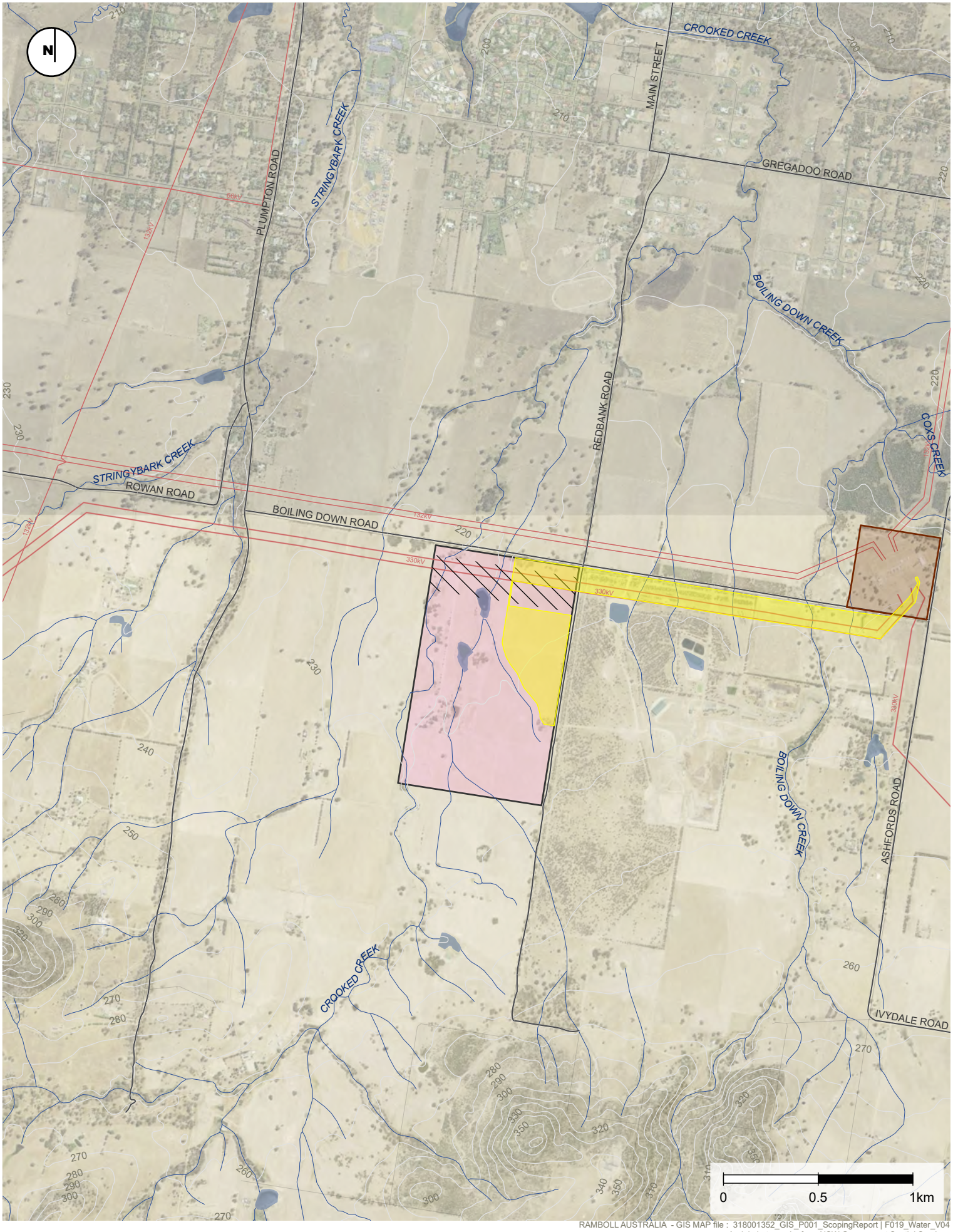
The site is not mapped as being groundwater vulnerable under the Wagga Wagga LEP.

Potential impacts

Water would be required for all stages of the project, however only minimal volumes of water are expected to be required during operation. Water would be required for a range of activities such as dust suppression, concrete works, and compaction during construction and for use in the permanent on site ancillary facilities during operation, including the administration building and for firefighting purposes.

Water required during construction and decommissioning stages of the project is expected to be sourced from a legal source such as a tanker and during operations, roof water would be captured from the onsite buildings stored in tanks for re-use.

A summary of the potential water impacts from the project is provided in **Table 7-12**.



RAMBOLL AUSTRALIA - GIS MAP file : 318001352_GIS_P001_ScopingReport | F019_Water_V04
Aerial photography from NSW Government Spatial Services

KEY

- Site boundary
- Indicative development area
- 10m elevation contour
- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV Transgrid substation
- Waterway
- Waterbody

Figure 7-8 | Water quality and hydrology

Table 7-12: Potential impacts – water

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction and operation	Increase to impervious fraction of the site	Low / Long term	Direct	Sensitive (environmental value)	Y	• Minimise – keep paved areas to a minimum to maximise site drainage potential.
Construction	Mobilisation of sediments from ground disturbing activities which could enter waterways via runoff	Low / Short term	Direct	Sensitive (environmental value)	N	• Avoid – avoid ground disturbance where possible. • Minimise – install sediment and erosion controls in accordance with Managing Urban Stormwater: Soils and Construction (Landcom 2004).
Construction and operation	Water pollution risks	Low / Short term	Direct	Sensitive (environmental value)	N	• Avoid – avoid chemical use and storage within 40 metres of any watercourses. • Minimise – use spill protection.
Construction and operation	Changes to surface water regimes leading to increased localised flooding	Low / Long term	Direct	Sensitive (environmental value)	Y	• Avoid – no artificial structures installed within 40 metres of any watercourses. • Avoid – no earthworks in floodways. • Minimise – keep paved areas to a minimum to maximise site drainage potential.
Construction	Interception of groundwater and impacts to the quality, quantity or recharge	Low / Short term	Direct	Sensitive (environmental value)	N	• Avoid – minimise depth of excavations where possible.

Assessment level and approach

The methodology for the water assessment would include:

- desktop review to define the existing environmental conditions of the site including:
  - review of rainfall and evaporation data relevant to the site
  - identification of catchments, watercourses and water sources (surface and groundwater)
  - review of existing water quality data
- quantification of water demand and water supply arrangements
- identification of any likely impacts to:
  - waterfront land
  - water quality and quantity of surface and groundwater resources
  - other water users
- identification of water management measures required for the project
- flood modelling and assessment of the potential effects of the project on flood behaviour.

7.3.7 Aboriginal heritage

Preliminary investigations

A preliminary Aboriginal heritage constraints memo was completed by OzArk in 2022 for the larger project site area prior to project refinements. The findings of which have been incorporated into this section.

Existing environment

The site is within the southern boundaries of the territory of the Wiradjuri tribal and linguistic group (Tindale, 1974), within the Riverina on the south-western margin of the Wiradjuri territory. Prior to British settlement, the eastern margins of the Murrumbidgee River basin supported woodland and forest habitats that provided home to a wide range of exploitable resources for the Aboriginal population including possums which provided a ready source of meat and fur for cloaks (Kabaila, 1998). Also used were vegetables including the roots of daisy yams (Myrrnong), the tubers of lilies and orchids, stands of bracken fern, and Kurrajong roots. As the Murrumbidgee River enters the western slopes of the Wagga Wagga area, the landscape becomes more an open plain woodland becoming increasingly arid with the western flow of the river. The grassland plains were characterised by kangaroos and emus that were hunted (Kabaila, 1998). The frequent floods of the Murrumbidgee River provided the local Aboriginal population with an abundance of resources, with receding floodwaters leaving the drying pools stocked with freshwater mussels, yabbies, fish, and waterfowl as well as aquatic plants (Kabaila, 1998).

Disease travelled the rivers of south-eastern Australia and decimated Indigenous populations even before the earliest physical presence of the British in the local area, while the beginnings of settlement by squatters, selectors, and eventually ex-gold diggers, significantly disrupted the Aboriginal population. Conflict arose in the Wagga Wagga area due to settlers being unwilling to share their goods and reacting violently to the Aboriginal people killing sheep or cattle. It is thought that by the 1900s there may have been as few as 20 local Aboriginal people left in the Wagga Wagga district as a result of disease, starvation, the ill effects of alcohol, and localised massacres (Green, 2002).

Several surveys have previously been undertaken in the regional area for other projects, identifying many Aboriginal sites including some large artefact scatters and open camp sites, along with scarred trees. However, assessments undertaken near the project have either recorded

low density, disturbed artefact scatters or modified trees. These sites tend to be associated with waterways.

A search of the Heritage NSW administered Aboriginal Heritage Information Management System's (AHIM) database was undertaken 21 February 2023, identifying 30 registered Aboriginal sites within a study area of seven kilometres by eight kilometres around the site (those within the map extent are shown in **Figure 7-9**). No registered sites were identified within the project site, with the closest site being modified trees located approximately 165 metres east of the site (56-1-0001) and 371 metres east (56-1-0037). However, there is suspicion that some of these sites either have wrong coordinates in AHIMS or the sites have been misidentified as all plot to landforms where no trees are visible in aerial imagery.

No native titles claims were identified in the region of the site. It is also unlikely that there are any native title claims under the *Aboriginal Land Rights Act 1983* as the site is freehold land.

Based on the previous preliminary constraints assessment, taking into consideration the landforms within the site and review of the AHIMs data and previous studies undertaken, the following types of previously unrecorded Aboriginal sites may be present in the site:

- isolated finds: these sites can occur anywhere, particularly within undisturbed contexts, and may be identified within the site
- open artefact scatters: this site type is not predicted to be common as most of the project site is within flat landforms distant to reliable water sources, and high degree of disturbance in the site
- culturally modified trees: this site type is predicted to be rare although may be present where mature vegetation is present.

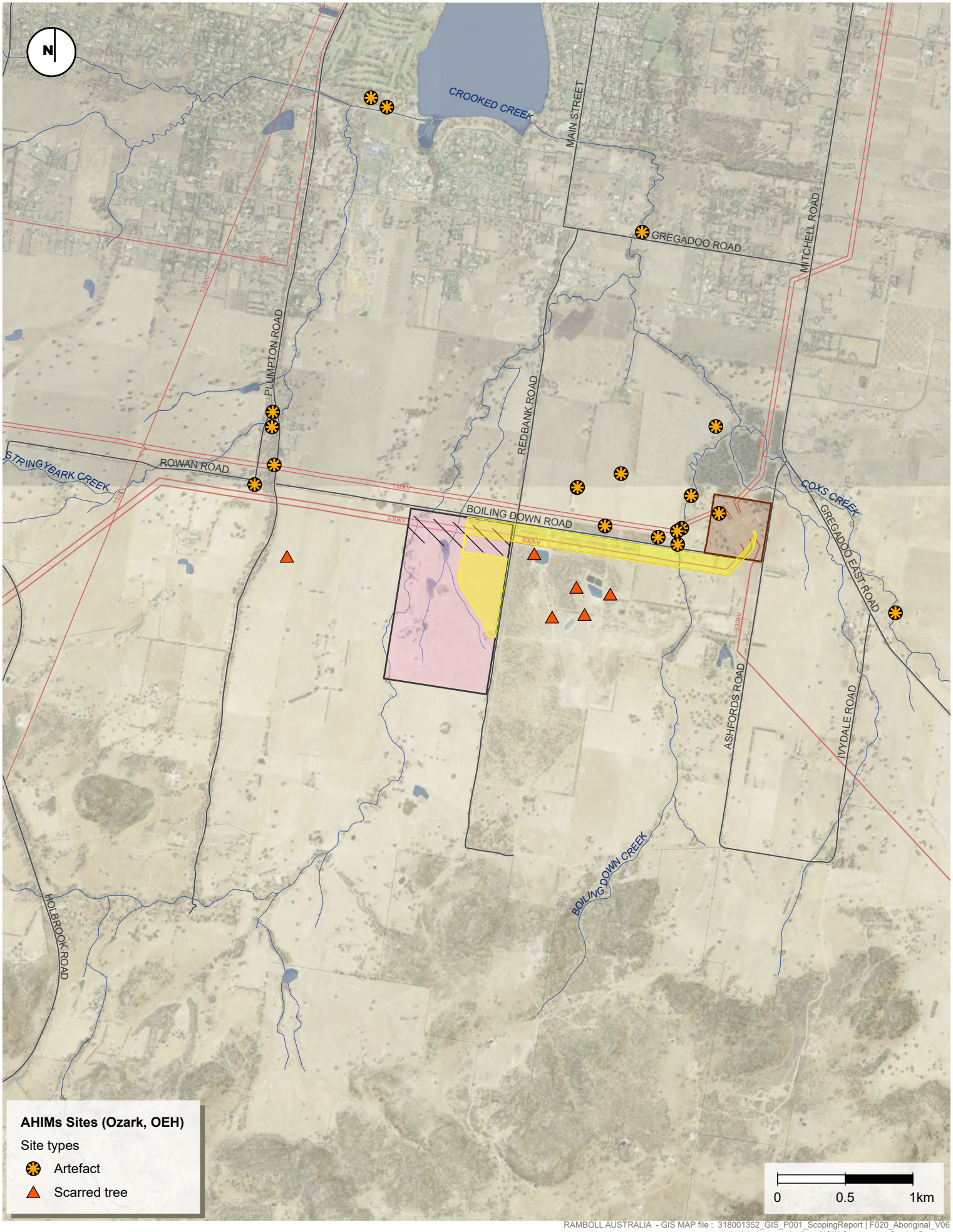
Potential impacts

The project would involve ground disturbance works associated with grading of the site, and construction of project infrastructure. The operational stage of the project is unlikely to involve significant ground disturbance.

Based on a previous preliminary constraints assessment prepared by OzArk, taking into consideration the landforms within the site and review of the AHIMs data and previous studies undertaken, significant Aboriginal objects are unlikely to be identified in the site. The most likely landforms where Aboriginal objects may be recorded are along Crooked Creek and its tributaries, however extensive areas of these landforms are avoided by the potential developable area and indicative development footprint, so potential Aboriginal objects located adjacent to drainage channels are unlikely to be impacted by the project.

Previously unrecorded Aboriginal objects that may be located within the site and have the potential to be impacted by the project, include low density artefact scatters, isolated finds, and potentially scarred trees in remnant vegetation.

A summary of the potential Aboriginal heritage impacts from the project is provided in **Table 7-13**.



RAMBOLL AUSTRALIA - GIS MAP file : 318001352_GIS_P001_ScopingReport | F020_Aboriginal_V06
Aerial photography from NSW Government Spatial Services

KEY

- Site boundary
- Indicative development area
- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV Transgrid substation
- Waterway

Figure 7-9 | Aboriginal heritage – preliminary identified sites

Table 7-13: Potential impacts – Aboriginal heritage

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Potential to impact on previously unrecorded Aboriginal objects, sites, or culturally modified trees	High / Long term	Direct	Sensitive (social value)	Y	• Avoid – siting of infrastructure would be designed to avoid known sites and sensitive landforms. • Minimise – an unexpected find procedure would be developed and implemented during construction. • Offset – any sites that cannot be avoided would be salvaged by an archaeologist.
Construction and operation	Potential to impact on social or cultural values of the site	High / Long term	Perceived	Sensitive (social value)	Y	• Minimise – consultation with Aboriginal representatives to define and understand social and cultural values of the site.

Assessment level and approach
The assessment of Aboriginal cultural heritage values would be addressed in an Aboriginal Cultural Heritage Assessment Report (ACHAR. Preparation of the ACHAR would include consultation with representatives from the Registered Aboriginal Parties (RAPs).

The assessment would follow the Code of Practice for the Investigation of Aboriginal Objects in New South Wales (Code of Practice), (Department of Environment, Climate Change and Water NSW, 2010a), the guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH, 2011) and the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department of Environment, Climate Change and Water NSW, 2010b).

