

Energy from Waste Facility

EIS Scoping Report

Jerrara Power Pty Ltd

22 June 2021



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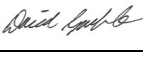
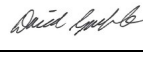
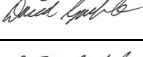
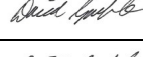
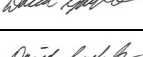
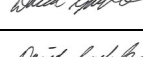
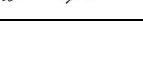
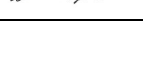
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Executive summary

Overview

Jerrara Power Pty Ltd (Jerrara Power) proposes to construct and operate an energy from waste facility (the proposal) in the Southern Tablelands of New South Wales (NSW) using Hitachi Zosen Inova (HZI) moving grate combustion technology. HZI is a global leader in energy from waste technology and has delivered more than 600 projects worldwide.

The proposal is deemed to be State significant development (SSD) as it is development for the purpose of a waste management facility that would handle more than 1,000 tonnes per year of waste, as well as electricity generating works with a capital investment value of more than \$30 million. The proposal therefore requires assessment and approval in accordance with Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (NSW).

Purpose of this Scoping Report

As SSD, the development application for the proposal must be accompanied by an Environmental Impact Statement (EIS) prepared in accordance with the Secretary's environmental assessment requirements (SEARs). This Scoping Report has been prepared to support an application to the NSW Department of Planning, Industry and Environment to request SEARs. It includes a description of the proposal, the statutory framework, stakeholder engagement completed to date and proposed ongoing engagement, preliminary identification of relevant environmental matters, potential impacts and the proposed scope of the assessment to be undertaken in the EIS.

Background

As waste generation continues to rise, there has been an increasing emphasis on management of waste and prioritising actions in line with the waste hierarchy. This change in perspective underpins efforts to divert waste otherwise destined for landfill and drives effort towards increased recycling and more efficient waste management.

With renewed focus on pollution reduction and resource conservation comes acknowledgement of the need to reduce the amount of waste ending up in landfills, where the embodied energy and utility value of many resources are lost. Waste can generate renewable energy for power or heating, displacing fossil fuels.

The Jerrara Power energy from waste facility would have the capacity to thermally treat up to 330,000 tonnes per year of residual municipal and commercial and industrial waste that would ordinarily be directed to landfill. The treated waste would be converted to electricity, generating up to 30 megawatts of power. This would account for about 10 per cent of the combined municipal and commercial and industrial waste that was landfilled in 2017-18 in the Metropolitan Levy Area¹. The power generated would be enough to power over three times the number of private dwellings within the Goulburn Mulwaree LGA².

Energy from waste demonstrates a commitment to an evolving and more efficient waste management industry, aligned with international emission reduction obligations and the need to meet national greenhouse gas targets. Recycling would continue to play an important role in waste management, with energy from waste facilities having the ability to manage residual combustible wastes that cannot be economically recycled into the future.

Key features of the proposal

Key features of the proposal include:

- construction and operation of an energy from waste facility with capacity to thermally treat up to 330,000 tonnes per year of residual municipal solid waste and commercial and industrial waste
- overhead 66 kilovolt power line (on single pole structures) to the main grid substation at Goulburn

The proposal also includes the following ancillary infrastructure/works:

- an administration building, visitor and education centre
- internal roads, weighbridges, car park for visitors and employees, truck parking and hardstand areas
- stormwater and water quality infrastructure,

¹ www.epa.nsw.gov.au/your-environment/waste/waste-levy/levy-regulated-area-and-levy-rates

² Based on the 2016 Australian Bureau of Statistics Community Profile for Goulburn Mulwaree LGA (LGA13310).

- fencing, landscaping and business identification signage

Proposal objectives

The objectives of the proposal are to:

- reduce the amount of waste requiring landfill disposal and improve resource recovery rates in line with the objectives of the NSW *Waste Avoidance and Resource Recovery Strategy 2014-21* and the NSW *Waste and Sustainable Materials Strategy 2041*, which include targets for diverting more waste from landfill
- generate base load renewable energy
- increase local employment, procurement and training opportunities
- reduce Australia's greenhouse gas emissions
- design, site and operate the facility to minimise overall impact to the community and environment.

The proposal responds to the NSW Government's *Waste and Sustainable Materials Strategy 2041*, which identifies the need for energy recovery facilities to assist in managing residual wastes in the future, as part of an integrated approach to waste management in NSW.

Key environmental issues

The preliminary environmental assessment undertaken as part of the preparation of this Scoping Report identified the following environmental issues requiring further assessment in the EIS:

- | | |
|--|---------------------------------------|
| – air quality and odour | – hazards and risk |
| – noise and vibration | – fire prevention and management |
| – waste management | – social |
| – human health | – biodiversity |
| – traffic, transport and access | – soils and surface water |
| – Aboriginal and non-aboriginal heritage | – groundwater |
| – landscape character and visual amenity | – land contamination |
| – land use | – greenhouse gases and climate change |

Next steps

Following receipt of the SEARs, Jerrara Power would prepare and publicly exhibit the EIS for the proposal, which would be prepared in accordance with the SEARs and technical guidelines. The EIS would include:

- a description of the proposal including its components and construction activities
- identification and consideration of issues raised by stakeholders and the community
- a description of the existing environment and an environmental assessment of potential direct and indirect impacts on environmental issues during construction and operation of the proposal
- identification of measures to be implemented to avoid, minimise, manage, offset and/or monitor the potential impacts of the proposal.

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Abbreviations and glossary of terms

Term	Definition
AEP	average exceedance probability
AHIMS	Aboriginal heritage information management system
BAT	best available technology/techniques
BDAR	biodiversity development assessment report
bottom ash	The coarse and granular non-combustible residue of combustion
CH ₄	methane
Capital investment value	<p>Capital investment value of a development or project includes all costs necessary to establish and operate the project, including the design and construction of buildings, structures, associated infrastructure and fixed or mobile plant and equipment, other than the following costs:</p> <p>(a) amounts payable, or the cost of land dedicated or any other benefit provided, under a condition imposed under Division 6 or 6A of Part 4 of the <i>Environmental Planning and Assessment Act 1979</i> or a planning agreement under that Division</p> <p>(b) costs relating to any part of the development or project that is the subject of a separate development consent or project approval</p> <p>(c) land costs (including any costs of marketing and selling land)</p> <p>(d) GST (as defined by <i>A New Tax System (Goods and Services Tax) Act 1999</i> of the Commonwealth) (NSW Department of Planning 2010)</p>
CO	carbon monoxide
CO ₂	carbon dioxide
CoPC	chemicals of potential concern
DP	deposited plan
DPIE	NSW Department of Planning, Industry and Environment
EIS	environmental impact statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EPA	NSW Environment Protection Authority
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999 (Commonwealth)</i>
flue gas treatment residues	Residues from the treatment of fly and boiler ash via the HZI SemiDry system, which would be chemically stabilised for safe disposal
food organics and garden organics	Used to describe the organics service offered by councils that allow food and garden waste to be placed in the green lid bins (Rawtec Pty Ltd 2018)
GHG	greenhouse gas
garden organics	Used to describe the organics service offered by councils that allow garden waste to be placed in green lid bins, but not food waste (Rawtec Pty Ltd 2018)
HZI (Hitachi Zosen Inova)	<p>Hitachi Zosen Inova</p> <p>A global leader in energy from waste design engineering technology. HZI has developed and operated numerous moving grate energy from waste facilities globally and has experience in different plant capacities, configurations, fuels, national standards and high efficiency concepts.</p>
HZI DyNOR® process	A process used to reduce NO _x by selective non-catalytic reduction: NO _x reacts with ammonia and chemically converts to nitrogen and water vapour.
HZI SemiDry system	<p>A semi-dry sorption process, employing the principle of the circulating fluidised bed, which involves:</p> <ul style="list-style-type: none"> – injection of hydrated lime into the fluidised bed reactor to neutralise corrosive acid gases – simultaneous spraying of water into the reactor to achieve the ideal reaction temperature (typically 145°C)

Term	Definition
IED	Industrial Emissions Directive
Jerrara Power Pty Ltd	A privately-owned Australian company which has been established to create a commercial and sustainable alternative to waste landfilling with the added benefit of producing energy from waste material. Jerrara Power is owned and managed by a group of experienced executives with an extensive background in waste management, transport, infrastructure, resources and finance.
LEP	local environment plan
LGA	local government area
Metropolitan Levy Area	As defined in the <i>Protection of the Environment Operations (Waste) Regulation 2014</i> , the local government areas of Bayside, City of Blacktown, Burwood, Camden, City of Campbelltown, Canada Bay, Canterbury-Bankstown, Central Coast, City of Cessnock, Cumberland, City of Fairfield, Georges River, City of Hawkesbury, Hornsby, Hunter's Hill, Inner West, Kiama, Kuring-gai, City of Lake Macquarie, Lane Cove, City of Liverpool, City of Maitland, Mosman, City of Newcastle, North Sydney, Northern Beaches, City of Parramatta, City of Penrith, Port Stephens, City of Randwick, City of Ryde, City of Shellharbour, City of Shoalhaven, Strathfield, Sutherland Shire, City of Sydney, The Hills Shire, Waverley, City of Willoughby, Wingecarribee, City of Wollongong and Woollahra
mAHD	metres on the Australian height datum
MW	megawatt
NCC	National Construction Code
NO _x	oxides of nitrogen
NO ₂	nitrogen dioxide
PCTs	plant community types
PHA	preliminary hazard analysis
PM	particulate matter
POEO Act	<i>Protection of the Environment Operation Act 1997 (NSW)</i>
Proposal site	The location of the proposed energy from waste facility and associated infrastructure, located on Lots 8 and 12 of Deposited Plan (DP) 750022 (974 Jerrara Road, Bungonia)
RFFE	regional flood frequency estimation
RFS	NSW Rural Fire Service
RU2	rural landscape zoning
SEARs	Secretary's environmental assessment requirements
SEPP	state environmental planning policy
SF ₆	sulphur hexafluoride
SIA	social impact assessment
SO ₂	sulphur dioxide
SSD	State significant development
Thermal treatment	According to Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i> , thermal treatment means the processing of waste by burning, incineration, thermal oxidation, gasification, pyrolysis, plasma or other thermal treatment processes (NSW Environment Protection Authority 2021)
tCO ₂ -e	tonnes of carbon dioxide equivalent gas

1. Introduction

1.1 Overview

Jerrara Power proposes to construct and operate an energy from waste facility (the proposal) in the Southern Tablelands of New South Wales (NSW) using Hitachi Zosen Inova (HZI) moving grate combustion technology. HZI is a global leader in energy from waste technology and has delivered more than 600 projects worldwide.

The proposal would have the capacity to thermally treat up to 330,000 tonnes per year of residual municipal and commercial and industrial waste that would ordinarily be directed to landfill. The treated waste would be converted to electricity, generating up to 30 megawatts of power.

The proposal is deemed to be State significant development (SSD) as it is development for the purpose of a waste management facility that would handle more than 1,000 tonnes per year of waste, as well as electricity generating works with a capital investment value of more than \$30 million. The proposal therefore requires assessment and approval in accordance with Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (NSW).

1.1.1 Key features

Key features of the proposal include:

- construction and operation of an energy from waste facility with capacity to thermally treat up to 330,000 tonnes per year of residual municipal solid waste and commercial and industrial waste
- overhead 66 kilovolt power line (on single pole structures) to the main grid substation at Goulburn

The proposal also includes the following ancillary infrastructure/works:

- an administration building, visitor and education centre
- internal roads, weighbridges, car park for visitors and employees, truck parking and hardstand areas
- stormwater and water quality infrastructure,
- fencing, landscaping and business identification signage

Figure 3.1 provides an overview of the proposed site plan.

1.1.2 Timing/program

Construction is planned to commence in early 2023 subject to planning approval and is expected to take about 36 months including commissioning. The life of the facility is expected to be a minimum of 25 years.

1.1.3 Capital investment value

The estimated capital cost of the proposal is about \$600 million.

1.1.4 The proponent

Jerrara Power Pty Ltd is the operating company for the energy from waste proposal and is 100% owned by Jerrara Holdings Pty Ltd. Jerrara Holdings is a privately held Australian company.

1.1.5 Technology provider

The appointed technology provider, HZI, is a global leader in energy from waste technology. HZI has developed numerous moving grate energy from waste facilities globally and has experience in different plant capacities, configurations, fuels, national standards and high efficiency concepts.

1.1.6 Similar facilities

There are a number of plants using similar technology to the one considered for the proposal.

The Greatmoor energy from waste facility in the United Kingdom (Figure 1.1) and the Covanta waste to energy facility in Dublin, Ireland (Figure 1.2) use the same technology (HZI) and process similar waste streams (mix of municipal and commercial and industrial waste) as planned for this proposal.

These two facilities demonstrate that the proposed technology can achieve reliable and acceptable environmental performance, particularly regarding air emissions, management and reuse of bottom ash and management of flue gas treatment residues from the energy recovery process.



Figure 1.1 Greatmoor energy from waste facility

Source: Power Technology (2016)



Figure 1.2 Covanta waste to energy facility

Source: RPS Group (2021)

Additionally, the energy from waste facility currently under construction in East Rockingham in Western Australia will also utilise the same HZI technology that is planned for this proposal. The layout and equipment within the East Rockingham facility is also similar to what is proposed for the Jerrara Power facility.

Figure 1.3 provides an artist's impression of what the East Rockingham waste to energy facility will look like, once operational.



Figure 1.3 East Rockingham waste to energy facility (artist rendering)

Source: East Rockingham Waste to Energy (2021)

Ferrybridge in the UK is another facility with similar technology. An outline of the abovementioned energy from waste facilities and their annual throughput can be seen in Table 1.1.

The EIS will nominate the reference facility selected for the proposal and provide further details on the facility.