The preparation of the ACHAR would include the following methodology:
- undertake background research to formulate a predicative model for the site and land subject to disturbance outside the site (such as road upgrade locations)
- identify and record objects or sites of Aboriginal heritage significance within the site as well as any landforms likely to contain further archaeological deposits
- undertake an Aboriginal cultural values assessment in consultation with RAPs of tangible and intangible cultural heritage values that have potential to be impacted by the project
- undertake test excavation if warranted
- assess the significance of any recorded Aboriginal sites, objects, or places likely to be impacted by the project, in consultation with RAPs
- assess the likely impacts of the proposed work to Aboriginal cultural heritage and provide management recommendations, in consultation with RAPs.

7.3.8 Social

Preliminary investigations
A preliminary social impact assessment was completed by AAP Consulting to support the scoping report and is included in **Appendix 3** The purpose of the preliminary assessment was to:
- gain an understanding of the project's social locality
- consider the characteristic of the communities within the social locality. This is described as the social baseline
- preliminary identification and evaluation of social impacts for different groups in the social locality and the level to which these impacts need to be addressed
- consider potential refinements or approaches in response to likely social impacts
- consider the remaining of the social impact assessment tasks including engagement.

Existing environment

Social baseline
The social baseline documents the existing social environment, conditions and trends relevant to the project and defines characteristics of the communities within the project's social locality, including any vulnerable groups. It considers any built or natural features on or near the project that could be affected and the intangible values that people may associate with these features.

To define the baseline of the social locality, the following aspects were considered:
- the site and regional context (refer to **Chapter 2**)
- planning policies and strategies relevant to the region (refer to **Chapter 3**)
- the project context and activities (refer to **Chapter 4**)

- the characteristics of surrounding communities and how positive and negative impacts may be reasonably perceived or experienced by different people, including those that may be vulnerable or marginalised
- the potentially affected built or natural features located near the project that have social value or importance (refer to **Section 2.4**)
- any relevant social, cultural, demographic trends or social change processes occurring now or in the past near the site
- the history of the site and the broader area, and any similar experiences people near the project have had
- the broader (indirect) area of social influence of communities that may be impacted
- cumulative impacts with other projects in the region (refer to **Section 7.5**).

A social baseline profile has been developed of the project's social locality, which for this project is defined as:

- one private property owner and any associated dwellings to be used for the project footprint including any ancillary facilities
- the suburbs and localities (SAL) that host or are adjacent to the project as per the Australian Bureau of Statistics (ABS) statistical areas of Rowan (the SAL in which the project is located), Gregadoo (the adjacent SAL directly to the east) and the host LGA of Wagga Wagga.

Stakeholder identification

Stakeholders may be affected groups or individuals that:

- live, work, or recreate near the project
- have an interest in the proposed action or change
- use or value a resource associated with the project
- are affected by the project e.g., may be required to relocate because of the project.

A stakeholder identification process was undertaken during the scoping phase for the project to support the planning and delivery of community and stakeholder consultation to inform the broader EIS, including the social impact assessment. Key stakeholder groups identified during the scoping phase are identified in **Section 6**. It is noted that stakeholders will be refined throughout the assessment process to reflect the direct and indirect social impacts arising as the project progresses and the EIS progresses.

Characteristics of the social locality

The project would be located at 233 Boiling Down Road Rowan, approximately nine kilometres southeast of the central business district of Wagga Wagga, within the City of Wagga Wagga LGA. Rowan is a small rural locality has a recorded population of 101 residents with a median age of 43 (Australian Bureau of Statistics, 2021). The landscape is predominantly characterised by agricultural land uses and large lot rural residences.

The closest regional township, where Rowan and surrounds would most likely access day to day services is Wagga Wagga. Wagga Wagga is the largest inland city in NSW, and is an important agricultural, military, and transport hub for Australia. The main sources of employment include healthcare and social assistance, construction, public administration and safety, education and training, and retail trade.

In 2021, Wagga Wagga City had a higher proportion of children (under 18) and a lower proportion of persons aged 60 or older than regional NSW (Id.community , 2023).

The region is home to the Wiradjuri people – the largest Aboriginal group in central NSW, by area and population. The people of the Wiradjuri country are known as "people of three rivers" being the Macquarie River (Wambool), Lachlan River (Kalari) and the Murrumbidgee River (Murrumbidjeri) which border their lands. Aboriginal people account for approximately 6.6% of the Wagga Wagga LGA (Australian Bureau of Statistics, 2021).

Key land uses in the local and broader region include agriculture, consisting primarily of wheat-growing, dairy farming, mixed farming and sheep grazing. More Wagga Wagga City residents worked in health care and social assistance than any other industry in 2021. Other top industries of employment include education and training (10.6%), public administration and safety (9.9%) and retail trade (9.7%) (Remplan, 2023).

Potential impacts

Key issues and opportunities for the social locality

The social baseline presents some of the strengths and challenges facing communities in the locality and it has been used as a basis, where possible, to assess the social impacts of the project. A summary of the key characteristics of the social locality and the strengths and challenges facing communities is outlined in **Table 7.14**.

Table 7.14: Key characteristics of the social locality

Community Characteristics	Strengths and challenges
• mix of urban and rural communities with a strong labour force and fairly high levels of affluence • diverse economy with a strong manufacturing and agricultural base • strong social ties with higher-than-average volunteer rates • strong connection to country, with Aboriginal persons accounting for a higher proportion of the population when compared to New South Wales.	• managing land use conflicts in the social locality due to urban growth and renewable energy • opportunities to utilise the strong manufacturing industry base of the region and skilled workforce • developing more and diverse employment and training services/opportunities for local people including Aboriginal and Torres Strait Islanders • conservation of heritage and environment, particularly with regard to natural disaster preparedness.

Vulnerabilities

From the social profile analysis undertaken for the project, it is possible to assess key areas of community resilience and risk in the LGA. The key findings are summarised in **Table 7-15** and identify several population groups that may be vulnerable to any social or economic changes within the social locality. These include:

- Aboriginal and First Nations people
- low income earners
- the elderly and those with a disability
- those with low levels of education and skills, including the long-term unemployed.

Table 7-15: Social baseline summary

Strengths	Vulnerabilities and opportunities within the social locality
Diverse economy including growing renewable energy services to the area	• temporary reduction in social amenity during construction which could have greater health impacts on the elderly or those living with illness or disability • impact on livelihoods and existing industry due to changes in land use • potential further restrictions to access to services for vulnerable groups due to influx of workers for major works • improved livelihoods due to access to employment opportunities • employment and training opportunities, and opportunities to strengthen community resilience to natural disasters such as drought and floods.
A stable population with high levels of community cohesion	• potential for reduced community cohesion due to differing perceptions on renewable energy and distributive equity, and changes to the population due to the construction workforce • service infrastructure will be vital for a growing population, including for vulnerable groups.
Low unemployment rates, high labour force participation rate and incomes	• lower levels of educational attainment, particularly bachelor's degree or above • low levels of educational attainment may mean the workforce is ill prepared for new industries and technologies.
Diverse natural capital, including diversity of natural resources, heritage items, agricultural lands, and national parks and reserves	• competing land uses in the region and managing community perceptions • vulnerability to natural disasters including fires and floods. • ongoing potential for conflict between different and similar industries utilising the natural capital of the area • potential for project to cause intangible harm to Aboriginal communities through cultural and physical loss • natural disaster preparedness.

Preliminary social impacts

The scoping of likely social impacts resulting from the project has been guided by the social impact assessment guideline and with reference to the social impact categories presented in **Table 7-16**.

Table 7-16: Social impact categories

Categories	Definition
Way of life	How people live, how they get around, how they work, how they play, and how they interact each day.

Categories	Definition
Community	Community composition, cohesion, character, how the community functions, and people's sense of place.
Accessibility	How people access and use infrastructure, services and facilities, whether provided by a public, private or not-for-profit organisation.
Culture	Aboriginal and non-Aboriginal, including shared beliefs, customs, values and stories, and connections to country, land, waterways, places and buildings.
Health and wellbeing	Physical and mental health especially for people vulnerable to social exclusion or substantial change, psychological stress resulting from financial or other pressures, access to open space and effects on public health.
Surroundings	Ecosystem services such as shade, pollution control, and erosion control, public safety and security, access to and use of the natural and built environment, and aesthetic value and amenity.
Livelihoods	People's capacity to sustain themselves through employment or business.
Decision-making systems	Including the extent to which people can have a say in decisions that affect their lives, and have access to complaint, remedy and grievance mechanisms.

The scoping phase determined a number of social impacts that required further investigation during the EIS phase. **Table 7-17** provides a summary of these impacts and demonstrates the interrelationships that exist between scoped impacts and the social impact categories.

Table 7-17: Scoped likely social impacts

Theme	Impact to people	Project activity	Social impact category	Affected people
Lifestyle and wellbeing	• changes to amenity resulting from construction, affecting how people live (i.e., because of construction dust, noise, light spill, and vibration)	• construction of the project including ancillary facilities and access roads	• way of life	• existing property owner • near neighbours
	• impacts to visual amenity as a result of construction and operation	• construction and operation	• surroundings	• existing property owner • near neighbours
	• potential safety risks to human life including electric shock, fire, flash burns, explosion, exposure to hazardous chemicals and released gases or short term exposure to very high levels of EMF	• operation of the project	• surroundings • health and wellbeing.	• existing property owner • nearby neighbours
Traffic and Transport	• increase in traffic in the locality, potential road closures, detours, causing day to day disruption for people in the locality due to increased travel times	• increased construction traffic, including heavy vehicles on local road network travelling to and from site • upgrades to roads and intersections required to accommodate OSOM vehicles	• access • health and wellbeing	• road users within the locality
	• increased heavy vehicle traffic on local roads causing damage and increasing maintenance costs for council and the community		• livelihoods	• council • broader community (road users and rate payers)
Land use	• potential biodiversity impact (including water and soil), potentially impacting on livelihoods, health and way of life	• construction and operation of the project	• surroundings • livelihoods.	• existing property owner • nearby neighbours

Theme	Impact to people	Project activity	Social impact category	Affected people
Culture	• likelihood of project to cause intangible harm through cultural and physical loss or tangible harm to items of heritage and cultural significance.	• construction of the project including land clearing and excavation	• culture	• elders, cultural knowledge owners, and people of Wiradjuri country
Socio-economic	• socio-economic benefits resulting from procurement, training and employment opportunities.	• construction and operation of the project, including construction activities, procurement, training and employment opportunities	• livelihoods • accessibility	• local business • potential workforce • Aboriginal and Torres Strait Islanders
	• construction and operation of this project and others leading to skills shortages or a shortfall in supplies for the region. This is also a cumulative impact.		• livelihoods • accessibility	• local business • broader community
	• community investment initiatives leading to improved sustainability and enhancing resilience.	• community contribution and benefits	• community	• community within the social locality
	• cecline in access to affordable housing, accommodation, and community services (including medical facilities) due to the temporary increase in population.	• employment of workforce during construction	• access	• community within the social locality
	• network resilience and the ability to reduce the chance of blackouts during high demand periods, overall reducing health and wellbeing risks associated with moderate blackout events.	• operation of the BESS	• health and wellbeing	• community within the social locality

Assessment level and approach
The social impact assessment would be undertaken in accordance with the Social Impact Assessment Guideline for State Significant Projects (Department of Planning, Industry and Environment, 2021e).

The social impact assessment will include:

- a detailed update of the baseline social profile to ensure that any further baseline data relevant to the impacts identified is obtained
- further validation of the area of social influence and identification of affected communities and vulnerable groups
- collection of primary research data through participatory engagement methodologies to understand the perceptions of the identified stakeholders within the social locality and those indirectly affected by the project
- a comprehensive assessment and evaluation of social impacts against existing baseline conditions.

The social impact assessment will seek broader involvement across the stakeholder groupings identified, over the subsequent phases of the EIS.

The scoped issues will be further explored and validated during the EIS preparation phase using several research methodologies, including a participatory and impartial engagement approach to inform the Social Impact Assessment (SIA). This engagement will build upon the engagement carried out by VEA as part of the development of the EIS.

7.4 Other issues

7.4.1 Landscape character and visual

Existing environment
The project site is characterised by naturally cleared land and modified paddocks that is used for grazing. Native vegetation is restricted to patches of trees and woodlands spread in pockets along creeks and dams within the site. There is dense vegetation to the east of the site along Redbank Road and Boiling Down Road interrupting visibility to the project site. Two sets of overhead high voltage transmission lines run parallel to the north (132kV) and south (330kV) of Boiling Down Road, connecting to Wagga Wagga substation, with the southern line located within an easement affecting the site. Project EnergyConnect (SSI-9172452) 500kV double circuit transmission lines would be positioned, when constructed on the southern side of the existing 330kV lines, within the site (refer to **Plate 7-1** to **Plate 7-6**).

Gregadoo Waste Management Centre is located east of the site across Redbank Road separated by land characterised by dense vegetation screening views from Redbank Road into the facility and from the facility into the site (**Plate 7-4**).

High voltage overhead transmission lines run parallel to Boiling Down Road generally in an east west direction within the project site with associated easements encompassing land along Boiling Down Road. Vegetated hills are situated beyond the southern boundary of the site (**Plate 7-6**).

Public roads around the project site include Boiling Down Road and Redbank Road. These roads are minor local roads which serve as access to surrounding residences.

To the north of the site, are the southern suburbs of Wagga Wagga. Closest to the project site, the southern suburbs consists of large lot residential character transitioning to urban and residential character. Between the site and Lake Albert approximately 2.8 kilometres away, the large lots slope towards the public recreation area surrounding the lake.

Topography within the residential character area throughout Wagga Wagga is predominantly flat with slight undulations in the west.

Large lot residential character is defined "Moderate density rural living character. Moderately modified landscape character with remnant vegetation along roads and drainage channels". Residential character is defined by "high density residential urban living … largely driven by suburban character" (Department of Planning and Environment, 2019).

Plate 7-2: View south west into site from corner of Redbank Road and Boiling Down Road

Plate 7-3: View from site facing north towards Wagga Wagga

Plate 7-4: View from Redbank Road into Gregadoo Waste Management Centre site

Plate 7-5: View facing south from Boiling Down Road into the site (existing transmission lines)

Plate 7-6: View within site looking east along transmission line easement

Potential impacts

Impacts on the visual amenity is predominantly assessed by its influence on the existing landscape and visual character and how the community regard these potential changes. There is potential that the community may feel there is a cumulative change in landscape character with increased residential development together with the project and other major projects.

The BESS component of the project would be a maximum height of seven metres and all other permanent on-site buildings (such as the control room, administration building etc) would be a maximum height of 8.5 metres. Based on topography, land to the southwest and east of the project may have some visibility of the project footprint. Due to existing built form, vegetation and other intervening factors, it is likely views from Wagga Wagga city centre and the Wagga Wagga suburbs would be limited. Visual impact from public receptor locations is limited to roads within a proximity of the project (Redbank Road and Boiling Down Road).

A summary of the potential landscape character and visual impacts from the project is provided in **Table 7-18**.

Table 7-18: Potential impacts – landscape character and visual

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Temporary reduction in visual amenity from construction infrastructure	Moderate / Short term	Direct	Sensitive (social value)	Y	• Minimise – locate temporary construction infrastructure away from sensitive receivers where possible.
Operation	Reduction in visual amenity from project infrastructure	High / Long term	Direct	Sensitive (social value)	Y	• Minimise – establish vegetation planting to provide visual screening where necessary.
Operation	Changes to the landscape character from agriculture to electrical infrastructure	High / Long term	Direct	Sensitive (social value)	Y	• Minimise – establish vegetation planting to provide visual screening.

Assessment level and approach
A visual impact assessment would include an assessment of the likely visual impacts of the project on surrounding sensitive receivers including residences, scenic or significant vistas, and possible views from the public domain such as nearby public roads.