Table 1.1 Energy from waste facility annual throughputs

Facility location	Annual throughput
Jerrara Power Energy from Waste Facility (the proposal)	330,000 t
Greatmoor, United Kingdom	345,000 t
Dublin, Ireland	600,000 t
Ferrybridge, United Kingdom	566,000 t
East Rockingham, Western Australia (under construction)	300,000 t

1.2 Purpose and structure of this report

As SSD, the development application for the proposal must be accompanied by an EIS prepared in accordance with the SEARs. This report has been prepared to support an application to the NSW Department of Planning, Industry and Environment (DPIE) to request the SEARs.

This scoping report has been developed in accordance with the draft DPIE guideline *Scoping an Environmental Impact Statement* (DPIE 2020). It includes a description of the proposal, the statutory framework, stakeholder engagement completed to date and proposed ongoing engagement, preliminary identification of relevant environmental matters, potential impacts and the proposed scope of the assessment to be undertaken in the EIS.

The EIS would be prepared in accordance with the requirements of the SEARs, the *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulation 2000* (the Regulation).

This report includes the following information:

- Section 2 — Description of the proposal site

- Section 3 — Description of the proposal including design and construction
- Section 4 — Description of the statutory framework including approval requirements
- Section 5 — Description of the strategic context and project justification
- Section 6 — Overview of engagement undertaken to date and an outline of planned stakeholder engagement activities
- Section 7 — Description of the key environmental issues
- Section 8 — Conclusion

2. Site context

2.1 Location

The proposal would be located about 21 kilometres east of Goulburn at 974 Jerrara Road, Bungonia, as shown on Figure 2.1.

The proposed energy from waste facility and associated infrastructure would be located on Lots 8 and 12 of Deposited Plan (DP) 750022 (the proposal site). These two lots are located to the south of Jerrara Creek, are irregular in shape and have a total area of about 27 hectares. The temporary construction workforce accommodation facility would be located on the south-eastern portion of Lot 8.

There are also six additional allotments that amount to the overall 974 Jerrara Road, Bungonia, these include:

- Lot 7, DP 750029
- Lot 6, DP 750029
- Lot 93, DP 750029
- Lot 23, DP 750029
- Lot 22, DP 750029
- Lot 157, DP 750029

These vacant lots are owned by Jerrara Power Pty Ltd and are located to the north of Jerrara Creek. This current proposal does not contemplate directly impacting these lots.

The proposal site is currently used for livestock grazing. It is located to the north of Mountain Ash Road, to the west of Jerrara Road and to the south of the Hume Highway, within the Goulburn Mulwaree local government area (LGA). Neighbouring suburbs include Tolwong, Marulan, Gundary, Boxers Creek and Tallong.

2.2 Ownership

The proposal site is owned by Jerrara Power Pty Ltd.

2.3 Zoning

The proposal site is zoned RU2 Rural Landscape under the Goulburn Mulwaree Local Environmental Plan 2009 (Goulburn Mulwaree LEP).

Figure 2.2 provides an overview of zoning within the locality.

The objectives of the RU2 Rural Landscape zoning are:

- to encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- to maintain the rural landscape character of the land.
- to provide for a range of compatible land uses, including extensive agriculture.
- to protect, manage and restore areas with high conservation, scientific, cultural or aesthetic values.
- to protect and enhance the water quality of receiving watercourses and groundwater systems and reduce their degradation.
- to preserve environmentally sensitive land, including catchment areas, and prevent development likely to result in environmental harm.
- to minimise the potential for conflict between adjoining land uses.

In accordance with the zone provisions, electricity generating works and waste and resource management facilities are prohibited in the RU2 zone.

Notwithstanding the above, Clause 121 of State Environmental Planning Policy (Infrastructure) 2007 (the Infrastructure SEPP) applies to development for the purpose of waste or resource management facilities and

provides that these types of works are permissible with consent, if carried out by any person on land in a prescribed zone.

Pursuant to Clause 121 definitions, prescribed zone includes RU2 Rural Landscape.

Relevant Aims of the Infrastructure SEPP include (clause 2):

- (b) providing greater flexibility in the location of infrastructure and service facilities, and*
- (g) providing opportunities for infrastructure to demonstrate good design outcomes*

The objectives of the RU2 Rural Landscape zone remain relevant considerations for the proposal and would be addressed in the EIS.

Further, Clause 34 of the Infrastructure SEPP applies to development for the purpose of electricity generating works and provides that these types of works are permissible with consent, if carried out by any person on land including a prescribed rural zone. As noted above, the proposal site is zoned RU2 Rural Landscape and this zone is included in the definition of a prescribed zone.

2.4 Surrounding land uses and sensitive receivers

Sensitive receivers are typically regarded as residential properties, schools, childcare centres, aged-care facilities, hospitals and neighbouring businesses. Two rural residential properties are located within 500 metres of the proposal site, and a further six are located within one kilometre (see Figure 2.3). The broader locality is dominated by several large, self-contained blocks of land.

There are three protected areas in the surrounding area. These include:

- Bungonia National Park (located seven kilometres east of the proposal site)
- Bungonia State Conservation Area (located seven kilometres south east of the proposal site)
- Pomaderris Nature Reserve (located 13 kilometres west of the proposal site).

During consultation, it was also identified that there is a chicken farm located 500 metres west of the proposal site. There are also two sheep farms, an additional chicken farm and winery located in the surrounding area.

The wider area around the proposal site is engaged in primary industry and includes a number of quarries and mines located on recognised resource and mineral land, forestry and agricultural farmlands. The quarries and mines include:

- Holcim, Lynwood Quarry (located 12 kilometres north of the proposal site)
- Gunlake Quarry (located 16 kilometres north of the proposal site)
- Boral Peppertree Quarry (located 10 kilometres north east of the proposal site)
- Boral Marulan South Limestone Mine (located 10 kilometres north east of the proposal site)
- Ardmore Park Quarry (located 9 kilometres south of the proposal site).

Surrounding land zoning includes E3 Environmental Management to the north and RU2 Rural Landscape to the east, south and west (as shown on Figure 2.2).

2.5 Topography

The proposal site is slightly undulating and consists of the following features:

- the western portion of the proposal site (Lot 8 of DP 750022) has elevations ranging from 598 mAHD to 595 mAHD, a fall of three metres from south to north, and a rise of about one metre from east to west.
- the eastern portion of the proposal site (Lot 12 of DP 750022) is on a lower level with elevations ranging from 585 mAHD to 582 mAHD. It has a fall of three metres from south to north and a fall of one metre from east to west.

The two distinct levels of the proposal site are separated by a relatively gentle slope. The existing contours of the proposal site are shown on Figure 2.4.

2.6 Access

The proposal site is accessed via Jerrara Road which is adjacent to the eastern site boundary. Jerrara Road is accessed via the Marulan South and Bungonia exit on the Hume Highway to the north, and King Street to the south.

An overview of the key access routes can be seen in Figure 2.1.

2.7 Utilities and services

2.7.1 Overview

A search of nearby utilities and services was undertaken in February 2021. This indicated that the following services were located within or nearby to the proposal site:

- Telstra optical fibre cable
- Essential Energy (electricity)

There are no nearby water and sewer mains. The need for connection to these services would be investigated and considered during the EIS.

2.7.2 Telecommunications

A buried Telstra optical fibre cable transects Lot 8 DP 750022 and the south east corner of Lot 12 DP 750022 and is offset from the southern and eastern boundary of Lot 8 DP 750022 by about 15 metres. There are several marker posts installed within and nearby the proposal site and a type 8-pit cable jointing pit located at the southern boundary of Lot 8 DP 750022.

2.7.3 Power

Essential Energy underground earth or wires and low voltage underground cable are located within the adjacent lot north east of the proposal site about 80 metres north of Lot 8 DP 750022. The low voltage cable services the existing buildings located on Lot 44 DP 750022.

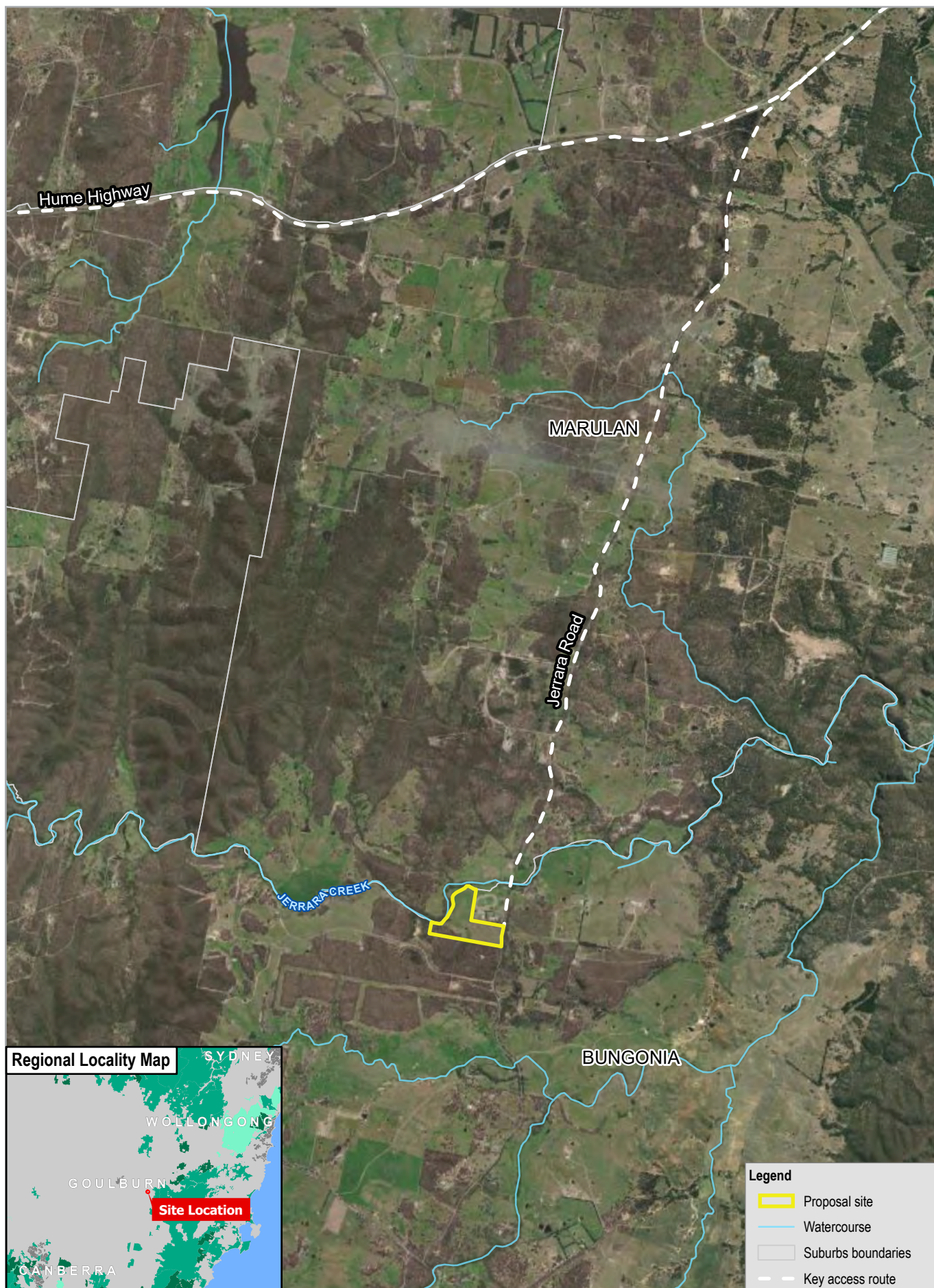
Figure 2.5 provides an indication of the existing surrounding services in the vicinity of the proposal site.

It would be necessary to provide a high voltage power connection to the proposal site, for import and export of power. Jerrara Power has engaged Essential Energy to undertake a study associated with the power connection which will include determining the route for connection. The EIS will consider potential environmental impacts, such as Aboriginal heritage and biodiversity impacts.

2.8 Environmental constraints

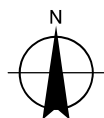
Figure 2.6 provides an overview of the environmental constraints on and within the vicinity of the proposal site.

Further discussion on the relevant environmental matters, the potential impacts of the proposal on these environmental matters and appropriate level of assessment are further described in section 7.