A viewshed analysis would be prepared using geographical information services (GIS) tools and site inspections. Community and stakeholder engagement would assist in identifying locations within a local setting that may experience views of project infrastructure or may be areas that are valued by the local community. Where relevant, the visual impact assessment and EIS would include mitigation measures to help reduce the project's impacts on visual amenity.

7.4.2 Historic heritage

Existing environment
Hamilton Hume and William Hovell were the first British explorers to travel near Wagga Wagga, during their 1824 expedition to find new grazing land in the south of the colony. The first European settler in the Wagga Wagga area was Charles Tompson, an emancipated convict, who along with his family established the Eunonyhareenyha 'run' on the north bank of the river in 1832. In 1832, on the south side of the Murrumbidgee River, ex-convict George Best also established a pastoral run which he called 'Wagga Wagga' (or 'Woga Woga') from which the town took its name. Other settlers soon followed, all of them squatting on the land illegally. By 1836 the colonial government regulated their tenure and established a licensing scheme.

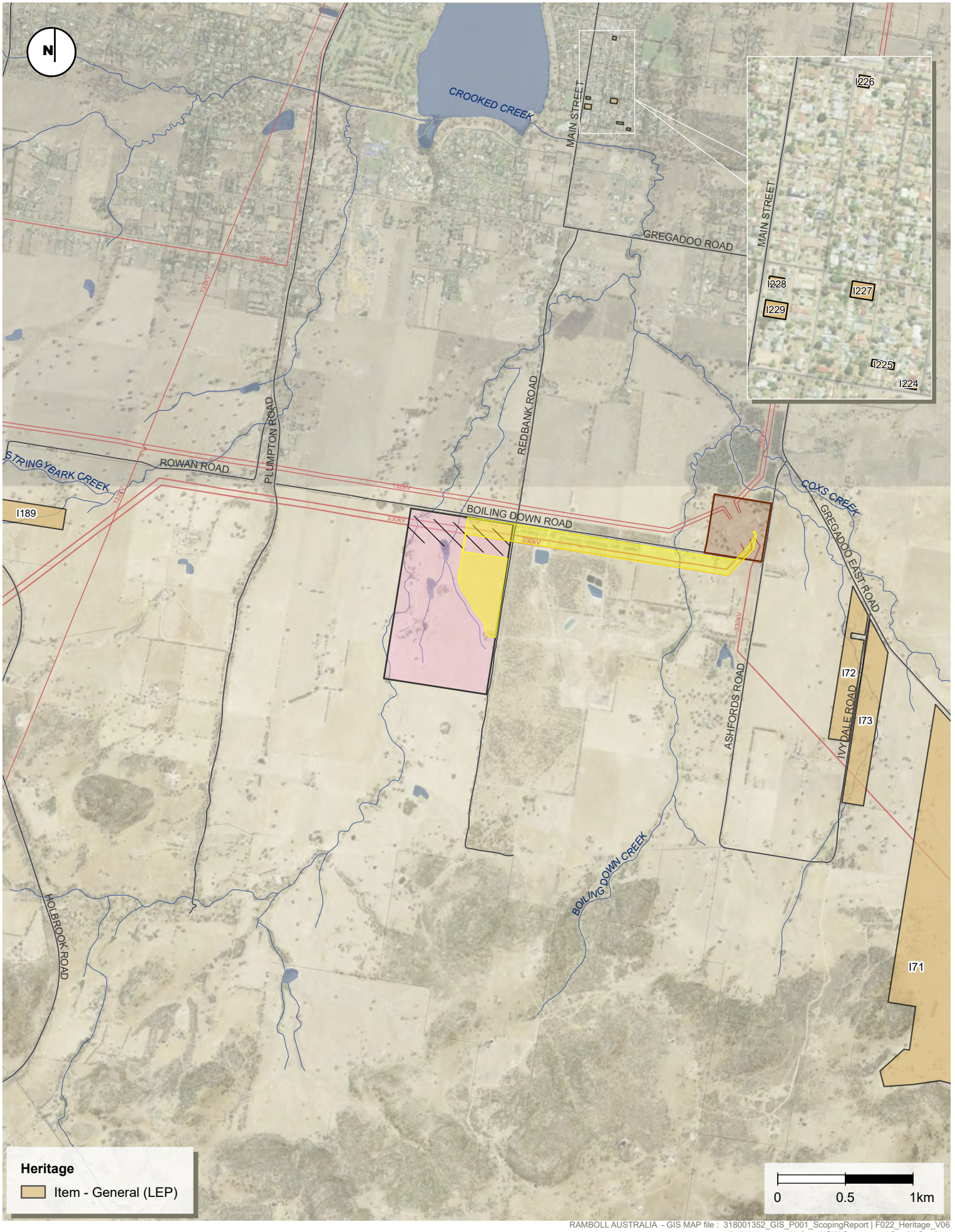
By 1847 there was the beginnings of a village formed near the ford used by most traffic passing through the area. The village included a crude blacksmith's shop and hotel. A post office was established in January 1849 and later that year the town was marked out by surveyor Thomas Townshend and formally gazetted as a village on 23 November 1849.

Parish maps indicate that the project site has been part of a closely subdivided landscape since at least 1881 when it appears that the larger Gumly Gumly Run had been divided into smaller holdings. While most of the project site was owned by the Graham family at this time, other portions were owned by the Harris and Johnson families. By 1898 the Graham family sold lots to the Booth and Angel families and the Harris family had also sold their single lot to the Angel family. Until at least the 1950s Crooked Creek was known at Tea Tree Creek with the modern name only appearing in parish maps of the 1980s.
A search of the Wagga Wagga LEP 2010 and the SHI for items of listed local and stage heritage significance found that there are no items listed within the project site or immediately adjacent.

The closest items of state heritage significance are in the town of Wagga Wagga to the north of the project site. Several items within Wagga Wagga City are listed on the Register of the National Estate which is a non-statutory archive. A search of the National Heritage List (Australia) and Commonwealth Heritage List found that there are no items of national heritage significance within or near the project site. The closest listed sites of local heritage significance are in **Table 7-19** and shown on **Figure 7-10.**

Table 7-19: Listed local heritage items near the project site.

LEP ID	Description	Distance to project site
I71	Stone ruin: remnant of the selector's cottage built post 1874	3.2 km east
I72	Ivydale Woolshed: no further information available	2.3 km east
I73	Ivydale Woolshed: no further information available	2.5 km east
I189	Rowan, dwelling: residential building	2.5 km west



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Aerial photography from NSW Government Spatial Services

KEY

- Site boundary
- Indicative development area
- Existing overhead transmission lines
- Existing transmission easement
- Existing 330kV Transgrid substation
- Waterway

Figure 7-10 | Historic heritage - heritage sites

Potential impacts

A summary of the potential historic heritage impacts from the project is provided in **Table 7-20.**

Table 7-20: Potential impacts – historic heritage

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction and Operation	Potential to impact on previously unknown historical archaeological relics.	Low / Long term	Direct	Sensitive (environmental value)	N	• Minimise – an unexpected find procedure would be developed and implemented during construction.

Assessment level and approach
Historic heritage values would be assessed in a heritage impact assessment. The heritage impact assessment would meet the following objectives:

- to identify whether historical heritage items or areas are, or are likely to be, present within the survey boundary
- to assess the significance of any recorded historical heritage items or areas
- determine whether the project is likely to cause harm to recorded historical heritage items or areas
- provide management recommendations and options for mitigating impacts.

A field assessment of the site would be undertaken as part of the heritage impact assessment by an experienced and qualified archaeologist. The assessment would be undertaken in accordance with the Heritage Council's Historical Archaeology Code of Practice (Heritage Council, 2006).

7.4.3 Air

Existing environment
The existing air quality at the site and within the surrounding area is expected to be generally good and typical of a rural environment.

Existing impacts to air quality are likely to include dust generated by agricultural practices and road traffic utilising both private driveways and public roads, particularly Boiling Down Road and Redbank Road which are currently unsealed roads, as well as operations at the Gregadoo Waste Management Centre

Potential impacts
The project is not expected to have a significant impact on air quality in the surrounding area. Air quality impacts are anticipated to be largely associated with construction, which may generate dust during earthworks and vegetation removal during dry periods, along with some vehicle exhaust emissions from machinery and heavy vehicles accessing the site. Impacts to the existing air quality during operation are expected to be negligible .

A summary of the potential air impacts from the project is provided in **Table 7-21**.

Table 7-21: Potential impacts – air

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Generation of dust from construction activities	Moderate / Short term	Direct	Sensitive (environmental value) Sensitive (social value)	Y	• Avoid – cease construction activities during high wind periods. • Minimise – implement best practice controls and management to minimise dust generation.
Construction	Release of emissions from use of construction vehicles and machinery	Low / Long term	Indirect	Sensitive (environmental value) Sensitive (social value)	Y	• Avoid – turn equipment and machinery off when not in use. • Minimise – use low emission technology where possible.
Operation	Potential smoke and / or toxic emissions resulting from potential fire	Moderate / Short term	Indirect	Sensitive (environmental value) Sensitive (social value)	Y	• Minimise – use low emission technology where possible. • Minimise – include adequate separation distances between onsite infrastructure and sensitive receivers to prevent fire propagation and compliance with 'Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning' (DPE 2011).

Assessment level and approach
Air quality and dust management will generally be assessed in accordance with relevant guidelines and policies including the National Greenhouse Accounts Factors (Australian Government, 2021) and NSW Climate Change Policy Framework (Office of Environment and Heritage, 2016).

The PHA (refer to **Section 7.3.3**) will identify and assess control measures to prevent fires and associated emissions.

The EIS will qualitatively consider the potential impacts to air quality and greenhouse gas and propose appropriate management and mitigation measures during the construction and operational phases of the project.

7.4.4 Waste and resources

Existing environment

Waste
The project would produce several waste streams during the construction and decommissioning phases. Minor quantities of waste would also continue to be generated by the day-to-day operation of the project.

The principal wastes expected to be generated during construction are:
- sewage
- domestic rubbish
- surplus topsoil and excavated material
- packaging material
- general construction debris.

Most waste would be classified as general solid waste.

In accordance with its Environmental Social Governance Policy, VEA is committed to ensuring that its assets are always developed, constructed, and operated to enhance positive effects and minimise adverse impacts on the environment, employees, and stakeholders.

To meet these expectations, waste management on site is governed by specific waste management plans which prioritise the reduction, re-use, recycle or re-treatment of waste. With disposal to landfill being the least preferred option.

A Decommissioning Plan would also be developed where installed infrastructure, including battery cells, is committed for recycling at the end of life.

All generated waste would be subject to standard waste minimisation and avoidance measures that would be adopted for the project, in accordance with Waste Classification Guidelines – Part 1: Classifying Waste (NSW EPA, 2014), ensuring that waste is either reused and recycled where possible, or disposed of appropriately where it is unable to be reused or recycled.

Resources
The key resources required for the project would likely include:
- sand for bedding for cable trenches

- aggregate and concrete for general building construction
- road base for pavements
- water for dust suppression, use in construction and potable water for workers.

Potential impacts

A summary of the potential waste and resource impacts from the project is provided in **Table 7-22**.

Table 7-22: Potential impacts – waste and resources

Phase	Potential impact	Scale of impact	Nature of impact	Sensitivity of receiving environment	Cumulative impacts (Y/N)	Potential mitigation measures
Construction	Pollution of land and water resulting from poor management of wastes	Moderate / Long term	Indirect	Sensitive (environmental value)	Y	• Minimise – management of wastes in accordance with a waste management plan.
Construction	Decreased availability of local resources including water, aggregate and sand etc	Low / Short term	Direct	Sensitive (economic value)	Y	• Minimise – consultation with Wagga Wagga Council to determine appropriate sources of resources.
Construction and operation	Decreased amenity resulting from poor management of wastes	Low / Short term	Direct	Sensitive (social value)	Y	• Minimise – management of wastes in accordance with a waste management plan.
Construction and operation	Disposal of wastes contributing to landfill	Low / Long term	Direct	Sensitive (environmental value)	Y	• Minimise – wastes would be recycled where possible.
Decommissioning	Recycling of battery components	Moderate / Long term	Direct	Sensitive (environmental value)	Y	• Minimise – consider reasonable and feasible alternative disposal methods for lithium battery components based on the industry standards at the time of decommissioning.

Assessment level and approach

An assessment of waste and resourcing impacts would be undertaken using a desktop assessment to understand the likely and potential waste and resourcing issues for the project. This would include:

- identifying the key resources required throughout the construction, operation and decommissioning phases of the project and their availability
- defining the statutory context for waste management
- identifying the waste streams that would be produced over the project lifecycle and their waste classification in accordance with relevant legislation
- identifying the existing waste management facilities in the vicinity and their capacity to accept different waste streams
- estimating quantities for key waste streams that would be produced
- consultation with Wagga Wagga City Council to determine appropriate sources and disposal of resources and waste.

7.5 Cumulative impacts

7.5.1 Existing environment

Large-scale projects in the region

A search of the Major Projects Portal (NSW Department of Planning and Environment, 2022) for the Wagga Wagga LGA shows that there are multiple SSD and SSI projects within proximity of the project that are proposed, approved, under construction and operational. The cumulative impact assessment (CIA) levels are defined in **Table 7-23**. Relevant cumulative impact assessment matters have been categorised for each project in accordance with the definitions in **Table 7-24**, which is based on the CIA scoping summary table in in **Appendix B** of the *Cumulative Impact Assessment Guidelines for State Significant Project* (Department of Planning, Industry and Environment, 2021f). These projects are shown on **Figure 3-1**.

Table 7-23: Cumulative impact assessment level definitions

Assessment level	Description
Detailed assessment (D)	The project may result in significant impacts on the matter, including cumulative impacts. Detailed assessment is characterised by: • potential overlap in impacts between a future project (e.g. Project A) and the proposed project • potential for significant cumulative impacts as a result of the overlap, requiring detailed technical studies to assess the impacts • sufficient data is available on the future project to allow a detailed assessment of cumulative impacts with the proposed project for the relevant matter • uncertainties exist with respect to data, mitigation, assessment methods and criteria.

Assessment level	Description
Standard assessment (S)	The project is unlikely to result in significant impacts on the matter, including cumulative impacts. Standard assessments are characterised by: • impacts are well understood • impacts are relatively easy to predict using standard methods • impacts are capable of being mitigated to comply with relevant standards or performance measures • the assessment is unlikely to involve any significant uncertainties or require any detailed CIA.
N/A	No potential overlap in impacts between a future project (e.g. Project A) and the proposed project that would warrant any consideration in the CIA.