Paper Size ISO A4
0 0.4 0.8 1.2 1.6
Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

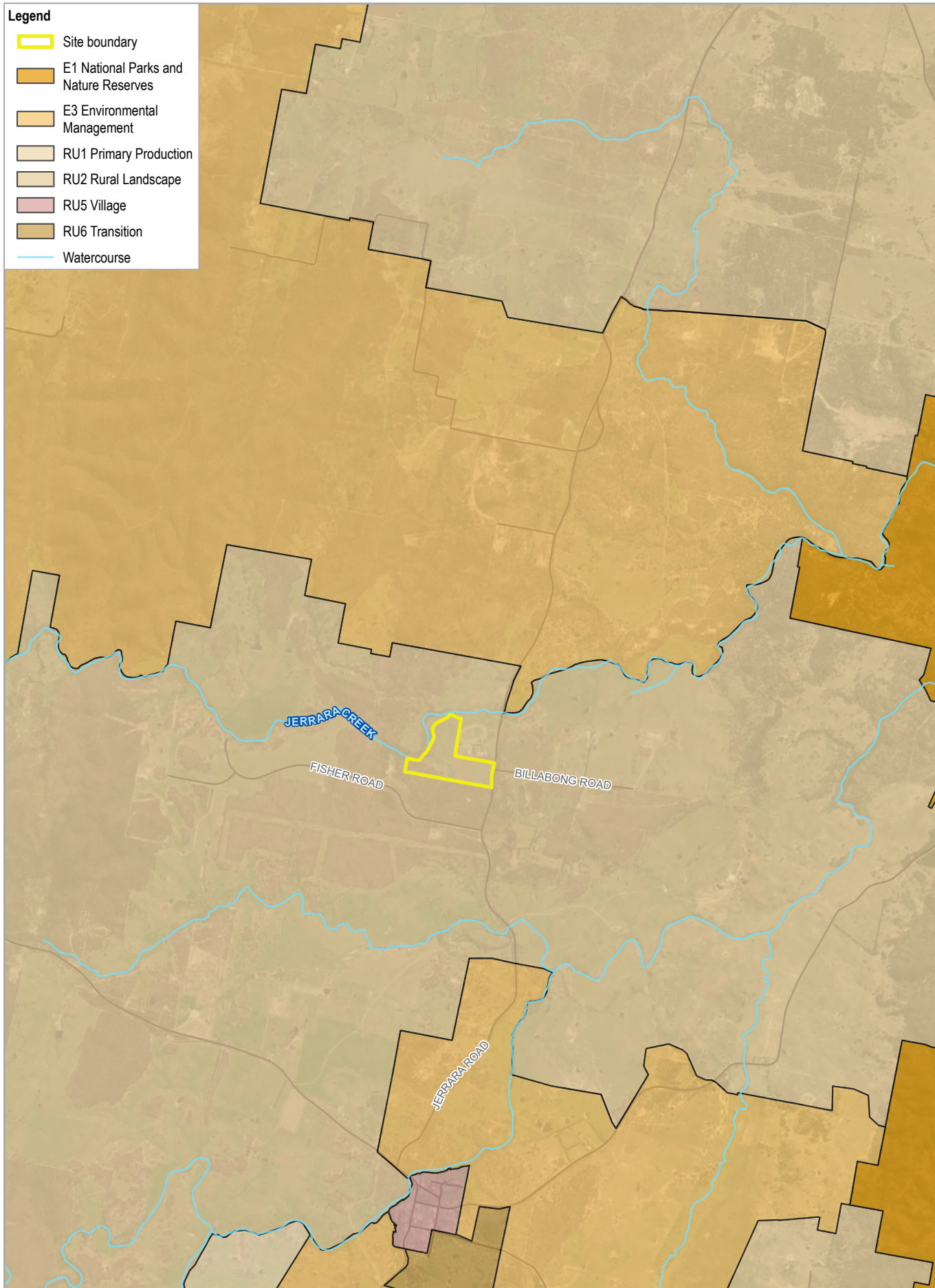


Jerrara Power Pty Ltd
Jerrara Power Energy from Waste Facility

Project No. 12533008
Revision No. 1
Date 25/05/2021

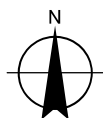
Proposal site location

FIGURE 2.1



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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

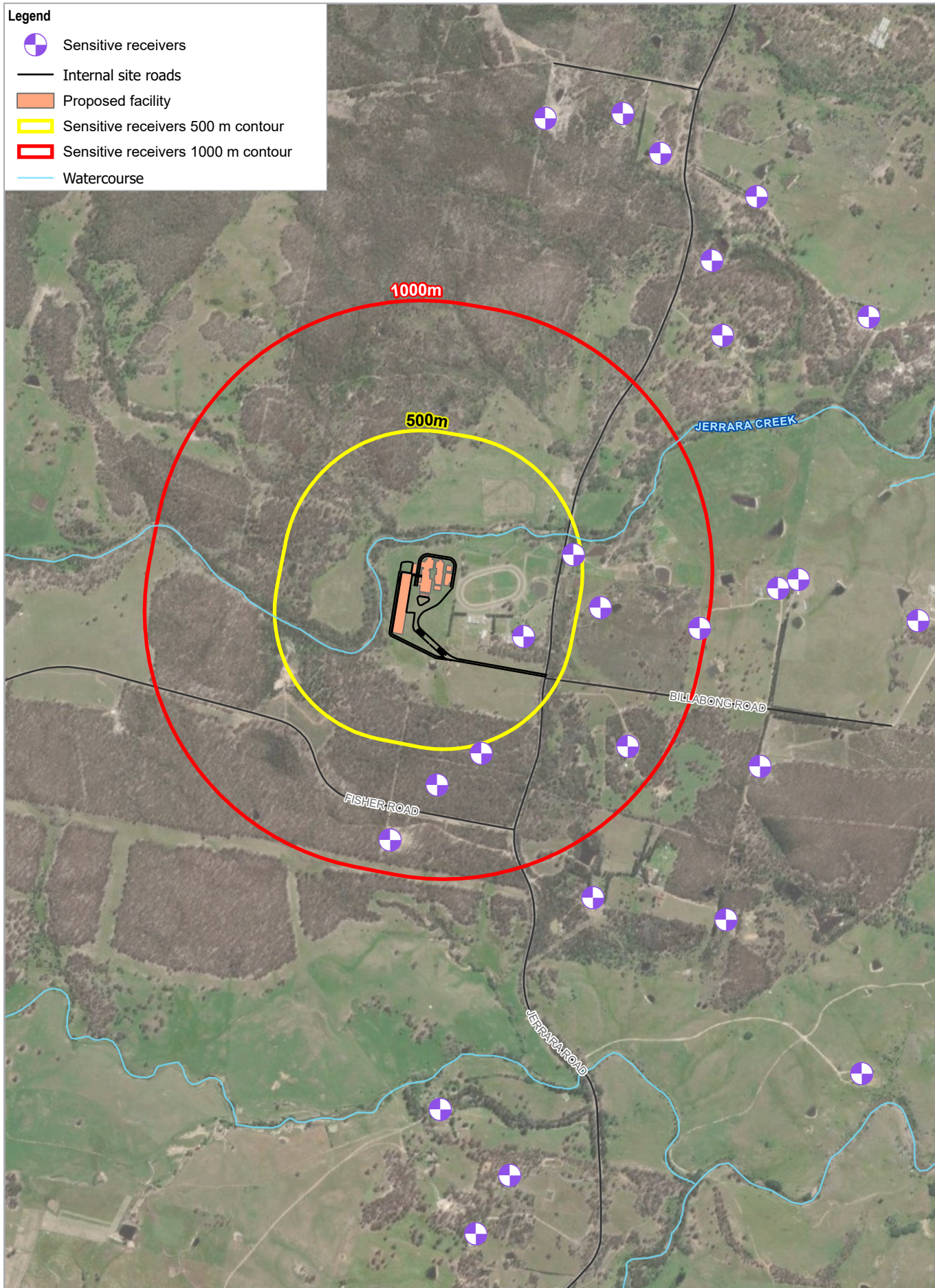


Jerrara Power Pty Ltd
Jerrara Power Energy from Waste Facility

Project No. 12533008
Revision No. 0
Date 25/05/2021

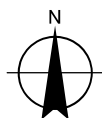
Land use zoning

FIGURE 2.2



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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

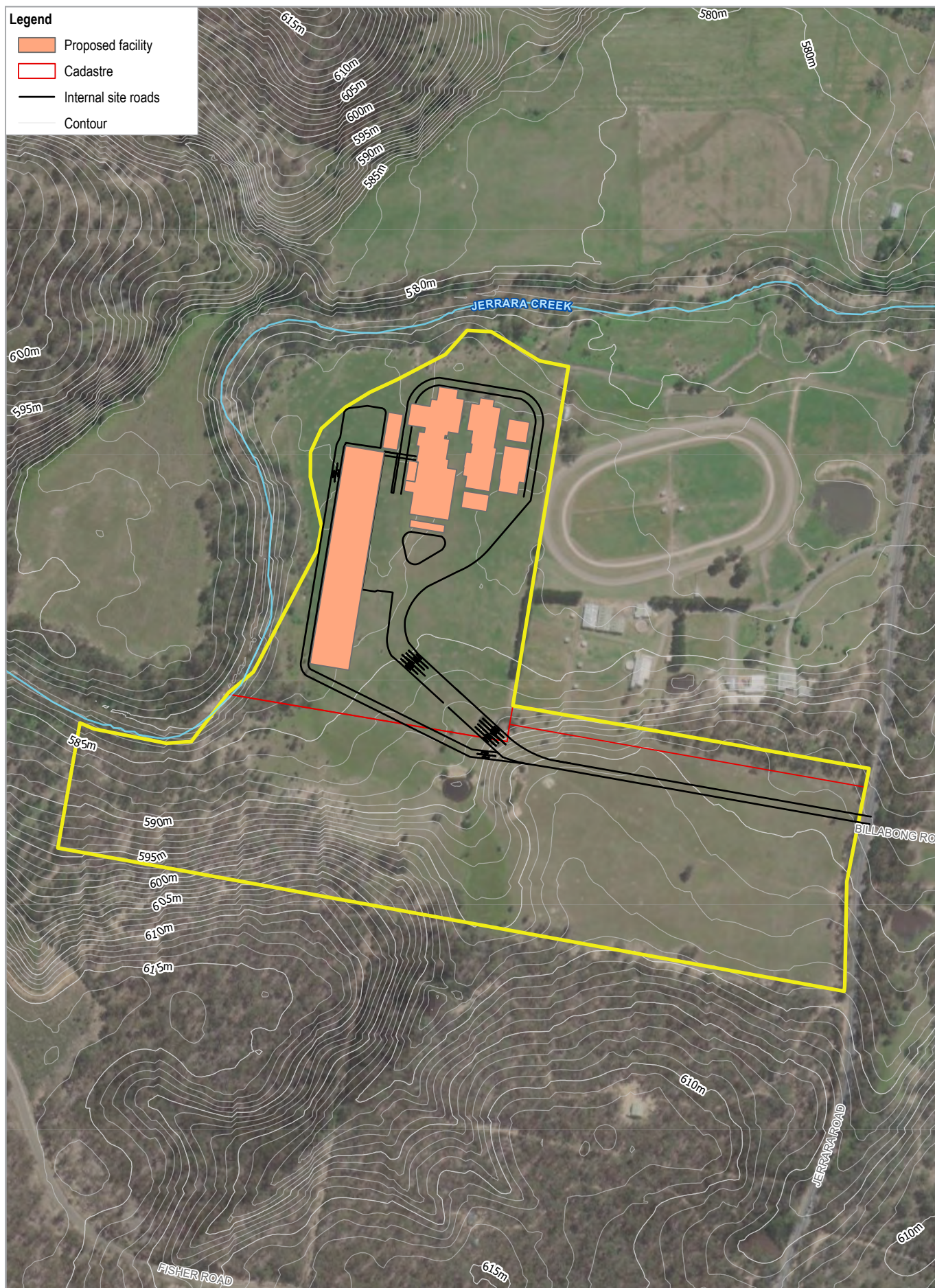


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Revision No. 1
Date 25/05/2021

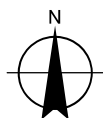
Sensitive receiver locations

FIGURE 2.3



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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55









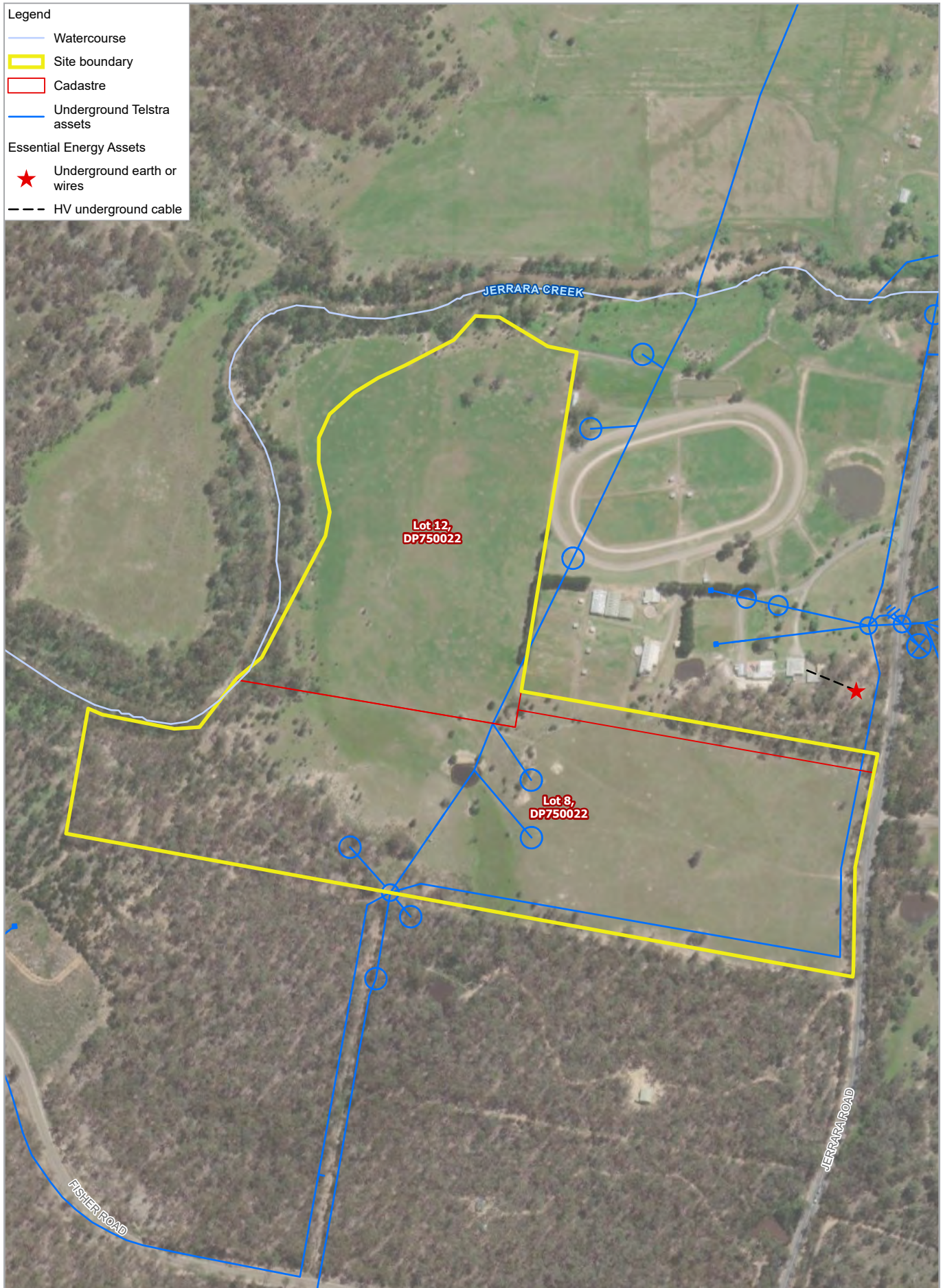
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Site topography

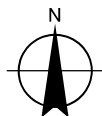
FIGURE 2.4

- Legend**
-  Watercourse
 -  Site boundary
 -  Cadastre
 -  Underground Telstra assets
- Essential Energy Assets**
-  Underground earth or wires
 -  HV underground cable



Paper Size ISO A4
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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

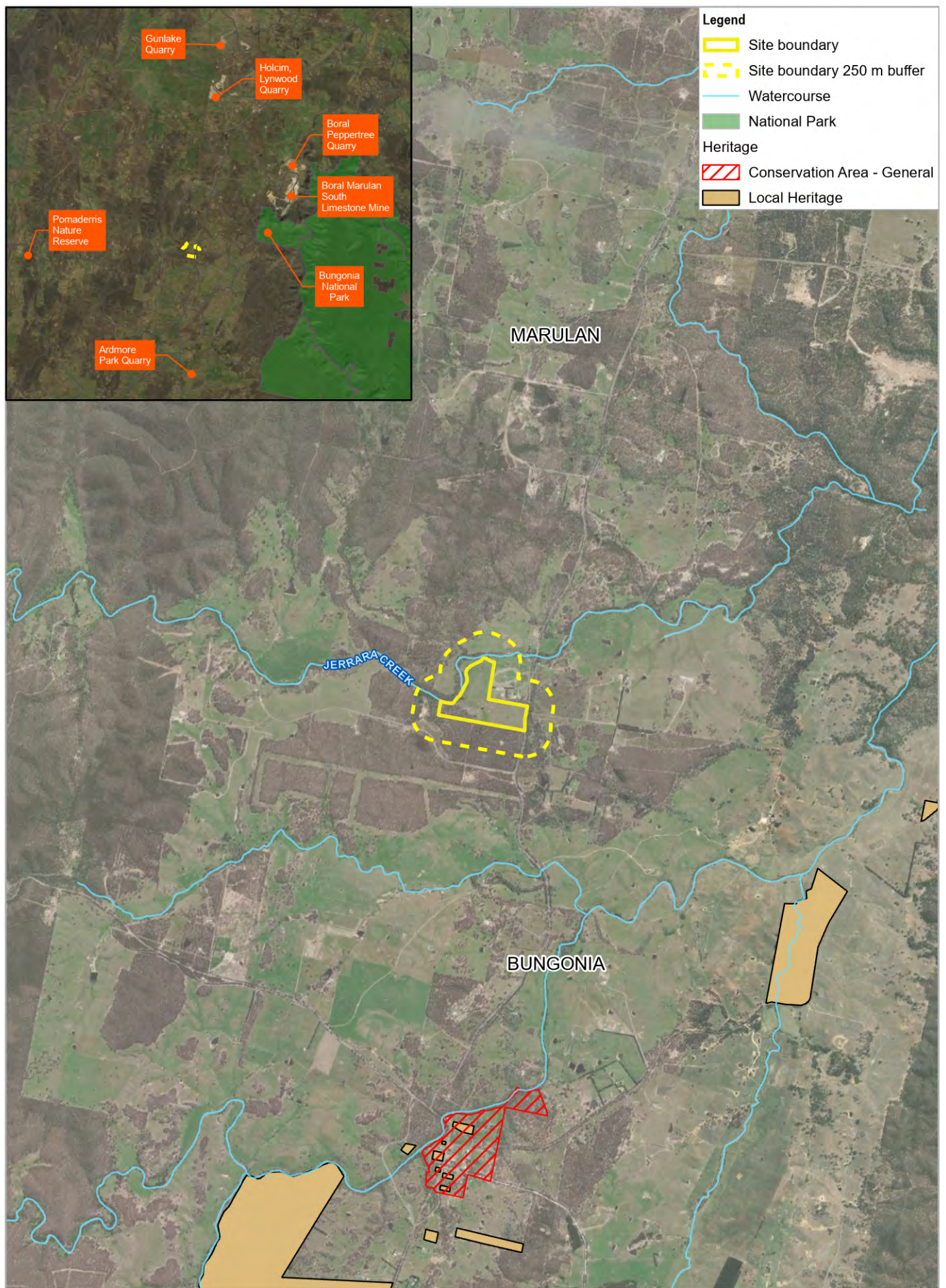


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Existing Services

FIGURE 2.5



Paper Size ISO A4
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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



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Environmental constraints

FIGURE 2.6

3. Proposal description

3.1 Overview

The proposal involves constructing and operating an energy from waste facility to process up to 330,000 tonnes of residual municipal solid waste and commercial and industrial waste each year to generate sustainable baseload electricity. The proposal also includes a 66 kilovolt power line connecting the facility to the main grid substation at Goulburn, as well as ancillary infrastructure to support the proposal.

An indicative layout is shown in Figure 3.1. A detailed internal layout, and the design and height of the stack would be developed by HZI and Jerrara Power during the preparation of the EIS.

Residual waste that is not suitable for recycling would be sourced locally and from the Sydney basin. It would be transported to the facility where the waste would be thermally processed at high temperature using world-leading Hitachi Zosen Inova (HZI) moving grate combustion technology. HZI is a global leader in energy from waste technology. The proposal would use technology developed by HZI and applied worldwide in more than 200 similar energy from waste plants. Similar plants are also currently being constructed by HZI and its partners in the United Kingdom, Turkey, France, Dubai and in Western Australia.

The heat from combustion would boil water to create steam. The steam would drive a turbine connected to a generator to produce reliable baseload electricity. This would be fed into the grid to power homes and businesses. Once fully operational, the facility would generate up to 30 megawatts of power. This is enough to power up to 43,000 homes (based on an average residential home in NSW using 5,100 kilowatts per year) (Independent Pricing and Regulatory Tribunal 2020) or over three times the number of private dwellings within the Goulburn Mulwaree LGA³.

One of the primary objectives of the proposal is to reduce the amount of waste requiring landfill disposal in NSW. There are no current plans for new landfills to manage Sydney's putrescible waste after the current two landfills that service the Sydney basin are exhausted. It is therefore anticipated that energy from waste facilities would be required in the future to manage combustible materials that cannot be economically recycled, but can be easily and safely converted into energy. The NSW Waste and Sustainable Materials Strategy 2041 report indicates that at least one large scale energy from waste facility is required by 2030 to serve the needs of the Greater Sydney region.

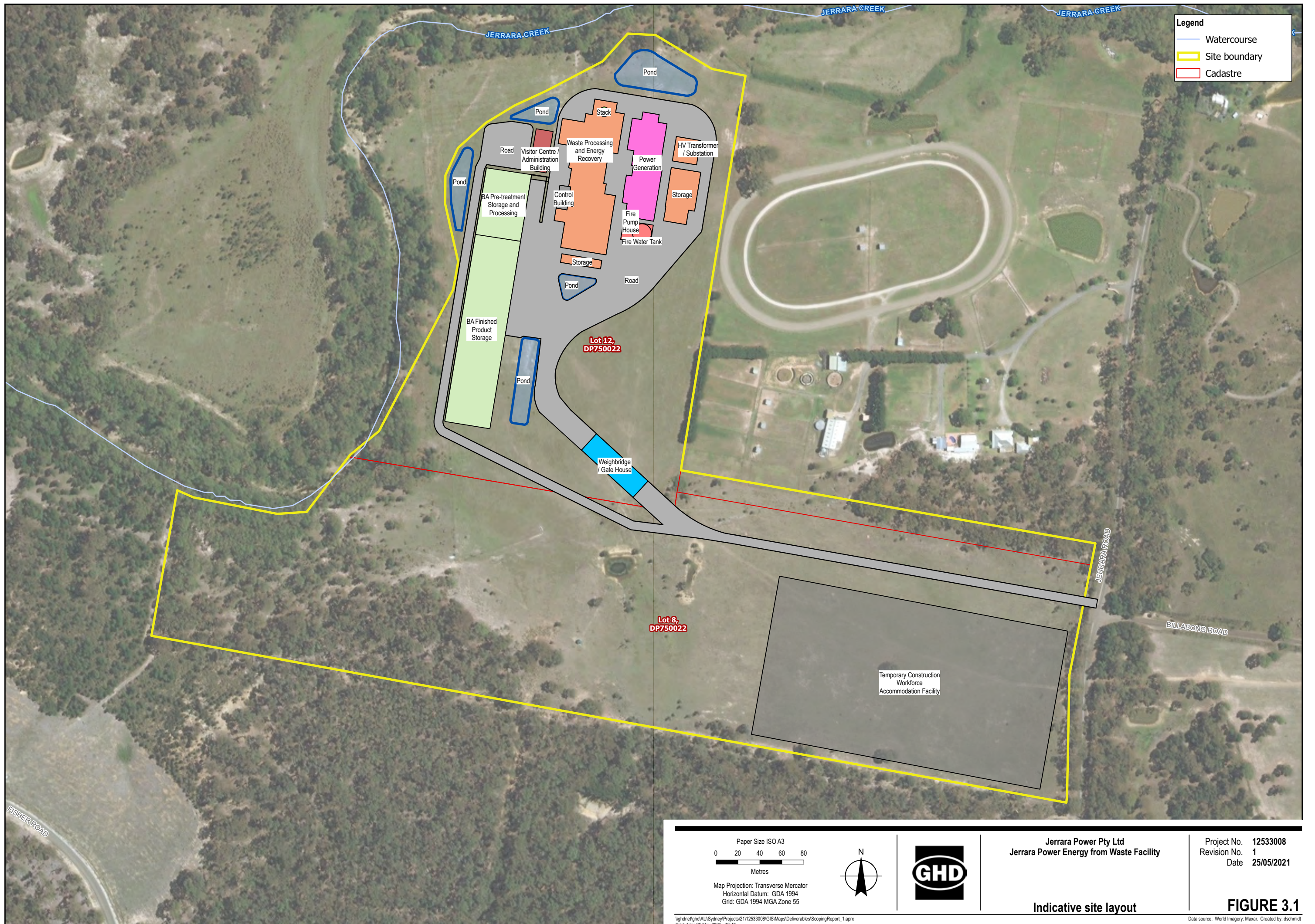
Energy from waste can fulfil an important transitional role as we transform over time to a fully circular economy.

3.2 Proposal objectives

The objectives of the proposal are to:

- reduce the amount of waste requiring landfill disposal and improve resource recovery rates in line with the objectives of the NSW *Waste Avoidance and Resource Recovery Strategy 2014-21* and the NSW *Waste and Sustainable Materials Strategy 2041*, which include targets for diverting more waste from landfill
- generate base load renewable energy
- increase local employment, procurement and training opportunities
- reduce Australia's greenhouse gas emissions
- design, site and operate the facility to minimise overall impact to the community and environment.

³ Based on the 2016 Australian Bureau of Statistics Community Profile for Goulburn Mulwaree LGA (LGA13310).



3.3 Waste types and volumes

The proposal would have the capacity to process up to 330,000 tonnes per year of residual municipal solid waste and commercial and industrial waste streams that would ordinarily be sent to landfill.

Residual municipal solid waste is red bin waste that is left over after households have separated out the dry recyclables and food and garden organics or if there is no separate food and garden organics collection after the red bin content has been through a pre-sorting process (NSW Environment Protection Authority (NSW EPA) 2020c). There is an increasing trend for food organics to be separated from residual municipal solid waste, along with garden organics.

Some councils now offer residents and businesses a combined food and garden organics service, or garden organics service (Rawtec Pty Ltd 2020). Residual municipal solid waste is most often collected in compactor trucks from kerbside, and deposited at large transfer stations, before being bulked up and transferred in large trailers to landfill sites.

Table 3.1 provides an overview of the typical composition of residual municipal solid waste for councils that provide a food and garden organics service and councils that provide a garden organics service or no organics service based on data between 2011 and 2019.

Table 3.1 Composition of residual municipal solid waste

	Food and garden organics councils		Garden organics councils		Councils with no organics service	
	% breakdown	Kg/bin/wk	% breakdown	Kg/bin/wk	% breakdown	Kg/bin/wk
Total paper and paper products	21.2%	1.4	19.0%	2.0	14.3%	2.1
Total organics	36.3%	2.3	51.0%	5.4	61.3%	9.1
– Total food	22.7%	1.5	37.6%	4.0	26.9%	4.0
– Total garden	2.1%	0.1	3.5%	0.4	26.7%	4.0
– Total other organics ⁴	11.5%	0.7	9.9%	1.0	7.7%	1.1
Total glass	3.3%	0.2	3.3%	0.3	3.1%	0.5
Total plastics	17.2%	1.1	12.7%	1.3	9.1%	1.4
Total ferrous material	2.9%	0.2	2.1%	0.2	1.9%	0.3
Total non-ferrous material	0.7%	0.04	0.8%	0.1	0.7%	0.1
Total other	18.5%	1.2	11.1%	1.2	9.7%	1.4
Total	100%	6.5	100%	10.6	100%	14.9
Total audits	16		39		9	
Total bins	3,399		7,889		1,909	

Source: Rawtec 2020

Commercial and industrial waste is waste produced by a broad range of businesses and industries such as manufacturing, retail, accommodation and food service, office/administration, healthcare and education facilities.