Table 7-24: Major projects in the locality and cumulative considerations

Project	Approx. distance to the project	Status	Indicative timing / potential overlap	Relevant cumulative impact assessment matters										
				Access	Air	Amenity	Biodiversity	Built environment	Economic	Hazards and risks	Heritage	Land	Social	Water
Existing projects														
Bomen Solar Farm (SSD-8835) and 1 Modification	14 km north	Operational	• social impacts of cumulative renewable projects in the LGA.	N/A	N/A	S	N/A	N/A	N/A	N/A	N/A	N/A	S	N/A
Enirgi Battery Recycling Facility (SSD-6619) and 1 modification	15 km north east	Operational	• operational overlap lifetime of up to 30 years.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Approved projects (yet to commence)														
Gregadoo Solar Farm (SSD-8825) and 1 modification	Immediately east of Redbank Road, north of Boiling Down Road.	Approved	• temporary changes from agricultural land use to electricity generation • impacts to landscape character of the region • construction period of approximately 9 months • operational overlap lifetime of up to 30 years.	D	S	D	S	S	S	D	S	S	S	S
Wagga Wagga Hospital	7 km north	Approved	• possible construction overlap	N/A	N/A	S	N/A	S	S	N/A	N/A	N/A	S	N/A

Project	Approx. distance to the project	Status	Indicative timing / potential overlap	Relevant cumulative impact assessment matters										
				Access	Air	Amenity	Biodiversity	Built environment	Economic	Hazards and risks	Heritage	Land	Social	Water
Redevelopment (SSD-9033) and 5 modifications			• social and economic impacts to Wagga Wagga.											
New public school, Estella Road Wagga Wagga (SSD-9494) and 1 modification	12 km northwest	Approved	• possible construction overlap • social and economic impacts to Wagga Wagga.	N/A	N/A	N/A	N/A	N/A	S	N/A	N/A	N/A	S	N/A
Projects under assessment														
Uranquinty Solar Farm (SSD-12154491)	11km west	Withdrawn	• project withdrawn.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Maxwell Downs Solar Farm (SSD-45083695)	9.5 kilometres southwest	Prepare EIS	• possible construction overlap • social impacts of cumulative renewable projects in the LGA • impacts to landscape character of the region.	S	N/A	S	S	N/A	N/A	N/A	N/A	N/A	S	N/A
Mates Gully Solar Farm (SSD-43606694)	27km east	Prepare EIS	• social impacts of cumulative renewable projects in the LGA.	N/A	N/A	S	N/A	N/A	N/A	N/A	N/A	N/A	S	N/A
HumeLink (SSI-36656827)	1.4km east	Prepare EIS	• construction commencing 2024, operation commence 2026.	S	S	S	S	S	S	D	S	S	S	S

Project	Approx. distance to the project	Status	Indicative timing / potential overlap	Relevant cumulative impact assessment matters										
				Access	Air	Amenity	Biodiversity	Built environment	Economic	Hazards and risks	Heritage	Land	Social	Water
Project EnergyConnect (NSW-Eastern Section) (SSI-9172452)	Immediate (Boiling Down Road frontage of site) Including works 1.4km east	Approved	• construction commencing late 2022 and operation to commence August 2024 • includes works along Boiling Down Road and Wagga Wagga substation.	D	S	D	S	S	S	D	S	S	S	S
Inland Rail - Albury to Illabo (SSI-10055)	6 km	Response to submissions	• construction commencing mid-2023. Operation to commence 2025.	S	N/A	N/A	N/A	N/A	S	N/A	N/A	S	S	N/A

Potential impacts

The project may generate cumulative impacts in conjunction with nearby projects during both construction and operation. The projects that have the greatest potential for cumulative impacts in conjunction with Gregadoo Solar farm (SSD-8825) which is immediately adjacent to the site and Project EnergyConnect (NSW-Eastern Section) (SSI-9172452) which includes works along Boiling Down Road and Wagga Wagga substation, both of which have potential to be under construction at the same time as the project, and Gregadoo Solar farm, which would overlap the operational life of the project. Other renewable projects such as Bomen Solar Farm (SSD-8835) are operational in the Wagga Wagga LGA and have potential to contribute to the notion of a changing character of the area and cumulative social impacts related to large scale renewable projects. State significant projects within the Wagga Wagga LGA, that may be constructed at the same time could also generate cumulative impacts across a wider geographical area and may generate cumulative impacts.

During construction and operation, key cumulative impacts that would need to be considered include the potential for stress on local business for supply and demand (in particular staff accommodation) and other cumulative considerations relating to haulage routes, noise impacts from heavy machinery and traffic related noise, visual impacts related to construction and operation and conflicts and changes to land uses.

A summary of the potential cumulative impacts from the project is provided in **Table 7-25**.

Table 7-25: Potential impacts – cumulative

Phase	Potential impact	Scale of impact	Sensitivity of receiving environment	Potential mitigation measures
Landscape character and visual				
Operation	Changes to the regional landscape character and visual amenity from large scale energy projects.	High / Long term	Sensitive (social value)	• Minimise – minimise visual impacts of infrastructure through strategic placement and screening.
Noise and vibration				
Construction	Noise and vibration emissions from concurrently construction activities.	Moderate / Short term	Sensitive (social value) Sensitive (environmental value)	• Minimise – coordinate with neighbouring developments to reduce operations occurring concurrently within the same locality.
Construction	Increased traffic on local roads.	Moderate / Short term	Sensitive (social value) Sensitive (environmental value)	• Avoid – avoid using the same local roads as other projects in the locality where possible.
Biodiversity				
Construction and operation	Removal of vegetation and impacts to flora and fauna.	Moderate / Short term	Sensitive (environmental value)	• Minimise – minimise vegetation clearing where possible.

Phase	Potential impact	Scale of impact	Sensitivity of receiving environment	Potential mitigation measures
Social				
Operation	Social impacts of multiple large scale projects impacting amenity of rural area.	High / Long term	Vulnerable to change	• Minimise – ongoing consultation with the local community.
Air				
Construction	Dust emissions from concurrently construction activities.	Moderate / Short term	Sensitive (social value) Sensitive (environmental value)	• Minimise – coordinate with neighbouring developments to reduce operations occurring concurrently within the same locality.
Waste and resources				
Construction and operation	Availability of resources and waste disposal facilities with capacity to accept wastes.	Moderate / Short term	Sensitive (environmental value)	• Minimise – reuse or recycle materials where possible. • Minimise – outsource resources that may be in short supply in the locality.

Assessment level and approach

Cumulative impacts would be assessed in accordance with the Cumulative Impact Assessment Guidelines for State Significant Project (Department of Planning, Industry and Environment, 2021f). This process starts at the scoping phase.

The project-level CIA considers the following assessment approaches:

- **Incremental assessment**: this involves adding the incremental impacts of the project to the baseline condition of each relevant matter
- **Combined incremental assessment**: this is the combined effect of the different impacts of the project, normally on a sensitive area or receiver
- **Issue-specific CIA**: the cumulative impacts of the project on key matters with other relevant future projects
- **Combined CIA**: the combined effect of the different cumulative impacts of the project on key matters, sensitive receivers or important features with other relevant future projects.

The Cumulative Impact Assessment Guidelines for State Significant Project (Department of Planning, Industry and Environment, 2021f), guides the scope of the CIA for the EIS. Aspects to be considered are listed in **Table 7-26**, along with a response on the proposed scope of the assessment to be undertaken for the EIS.

Table 7-26: Key questions to answer in scoping the cumulative impact assessment

Question	Response
What to assess?	Key matters that would be considered in the CIA would include: • land use and soils • biodiversity • hazards and risks • noise and vibration • traffic and access • water quality, hydrology and flooding • Aboriginal heritage • social.
What study area?	The study area will vary depending on the specific characteristics of the assessment matter and the scale and nature of the potential impacts on the matter resulting from the project with other relevant future projects. Each CIA will be undertaken in accordance with the relevant guidelines, where applicable, and broad enough to capture all relevant cumulative impacts.
Over what time period?	The CIA would consider the life of the project including construction, operation and decommissioning. The relevant projects to consider as part of the CIA will be those within the relevant study area that have concurrent project timelines with the project through all phases of development.
What projects to include?	The CIA would consider the projects identified in **Table 7-24** and other proposed developments advertised in the public arena at the time of preparing the EIS. This would include changes to existing projects, approved projects or projects under assessment.

Question	Response
What is the approach to assessment?	The CIA would be undertaken in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Project* (Department of Planning, Industry and Environment, 2021f) and with the approved assessment methods for relevant matters.
What are the key uncertainties?	Key uncertainties to undertaking the CIAs will include availability and quality of data on proposed future projects at the time of preparation of assessments.

7.6 Matters requiring no further assessment in the EIS

Matters that have been identified as requiring no further assessment in the EIS in accordance with the Scoping Report Guideline are presented in **Table 7-27**.

Table 7-27: Matters requiring no further assessment in the EIS

Matter	Justification
Access – rail, port and airport facilities	The project does not involve the development of rail, port or airport facilities. The project would have no interaction with a port facility. Wagga Wagga Airport is located approximately 7.5 km northeast of the site, and Wagga Wagga Railway Station is located within Wagga Wagga town centre, approximately 7.3 km north of the site. There would be no interaction with these facilities.
Amenity – odour	The project would not produce odorous emissions.
Biodiversity – conservation areas	There are no conservation areas within or within proximity to the site.
Hazards and risks - biosecurity	The project would generate a minimal risk to biosecurity, with potential introduction of pest species largely associated with the transport of weeds via vehicle movements in and out of the site. These risks can be mitigated through standard mitigation measures and do not require further assessment.
Hazard and risks - coastal hazards	The site is not located near the coast, so coastal hazards are not relevant to the project.
Hazard and risks - environmental hazards	Environmental risks associated with the project will be assessed in other relevant environmental assessments.
Hazard and risks - land movement	The site is generally flat, resulting in a low risk of landslide. Erosion risks will be addressed in an assessment of soils and land capability to be undertaken for the EIS.
Land – stability	The site is generally flat, resulting in a low risk of landslide. Erosion risks will be addressed in an assessment of soils and land capability to be undertaken for the EIS.
Land – soil chemistry	The project would not involve activities that alter the soil chemistry of the site.

Matter	Justification
Land - topography	Given the site is already generally flat, the project would not alter the typical topography of the site.
Land – Crown land, travelling stock reserves and mining titles	Preliminary searches reveal the site is not subject to Crown land, travelling stock reserves or mining or mineral exploration licenses.
Social – decision making systems	The project would have no impact on decision making systems but would be undertaken in accordance with those systems.

8. CONCLUSION

This scoping report has outlined the proposed Belhaven BESS would be assessed under Part 4 of the EP&A Act and the Planning Systems SEPP. The project forms an important part of Australia's transition to renewable energy generation and would positively contribute to meeting Commonwealth and the state government's targets. The project would allow for the storage and export of energy to and from the grid network which would assist in network stabilisation and reliability of the network as a greater reliance on renewable energy generation increases and the transition away from energy generation from fossil fuels is phased out.

This scoping report has been prepared to assist the development of the SEARs for the project, which would guide the preparation of an EIS. The key environmental matters identified that would be considered in the EIS include:

- land use and soils
- biodiversity
- hazards and risks
- noise and vibration
- traffic and access
- water quality, hydrology and flooding
- Aboriginal heritage
- social.

Other matters that would be considered include:

- landscape character and visual
- historic heritage
- air quality
- waste and resources.

Cumulative impacts with other SSD projects (both existing and proposed) would also be considered and assessed.

The EIS would be prepared in accordance with the SEARs to be issued by the NSW Department of Planning and the Environment in response to this scoping report. All assessments (including specialist assessments) would be completed by taking into consideration consultation with stakeholders, industry best practice guidelines, and the experiences from other renewable projects.

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APPENDIX 1
SCOPING SUMMARY TABLE

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
Access					
Access to property	Detailed	N	General	• Guide to Road Design Part 3: Geometric Design (Austroads, 2016) • Guide to Road Design Part 4: Intersections and Crossings: General (Austroads, 2017)	**Section 7.3.5**
Traffic	Detailed	Y	Specific	• Guide to Traffic Generating Developments version 2.2 (Roads and Traffic Authority, 2002) • Guide to Traffic Management Part 3: Transport Study and Analysis Methods (Austroads, 2020) • Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings (Austroads, 2020) • Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (Austroads, 2020)	**Section 7.3.5**
Parking	No further assessment	n/a	n/a	n/a	n/a
Port and airport facilities	No further assessment	n/a	n/a	n/a	n/a
Road and rail facilities	No further assessment	n/a	n/a	n/a	n/a
Air					
Atmospheric emissions	Standard			• *Protection of the Environment Operations Act 1997*	**Section 7.4.3**
Gases	Standard			• NSW Climate Change Policy Framework (Office of Environment and Heritage, 2016)	**Section 7.4.3**

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
Particulate matter	Standard			• *Protection of the Environment Operations Act 1997*	**Section 7.4.3**
Amenity					
Noise	Detailed	Yes	Specific	• Interim Construction Noise Guideline (Department of Environment and Climate Change, 2009) • NSW Road Noise Policy (Department of Environment, Climate Change and Water, 2011) • Noise Policy for Industry (NPfI) (Environment Protection Authority, 2017)	**Section 7.3.4**
Vibration	Detailed	No	General	• Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006) • British Standard BS7385.2 - 1993 Evaluation and Measurement for Vibration in Buildings, Part 2 - Guide to damage levels from ground borne vibration • DIN 4150: Part 3-1999 Structural vibration – Effects of vibration on structures 1999	**Section 7.3.4**
Visual	Standard	No	General	Refer to scoping report for further discussion on approach to assessment	**Section 7.4.1**
Odour	No further assessment	n/a	n/a	n/a	n/a
Biodiversity					
Conservation areas	Standard			• *Environment Protection and Biodiversity Conservation Act 1999*	**Section 7.3.2**

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
				• Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013)	
Terrestrial flora and fauna	Detailed			• *Biodiversity Conservation Act 2016* • *Environment Protection and Biodiversity Conservation Act 1999* • Biodiversity Conservation Regulation 2017 • Biodiversity Offset Scheme • Biodiversity Assessment Methodology (Department of Planning, Industry and Environment, 2020) • Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013)	**Section 7.3.2**
Aquatic flora and fauna	Detailed			• *Fisheries Management Act 1991* • *Biodiversity Conservation Act 2016* • *Environment Protection and Biodiversity Conservation Act 1999*	**Section 7.3.2**
Built environment					
Public infrastructure	No further assessment	n/a	n/a	• n/a	n/a
Design quality	No further assessment	n/a	n/a	• n/a	n/a
Economic					
Natural resource use	Standard	Y	General	Refer to scoping report for further discussion on approach to assessment	

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
Livelihood	Standard	Y	Specific	Refer to scoping report for further discussion on approach to assessment	Y
Opportunity cost	No further assessment	n/a	n/a	n/a	n/a
Hazards and risks					
Bushfire	Detailed	N	General	• NSW Rural Fire Service Planning for Bushfire Protection 2019 (NSW Rural Fire Service, 2019)	**Section 7.3.3**
Hazardous and offensive development	Detailed	N	Specific	• Hazardous Industry Advisory Paper No. 4 – 'Risk Criteria for Land Use Safety Planning (Department of Planning, 2011) • Hazardous Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis (Department of Planning, 2011) • Assessment Guideline - Multi-Level Risk Assessment (Department of Planning and Industry, 2011) • Hazardous and Offensive Development Application Guidelines Applying SEPP 33 (Department of Planning, 2011)	**Section 7.3.3**
Battery storage	Detailed	N	Specific	• Hazardous Industry Advisory Paper No. 4 – 'Risk Criteria for Land Use Safety Planning (Department of Planning, 2011) • Hazardous Industry Planning Advisory Paper No.6 – Guidelines for Hazard Analysis (Department of Planning, 2011) • Assessment Guideline - Multi-Level Risk Assessment (Department of Planning and Industry, 2011)	**Section 7.3.3**

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
				Hazardous and Offensive Development Application Guidelines Applying SEPP 33 (Department of Planning, 2011)	
Electromagnetic fields	Detailed	N	Specific	• Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields (International Commission on Non-Ionizing Radiation Protection, 2020)	**Section 7.3.3**
Coastal hazards	No further assessment	n/a	n/a	n/a	n/a
Dams safety	No further assessment	n/a	n/a	n/a	n/a
Dangerous goods	Standard	N	General	• *Dangerous Goods Act 1985* • *Dangerous Goods (Road and Rail Transport) Act 2008* • Dangerous Goods (Road and Rail Transport) Regulation 2014 • Australian Code for the Transport of Dangerous Goods by Road and Rail (Commonwealth of Australia, 2018)	**Section 7.3.3**
Environmental hazards	No further assessment	n/a	n/a	n/a	n/a
Land movement	No further assessment	n/a	n/a	n/a	n/a
Groundwater contamination	No further assessment	n/a	n/a	n/a	n/a
Heritage					

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
Aboriginal	Detailed	N	Specific	• Code of Practice for the Investigation of Aboriginal Objects in New South Wales (Department of Environment, Climate Change and Water NSW, 2010) • Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (Office of Environment and Heritage, Department of Premier and Cabinet, 2011) • Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department of Environment, Climate Change and Water, 2010)	**Section 7.3.7**
Historic	Standard	N	General	• Burra Charter 2013 (Australia International Council on Monuments and Sites, 2013) • Part 4 of the EP&A Act 1979 • *NSW Heritage Act 1977*	**Section 7.4.2**
Natural	No further assessment	n/a	n/a	n/a	
Land					
Stability	Detailed	N	General	• Managing Urban Stormwater: Soils and Construction 4th Edition (Landcom, 2004)	**Section 7.3.1**
Land capability	Detailed	N	General	• Land Use Conflict Risk Assessment Guide (Department of Primary Industry, 2011) • Agricultural Land Use Mapping Resources in NSW - User's guide (Department of Primary Industries, February 2017) • The land and soil capability assessment scheme (Office of Environment and Heritage, October 2012)	**Section 7.3.1**

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
Topography	Detailed			• The land and soil capability assessment scheme (Office of Environment and Heritage, October 2012)	**Section 7.3.1**
Land use (Private property and public land)	Detailed	Y	Specific	• Land Use Conflict Risk Assessment Guide (Department of Primary Industry, 2011)	**Section 7.3.1**
Land contamination	Detailed	N	General	• *Protection of the Environment Operations Act 1997* • *Contaminated Land Management Act 1997* • State Environmental Planning Policy (Resilience and Hazards) 2021 • Guidelines on the Duty to Report Land Contamination (Environment Protection Authority, 2015)	**Section 7.3.1**
Soil chemistry	No further assessment	n/a	n/a	n/a	n/a
Biosecurity	No further assessment	n/a	n/a	n/a	n/a
Social					
Way of life	Detailed	Y	Specific	• Social Impact Assessment Guidelines for State Significant Projects (Department of Planning Industry and Environment, 2021)	**Section 7.3.8**
Health and wellbeing	Detailed	Y	Specific	• Social Impact Assessment Guidelines for State Significant Projects (Department of Planning Industry and Environment, 2021)	**Section 7.3.8**

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
Community	Detailed	Y	Specific	• Social Impact Assessment Guidelines for State Significant Projects (Department of Planning Industry and Environment, 2021)	**Section 7.3.8**
Surroundings	Detailed	Y	Specific	• Social Impact Assessment Guidelines for State Significant Projects (Department of Planning Industry and Environment, 2021)	**Section 7.3.8**
Accessibility	Detailed	Y	Specific	• Social Impact Assessment Guidelines for State Significant Projects (Department of Planning Industry and Environment, 2021)	**Section 7.3.8**
Livelihoods	Detailed	Y	Specific	• Social Impact Assessment Guidelines for State Significant Projects (Department of Planning Industry and Environment, 2021)	**Section 7.3.8**
Culture	Detailed	Y	Specific	• Social Impact Assessment Guidelines for State Significant Projects (Department of Planning Industry and Environment, 2021)	**Section 7.3.8**
Decision-making systems	No further assessment	n/a	n/a	n/a	
Water					
Hydrology	Standard	N	General	• *Water Management Act 2000* • *Protection of the Environment Operations Act 1997* • Managing urban stormwater: soils and construction (Landcom, 2004)	**Section 7.3.6**
Water availability	Standard	Y	General	• *Water Management Act 2000*	**Section 7.3.6**
Water quality	Standard	Y	General	• *Water Management Act 2000*	**Section 7.3.6**

Matter	Level of assessment	Cumulative impact (Y/N)	Level of Engagement	Relevant government plans, policies, and guidelines	Scoping report Section
				• *Protection of the Environment Operations Act 1997* • Australian & New Zealand Guidelines for fresh & Marine Water quality	
Flooding	Standard	N	General	• State Environmental Planning Policy (Resilience and Hazards) 2021 • Wagga Wagga Major Overland Flow Floodplain Risk Management Study and Plan (City of Wagga Wagga, 2021)	**Section 7.3.6**
Waste and resources					
Waste	Standard	N	General	• Waste Classification Guidelines (Environment Protection Authority, 2014) • Protection of the Environment Operations (Waste) Regulation 2014 • *Waste Avoidance and Resource Recovery Act 2001*	**Section 7.4.4**

APPENDIX 2
PROTECTED MATTERS SEARCH TOOL RESULTS

EPBC Act Protected Matters Report

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

Report created: 30-Jan-2023

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	44
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	333
Commonwealth Heritage Places:	1
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	10
Regional Forest Agreements:	1
Nationally Important Wetlands:	2
EPBC Act Referrals:	15
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	600 - 700km upstream from Ramsar site	In feature area
Hattah-kulkyne lakes	400 - 500km upstream from Ramsar site	In feature area
Riverland	500 - 600km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	600 - 700km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area	In feature area
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area	In buffer area only
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In buffer area only
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Callocephalon fimbriatum Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Maccullochella macquariensis](#) Trout Cod [26171]	Endangered	Species or species habitat known to occur within area	In buffer area only
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
[Nannoperca australis Murray-Darling Basin lineage](#) Southern Pygmy Perch (Murray-Darling Basin lineage) [91711]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
FROG			
[Crinia sloanei](#) Sloane's Froglet [59151]	Endangered	Species or species habitat known to occur within area	In feature area
[Litoria booroolongensis](#) Booroolong Frog [1844]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Litoria raniformis](#) Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Keyacris scurra			
Key's Matchstick Grasshopper [89739]	Endangered	Species or species habitat may occur within area	In buffer area only
Synemon plana			
Golden Sun Moth [25234]	Vulnerable	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area	In feature area
Nyctophilus corbeni			
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat known to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area	In feature area
PLANT			
Ammobium craspedioides			
Yass Daisy [20758]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Amphibromus fluitans			
River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Austrostipa wakoolica			
[66623]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Brachyscome muelleroides			
Mueller Daisy [15572]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Caladenia arenaria			
Sand-hill Spider-orchid [9275]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Caladenia concolor Crimson Spider-orchid, Maroon Spider-orchid [5505]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Lepidium aschersonii Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area	In buffer area only
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat known to occur within area	In buffer area only
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Prasophyllum validum Sturdy Leek-orchid, Mount Remarkable Leek-orchid [10268]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In feature area
Vincetoxicum forsteri listed as Tylophora linearis [92384]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area	In buffer area only
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

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

Commonwealth Land Name	State	Buffer Status
Commonwealth Bank of Australia		
Commonwealth Land - Commonwealth Bank of Australia [14772]	NSW	In buffer area only
Commonwealth Land - Commonwealth Bank of Australia [14775]	NSW	In buffer area only
Commonwealth Land - Commonwealth Bank of Australia [14932]	NSW	In buffer area only
Commonwealth Land - Commonwealth Bank of Australia [14796]	NSW	In buffer area only
Communications, Information Technology and the Arts - Australian Broadcasting Corporation		
Commonwealth Land - Australian Broadcasting Corporation [14954]	NSW	In buffer area only
Communications, Information Technology and the Arts - Australian Postal Corporation		
Commonwealth Land - Australian Postal Commission [15072]	NSW	In buffer area only
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [14962]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14963]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14964]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14965]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [15279]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14699]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14698]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Telecommunications Commission [15071]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14697]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14695]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [15073]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14969]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14966]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14967]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14968]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [15074]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14753]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14692]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14691]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14693]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [15076]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14702]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14703]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14961]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14959]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14953]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Telecommunications Commission [14690]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14721]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14720]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14727]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14705]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14738]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14706]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14955]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14701]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14946]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14945]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [16191]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [16192]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14704]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [15054]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14911]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [14975]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Commission [15055]	NSW	In buffer area only
Commonwealth Land - Australian Telecommunications Corporation [14700]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Australian Telecommunications Corporation [15053]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [15416]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [15052]	NSW	In buffer area only
Commonwealth Land - Telstra Corporation Limited [15051]	NSW	In buffer area only
Defence		
Commonwealth Land - Defence Service Homes Corporation [14920]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [14921]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [14910]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [14915]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [14919]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [14947]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [14916]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [14917]	NSW	In buffer area only
Commonwealth Land - Defence Service Homes Corporation [14949]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11192]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11193]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11184]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11186]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11185]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11183]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11182]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11181]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11188]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11187]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11180]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11189]	NSW	In buffer area only
Defence - BLAMEY BARRACKS - KAPOOKA [11190]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Defence - BLAMEY BARRACKS - KAPOOKA [11191]	NSW	In buffer area only
Defence - RAAF BASE WAGGA [11217]	NSW	In buffer area only
Defence - RAAF BASE WAGGA [11216]	NSW	In buffer area only
Defence - RAAF BASE WAGGA [11218]	NSW	In buffer area only
Defence - RAAF BASE WAGGA [11215]	NSW	In buffer area only
Defence - RAAF BASE WAGGA [11213]	NSW	In buffer area only
Defence - RAAF BASE WAGGA [11214]	NSW	In buffer area only
Defence - WAGGA ARES DEPOT ; BLAMEY BKS -WAGGA WAGGA TRG DEP [11208]	NSW	In buffer area only
Defence - WAGGA ARES DEPOT ; BLAMEY BKS -WAGGA WAGGA TRG DEP [11206]	NSW	In buffer area only
Defence - WAGGA ARES DEPOT ; BLAMEY BKS -WAGGA WAGGA TRG DEP [11207]	NSW	In buffer area only
Defence - WAGGA - WATER BORE SITE AP1 [11230]	NSW	In buffer area only
Defence - WAGGA - WATER BORE SITE AP2 [11232]	NSW	In buffer area only
Defence - WAGGA - WATER BORE SITE AP3 [11231]	NSW	In buffer area only
Defence - Defence Housing Authority		
Commonwealth Land - Defence Housing Authority [14849]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14846]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14847]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16348]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14844]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16349]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14845]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14960]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14842]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14886]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14840]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14843]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [14925]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14841]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14838]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14891]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14839]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14828]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16343]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14867]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16344]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16345]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16346]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16347]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14789]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14761]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14892]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14893]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14857]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14890]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14848]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16251]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16250]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14912]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14805]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14804]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14779]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14809]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14778]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [14808]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14765]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14887]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14785]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14788]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14763]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14773]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14781]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14769]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14771]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14770]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14777]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14776]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14774]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14852]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [15720]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14931]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14784]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14800]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14936]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14760]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14803]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14802]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14930]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14806]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14801]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14766]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [14939]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14938]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14935]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14934]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14937]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14854]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14855]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14856]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14758]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14793]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14792]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14791]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14790]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14799]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14798]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14783]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14764]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14859]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14851]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14755]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14752]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14827]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14757]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14724]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14754]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14759]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14756]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [14826]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14850]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14868]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14786]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14787]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14767]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14822]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14869]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14923]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14926]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14927]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14924]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14928]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14821]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14929]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14837]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14836]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14831]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14830]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14933]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14835]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14834]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14832]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14833]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14866]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14908]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14860]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [15719]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14768]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14865]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14864]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14725]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14905]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14904]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14907]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14906]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14900]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14901]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14902]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14903]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14863]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14862]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14861]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16130]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16248]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14858]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14817]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14816]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14815]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14814]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14952]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14958]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14741]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14819]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [14818]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16131]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14885]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14762]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14812]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14813]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14810]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14811]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16501]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16500]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14794]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14795]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14941]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14723]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14722]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14853]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14889]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14913]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14739]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14888]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14940]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14726]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14956]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14951]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14957]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14950]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14751]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [14750]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16129]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14942]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14736]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14797]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14737]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16350]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14730]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14731]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14732]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14733]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14944]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14820]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14909]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14873]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14874]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14875]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14876]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16128]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14829]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14877]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14948]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14824]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14825]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14823]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16127]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16126]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [14749]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14746]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14748]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14882]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14883]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14879]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14878]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14780]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14872]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14871]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14870]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14740]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14743]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14742]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14745]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14744]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14747]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [16249]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14896]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14897]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14895]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14894]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14898]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14881]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14728]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14899]	NSW	In buffer area only
Commonwealth Land - Defence Housing Authority [14880]	NSW	In buffer area only

Commonwealth Land Name	State	Buffer Status
Commonwealth Land - Defence Housing Authority [14729]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [14782]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [14922]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [14918]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [14914]	NSW	In buffer area only
Commonwealth Land - Director of War Service Homes [14943]	NSW	In buffer area only
Transport and Regional Services - Airservices Australia		
Commonwealth Land - Airservices Australia [14719]	NSW	In buffer area only
Commonwealth Land - Airservices Australia [14717]	NSW	In buffer area only
Unknown		
Commonwealth Land - [14696]	NSW	In buffer area only
Commonwealth Land - [14694]	NSW	In buffer area only
Commonwealth Land - [14807]	NSW	In buffer area only
Commonwealth Land - [14689]	NSW	In buffer area only
Commonwealth Land - [14884]	NSW	In buffer area only
Commonwealth Land - [14735]	NSW	In buffer area only
Commonwealth Land - [14734]	NSW	In buffer area only

Commonwealth Heritage Places [Resource Information]

Name	State	Status	Buffer Status
Historic			
Junee Post Office	NSW	Listed place	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Carabost	Flora Reserve	NSW	In buffer area only
Doodle Comer Swamp	Nature Reserve	NSW	In buffer area only
Ellerslie	Nature Reserve	NSW	In buffer area only
Livingstone	State Conservation Area	NSW	In buffer area only
Livingstone	National Park	NSW	In buffer area only
Murraguldrie	Flora Reserve	NSW	In buffer area only
Murrumbidgee Valley	National Park	NSW	In buffer area only

Protected Area Name	Reserve Type	State	Buffer Status
Nest Hill	Nature Reserve	NSW	In buffer area only
Tarcutta Hills	Conservation Reserve	NSW	In buffer area only
The Rock	Nature Reserve	NSW	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included.

RFA Name	State	Buffer Status
Southern RFA	New South Wales	In buffer area only

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Doodle Corner Swamp	NSW	In buffer area only
Mid Murrumbidgee Wetlands	NSW	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
EnergyConnect NSW - Eastern Section	2020/8766		Post-Approval	In feature area
Controlled action				
Hume Highway upgrade	2007/3330	Controlled Action	Post-Approval	In buffer area only
Hume Highway Upgrade - 9.5km dual carriageway bypass of Holbrook	2009/5164	Controlled Action	Post-Approval	In buffer area only
Hume Highway Upgrade - proposed 7km upgrade Tarcutta bypass	2009/5062	Controlled Action	Post-Approval	In buffer area only
Olympic Highway Realignment & Construct Road-Over-Rail Bridge, Wagga Wagga NSW	2013/6956	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Access road to Gumly Gumly Quarry	2007/3813	Not Controlled Action	Completed	In buffer area only
Albury to Illabo Section of Inland Rail	2020/8670	Not Controlled Action	Completed	In feature area
Gregadoo Solar Farm 19-590	2020/8643	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
INDIGO Central Submarine Telecommunications Cable	2017/8127	Not Controlled Action	Completed	In feature area
Red Hill Road extension	2005/2311	Not Controlled Action	Completed	In buffer area only
Rockley Falls Quarry for Hume Highway Duplication	2007/3920	Not Controlled Action	Completed	In buffer area only
Wagga Wagga Gas-Fired Power Station	2003/1182	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	Not Controlled Action (Particular Manner)	Post-Approval	In feature area
Referral decision				
New transmission infrastructure, HumeLink	2021/9121	Referral Decision	Referral Publication	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

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APPENDIX 3
SOCIAL IMPACT SCOPING REPORT

Social Impact Scoping Report

Belhaven Battery Energy Storage System, NSW

7 March 2023

Disclaimer

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Table of Contents

1 Introduction

1.1 Project overview

Vena Energy Services (Australia) Pty Ltd (VEA) is proposing to construct and operate a battery energy storage system (BESS) south of Wagga Wagga, in New South Wales (the project). The project would comprise a BESS with a total capacity of approximately 400 megawatts (MW) with two hours of storage (400MW/800MWh) and would contribute up to 800MWh storage capacity to the National Electricity Market (NEM).