Other materials such as refuse derived fuel and processed engineered fuel from specialised production facilities could also be received and processed. This would provide opportunities for producers of this type of material, which has been exported in the past. While there are currently a limited number of facilities producing this material, there is expectation that this type of activity would expand in the future.

Waste and refuse derived fuel or processed engineered fuel would be obtained from existing waste industry sources within the Sydney metropolitan area and other regions, including Canberra, Goulburn Mulwaree Council,

⁴ Sums may not equate due to rounding.

and other surrounding local government areas. Waste, refuse derived fuel and processed engineered fuel would be transported by road trailers to the proposal.

Hazardous wastes, liquid wastes, asbestos and/or chemical waste types would not be accepted.

3.4 Energy from waste facility infrastructure/works

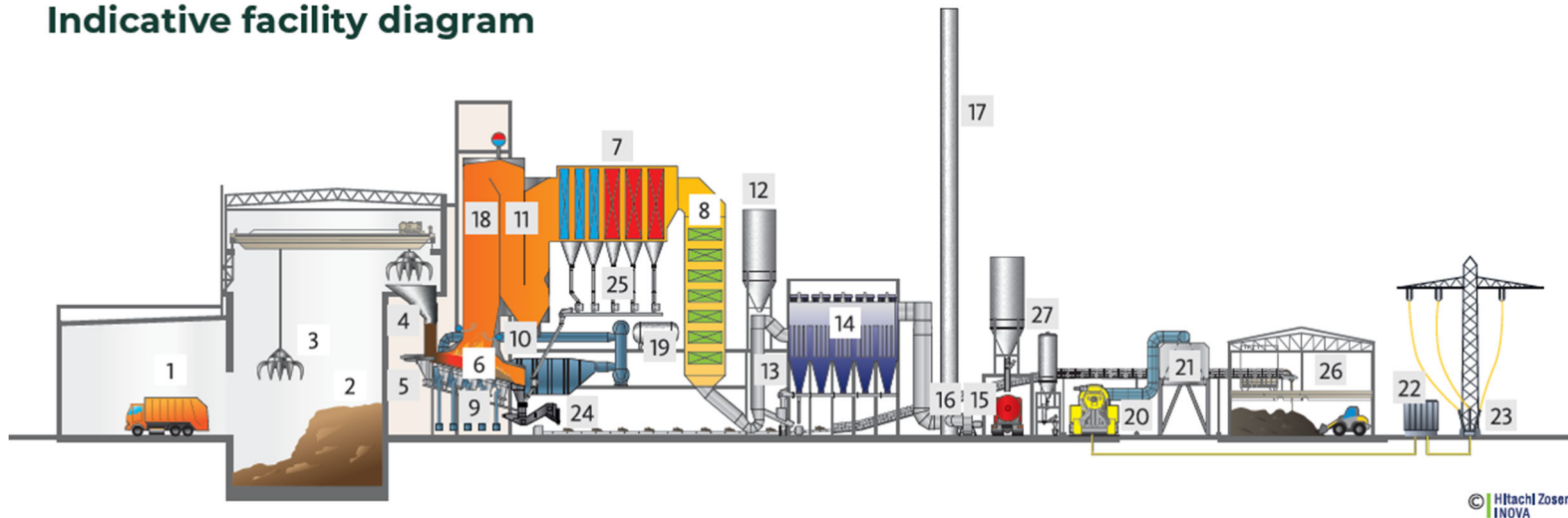
Figure 3.2 provides an overview of a typical HZI energy from waste facility. The key components of the energy from waste facility would include:

- Waste delivery and storage: delivery hall, waste bunker and overhead crane
- Combustion line and boiler: feed hopper, ram feeder, HZI moving grate, boiler, and superheater
- Energy recovery and power generation: feed water system, air cooled condenser, turbine, and transformer
- Flue gas treatment system: HZI SemiDry and selective non-catalytic reduction system activated carbon silo, fabric filter, induced draught fan, silencer, and stack
- Residue handling and treatment: bottom ash extractor, boiler and fly ash extractor, bottom ash treatment plant and residue silos.

The following sections provide a description of the key activities in the energy from waste process. These include:

- Waste delivery and storage
- Combustion and boiler
- Flue gas treatment
- Energy recovery and electrical power generation
- Residue handling and treatment

Indicative facility diagram



Waste delivery and storage

1. Delivery hall
2. Waste bunker
3. Waste crane

Combustion and boiler

4. Feed hopper
5. Ram feeder
6. HZI grate
7. Superheater
8. Economiser
9. Primary air
10. Secondary air
11. Five-pass boiler

Flue gas treatment

12. Activated carbon silo
13. HZI SemiDry
14. Fabric filter
15. Induced draught fan
16. Silencer
17. Stack
18. Selective non-catalytic reduction system

Energy recovery

19. Feed water system
20. Turbine
21. Air cooled condenser
22. Transformer
23. Electrical power generation

Residue handling and treatment

24. Bottom ash extractor
25. Boiler and fly ash extraction
26. Bottom ash treatment plant
27. Residue silos

Figure 3.2 Indicative diagram of an energy from waste facility

Source: HZI 2021

3.4.1 Waste delivery and storage

Upon arrival at the proposal site, trucks would pass over the weighbridge and then travel to the delivery hall. Trucks would enter the delivery hall at the western end and unload waste directly into the waste bunker. The waste bunker is within the delivery hall and isolated from any other buildings. The waste bunker would be designed for at least four days of waste storage. Trucks would leave the delivery hall at the eastern end. Fast opening roller doors would open to allow truck entry/exit, and close once trucks have entered or left the building.

Odour emissions generated from unloading and storage of waste would be prevented from escaping the building through the use of automatic, fast opening doors and operation of the delivery hall under negative air pressure. The air within the building would be extracted and discharged to the combustion chamber, where high combustion temperatures would destroy odorous compounds.

One duty and one standby crane would be installed in the waste bunker. The cranes would homogenise and mix the waste as well as feed the waste into the feed hopper to commence the combustion process. The cranes would be fitted with automatic weighing cells to provide data on the amount of waste placed in the hopper to the control system.

3.4.2 Combustion and boiler

The waste would pass from the feed hopper down a chute onto a combustion grate. A ram feeder would ensure steady feed and homogenous distribution over the grate width and an airtight combustion process.

HZI's air cooled moving grate design is proven technology with low wear and long lifetime. The moving grate system would consist of four individually driven zones to facilitate the different phase of the combustion process (drying, ignition, gasification and combustion of volatiles, char burn-out). The moving grate would mix and agitate the waste to allow an optimal burn out and thereby reduce the waste volume significantly. The burnt-out bottom ash would pass through an ash discharger and be transported via conveyor systems to the bottom ash treatment plant.

The furnace would be designed for continuous waste combustion in a wide range from the thermal design load. Short-term peaks caused by the non-homogeneity of waste would therefore be absorbed by the system. The combustion design would allow for safe processing of the intended waste streams while accommodating fluctuations in waste composition and calorific value.

The combustion line would include a five-pass water tube boiler where a closed water steam cycle would use the high temperature flue gas to convert water into superheated steam.

3.4.3 Flue gas treatment

The flue gas treatment system would comprise:

- a selective non-catalytic reduction system developed by HZI called DyNor® to convert oxides of nitrogen to nitrogen (a natural constituent of air) and water vapour. This would involve injection of an aqueous ammonia solution into the flue gas in the secondary combustion chamber of the furnace (the first pass of the boiler).
- the HZI SemiDry system – the technology would involve simultaneous injection of water, hydrated lime, and powdered activated carbon into the fluidised bed reactor (downstream of the boiler). Water would be sprayed into the reactor in a controlled manner to achieve the optimum reaction temperature for the sorption process (typically 145°C). In addition to regulating the temperature, the water would reactivate the recirculated residues, optimising the separation efficiency of the process. The hydrated lime would neutralise acidic components (such as hydrogen chloride, hydrogen fluoride and sulphur dioxide) and the activated carbon would adsorb dioxins, furans, gaseous mercury and other components.
- a fabric filter (bag filters) would be used to trap fine particulates and separate and capture the resulting flue gas treatment residues.

An induced draught fan would be used to maintain flue gas flows through the process and overcome pressure losses through the system.

The emissions would be monitored via a continuous emissions monitoring system (CEMS) before the cleaned gas would be released to the atmosphere at the stack in compliance with emission requirements.

3.4.4 Energy recovery and electrical power generation

The superheated steam from the boiler would be expanded by means of a turbo-generator and drive turbines to produce electrical energy. The exhaust steam from the turbine would condense in the air-cooled condenser.

3.4.5 Residue handling and treatment

The energy from waste process would generate two residues:

- bottom ash, and
- flue gas treatment residues.

Bottom ash

Bottom ash is the non-combustible residue of combustion and is coarse and granular. The technology proposed would capture the bottom ash generated from the combustion of the waste for processing onsite at the bottom ash treatment plant. Here ferrous and non-ferrous metals would be extracted for recycling using magnets and eddy current separators. The remaining residual materials after metals are extracted would be processed into aggregate for reuse in civil works applications.

Ferrous metals contain iron and include steel, carbon steel, alloy steel, cast iron and wrought iron. Non-ferrous metals include aluminium, copper, lead, zinc and tin.

Figure 3.3 shows some examples of bottom ash derived aggregate.



Figure 3.3 Examples of aggregate (UK)

Source: HZI 2021

Flue gas treatment residues

As described in Section 3.4.3, the proposal would include a specialised flue gas treatment system to reduce contaminant concentrations levels to comply with emission requirements.

Flue gas treatment residues would be collected and stored on site in a purpose designed and built contained silo storage system.

Various pollutants would be produced by the combustion processes and then captured. These include oxidised combustion products such as sulfur dioxide and nitrous oxide products, as well as substances such as hydrogen chloride and hydrogen fluoride, heavy metals, dioxins and furans.

Prior to transport off site, the dry residue would be chemically stabilised for safe disposal. The stabilised dry residue is expected to be classified as restricted waste. It would be sent to an appropriately licensed landfill that is lawfully able to accept restricted waste.

3.5 Overhead powerline

The proposal would include a 66 kilovolt overhead powerline (on single pole structures) connecting the facility to the main grid substation at Goulburn. Investigations are currently in progress regarding power connection, including route selection, in consultation with Essential Energy. The EIS would include details of the proposed overhead powerline, an assessment of potential environmental impacts as well as outcomes of consultation.

3.6 Ancillary infrastructure/works

The proposal includes the following ancillary infrastructure/works:

- an administration building, visitor and education centre
- internal roads, weighbridges, car park for visitors and employees, truck parking and hardstand areas
- stormwater and water quality infrastructure
- fencing, landscaping and business identification signage

A detailed internal layout, sizes and locations of ancillary infrastructure would be developed by HZI and Jerrara Power during preparation of the EIS.

Other related development is discussed in section 3.13.

3.7 Construction

It is estimated that the proposal would take about 36 months to construct and commissioning and consist of two key stages.

The first stage (around 30 months) would involve the following main phases of work:

- site establishment and enabling works including site clearance, establishing the construction compound and laydown area and construction workforce accommodation facility
- bulk earthworks
- civil works including stormwater infrastructure, internal roads, hardstand and parking areas
- main site works including foundations and building construction
- installation of equipment and fit out
- services installation
- overhead power line to Essential Energy Goulburn Substation

The second stage (around 6 months) would include:

- testing and initial commissioning of equipment
- final commissioning with test fuels
- finishing and restoration works.

The following key infrastructure is proposed to support construction of the proposal:

- a temporary construction workforce accommodation facility for up to 300 people
- construction compound and laydown area.

Construction working hours would be undertaken during the periods specified in the draft Construction Noise Guideline (NSW Environment Protection Agency 2020b). These are:

- 7 am to 6 pm Monday to Friday
- 8 am to 1 pm on Saturdays
- no work on Sundays or Public Holidays.

Any need for construction work to be undertaken outside of these standard hours would be addressed in the EIS.

Further information on how the proposal would be constructed would be provided in the EIS.

Details about the location, size and general requirements for the proposed temporary construction workforce accommodation facility would be provided in the EIS.

3.8 Emissions

The gases produced by the proposal would go through a gas cleaning system consisting of a dry reagent scrubbing system with absorbent injection system, followed by a compartmentalised pulse jet fabric filter baghouse filtration before being discharged through a stack (as described in section 3.4.3). The process would be designed to meet the European Union Best Available Technology emission standards, which are consistent with those that apply to similar new facilities located within European cities, near offices and residential areas.

These standards are set out in the Industrial Emissions Directive 2010/75/EU of the European Parliament and the Council on industrial emissions (the Industrial Emissions Directive or IED), which is the main EU instrument regulating pollutant emissions from industrial installations. These standards were further tightened in November 2019, and the latest standards would apply to this proposal.

The IED aims to achieve a high level of protection of human health and the environment taken as a whole by reducing harmful industrial emissions across the EU, in particular through better application of Best Available Techniques.

The IED limits that the proposal would comply with are stricter than the current NSW EPA requirements, which are set out in the *Protection of the Environment Operations (Clean Air) Regulation 2010*.

As described in section 3.4.1, the delivery hall and waste bunker would be fully enclosed (the only area where odour is likely to be generated). All wastes delivered to the proposal site would be unloaded, stored and managed indoors.

During maintenance periods or shut down periods, an auxiliary ventilation system would extract air from above the waste bunker, discharging to a stack to ensure that odours from the delivery hall would be dispersed in a manner that ensures that relevant assessment criteria are met. System procedures would be in place to minimise potential emissions during start up and shut down of the plant. These would be described in the EIS.

3.9 Greenhouse gas

The proposal would help reduce Australia's greenhouse gas emissions by:

- displacing carbon dioxide (CO₂) emissions from coal-fired electrical generation (equivalent to the 30 MW generated by the plant) – estimated to be 228,000 tonnes of CO₂ equivalents (CO₂-e)
- avoiding methane emissions that would have arisen if 330,000 tonnes per year of waste treated in the plant were instead placed in landfill - estimated to be 508,000 tonnes of CO₂-e

The emissions generated by combustion of 330,000 tonnes per year of waste (estimated to be about 208,000 tonnes of CO₂-e) would offset these savings. There would also be emissions from vehicles used to transport the waste to the facility and transport stabilised residues from the facility for disposal (estimated to be about 4,000 tonnes of CO₂-e).

These approximate figures suggest that the proposal has the potential to reduce greenhouse gas emissions by about 524,000 tonnes of CO₂-e per year. This includes consideration of the greenhouse gas emissions generated as a result of transport of waste to the proposal site and transport of stabilised residues from the proposal site. Depending upon the assumptions made, this is equivalent to taking about 114,000 cars off the road.

According to the United States Environment Protection Agency (2018), a typical passenger vehicle emits about 4.6 tonnes of carbon dioxide per year. This number can vary based on a vehicle's fuel, fuel economy, and the number of miles (or kilometres) driven per year. Australian figures may differ slightly from this and additional information about this would be provided in the EIS. All the figures presented above are only indicative and would be updated in the EIS.

Specific greenhouse gas calculations for Scope 1, 2 and 3 emissions would be undertaken as part of the EIS for the proposal. These calculations would consider the tonnages of carbon dioxide which would be generated as a result of the proposal, taking into consideration the emissions produced by both the facility and the vehicles associated with operation of the proposal (see section 3.12).

3.10 Operating hours

The proposed hours of operation for the proposal are as follows:

- delivery of waste: the majority of waste would be delivered during standard receipt hours, which are between 6 am and 9 pm on weekdays. There is potential for some deliveries to occur outside of these hours.
- combustion: continuous (24 hours a day, seven days a week)
- bottom ash treatment: the majority would be treated between 6 am and 7 pm on weekdays, and as needed outside of these hours.
- administration and waste education at the visitor and education centre: between 9 am and 5 pm weekdays.

Any work required to be undertaken outside of the hours would be undertaken following prior notification to local residents.

3.11 Employment

The proposal is expected to generate employment for up to 300 people during the peak construction period. The duration of the peak construction period would be investigated and included within the EIS.

Construction of the proposal would provide local employment and business opportunities including direct construction jobs and revenue for businesses providing services to the construction facilities, and longer term to the operational facility. The proposal would also include a temporary construction workforce accommodation facility to minimise the daily commute for the construction workforce. The location for the temporary construction workforce accommodation facility would be considered and confirmed during the EIS.

During operation, up to 60 staff are expected to be required.

As Jerrara Power intends to operate its own truck fleet, there would also be additional employment opportunities for truck fleet drivers and heavy vehicle operators, as well as positions to support logistic services, production and facility management and maintenance activities.

3.12 Traffic

During construction, up to 20 heavy vehicles per day are expected to deliver materials to the proposal site. Some oversized vehicles carrying large equipment and structural components would also be expected during construction. These deliveries would require escorts and would be scheduled to avoid peak times.

During operation, there would be up to 52 heavy vehicles per day associated with delivery of waste, delivery of water, delivery of consumables and export of treated residues. These vehicles would be multi-axle articulated vehicles.

During operation it is expected that the proposal would generate up to 30 personal vehicles per day (for staff).

The key access route for all vehicles is discussed in section 2.6 can be seen in Figure 2.1.

If required, Jerrara Power would also enter into a Voluntary Planning Agreement with Goulburn Mulwaree Council as part of the proposal. Under this agreement, Jerrara Power would provide or fund: an ongoing maintenance levy for Jerrara Road due to the daily number of vehicles (heavy and light) proposed to use Jerrara Road to access the proposal site.

3.13 Related development and other approvals required

Related development are additional projects required to support the operation of the proposal which would be assessed and determined through separate approval processes. This may be because the scope of related development is not sufficiently developed to allow a detailed assessment of environmental impacts to be undertaken at this stage and/or it is assessed under a different planning pathway.

Related developments that may be needed have been identified in Table 3.2.

Table 3.2 *Related developments*

Related development	Relationship to the proposal
Telecommunications connection	The proposal would require a new connection to the telecommunications network. The operation of the proposed continuous emissions monitoring system requires a communication network. This system would control and monitor the energy from waste facility operations.
Site access and road upgrade works	The site access and Jerrara Road would need to be upgraded to safely accommodate the expected traffic movements associated with the proposal. The required upgrade works would be identified and developed in consultation with Goulburn Mulwaree Council.

The EIS would describe each related development that may be needed. For each related development, the EIS would also provide a high-level assessment of potential environmental impacts and outline the approval process and provide indicative timing for construction and operation.

4. Statutory framework

4.1 Approval and assessment requirements under the *Environmental Planning and Assessment Act 1979*

The Environmental Planning and Assessment Act 1979 and the Environmental Planning and Assessment Regulation 2000 provide the framework for development assessment in NSW. The Environmental Planning and Assessment Act 1979 and the Environmental Planning and Assessment Regulation 2000 include provisions to ensure that the potential environmental impacts of a development are considered in the decision-making process prior to proceeding to construction.

The key requirements of the *Environmental Planning and Assessment Act 1979* in relation to the approval and assessment of the proposal are described below.

4.1.1 Permissibility

Clause 121 of the Infrastructure SEPP applies to development for the purpose of waste or resource management facilities and provides that these types of works are permissible with consent, if carried out by any person on land in a prescribed zone.

Pursuant to Clause 121 definitions, prescribed zone includes RU2 Rural Landscape.

Further, Clause 34 of the Infrastructure SEPP applies to development for the purpose of electricity generating works and provides that these types of works are permissible with consent, if carried out by any person on land including a prescribed rural zone. As noted above, the proposal site is zoned RU2 Rural Landscape and this zone is included in the definition of a prescribed zone.

The proposal could therefore be either characterised as a waste facility or electricity generating works facility under the Infrastructure SEPP and would be permitted with consent in accordance with clauses 121(1) and 34(1)(b) and 34(4)(b) (see section 4.2).

4.1.2 State significant development

Section 4.36(2) of the *Environmental Planning and Assessment Act 1979* provides that a State environmental planning policy may declare any development, or any class or description of development, to be State significant development. The proposal is deemed SSD in accordance with clause 20 and clause 23 in Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011 (State and Regional Development SEPP) (see section 4.2.3).

4.1.3 Approval authority

In accordance with section 4.5(a) of the *Environmental Planning and Assessment Act 1979*, the consent authority for State significant development is the Minister for Planning and Public Spaces or the Independent Planning Commission (pursuant to section 8A of the State and Regional Development SEPP).

4.1.4 Assessment requirements

Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* provides that a development application for State significant development needs to be accompanied by an EIS prepared by or on behalf of the applicant in the form prescribed by the regulations. Clause 3(1) of Schedule 2 of the Regulation provides that, before preparing an EIS, an applicant must make a written application to the Planning Secretary for the environmental assessment requirements for the EIS (the SEARs). This report has been prepared to support this application.

An EIS would be prepared to support the application for approval of the proposal in accordance with the requirements of Division 4.3 of the *Environmental Planning and Assessment Act 1979*, Schedule 2 of the Regulation and the SEARs.

4.2 Consideration of relevant environmental planning instruments

4.2.1 Goulburn Mulwaree Local Environmental Plan 2009

The proposal site is located within the Goulburn Mulwaree LGA and the relevant local environmental plan is the Goulburn Mulwaree LEP. As noted in section 2.3, the proposal site is zoned RU2 Rural Landscape.

Electricity generating works are defined by the LEP in accordance with the Standard Instrument – Principal Local Environmental Plan (NSW Legislation 2006) (the Standard Instrument) as follows:

electricity generating works means a building or place used for the purpose of—

(a) making or generating electricity, or

(b) electricity storage

The proposal involves constructing and operating a building that would be used for the purpose of making electricity and is therefore considered to be an electricity generating work for the purposes of the LEP.

The proposal is also considered to meet the definition of waste and resource management facilities under the LEP. These facilities are defined by the LEP (in accordance with the Standard Instrument) as follows:

waste or resource management facility means any of the following—

(a) a resource recovery facility,

(b) a waste disposal facility,

(c) a waste or resource transfer station,

(d) a building or place that is a combination of any of the things referred to in paragraphs (a)–(c).

A waste disposal facility is defined as:

...a building or place used for the disposal of waste by landfill, incineration or other means, including such works or activities as recycling, resource recovery and other resource management activities, energy generation from gases, leachate management, odour control and the winning of extractive material to generate a void for disposal of waste or to cover waste after its disposal.

The proposal involves constructing and operating a building for the disposal of waste by thermal treatment and is therefore considered to meet this definition.

In accordance with the zone provisions, electricity generating works and waste and resource management facilities are prohibited in the RU2 zone.

4.2.2 State Environmental Planning Policy (Infrastructure) 2007

The Infrastructure SEPP clarifies the consent arrangements for infrastructure projects. Relevant Aims of the Infrastructure SEPP include (clause 2):

(b) making or generating electricity, or

(g) providing opportunities for infrastructure to demonstrate good design outcomes

Division 4 of the Infrastructure SEPP applies to electricity generating works. Clause 33 provides that electricity generating works have the same meanings as in the Standard Instrument. As noted in section 4.2.1, the proposal meets the definition of electricity generating works in the Standard Instrument.

Clause 34(1)(b) 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. Prescribed rural, industrial or special use zones are described in clause 33 and include RU2 Rural Landscape. As the proposal

meets the definition of electricity generating works and would be carried out in a prescribed zone it is development with consent for the purposes of Part 4 of the *Environmental Planning and Assessment Act 1979*.

In addition, clause 34(4)(b) of the Infrastructure SEPP provides that if an environmental planning instrument (including this Policy) permits development for the purpose of a waste or resource management facility with consent, then development for the purpose of electricity generating works that generate energy from waste may also be carried out with consent on that land.

Further to the provisions of clause 34(4)(b), Division 23 of the Infrastructure SEPP applies to waste or resource management facilities. Clause 121(1)(a) provides that development for the purpose of a waste or resource management facilities may be carried out by any person with consent on land in a prescribed zone. Prescribed zones are defined by clause 120 and include RU2 Rural Landscape.

Clause 33 provides that electricity generating works have the same meanings as in the Standard Instrument. As noted in section 4.2.1, the proposal meets the definition of electricity generating works in the Standard Instrument. As development for the purpose of a waste or resource management facility is permitted with consent on the proposal site, then development that generates energy from waste may also be carried out with consent on that site.

According to clause 8(1) of the Infrastructure SEPP 'if there is an inconsistency between this Policy and any other environmental planning instrument, whether made before or after the commencement of this policy, this policy prevails to the extent of the inconsistency'. As a result of the application of this clause, the Infrastructure SEPP overrides the prohibitions under the LEP (see section 4.2.1).

Therefore, the proposal is considered to be permissible with consent and is subject to the assessment and approval requirements of Part 4 of the *Environmental Planning and Assessment Act 1979*.

4.2.3 State Environmental Planning Policy (State and Regional Development) 2011

The State and Regional Development SEPP provides definitions of State significant infrastructure and State and regionally significant development. The proposal does not meet the definitions of State significant infrastructure or regionally significant development.

Clause 8 of the State and Regional Development SEPP provides that development is State significant development, pursuant to section 4.36 of the *Environmental Planning and Assessment Act 1979*, if:

- by the operation of an environmental planning instrument, it is not permissible without development consent under Part 4 of the *Environmental Planning and Assessment Act 1979*,
- it meets the definitions provided in Schedule 1 or 2 of the SEPP.

Clause 20 in Schedule 1 includes the following definition of electricity generating works and heat co-generation:

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) that—(a) has a capital investment value of more than \$30 million

In addition, clause 23 in Schedule 1 includes the following in the definition of waste and resource management facilities:

'(4) Development for the purpose of waste incineration that handles more than 1,000 tonnes per year of waste.'

As the proposal is permissible with consent under Part 4 (see section 4.2.2) and the purpose meets the definitions provided in Schedule 1 (it is development for the primary purpose of a waste management facility that would handle more than 1,000 tonnes per year of waste, as well as development for the purpose of electricity generating works with a capital investment value of more than \$30 million) it is deemed State significant development for the purposes of section 4.36 of the *Environmental Planning and Assessment Act 1979*.

4.3 Approval requirements under other legislation

4.3.1 Approvals that do not apply or have to be applied consistently for State significant development

In accordance with section 4.41(1) of the *Environmental Planning and Assessment Act 1979*, the following approvals, which may have otherwise been required to undertake the proposal, would not be required:

- *Fisheries Management Act 1994* (NSW) – permit for work or structures within a waterway under sections 201, 205 or 219
- *Heritage Act 1977* (NSW) – approval to disturb an item (under Part 4) or an excavation permit under section 139
- *National Parks and Wildlife Act 1974* (NSW) – an Aboriginal heritage impact permit under section 90
- *Rural Fires Act 1997* (NSW) – a bush fire safety authority under section 100B
- *Water Management Act 2000* (NSW) – 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.

Section 4.42(1) provides that the following potentially relevant approvals cannot be refused if necessary, for the carrying out of an approved project and are to be substantially consistent with an approval to carry out the project:

- An environmental protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997* (NSW)
- A consent under Section 138 of the *Roads Act 1993* (NSW).

The approval requirements of the *Protection of the Environment Operation Act 1997* and *Roads Act 1993* as they relate to the proposal are summarised in the following section.

4.3.2 Requirements of other NSW Acts

Protections of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* establishes, amongst other things, the procedures for issuing licences for environmental protection on aspects such as waste, air, water and noise pollution control. Environment protection licences are generally required for scheduled activities or scheduled development work. The definitions of scheduled activities provided in Schedule 1 include:

17 Electricity generation

(1) *This clause applies to the following activities –*

electricity works (wind farms), meaning the generation of electricity by means of wind turbines.