The BESS would be located at 233 Boiling Down Road Rowan, approximately nine kilometres southeast of the central business district of Wagga Wagga, within the City of Wagga Wagga Local Government Area. The development footprint for the project will comprise approximately 10 hectares of land south of Boiling Down Road, connected via underground electrical reticulation to the existing 330kV TransGrid substation approximately 1.4 kilometres east of the site. The potential developable area available to accommodate the project within the site is approximately 25 hectares. This is land that is understood to be unconstrained land which avoids the drainage lines and riparian vegetation that cross part of the site. The Belhaven Battery Energy Storage System will require a construction period of approximately 12 months from site establishment to commissioning; with a peak workforce of approximately 100 construction staff. Once operational the project would require 6-10 staff on the basis of one full week each month. There will also be certain activities such as inverter or substation maintenance which could see an additional 2-6 people on site for two to three weeks during the year. A cleaner would also attend the site periodically. Most of the maintenance roles will be filled by electricians however there will also be a requirement for cleaners, pest control, grounds keeping/vegetation management.

A detailed description of the project is presented in Chapter 4 of the Scoping Report (Ramboll, 2023)

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

This Social Impact Scoping Report has been prepared by AAP Consulting Pty Ltd on behalf of VEA, the proponent of the project. It documents the process and outcomes of the scoping phase of the social impact assessment and been prepared in consideration of the DPE Social Impact Assessment Guideline (2022) (SIA Guideline).

1.2 Structure of this report

The structure of this report is influenced by the SIA Guideline requirements and is outlined below.

Table 1.1 Structure of this report

Chapter	Summary
Chapter 1	Introduces the project and structure of this report
Chapter 2	Describes the social locality
Chapter 3	Establishes the social baseline
Chapter 4	Initial evaluation of the likely social impacts for different groups in the social locality
Chapter 5	Provides a framework for approach to SIA in the assessment phase

2 Social locality

2.1 Preliminary identification of social locality

This report considers social impacts in the 'social locality'. There is no prescribed meaning or fixed, predefined geographic boundary to a project's social locality; rather, the social locality has been construed based on the project's nature and its impacts.

A number of factors have been considered in determining the social locality for the project including the nature and scale of the project and its associated activities, the characteristics of surrounding communities and the potentially affected built or natural features located near the project that have social value or importance.

Cumulative impacts that may impact affected communities because of other projects or operations near the project site and any relevant social, cultural, demographic trends or social change processes occurring now or in the past near the project site have also been considered.

The broader (indirect) area of social influence of communities that will be impacted by future incoming workforces, business opportunities, construction access and transport routes.

A social baseline profile has been developed of the project's social locality, which for this project is defined as:

- One private property owner and any associated dwellings to be used for the project footprint including any ancillary facilities.
- The suburbs and localities (SAL) that host or are adjacent to the project as per the Australian Bureau of Statistics' (ABS) statistical areas of Rowan (the SAL in which the project is located), Gregadoo (the adjacent SAL directly to the east) and the host local government areas (LGA) of Wagga Wagga.

The social locality may extend beyond these boundaries as the project planning progresses to include haulage routes, places of residence of future construction and operational workforce and their primary dependents, and where materials may be sourced for the project. The social locality will be further refined as required during the assessment phase.

2.2 Stakeholder identification

Social impact assessment involves the participation and collaboration of people who have an interest in, or those that are affected by, a project. As Burdge (2004) outlines, stakeholders may be affected groups or individuals that:

- Live, work, or recreate near the project
- Have an interest in the proposed action or change
- Use or value a resource associated with the project
- Are affected by the project e.g., may be required to relocate because of the project.

A stakeholder identification process was undertaken during the scoping phase for the project to identify those people that may potentially have an interest in the project, or those directly and indirectly affected. This included identifying any potentially vulnerable or marginalised groups within the community (refer to Appendix 1). It is noted that stakeholders will be refined throughout the assessment process to reflect the direct and indirect social impacts arising as the project progresses and the EIS progresses.

3 Preliminary social baseline

This chapter presents the preliminary social baseline for the project and describes the social context without the project. It documents the existing social environment, conditions, and trends relevant to the project and defines characteristics of the communities within the project's social locality, including any vulnerable groups.

The social baseline provides a point of comparison – it can be used as a reference against which to measure the project's impacts as it develops and/or to determine the adequacy or otherwise of existing facilities (Vanclay et. al, 2015).

For this SIA Scoping Report, a summary of the social baseline is described in this chapter to provide a succinct overview of the existing environment. The community profile dataset that supports this scoping report is included in Appendix 2.

3.1 Social context

3.1.1 National and international

In addition to the challenges identified in the policies and strategies below, 2022 has seen electricity prices in NSW and Australia rise significantly. In May 2022, the NSW short-term wholesale price of electricity was reportedly 80 per cent higher than in 2021 while National wholesale energy prices had increased 140 per cent in 12 months. Most recently average quarterly Q4 2022 prices fell from record quarterly prices observed in Q2 and Q3 but remained elevated compared to Q4 2021.

In June 2022, for the first time since its establishment, the Australian Energy Market Operator (AEMO) suspended wholesale spot market trading on the East Coast of Australia to ensure reliable supply . Price caps, implemented by AEMO to limit rising electricity costs, resulted in unprofitable conditions for electricity generators. Consequently, electricity generators withdrew from the energy market, reducing supply in a period of notably high demand. This nexus of high demand and high energy production cost has highlighted vulnerabilities within the East Coast energy market.

A key driver in State and National electricity prices has been the increasing cost of fossil fuel energy sources, geopolitical instability and conflict in the Ukraine have restricted Russian exports of petroleum, coal and gas. Instability and restriction of global supply chains have led to market prices for fossil fuels to increase notably in Australia. Renewable energy and energy storage have been identified as an appropriate measure to reduce energy prices and reduce State and National vulnerability to global instability.

The cost of living in NSW has also continued to increase with electricity being one of many household costs on the rise (alongside petrol, interest rates , housing , HECS debt indexation and food). Of particular note, on the 8 February 2023 the RBA increased the official cash rate by 0.25% to 3.35%. This is the ninth increase to the cash rate since May 2022 (ASX, 2023). Paired with limited wage growth across the State, the cost of living is currently rising faster than wages, placing increasing pressure on households.

Overall, the reliability of electricity supply in NSW is highly strained, while consumer electricity costs and general costs of living are on the rise, placing increasing pressure on businesses and households.

3.1.2 Regional

The project is in the Riverina Murray Region in New South Wales, approximately nine kilometres southeast of the central business district of Wagga Wagga and within the City of Wagga Wagga Local Government Area. The key regional cities and major towns in the region include Wagga Wagga, Griffith and Albury.

The Riverina Murray Region is home to more that 283,300 people who live in a diverse network of centres and rural localities. The regional cities of Albury, Wagga Wagga and Griffith are home to more than 50% of the region's population. (Riverina Murray Regional Plan 2041).

Agriculture is the primary use of rural land in the region due to its soil types, landscapes, availability of water and climatic conditions as well as the diversity of its production, supporting industries and access to markets. Agriculture drives secondary industries such as processing, milling, pressing, canneries and transport, as well as related industries like wineries, restaurants and the visitor economy. Health Care and Social Assistance is the largest industry of employment in the region, followed by Agriculture, Forestry and Fishing and manufacturing (REMPLAN, 2023).

The NSW Department of Planning, Infrastructure and Environment (now DPE)'s Riverina Murray Regional Plan 2041 is a 20-year blueprint for the future of the Riverina Murray region and the overarching strategic planning framework. The vision outlined in the plan is to create a diversified economy founded on Australia's food bowl, iconic waterways and a network of vibrant connected communities. The elements of the Regional Plan that are addressed by the project are summarised in Table 3.1**.**

Table 3.1 Relationship of the project to Riverina Murray Regional Plan

Plan Reference	Regional Plan element	Relevance of the project to element
Part 2 Communities and places	Objective 11 Plan for integrated and resilient utility infrastructure	The Project has the potential to directly contribute to this objective.
Part 3 Economy	Objective 13 Support the transition to net zero by 2050	The Project has the potential to directly contribute to this objective.

3.1.3 Local

The BESS would be located at 233 Boiling Down Road Rowan, approximately nine kilometres southeast of the central business district of Wagga Wagga, within the City of Wagga Wagga Local Government Area. Rowan is a small rural locality has a recorded population of 101 residents with a median age of 43 (ABS, 2021). The landscape is predominantly characterised by agricultural land uses and large lot rural residences.

There are some special purpose land uses in the area, the closest being the Gregadoo Waste Management Centre (a Council operated major landfill), located to the east of the site (across Redbank Road). This landfill accepts the majority of the solid wastes produced within the city and

surrounding villages. To the north of Gregadoo Waste Management Centre is TransGrid's Wagga Wagga 330kV substation.

The closest regional township, where Rowan and surrounds would most likely access day to day services is Wagga Wagga. Wagga Wagga is the largest inland city in New South Wales, and is an important agricultural, military, and transport hub for Australia. The main sources of employment include healthcare and social assistance, construction, public administration and safety, education and training, and retail trade.

Wagga Wagga is 518km by rail from Sydney and 432km from Melbourne on the main Southern line. It is 180m above sea level at the Council Chambers and situated on the Sturt Highway, which joins the Hume Highway 48km to the east. It is the junction of the Sturt Highway and the Trunk Road known as the "Olympic Highway", which enables travelers by road to proceed to and from Sydney via Cootamundra, Cowra, Bathurst and The Blue Mountains area, instead of traveling via the Hume Highway.

The LGA includes the suburb of Wagga Wagga, 20 other suburbs and nine other villages including Collingullie, Currawarna, Galore, Humula, Ladysmith, Mangoplah, Oura, Tarcutta and Uranquinty. It is home to home to 69, 609 people with a median age of 35 years. 5,224 more people call Wagga Wagga home in 2021 compared to 2016 (ABS, 2021).

In 2021, Wagga Wagga City had a higher proportion of children (under 18) and a lower proportion of persons aged 60 or older than Regional NSW (id.community, 2021).

The region is home to the Wiradjuri people - the largest Aboriginal group in central New South Wales, by area and population. The people of the Wiradjuri country are known as "people of three rivers" being the Macquarie River (Wambool), Lachlan River (Kalari) and the Murrumbidgee River (Murrumbidjeri) which border their lands. Aboriginal people account for approximately 6.6% of the Wagga Wagga LGA (ABS, 2021).

Key land uses in the local and broader region include agriculture, consisting primarily of wheat-growing, dairy farming, mixed farming and sheep grazing. More Wagga Wagga City residents worked in health care and social assistance than any other industry in 2021. Other top industries of employment include Education and Training (10.6%), Public Administration and Safety (9.9%) and Retail Trade (9.7%) (Remplan, 2022).

Renewable energy development is a growing land use in the area, with multiple renewable energy projects located in the vicinity. Analysis of the employment status (as a percentage of the labour force) in the region compared to NSW, shows that unemployment levels are relatively low. In the June 2022 quarter, unemployment in the Wagga Wagga LGA was 2.8% (id.community).

Wagga Wagga City Council Community Strategic Plan 2040

Wagga Wagga City Council's Community Strategic Plan 2040 identifies priorities and aspirations to be implemented over the next 20-years. The plan is based on broad community consultation across the LGA and establishes objectives and strategies to achieve those main priorities.

The vision identified in the CSP is that "in 2040 Wagga Wagga will be a thriving, innovative, connected and inclusive community on the Murrumbidgee. Rich in opportunity, choice, learning and

environment, Wagga Wagga is a place where paths cross and people meet." There are five overarching themes that guide the CSP, including: Community leadership and collaboration, Safe and healthy community, Growing economy, Community Place and identity and The environment. Under the theme of the environment, the plan identifies working towards net zero emissions for Council by 2040 and supporting and empowering the community to reach a 50% reduction in emissions compared to 2005 levels by 2030 and to achieve NET ZERO Emissions by 2050.

3.2 Vulnerabilities

An important aspect of documenting the existing social environment includes defines characteristics of the communities within the project's social locality, including any vulnerable groups. The need to identify and empower vulnerable groups is inherent within the SIA process. "Although vulnerability is context dependent and can include a very wide range of groups, typically the concept includes Indigenous peoples, ethnic minorities, migrants, disabled people, the homeless, the poor, those struggling with substance abuse, and isolated elderly people" (Vanclay et. al., 2015).

From the social profile analysis undertaken for the project, it is possible to assess key areas of community resilience and risk in the LGA. The key findings are summarised Table 3.2 and identify several population groups that may be vulnerable to any social or economic changes within the social locality. These include:

- Aboriginal and First Nations people
- Low income earners
- The elderly and those with a disability
- Those with low levels of education and skills, including the long-term unemployed.

Table 3.2 Social baseline summary

Strengths	Vulnerabilities and opportunities within the social locality
Diverse economy including growing renewable energy services to the area.	• Temporary reduction in social amenity during construction which could have greater health impacts on the elderly or those living with illness or disability • Impact on livelihoods and existing industry due to changes in land use • Potential further restrictions to access to services for vulnerable groups due to influx of workers for major works • Improved livelihoods due to access to employment opportunities • Employment and training opportunities, and opportunities to strengthen community resilience to natural disasters such as drought and floods
A stable population with high levels of community cohesion	• Potential for reduced community cohesion due to differing perceptions on renewable energy and distributive equity, and changes to the population due to the construction workforce • Service infrastructure will be vital for a growing population, including for vulnerable groups

Strengths	Vulnerabilities and opportunities within the social locality
Low unemployment rates, high labour force participation rate and incomes	• Lower levels of educational attainment, particularly bachelor's degree or above • Low levels of educational attainment may mean the workforce is ill prepared for new industries and technologies
Diverse natural capital, including diversity of natural resources, heritage items, agricultural lands, and national parks and reserves.	• Competing land uses in the region and managing community perceptions • Vulnerability to natural disasters including fires and floods. • Ongoing potential for conflict between different and similar industries utilising the natural capital of the area • Potential for project to cause intangible harm to Aboriginal communities through cultural and physical loss • Natural disaster preparedness

3.3 Social baseline summary

This chapter has presented the preliminary social baseline for the project and the existing social context (without the project). A summary of the key characteristics of the social locality and the stregths and challenges facing communities is outlined in Table 3.3. This baseline has been used as a basis, where possible, to inform the scoping of social impacts of the project.

Table 3.3 Summary of findings of the preliminary social baseline

Community Characteritics	Strengths and challenges
• Mix of urban and rural communities with a strong labour force and fairly high levels of affluence • Diverse economy with a strong manufacturing and agricultural base • Strong social ties with higher-than-average volunteer rates • Strong connection to country, with Aboriginal persons accounting for a higher proportion of the population when compared to NSW.	• Managing land use conflicts in the social locality due to urban growth and renewable energy • Opportunities to utilise the strong manufacturing industry base of the region and skilled workforce • Developing more and diverse employment and training services/opportunities for local people including Aboriginal and Torres Strait Islanders • Conservation of heritage and environment, particularly with regard to natural disaster preparedness.

4 Scoping of likely social impacts

4.1 Scoping methodology

State-significant projects can impact people in many ways, both positive and negative. The SIA process assesses a project from the people's perspective – meaning development is more likely to be socially sustainable if the expected and perceived impacts on people are understood, managed and/or mitigated.

The scoping approach followed the SIA Guideline and included:

- Gaining an understanding of the project's social locality
- Considering the characteristic of the communities within the social locality (the social baseline)
- Identifying likely social impacts for different groups in the social locality.

The scoping tool contained in the guidelines was used to help inform this scoping process. The tool is used to demonstrate how scoping has informed the level of assessment to be undertaken.

The process of applying the scoping tool involved:

- Identifying project activities
- Using available technical assessments, review of submissions from comparative projects and review of social commentary as inputs to the scoping tool and considering each of the categories of social impact (see Table 4.1) before determining how likely it is that project activities will cause an impact
- Considering and assessing the material characteristics of any likely impact
- Considering stakeholder and community opinions and sentiment towards the project activities through desktop research and review of other comparative projects
- Determining whether a social impact may potentially arise from the project activities and then developing a rationale for the decision
- Determining the level of assessment (and engagement) required in the EIS preparation phase.