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.

Metropolitan electricity works (gas turbines), meaning the generation of electricity by means of electricity plant—

(a) *that is based on, or uses, a gas turbine, and*

(b) *that is situated in the metropolitan area or in the local government of Port Stephens, Maitland, Cessnock, Singleton, Wollondilly or Kiama.*

Metropolitan electricity works (internal combustion engines), meaning the generation of electricity by means of electricity plant—

(a) *that is based on, or uses, a gas turbine, and*

(b) *that is situated in the metropolitan area or in the local government of Port Stephens, Maitland, Cessnock, Singleton, Wollondilly or Kiama.*

40 Waste disposal (thermal treatment)

(1) *This clause applies to the following activities –*

thermal treatment of general waste, meaning the receiving of waste (other than hazardous waste, restricted solid waste, liquid waste or special waste) from off site and its processing by thermal treatment.

thermal treatment of hazardous and other wastes, meaning the receiving of hazardous waste, restricted solid waste, liquid waste or special waste from off site and its processing by thermal treatment.

The proposal meets these definitions and would therefore require an environment protection licence. Jerrara Power would apply for an environment protection licence for the proposal.

Roads Act 1993

Under Section 138 of the *Roads Act 1993*, a person must not impact on, or carry out work on or over, a public road other than with the consent of the appropriate road's authority. Section 138 of the *Roads Act 1993* requires that a person obtain the consent of the appropriate roads authority to erect a structure, or carry out work in, on or over a public road, or dig up or disturb the surface of a public road.

The proposal would likely include upgrades to Jerrara Road (see section 7.11). Jerrara Power would seek the necessary approvals under the *Roads Act 1993*. As noted in section 4.2.1, section 4.42 of the *Environmental Planning and Assessment Act 1979* provides that a permit under section 138 of the *Roads Act 1993* cannot be refused if it is necessary to carry out State significant development.

4.3.3 Other potentially relevant environmental legislation and planning instruments

In addition to the State and Regional Development SEPP and Infrastructure SEPP, other State policies and Acts would also be relevant to the proposal. These would be identified and considered in the EIS and are likely to include:

- State Environmental Planning Policy (Koala Habitat Protection) 2020
- State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
- State Environmental Planning Policy No. 55 – Remediation of Land
- State Environmental Planning Policy No. 64 – Advertising and Signage
- *Biosecurity Act 2015* (NSW)
- *Biodiversity Conservation Act 2016* (NSW)
- *Contaminated Land Management Act 1997* (NSW)

4.3.4 Relevant Commonwealth legislation

In accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) proposed 'actions' that have the potential to significantly impact on matters of national environmental significance the environment of Commonwealth land; or that are being carried out by an Australian Government agency, must be referred to the Australian Minister for the Environment for assessment. If the Minister determines that a referred project is a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999*, the approval of the Minister would be required.

As described in section 7.7.3, the development application for the proposal would be accompanied by a BDAR that would include an assessment of the likely significance of impacts on biodiversity-related matters of national environmental significance pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* significant impact guidelines.

Consideration of potential impacts upon any further matters of national environmental significance potentially impacted by the proposal would also be undertaken as part of the EIS.

5. Strategic context and justification

5.1 Strategic context

As waste generation continues to rise, there has been an increasing emphasis on management of waste and prioritising actions in line with the waste hierarchy (see Figure 5.1). This change in perspective underpins efforts to divert waste otherwise destined for landfill and drives effort towards increased recycling and more efficient waste management.



Figure 5.1 The waste hierarchy

Source: Blue Environment Ptd Ltd 2020

With renewed focus on pollution reduction and resource conservation comes acknowledgement of the need to reduce the amount of waste ending up in landfills where the embodied energy and utility value of many resources are lost.

Climate change is a key driver for consideration of cleaner energy generation to replace fossil fuels and lower carbon emissions. Waste can generate renewable energy for power or heating, displacing fossil fuels. It is clear that energy from waste technologies would continue to play an important role in an evolving and more efficient waste management industry, aligned with international emission reduction obligations and the need to meet national greenhouse gas targets.

With this in mind, the demand for energy from waste in NSW is largely driven by the following additional factors:

- meeting NSW's resource recovery targets
- increasing waste generation due to population growth
- scarcity of landfill space in the Sydney area
- commercial viability of energy from waste due to increasing landfill levies and gate fees.

According to the National Waste Report (Blue Environment Pty Ltd 2020), NSW generates close to 19 million tonnes of mixed household waste each year. About 63 per cent of this waste is recovered through recycling and reuse initiatives, and the remaining 37 per cent, or 7 million tonnes, is directed to landfill.

Greater Sydney, with a population of more than four million people (Australian Bureau of Statistics 2020), is Australia's biggest city. It accounts for more than 75 per cent of the NSW economy. It is therefore important for the NSW and national economy that Sydney's waste is managed efficiently and in an environmentally responsible manner.

Only two landfill sites are licensed to dispose of putrescible wastes (municipal and wet commercial and industrial waste streams) from Sydney. They are approved to receive more than 2 million tonnes of waste each year. Other putrescible landfills in Sydney have been filled and progressively closed over the past decade.

There are no new landfill sites proposed for the Sydney area and as its population continues to grow, and available landfill airspace continues to decline, energy from waste provides part of the longer-term solution to address Sydney's waste disposal needs.

The proposal would have the capacity to thermally treat up to 330,000 tonnes per year of Sydney's waste, which would account for about 10 per cent of the combined municipal and commercial and industrial waste that was landfilled in 2017-18 in the Metropolitan Levy Area⁵.

Energy from waste does not replace recycling. Recycling would continue to play an important role in waste management, with energy from waste facilities having the ability to manage residual combustible wastes that cannot be economically recycled into the future.

The *NSW Energy from Waste Policy Statement* (NSW EPA 2021) also regulates the proportion of waste that can be used to generate energy. Energy from waste can be viewed as an important transitional step as NSW and Australia move towards a full circular economy over time.

5.2 Proposal development history and options considered

5.2.1 Role of energy from waste

The vision for this proposal arose from observing the role that energy from waste plays, and has played for many years, in advanced industrial countries such as the United Kingdom, Germany, Japan, France or Switzerland, and their reduced reliance on landfilling. The HZI technology intended for the proposal has been used extensively worldwide, with the emissions tightly controlled and monitored in these locations.

An important consideration in relation to energy from waste facilities is the capacity of the facility, in comparison with the overall volumes of waste produced, that would be suitable for power generation. Having too large a facility potentially risks upsetting the balance between recycling and providing sufficient waste to keep the facility operating effectively. Over time, more wastes would become commercially viable for recycling, and the composition of incoming wastes would change during the life of the facility.

However, there are many challenges with recycling at present, including how to design packaging and products to make them more easily recyclable, how to produce good quality recycled materials and ensure that it is able to be marketed and eventually incorporated into new products. Much of the material that enters red lid (residual waste) bins falls into this category, as well as office wastes.

Processing of residual waste in large industrial facilities using alternative technologies such as mechanical biological treatment or anaerobic digestion does not provide a complete solution for residual waste. In NSW, the resulting mixed waste organic output compost has been deemed unsuitable for use for land applications, due to contamination. Hence, other solutions are needed. This includes municipal food and garden organics collection and processing, which leaves a dryer form of residual waste with reduced food organics content, which is potentially more suitable for energy recovery.

Energy from waste facilities have the potential to bridge the gap between the capability of existing recycling systems and the introduction of future systems that may be capable of collecting and recycling a much greater proportion of the wastes that are produced by residents and industry.

5.2.2 Site selection

An initial screening process of LGAs within NSW was undertaken to identify the region which the proposal would be located. The general area of focus throughout this process remained rural, within proximity to as few sensitive receivers as practicable. Locating the proposal within an economically feasible distance from the waste source was also a key consideration.

Unnecessary long-distance transport of waste has been identified by the NSW EPA (EPA) as generating adverse health and environmental impacts, as well as being inconsistent with best practice management (NSW EPA 2018).

⁵ www.epa.nsw.gov.au/your-environment/waste/waste-levy/levy-regulated-area-and-levy-rates

However, locating a facility within the Sydney metropolitan area would potentially result in waste transport vehicles being affected by increasing levels of traffic congestion, and generating high levels of emissions.

The Goulburn Mulwaree LGA was selected for the proposal due to proximity to the Hume Highway and key waste sources, as well as the potential to hire a local workforce. The proposal site is within close proximity to the Hume Highway and provides convenient road transport access, as the Hume Highway is interconnected with Sydney's motorway system. The proposed site is located within 130 kilometres driving distance of Canberra, 140 kilometres of Wollongong and 180 kilometres of the Sydney CBD. It is also located along the main route to Melbourne.

An in depth social, environmental, and economic constraints assessment was then undertaken to identify and assess a selection of potential sites within the Goulburn Mulwaree LGA against the following criteria:

- community and stakeholder impact
- distance from sensitive receivers and urban areas
- environmental considerations, including Aboriginal and non-Aboriginal heritage
- access to existing utilities and infrastructure
- location and size of site
- site constraints
- distance from waste sources
- land use zoning
- current land use and land availability.

The proposal site was identified as suitable for the following reasons:

- it is located within close proximity to the Hume Highway
- it is located on a land zoning where the proposed land use is permissible with development consent (see section 4)
- there are relatively few sensitive receivers within close proximity
- it is suitably sized to enable the proposal to be set back significantly from Jerrara Road to reduce visual and amenity impacts on existing surrounding landowners
- it is relatively flat with few environmental constraints (see section 7)
- it was available for purchase.

5.3 NSW Energy from Waste Policy Statement

The *NSW Energy from Waste Policy Statement* (NSW EPA 2015) was first released in 2015 and it established the framework for the assessment of energy from waste facilities in NSW.

In December 2019 the NSW Minister for Environment requested the NSW Chief Scientist and Engineer provide independent expert advice on energy recovery facilities and related environment protection frameworks to ensure facilities in NSW undertake robust assessments and adopt international best practice standards and controls to ensure human health and the environment are protected.

As part of the review, the Chief Scientist and Engineer commissioned the University of Sydney to provide expert review and advise on the proposed best practice air emissions limits for energy from waste facilities in NSW.

The *Energy from Waste report from the Chief Scientist and Engineer* (NSW Chief Scientist and Engineer 2020) made a number of recommendations to ensure proposals adopt international best practice standards and controls to protect human health and the environment.

The *NSW Energy from Waste Policy Statement* was recently been updated to reflect this latest advice on air emissions standards from the NSW Chief Scientist and Engineer. It was publicly released on 15 June 2021 and includes strict new air quality and operating standards.

The EIS would evaluate the consistency of the proposal with respect to the requirements of the updated *NSW Energy from Waste Policy Statement* (NSW EPA 2021). This evaluation would outline:

- how the proposal would be using current international best practice with respect to process design and control, emission control practices, emissions monitoring and feedback, waste receipt and management of process residues
- how the proposal would meet the technical, thermal efficiency and resource recovery criteria described in the policy statement and be technically fit-for-purpose
- how the proposal would demonstrate proof of performance through monitoring
- a commitment to providing a commissioning plan at licence application stage.

Other relevant policies, strategies, guidelines and plans are discussed in section 5.4.

5.4 NSW Waste and Sustainable Materials Strategy 2041

The NSW Department of Planning, Industry and Environment recently published the *NSW Waste and Sustainable Materials Strategy 2041* (2021) for Stage 1: 2021 – 2027. The strategy aims to facilitate transition to a circular economy over the next 6 years. The strategy acknowledges that energy from waste facilities are a legitimate and necessary residual waste management option. It is noted that regional precincts located on arterial transport routes are suitable for the implementation of circular economy precincts.

The strategy identifies that at least one large scale regional energy recovery facility is required by 2030 to manage the potential mix of residual waste generated by the Greater Sydney region. At least 3 additional energy from waste facilities are required by 2040.

5.5 Consistency with strategic documents

The proposal is consistent with relevant policies, strategies, guidelines and plans, including:

Waste

- *NSW Energy from Waste Policy Statement* (NSW EPA 2021)
- *National Waste Policy* (Department of Agriculture, Water and the Environment 2018)
- *NSW Waste and Sustainable Materials Strategy 2041* (NSW Department of Planning, Industry and Environment 2021)
- *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* (NSW EPA 2014)
- *Waste Less, Recycle More 2017-2021*
- *NSW 2021: A Plan to Make NSW Number One* (NSW Department of Premier and Cabinet 2011)
- *NSW Circular Economy Policy Statement* (NSW EPA 2019)
- *NSW Waste and Sustainable Materials Strategy 2041* (NSW Department of Planning, Industry and Environment 2021).

Energy

- *NSW Renewable Energy Action Plan* (NSW Trade and Investment 2013)
- *NSW Climate Change Policy Framework* (NSW Government 2016)
- *NSW Electricity Strategy* (NSW Government 2019).

Land use

- *Goulburn Mulwaree Council Local Strategic Planning Statement* (Shelter NSW 2020)
- *Goulburn Mulwaree Strategy 2020* (Parsons Brinckerhoff 2020)
- *The Southern Tablelands Regional Economic Development Strategy 2018–2022* (Goulburn Mulwaree Council, Upper Lachlan Shire Council and Yass Valley Council 2018)
- *The South East and Tablelands Regional Plan 2036* (NSW Government 2017)

The EIS would provide further information on these policies, strategies, guidelines and plans, as well as evaluate their relationship to the proposal.

6. Community and stakeholder engagement

6.1 Overview

Jerrara Power is committed to developing and maintaining successful partnerships and working relationships with the people, communities and other stakeholders impacted both directly and indirectly by the construction and operation of the proposal. An overarching community and stakeholder engagement plan has been prepared to provide a framework for communications and engagement activities for the proposal.