Table 4.1 Social impact categories (SIA Guideline)

Categories	Definition
Way of life	How people live, how they get around, how they work, how they play, and how they interact each day.
Community	Community composition, cohesion, character, how the community functions, and people's sense of place.
Accessibility	How people access and use infrastructure, services and facilities, whether provided by a public, private or not-for-profit organisation.

Categories	Definition
Culture	Aboriginal and non-Aboriginal, including shared beliefs, customs, values and stories, and connections to Country, land, waterways, places and buildings.
Health and wellbeing	Physical and mental health especially for people vulnerable to social exclusion or substantial change, psychological stress resulting from financial or other pressures, access to open space and effects on public health.
Surroundings	Ecosystem services such as shade, pollution control, and erosion control, public safety and security, access to and use of the natural and built environment, and aesthetic value and amenity.
Livelihoods	People's capacity to sustain themselves through employment or business.
Decision-making systems	Including the extent to which people can have a say in decisions that affect their lives, and have access to complaint, remedy and grievance mechanisms.

4.2 Other major projects in or near the locality

In this SIA, cumulative impacts refer to the combined effect of impacts from several activities on a particular value or receiver. Cumulative impacts can take the following three forms (DPE, 2022):

- Spatial impacts: occurring over the same area, such as trucks from multiple operations, which may produce a cumulative noise impact along a common haulage route
- Temporal: vary over time, such as the construction of multiple large projects over the same timeframe, which may produce a spike in temporary work in an area, creating a cumulative shortage of accommodation
- Linked impact: involve more complex interactions where one impact may trigger another.

To build an understanding of potential community perceptions of the project and to inform the assessment approach for the SIA, a select number of comparable projects in the region have been reviewed to identify how communities have responded to these proposed developments. These projects include a range of sectors including renewable energy and other infrastructure, to ascertain and understanding of community sentiment towards change with the region in general.

A review of scoping reports, response to submissions and media has been undertaken and highlighted that key community sentiments towards these projects included:

- Impact on surroundings and how people experience the rural environment
- Conflicts and changes to land use from agriculture to renewables
- Changes to the regional landscape and character of the region
- Strain on local business for supply and demand
- Visual impacts, including both construction and operation
- Traffic impacts during construction meaning increased traffic on roads

- Availability of resources and waste disposal facilities with capacity to accept wastes

While there are no known proposed BESS projects within the LGA, a review of comparable BESS projects within NSW has also be undertaken to help inform additional scoping of social impacts. Community sentiments towards BESS projects included:

- Safety and hazards, including exlusion zones
- Both support and objection to the uptake of renewable energy sources, inclusive of BESS'
- The potential ability (or inability) to improve network resilience and reduce the chance of blackouts during high demand periods.

Table 4.2 Comparable nearby projects

Project	Approximate Distance from project Site	Status
Other comparable developments within the 50km of the Project		
Bowmen Solar Farm	14km	Operational
Enirgi Battery Recycling Facility	15km	Operational
Gregadoo Solar Farm	immediately east of Redbank Road, north of Boiling Down Road	Approved
Project Energy Connect	immediately near the project on Boiling Down Road	Approved
HumeLink	1.4km	Planning
Inland Rail – Albury to Illabo	6km	Planning
Maxwell Downs Solar Farm	9.5km	Planning
Comparable BESS projects within NSW		
Coleambally Battery Energy Storage System	Murrimbidge LGA	Planning
Apsley Battery Energy Storage System	Dubbo LGA	Planning
Wellington South Battery Energy Storage System	Dubbo LGA	Planning
Awaba Battery Energy Storage System	Lake Macquarie LGA	Planning

4.3 Project engagement to date

VEA began community engagement in 2018. To date, community engagement has predominately been undertaken by the VEA project team with the existing property owner, near neighbours and Council with the purpose of:

- Introducing the project and the project team with landowners and neighbour
- Arranging access requirements for various surveys and investigations,
- Understanding existing land use

- Understanding any preliminary concerns, including rehabilitation and environmental considerations, and impact on services.

Consultation undertaken by VEA during the scoping phase has provided valuable early input into the understanding of stakeholder needs and concerns. A brief summary of engagement to date is provided Table 4.3 and detailed further in Chapter 6 of the Scoping Report.

Table 4.3 Engagement to date (VEA)

Stakeholder Group	Stakeholder	Date	Method	Engagement activities
Community	Near neighbours	From 2018 to present	In person meetings	In person meetings with the four property owners with adjoining properties to the site
	Aboriginal groups		In person meetings	Meetings with seven local Aboriginal stakeholders, including co-Chairs of Mawang Gaway, Elder and Wiradjuri representatives. Overview of the project and project site emailed prior to discussions.
Local Government	Wagga Wagga City Council	From 2018 to present	In person meetings and phone calls	Project updates and briefing meetings. Since November 2022 discussions have also taken place with planning staff, senior strategic land use planner and engineers, covering roads, water, sewerage and stormwater services.
State Government	DPE	9 June 2022	In person meeting	Initial pre-lodgment meeting with presentation of the then proposed solar project.
		26 August 2022	Email	Identified potential project re-design in light of Council's Southern Growth Area.
		13 November 2022	Email	Confirmed the project refinement (dropping solar and proposing standalone BESS).
	State Member for Wagga Wagga	19 December 2022	Email	An introductory letter on the project was emailed with the offer to meet and provide a briefing on the project.
Private Agencies	BCD (Now BCS)	14 February 2019	Meeting	Meeting to discuss potential biodiversity impacts of the project
		12 December 2019	Letter / email	Confirmation from DPE on approach to biodiversity assessment candidate species)
		13/01/2023	Email	Formal notification regarding installation of temporary meteorological mast
	Transgrid	22 April 2022	Email	Initiation of request to lodge a Connection Enquiry

Stakeholder Group	Stakeholder	Date	Method	Engagement activities
		28 October 2022	Email	Discussion on utilisation of an existing electricity easement to construct a 330kV underground cable from the Wagga 330 Substation to the development site
Federal Government	Federal Member for Riverina	19 December 2022	Email	An introductory letter on the project was emailed with the offer to meet and provide a briefing on the project.

The outcomes of engagement have been used to further inform the scoping of likely social impacts with issues identified for consideration in the EIS phase to include:

- heavy vehicle construction traffic and a preference that Plumpton Road not be used (Council)
- the protection of water quality and flows to Lake Albert;
- how VEA will manage surplus land and potential opportunities for near neighbours to utilise this land.

VEA also discussed the project with Aboriginal stakeholder representatives who were generally appreciative of the early consultation, expressed an interest in working with VEA on the project, and confirmed their expectation that an Aboriginal Cultural Heritage Assessment be completed in accordance with relevant guidelines during preparation of the EIS. The provision of cultural awareness training for contractors was also highly regarded.

The stakeholder engagement action plan specific to the SIA for the EIS phase is further discussed in Chapter 6. This action plan outlines a participatory approach to SIA and identifies how the SIA will seek broader involvement across the stakeholder groupings over the subsequent phases of the EIS.

4.4 Project refinement during scoping phase

The project has been in development since 2018 and options for alternative renewable energy projects (including a large-scale solar project) were investigated. VEA commissioned a range of technical consultants between 2018 and 2022 to investigate the potential constraints and opportunities for the site in relation to a potential large scale solar project.

The site subject to the large-scale solar option included eight lots in addition to the three that are subject to the current proposal and covered an area of approximately 398 hectares. As a result of ongoing consultation with Wagga Wagga City Council, adjoining landowners and other various stakeholders, together with responding to the constraints of the site, the large-scale solar project was refined, resulting in the proposed Belhaven Battery Energy Storage System Project that is the subject of this scoping report.

4.5 Level of impact assessment

A key objective of the SIA scoping phase is to identify the level of assessment required for each impact in the assessment phase (DPE, 2022). The level of assessment determines the extent of effort and data required to assess the impact. The levels of assessment and the indicative data requirements are shown in Table 4.4.

Table 4.4 Level of assessment (DPE, 2022)

Level of Assessment	Secondary Data	Primary Data	
		Consultation	Research
Detailed: the project may result in significant social impacts, including cumulative impacts.	Required	Broad consultation	Targeted research
Standard: the project is unlikely to result in significant social impacts, including cumulative impacts.	Required	Targeted consultation	Potentially targeted research
Minor: the project may result in minor social impacts.	Required	Limited – if required (e.g. local council)	Not required
Not relevant: The project will have no social impact, or the social impacts of the project will be negligible.	N/A		

The scoped social impacts and their required level of assessment are outlined in Table 4.5

4.6 Scoped likely social impacts

The scoped impacts have been grouped by the themes that arose during the scoping phase, including understanding the feedback received by VEA during community engagement, preliminary technical assessment and extensive research. These themes include:

- **Lifestyle and wellbeing,** including changes to amenities resulting from construction, affecting how people live (i.e., because of construction dust and noise), changes to visual amenity and potential safety and hazards.
- **Traffic and transport,** including changes to the way people travel due to increasing traffic and potential road closures or detours, and damage to the local roads.
- **Land use,** including impact on water and contaminated soils impacting on livelihoods or how people currently live
- **Culture** and the likelihood that the project could cause tangible harm to items of significance and intangible harm through cultural and physical loss
- **Socio-economic considerations,** including benefits resulting from community investment, procurement, training and employment, impacts on important community services and availability of supplies and improved electricity network resilience.

Table 4.5 Scoped impacts

Theme	Impact to people	Project activity	Social impact category	Affected people	Level of assessment
Lifestyle and wellbeing	• Changes to amenity resulting from construction, affecting how people live (i.e., because of construction dust, noise, light spill, and vibration).	• Construction of the project including ancillary facilities and access roads	• Way of life	• Near neighbours	Minor
	• Impacts to visual amenity as a result of construction and operation	• Construction and operation	• Surroundings	• Host landholder • Near neighbours	Standard
	• Potential safety risks to human life including electric shock, fire, flash burns, explosion, exposure to hazardous chemicals and released gases or short term exposure to very high levels of electromagnetic field	• Operation of the project	• Surroundings • Health and wellbeing	• Nearby neighbours	Standard
Traffic and Transport	• Increase in traffic in the locality, potential road closures, detours, causing day to day disruption for people in the locality due to increased travel times.	• Increased construction traffic, including heavy vehicles on local road network travelling to and from site • Upgrades to roads and intersections required to accommodate OSOM vehicles	• Access • Health and wellbeing	• Road users within the locality	Detailed
	• Increased heavy vehicle traffic on local roads causing damage and increasing maintenance costs for council and the community		• Livelihoods	• Council • Broader community (road users and rate payers)	Standard
Land use	• Potential biodiversity impact (including water and soil), potentially impacting on livelihoods, health and way of life	• Construction and operation of the project.	• Surroundings • Livelihoods	• Nearby neighbours	Minor
Culture	• Likelihood of project to cause intangible harm through cultural and physical loss or tangible harm to items of heritage and cultural significance.	• Construction of the project including land clearing and excavation.	• Culture	• Elders, cultural knowledge owners, and people of Wiradjuri country	Standard

Theme	Impact to people	Project activity	Social impact category	Affected people	Level of assessment
Socio-economic	• Socio-economic benefits resulting from procurement, training and employment opportunities	• Construction and operation of the project, including construction activities, procurement, training and employment opportunities.	• Livelihoods • Accessibility	• Local business • Potential workforce • Aboriginal and Torres Strait Islanders	Standard
	• Construction and operation of this project and others leading to skills shortages or a shortfall in supplies for the region. This is also a cumulative impact		• Livelihoods • Accessibility	• Local business • Broader community	Standard
	• Community investment initiatives leading to improved sustainability and enhancing resilience.	• Community contribution and benefits	• Community	• Community within the social locality	Minor
	• Decline in access to affordable housing, accommodation, and community services (including medical facilities) due to the temporary increase in population.	• Employment of workforce during construction	• Access	• Community within the social locality	Standard
	• Network resilience and the ability to reduce the chance of blackouts during high demand periods, overall reducing health and wellbeing risks associated with moderate blackout events	• Operation of the BESS	• Health and wellbeing	• Community within the social locality	Minor

5 SIA research methodologies and engagement

5.1 SIA research methodologies

The scoping phase has identified several likely social impacts of the project, which will primarily require a 'standard' or 'detailed' level of assessment during the EIS. Technical specialists will carry out several detailed studies and investigations, including (but not limited to) water, biodiversity, noise and traffic. The SIA consultant will work closely with the specialists assessing the project's impacts to determine the likely indirect impacts.

In addition, the SIA will use specific research methods to gather qualitative and quantitative information. This will further assist with refining issues, responses to social impacts and proposed management measures. The SIA research methods are further defined in Table 5.1.

Table 5.1 Research methodology for SIA

Research methodology	Description
Primary data collection – interviews and surveys	The work of Bradshaw and Stratford (2005) on qualitative research design and rigour is beneficial in designing the semi-structured interview methodology and the online survey. The authors' guide participant selection and sampling. Their work explains that in qualitative research, the number of people we interview, communities we observe, or texts we read is less important than the quality of who or what we involve in our research and how we conduct that research. Their work emphasises that 'purposive' sampling is typical in this type of research and that the sample is not intended to be representative, given that the emphasis is usually on analysing meanings.
Exploratory research	Exploratory research involves familiarising a researcher with a topic to satisfy curiosity and improve understanding. Exploratory research is often conducted in areas of inquiry, where the goals of the research are "to scope out the magnitude or extent of a particular phenomenon, problem, or behaviours, to generate some initial ideas (or "hunches") about that phenomenon, or to test the feasibility of undertaking a more extensive study regarding that phenomenon (Bhattacherjee, 2012). For instance, if a community is generally dissatisfied with the operations of a business or government body, exploratory research may be directed at measuring the extent of dissatisfaction or frequency of complaints, and the presumed cause of such complaints. For this assessment, research will include comparative analysis of similar operations including reviews of submission reports, social commentary and engagement outcomes.
Desktop analysis based on specialist studies	The term ‘desktop analysis’ refers to a study that is carried out primarily through the integration of technical assessments into the SIA, rather than physical investigations. For this assessment, several social impacts, including aesthetics and amenity, and cumulative impacts will be mostly assessed in other technical studies in the EIS.
Targeted research	Targeted research into the potential impacts on accommodation provisions and use of community services such as medical facilities will be considered as part of the assessment.

5.2 Participatory engagement approach

Primary data will be collected using a participatory and impartial engagement approach and will build upon the engagement carried out by VEA as part of the development of the EIS. The engagement will be respectful, inclusive, and meaningful, and will complement other SIA research activities. The proposed tool that will be used to achieve the desired SIA consultation outcomes is shown in Table 5.2. The engagement approach will be integrated into the broader EIS program to improve engagement efficiencies and minimise the risk of consultation fatigue.

Table 5.2 SIA engagement approach and timing

Engagement Technique	Level of participation	Description	Targeted stakeholders
Semi-structured interviews	Consulting to collect information and insights	Interviews will be used to further explore the social impacts of the project and to collect data, evidence, and insights for those stakeholders nearest to the Project site. The semi-structured interview format provides a flexible structure which allows the interviewer to create and ask questions about situations as they emerge, and the interviewee to digress and express views freely.	Nearby neighbours, First Nations, Aboriginal and Torres Strait Islanders, Community groups, Local business and suppliers, City of Wagga Wagga Council
Online forums / face to face meetings / workshops or focus groups	Consulting to collect information and insights / Collaborating in decision making	Engagement techniques that present opportunities for either consulting to collect information and insights or collaborating in decision making are used in the social impact assessment to further inform perceived impacts, involve vulnerable or marginalised groups, encourage collaboration in project design and refinement strategy on key impact areas and future monitoring and management measures.	Key stakeholder groups specific to relevant impact themes, e.g., Fire and Rescue NSW, Rural Fire Service, nearby neighbours and community groups.
Fact sheets / newsletters	Sharing information	Provide input into project information prepared by VEA to help people understand the social impact assessment and ways that they can get involved.	Community

6 Conclusion

This report documents the process and outcomes of the scoping phase of the SIA undertaken for the project.

The report has identified key social impacts that require further assessment as part of the EIS. Subsequent phases of the SIA program will include:

- A detailed update of the baseline social profile to ensure that any further baseline data relevant to the impacts identified is obtained
- Further validation of the area of social influence and identification of affected communities and vulnerable groups
- Collection of primary research data through participatory engagement methodologies to understand the perceptions of the identified stakeholders within the social locality and those indirectly affected by the project
- A comprehensive assessment and evaluation of social impacts against existing baseline conditions.

The SIA will seek broader involvement across the stakeholder groupings identified, over the subsequent phases of the EIS, this includes further engagement with Council, business and the community regarding impacts related to community benefit, accommodation and services.

The scoped issues will be further explored and validated during the EIS preparation phase using several research methodologies, including a participatory and impartial engagement approach to inform the SIA. This engagement will build upon the engagement carried out by VEA as part of the development of the EIS.

7 References

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Appendix 1 Community stakeholders

A stakeholder identification process was undertaken during the scoping phase for the project to identify people within the social locality that could potentially have an interest in the project, orare directly and indirectly affected. The following table identifies these stakeholders and their potential areas of interest in the Project.

The level of engagement through the EIS phase will be determined based on the project scope and scoped impacts. The engagement approach will be refined throughout the assessment process to reflect the direct and indirect social impacts arising as the project progresses.

Stakeholder Group	Potential areas of interest	Details
Existing landowner and nearby neighbours / adjacent properties	• Construction impacts on amenity and way of life (noise, visual, dust, traffic) • Operational impacts (financial agreements, access agreements, access road, health and safety) • Impact on livelihood (farming operations) • Impacts on access	• The site comprises three parcels of land, owned by one landholder. • There are four adjoining residential properties sharing a boundary with the site, including two that are directly adjacent, separated only by public roads (including Gregadoo Waste Management Centre and one residential property). The closest residential receiver is located approximately 1.20 kilometres from the site.
Wagga Wagga and surrounds	• Construction Amenity impacts (traffic) • Community Cohesion and sense of place • Benefit-sharing and improvements to public infrastructure • Economic benefits and job opportunities • Implications of the project in the context of other projects (cumulative impacts)	• The is located nine kilometres southeast of the CBD of Wagga Wagga (the closest regional centre). • The surrounding localities as per the ABS statistical areas of: ○ Birriwa (immediately east) ○ Gregadoo (to the east) ○ Gelston Park (to the south) ○ Maxwell (to the south west) ○ Uranquinty (to the west) ○ Springvale (to the north) ○ Kapooka (to the north west)
Wagga Wagga City Council (elected representatives and council staff)	• Cumulative impacts • Impact on services (accommodation, health etc) • Environmental Impacts • Community Impacts and benefits • Economic Impacts including voluntary planning agreements and rates • Road access / haulage routes / delivery	• Mayor, Dallas Tout • Deputy Mayor, CR Jenny McKinnon • General manager, Peter Thompson

Stakeholder Group	Potential areas of interest	Details
Aboriginal and Torres Strait Islanders	• Potential impacts on livelihoods and wellbeing including economic or employment benefits • Likelihood of project to cause intangible harm through cultural and physical loss • Tangible harm to items of heritage and cultural significance	• Aboriginal communities located within the area including LALCs, Traditional Owners and knowledge holders, community leaders, elders, native title holders, service providers and the broader community • Wagga Wagga Local Aboriginal Land Council
Local business, services and suppliers	• Impact on farming operations • Work opportunities • Delays on road network • Economic growth and opportunities • Supply and contract opportunities, economic development • Employment and training opportunities • Impact on both the supply and demand of services	• Businesses potentially impact by the project including Primary producers, landscape suppliers, rural services, retail, service and hospitality • Wagga Wagga Business Chamber • Local businesses including accommodation, retail, food and beverage and entertainment providers; medical services, fuel/vehicle maintenance services; as well as a range of business geared to servicing large civil construction projects
Electricity network and utility and service providers	• Impacts on their infrastructure • Access to future infrastructure • Connection and supply	• TransGrid • Australian Energy Market Operator • NBN Co Limited • Telstra Corporation Limited
Community Groups		
Emergency services	• Road access in the event of emergency • Bushfire risks • Construction impacts on health and safety • Community access to services • Training opportunities • Safety demonstrations • Safety plan	• NSW State Emergency Services – Southern Zone • Riverina Police District
Not for profits and sporting groups	• Preserving the town's services and character • Encouraging growth and development of the district • Community connection and cohesion.	• Local Sporting groups and community organisations, including not-for-profits. Community groups are primarily run by volunteers with strong connections. Groups include: ○ Wagga Wagga Farmers Association ○ Wagga Wagga Men's Shed ○ Wagga Wagga Visitors Information Centre ○ Wagga Wagga Urban Landcare ○ PCYC Wagga Wagga ○ Wagga Wagga South Lions Club

Stakeholder Group	Potential areas of interest	Details
		○ NSW Farmers Association
Local schools	• Community connection and cohesion • Access to services and amenity impacts • Opportunities for community partnerships and support	• Ashmont Public School • Holy Trinity Primary School • Kildare Catholic College • Lutheran School Wagga Wagga • Red Hill Public School • South Wagga Public School • Sturt Public School • The Bidgee School • Wagga Wagga High School • Willans Hill School
Employment, education and training providers	• Jobs, apprenticeships and traineeships • Research projects • Scholarships • Employee training programs	• Charles Sturt University • TAFE NSW Wagga Wagga • Training Services NSW
Advocacy groups	• Cumulative impacts • Economic growth • Opportunities for community partnership and support	• Re-Alliance • Renew Economy
State and Federal government regulatory bodies		
Government elected officials	• Governance and legislation • Adherence to planning permits conditions • Community Impacts and investment opportunities • Economic Impacts and development	• Mr. John McGirr, MP Member of the Legislative Assembly; Member for Wagga Wagga; Independent • Matt Keane (NSW Minister for Energy and Environment) • The Hon Michael McCormack, Ferderal Member for Riverina
State government departments and statutory authorities	• Governance and legislation • Adherence to planning permits conditions • Environmental Impacts • Community Impacts and investment opportunities • Economic Impacts and development • impacts from construction and operational activities • Road access / haulage routes / delivery • employment and training opportunities • Turbine height, wind farm footprint. Potential impacts on flight paths	Key stakeholders include: • Department of Planning and Environment NSW including: ○ Biodiversity, Conservation and Science Directorate ○ WaterNSW ○ Heritage NSW • Department of Primary Industries • NSW Environment Protection Authority • Transport for NSW • Crown Lands • Riverina Local Land Services • Department of Regional NSW
Federal government departments	• As above	• Department of Environment and Energy

Stakeholder Group	Potential areas of interest	Details
		• Department of Infrastructure and Regional Development • Department of Agriculture, Water and Environment
Media		
Local media	• Community impact • Project milestones • Community engagement • Delays on road network • Economic growth and opportunities	• The Daily Advertiser • Eastern Riverina Chronicle • ABC Riverina

Appendix 2 Community Profile Data Sets

Data sources:

- Australian Bureau of Statistics 2021, quick stats
- Australian Bureau of Statistics 2021, Community Profiles
- Primary Health Network, LGA Population Health Snapshot (2021) (PHIDU)

Table 7.1 Quickstats, Surrounding Suburbs and Localities (SALs)

Indicator	Rowan	Gregadoo	Wagga Wagga LGA	NSW
People - Demographics and Education (Source ABS 2021)				
Total population (2021)	105	274	67609	8072163
Male	46.5%	51.5%	48.6%	49.4%
Female	53.5%	48.5%	51.4%	50.6%
Aboriginal and/or Torres Strait Islander people		3.6%	6.6%	3.4%
Age Structure (Source ABS 2021)				
% Population under 14 and under	na	20.6%	20.3%	18.2%
% Population over 65 years.	na	14.5%	16.6%	17.7%
Median Age (years)	43	41	35	39
Social Marital status (Source ABS 2021)				
Registered Married	na	61.1%	45.7%	47.3%
De facto marriage	na	7.6%	12.1%	10.6%
Not married	na	31.3%	42.2%	42.1%
Education				
Pre-school	na	7.8%	7.7%	6.8%
Infants/Primary	na	26.7%	27.4%	26.5%
Secondary	na	25.6%	20.7%	20.9%
Technical or Further Educational Institution	na	8.9%	9.9%	8.5%
University or other Tertiary Institution	na	6.7%	14.2%	15.3%
Other type of educational institution	na	0.0	2.2%	3.0%
Not stated	na	17.8%	17.9%	19.0%
Level of highest education attainment (Source ABS 2021)				
Bachelor's degree level and above	na	21.9%	19.5%	27.8%
Advanced Diploma and Diploma level	na	7.8%	8.3%	9.3%

Indicator	Rowan	Gregadoo	Wagga Wagga LGA	NSW
Certificate level IV	na	1.4%	4.5%	3.3%
Certificate level III	na	19.6%	16.0%	11.7%
Year 12	na	11.0%	13.9%	14.5%
Year 11	na	5.9%	4.0%	3.2%
Year 10	na	11.9%	13.3%	10.6%
Certificate level II	na	0.0	0.1%	0.1%
Certificate level I	na	0.0	0.0	0.0
Year 9 or below	na	7.8%	8.6%	7.4%
No educational attainment	na	0.0	0.7%	1.0%
Not stated	na	10.5%	8.4%	8.3%
People - cultural and language diversity (Source ABS 2021)				
English ancestry	na	50.0%	39.4%	29.8%
Australian ancestry	na	44.2%	40.0%	28.6%
Scottish ancestry	na	13.5%	10.7%	7.7%
Irish ancestry	na	8.8%	12.9%	9.1%
German ancestry	na	5.1%		3.0%
Australian Aboriginal	na		6.4%	3.2%
Country of birth				
Australia	na	89.4%	83.0%	65.4%
Languages (Source ABS 2021)				
English only spoken at home	na	93.4%		67.6%
Employment Type (Source ABS 2021)				
Worked Full Time	na	65.4%	60.3%	55.2%
Worked part-time	na	25.2%	30.3%	29.7%
Away from work	na	7.5%	5.4%	10.2%
Unemployed	na	2.5%	4.0%	4.9%
Labour force participation (15-85 years) (including those are unemployed looking)	na	72.6%	64.4%	58.7%
Occupation (Source ABS 2021)				
Managers	na	28.9%	12.2%	14.6%
Professionals	na	19.5%	20.7%	25.8%
Technicians and Trades Workers	na	15.1%	15.0%	11.9%
Community and Personal Service Workers	na	6.9%	14.5%	10.6%

Indicator	Rowan	Gregadoo	Wagga Wagga LGA	NSW
Clerical and Administrative workers	na	6.3%	11.2%	13.0%
Sales Workers	na	5.0%	9.1%	8.0%
Machinery Operators and Drivers	na	3.8%	5.4%	6.0%
Industry of employment (Source ABS 2021) (Top 5)				
Secondary Education	na	6.9%		1.8%
Beef Cattle Farming (Specialised)	na	5.7%		0.4%
Primary Education	na	5.0%	2.5%	2.1%
Automotive Body, Paint and Interior Repair	na	4.4%		0.3%
House Construction	na	3.8%		0.8%
Hospitals (except Psychiatric Hospitals)	na		5.7%	4.2%
Defence	na		4.3%	0.6%
Other Social Assistance Services	na		3.4%	2.2%
Supermarket and Grocery Stores	na		2.4%	2.5%
Median weekly income (Source ABS 2021)				
Personal	na	959	839	813
Family	na	2550	2060	2185
Households	2,416	2305	1638	1829
Method of Travel to Work (Source ABS 2021)				
Walked only	na	2.5%	3.9%	2.5%
Worked at home	na	20.1%	8.4%	31.0%
by car as driver or passenger	na	66.7%	75.2%	47.2%
Truck	na		0.6%	0.7%
Public Transport	na	3.1%	0.7%	4.0%
Unpaid work (Source ABS 2021)				
did unpaid domestic work	na	79.6%	68.5%	66.5%
cared for child/children	na	32.1%	28.4%	25.3%
provided unpaid assistance to a person with a disability	na	13.1%	12.4%	11.5%
did voluntary work through an organisation or group	na	25.0%	16.1%	13.0%
Family composition (Source ABS 2021)				
Couple family with no children	na	40.8%	38.7%	37.9%
Couple family with children	na	51.3%	42.5%	44.7%
One parent family	na	3.9%	17.4%	15.8%

Indicator	Rowan	Gregadoo	Wagga Wagga LGA	NSW
Other family	na	0.0	1.5%	1.6%
Employment status of couple families (Source ABS 2021)				
Both employed, worked full-time	na	40.9%	27.1%	21.7%
Both employed, worked part-time	na	4.5%	3.8%	4.7%
One employed full-time, one part-time	na	19.7%	24.6%	18.2%
One employed full-time, other not working	na	7.6%	10.2%	12.3%
One employed part-time, other not working	na	0.0	5.2%	22.9%
Both not working	na	4.5%	17.9%	22.9%
other (includes away from work)	na	13.6%	6.1%	10.3%
Labour force status not stated	na	9.1%	5.0%	3.7%
Dwellings				
Occupied private dwellings	na	93.1%	92.5%	90.6%
Separate house	na	100%	85.5%	65.6%
Semi-detached, row or terrace house, townhouse etc.	na	0.0	4.8%	11.7%
Flat, unit or apartment	na	0.0	9.2%	21.7%
Other dwelling	na	0.0	0.4%	0.7%
Average number of bedrooms per dwelling	na	3.7	3.3	3.1
Average number of people per household	3.2	3.1	2.5	2.6
Owned outright	na	50.6%	29.5%	31.5%
Owned with a mortgage	na	37.0%	34.1%	32.5%
Rented	na	6.2%	32.7%	32.6%
Tenure type not stated	na	0.0	1.5%	1.5%
Household composition (Source ABS 2021)				
Family	na	91.5%	68.5%	71.2%
Single (or lone)	na	8.5%	27.7%	25.0%
Group households	na	0.0	3.8%	3.8%
Household income (Source ABS 2021)				
Less than $650 gross weekly income	na	7.0%	16.8%	16.3%
More than $3000 gross weekly income	na	35.2%	19.4%	26.9%
Median rent	350	278	300	420
Households where rent payments are less than 30% of householder income	na	60.0%	62.8%	56.1%
Households with rent payments greater than or equal to 30% of household income	na	0.0	28.3%	35.5%

Indicator	Rowan	Gregadoo	Wagga Wagga LGA	NSW
Median mortgage repayments	1650	2167	1517	2167
Households where mortgage payments are less than 30% of householder income	na	86.7%	79.3%	71.9%
Households with mortgage payments greater than or equal to 30% of household income	na	16.7%	9.3%	17.3%
Car ownership per dwelling (Source ABS 2021)				
None	na	0.0	6.1%	9.0%
One	na	9.9%	34.3%	37.8%
Two	na	38.5%	38.0%	34.1%
Three of more	na	51.6%	20.0%	17.5%
Not stated	na	0.0	1.5%	1.5%
Population mobility (address) (Source ABS 2021 Community Profile)				
Proportion of population with a different address 1 year ago	na	84.6%	77.3%	79.4%
Proportion of population with a different address 5 years ago	na	62.7%	49.6%	53.9%
At risks and vulnerable groups				
Aboriginal and/or Torres Strait Islander people	na	3.6%	6.6%	3.4%
Provided unpaid assistance to a person with a disability (last two weeks before Census night) (%)	na	13.1%	12.4%	11.5%
Highest Educational attainment: Year 9 or below (%)	na	7.8%	8.6%	7.4%
Population aged 65+ (%)	na	14.5%	16.6%	17.7%
SEIFA Index of Relative Socio-economic Disadvantage (IRSD) (2016)	na	na	995	na