6.2 Engagement during scoping

Initial stakeholder engagement formally commenced in November 2020 with an introduction of the proposal to DPIE. A high-level overview of activities proposed was presented, as well as findings from the preliminary environmental assessment. Feedback and comments were also sought.

Another meeting in December 2020 was held with the following government agencies:

- DPIE
- Murrumbidgee and Southern NSW Local Health Districts
- NSW EPA
- NSW Health

Building on the engagement undertaken to date with government agencies, views of the community, targeted stakeholders and landowner were also sought during preparation of the Scoping Report about the proposal. This included the issues to be addressed in the EIS, and opportunities for ongoing involvement during the assessment of the impacts of the proposal.

Stakeholders engaged during this process included:

- Neighbouring landholders
- residents from Goulburn Mulwaree LGA
- local businesses
- Goulburn Mulwaree Council
- State Member for Goulburn Ms Wendy Tuckerman
- Federal Member for Hume The Hon. Angus Taylor

During scoping, DPIE organised a planning focus meeting and site walkover on 9 June 2021. The meeting and site walkover was attended either in person or via dial by representatives of:

- DPIE – Planning and Assessment
- NSW EPA
- NSW Health
- Goulburn Mulwaree Council
- DPIE – Biodiversity Conservation Division
- DPIE – Agricultural Resources
- WaterNSW
- DPIE – Aboriginal Heritage
- Transport for NSW / Roads and Maritime
- DPIE – Regional Planning
- DPIE – Hazards

6.2.1 Engagement approach

During the preparation of the Scoping Report, the following engagement activities were undertaken to provide information about the proposal to the community and stakeholders:

- phone, email or letter contact with stakeholders
- dedicated proposal information phone line and email
- dedicated proposal website including an overview of the proposal, company information, overview of the proposed technology, animated videos, frequently asked questions, plans, maps, media releases, advertising material, contact information and links to useful content
- dedicated Facebook page to share animated videos, project updates, new community workshop dates and respond to stakeholder enquiries
- community contact cards provided to Goulburn Mulwaree Council, Goulburn electorate office and GHD specialists and contractors to issue to community stakeholders if approached
- proposal overview in the form of a four-page, full colour printed fact sheet (also available online) (Appendix D)
- letterbox drop of residents in Bungonia and Marulan
- proposal advertising in local publications to advise of upcoming consultation opportunities
- door knocks and meetings with neighbouring property owners
- meetings with Goulburn Mulwaree Council General Manager and staff members
- briefing of Goulburn Mulwaree Councillors
- meetings with State and Federal members of Parliament
- media releases
- random phone survey with residents of Goulburn Mulwaree LGA
- community workshops.

Engagement activities undertaken during this period are summarised in Table 6.1.

Table 6.1 Engagement activities undertaken to date

Activity	Timing	Detail
Meeting with DPIE	November 2020	To introduce the proposal and present findings from the preliminary environmental assessment
Meeting with DPIE, Murrumbidgee and Southern NSW Local Health Districts, NSW EPA and NSW Health	December 2020	To introduce the proposal and present findings from the preliminary environmental assessment
Proposal phone line established	December 2020	Free-call 1800 number diverted to the community relations manager between 8:30 am and 5 pm weekdays Voicemail at other times <i>116 calls received as at 24/05/2021</i>
Proposal email established	December 2020	<i>114 emails received as at 24/05/2021</i>
Briefing note to Minister for Environment	24 March 2021	To introduce the proposal and provide a copy of the proposal overview
Briefing note to Minister for Planning and Public Spaces	24 March 2021	To introduce the proposal and provide a copy of the proposal overview
Meeting with Goulburn Mulwaree Council	1 April 2021	Attended by General Manager and staff members
Unaddressed letters letterbox dropped to neighbouring property owners on Jerrara Road	10 April 2021	To invite residents to contact Jerrara Power to organise a meeting to discuss the proposal

Activity	Timing	Detail
Meeting with adjoining property owner	12 April 2021	Discussions are commercial in confidence
Community stakeholder meeting	12 April 2021	<i>1 meeting</i>
Meeting with Minister's office - Environment	12 April 2021	Attended by representatives of the Minister's office
Community stakeholder meeting	14 April 2021	<i>1 meeting</i>
Meeting with Federal Member for Hume	15 April 2021	Attended by The Hon. Angus Taylor and staff member
Meeting with Goulburn Mulwaree Council	15 April 2021	Attended by General Manager, Mayor and staff member
Meeting with State Member for Goulburn	15 April 2021	Attended by Ms Wendy Tuckerman and staff member
Community stakeholder meeting	16 April 2021	<i>1 meeting</i>
Proposal website launched	19 April 2021	A six-page website with an overview of the proposal, company information, overview of the proposed technology, animated videos, frequently asked questions, plans, maps, media releases, advertising material, contact information and links to useful content <i>4,600 page views and 1,204 visitors as at 24/05/2021</i>
Proposal Facebook page launched	19 April 2021	To provide an avenue for stakeholders to contact Jerrara Power and share and receive information, promote consultation opportunities and provide proposal updates <i>60 followers, 5,200 post reach and 2,500 engagements as at 24/05/2021</i>
Media release issued	19 April 2021	To provide an overview of the proposal and invite people to register for the community workshops
Door knock of neighbouring properties and letterbox drop	20 April 2021	About <i>93 properties</i> attempted letterbox dropped a copy of the proposal overview along Jerrara Road, Cook Place, Fisher Road, Oak Valley Road, Glynmar Road, Tickner Valley Way, Billabong Road. Some properties had no letterbox.
Letterbox drop Marulan community	21 April 2021	Approximately <i>437 properties</i> letterbox dropped a copy of the proposal overview
Community stakeholder meetings	21 April 2021	<i>3 meetings</i>
Advertisement published	21 April 2021	Full-page advertisement in Goulburn Post including proposal overview and invitation to register for community workshops
Community stakeholder meetings	22 April 2021	<i>2 meetings</i>
Letterbox drop Bungonia village and immediate surrounds	22 April 2021	Approximately <i>98 properties</i> in Bungonia village, 3 km along Oallen Ford Road, 3 km along The Lookdown Road and 4 km along Mountain Ash Road letterbox dropped a copy of the proposal overview
Media release issued	27 April 2021	To provide information about an additional date added for community workshops
Meeting with Minister's office - Planning and Public Spaces	27 April 2021	Attended by representatives of the Minister's office
Market research and sentiment analysis commenced	28 April 2021	Micromex Research commenced random phone survey of Goulburn Mulwaree LGA residents
Community stakeholder meeting	28 April 2021	<i>1 meeting</i>

Activity	Timing	Detail
Letterbox drop	28 April 2021	Approximately 31 <i>properties</i> letterbox dropped a copy of the proposal overview along the remainder of The Lookdown Road and 5 km of Inverary Road with 100 additional copies left at Bungonia Hall
Advertisement published	1 May 2021	Full page advertisement in Discover Marulan newsletter including proposal overview and invitation to register for community workshops
Advertisement published	1 May 2021	Full page advertisement in Windellama News including proposal overview and invitation to register for community workshops
Market research and sentiment analysis concluded	4 May 2021	405 Goulburn Mulwaree LGA residents surveyed by phone
Community stakeholder meetings	5 May 2021	3 meetings
Advertisement published	5 May 2021	Full-page advertisement in Goulburn Post including proposal overview and invitation to register for community workshops – additional date
Community stakeholder meeting	10 May 2021	1 meeting
1 st community workshop	11 May 2021 3 pm – 5 pm	32 participants
2 nd community workshop	11 May 2021 6 pm – 8 pm	34 participants
3 rd community workshop	12 May 2021 10 am – 12 pm	19 participants
4 th community workshop	12 May 2021 4 pm – 6 pm	18 participants
Media release issued		To provide information about an additional Saturday workshop added to the schedule
5 th community workshop	15 May 2021 10 am – 12 pm	51 participants
Advertisement published	19 May 2021	¼ page advertisement in Goulburn Post about an additional Saturday workshop added to the schedule
6 th community workshop	22 May 2021 1 pm – 3 pm	15 participants
Briefing Goulburn Mulwaree Council	25 May 2021	To provide a briefing and question and answer opportunity to elected representatives
Planning focus meeting and site walkover	9 June 2021	To provide an opportunity for agencies to view the proposal site, provide a briefing and answer questions

6.2.2 Feedback received

Workshops

The community workshops each ran for two hours. The purpose of these workshops was to identify the issues and concerns of the community based on what they knew or had heard about the proposal. Where time allowed, residents were also canvassed on which communication and engagement tools they would like to be used during preparation of the EIS.

Over the course of the six workshops, the format was amended in response to stakeholder requests for more question and answer time. It was evident during the workshops that stakeholders wanted more technical detail about the proposal than what was available during the current scoping phase.



169 residents participated in six scoping workshops held at Bungonia and Marulan in May 2021.

Source: Jerrara Power, 2021

Meetings

Jerrara Power representatives met with property owners, community stakeholders, Goulburn Mulwaree Council and local Members of Parliament by appointment and through door knocking. Where residents were not home during door knocking, a “Sorry we missed you” calling card was left with a copy of the proposal overview. Many property owners in the proposal area live and work elsewhere during the week and efforts have been made to accommodate these residents with some meetings held in Sydney.

Facebook

Jerrara Power is aware of two community-driven Facebook groups dedicated to the proposal. The groups are also active offline and have held several meetings open to the community.

Community stakeholders have also left feedback on Jerrara Power’s Facebook page or sent private messages.

Media

Jerrara Power has issued three media releases since the proposal was announced on 19 April 2021. There have been five print/online articles (some newspapers now publish directly or only online), and two radio interviews in which named and unnamed stakeholders were interviewed as well as representatives from Jerrara Power.

Self-selected tools

Feedback was collected using a range of self-selected tools since the proposal was formally announced on 19 April 2021. This included phone calls, emails, face-to-face meetings, six community workshops, comments and messages on the Jerrara Power Facebook page and other Facebook pages and groups, as well as media coverage that included stakeholder interviews.

The issues, questions and concerns identified by the community and stakeholders using self-selected tools are summarised in Table 6.2. The issues are listed in order of their prevalence during consultation.

Table 6.2 Issues identified by community and stakeholders from self-selected tools

Issue	Detail
Water	<ul style="list-style-type: none"> – where will it come? – how much will the facility use? – what is the impact on surface and groundwater? – what is the impact on Jerrara Creek and the wider water catchment?
Environment – air quality	<ul style="list-style-type: none"> – what is emitted and what isn’t? – what happens to the flue ash residue? – where is it stored?

Issue	Detail
	<ul style="list-style-type: none"> – when is it disposed of? – how are emissions monitored?
Environment – waste stream	<ul style="list-style-type: none"> – how can the composition of the waste source be guaranteed? – what is it comprised of? – how is it sorted? – where is it pre-processed? – where is it coming from (locations/sites)? – what waste groups will provide the contracts?
Environment – greenhouse gases	<ul style="list-style-type: none"> – how is this good for the environment? – why not capture the methane from landfill instead?
Environment - odour	<ul style="list-style-type: none"> – odour from the trucks and odour from the facility itself
Environment - wastewater	<ul style="list-style-type: none"> – where will it go? – where will it be stored?
Environment - noise	<ul style="list-style-type: none"> – construction, operational noise and noise from the additional truck movements on Jerrara Road
Environment - biodiversity	<ul style="list-style-type: none"> – impact of the proposal on flora and fauna in the immediate area and the broader impacts to biodiversity into the Bungonia National Park
Environment – visual amenity	<ul style="list-style-type: none"> – impact on local character and landscape
Site selection/location	<ul style="list-style-type: none"> – why was this site chosen? – why can't it be located closer to the source of fuel? – what criteria were used to select the site? – what other sites were ruled out and why? – how is this permissible in an RU2 zone?
Traffic and roads	<ul style="list-style-type: none"> – current condition of Jerrara Road is not suitable for heavy vehicles – how will it be upgraded? – how will it be maintained? – who will pay for it? – concerns about safety for motorists, children catching school buses, wildlife strikes, speed limit and further damage
Health	<ul style="list-style-type: none"> – concern about potential impacts on human and animal health including domestic stock and wildlife – peer-reviewed literature details health effects of older generation facilities – the community want guarantees about the new technology
Technology	<ul style="list-style-type: none"> – where is this technology being used? – what are the reference plants? – why has it been refused elsewhere in NSW? – the proposal will deter people from recycling – what happens to the facility when a true circular economy is reached?
Property values	<ul style="list-style-type: none"> – how will the proposal impact property values? – what compensation is available to property owners?
Company governance	<ul style="list-style-type: none"> – questions were raised about the company structure, its shareholders, whether it was a front for another organisation, whether its shareholders were Australian, political donations
Planning assessment, approvals and regulation	<ul style="list-style-type: none"> – lack of trust in the NSW planning system – lack of trust in the NSW EPA to regulate and enforce penalties for noncompliant activities
Consultation and communication	<ul style="list-style-type: none"> – lack of trust in consultation process – lack of understanding about role of consultation in planning and assessment process

Issue	Detail
	<ul style="list-style-type: none"> – accessibility to consultation opportunities for those who live elsewhere through the week – concern the letterbox drop missed properties, especially those without letterboxes. Internet access and mobile services in the area are poor
Hazards and risks	<ul style="list-style-type: none"> – safety at the site and on the roads. This includes the risk of explosion, shooters hunting in the area for pests such as deer.
Bush fire	<ul style="list-style-type: none"> – this includes containment of the proposal site during a bushfire and the risk of contamination to the surrounding area during a bush fire
Community benefits	<ul style="list-style-type: none"> – little benefit for the community. – want to know proportion of jobs that will be local, temporary and permanent. – Do not see environmental benefits because it's Sydney's waste

Planning focus meeting

The issues raised by agencies at the planning focus meeting are summarised in Table 6.3.

Table 6.3 *Issues identified by agencies at the planning focus meeting*

Agency	Issues raised
DPPE – Planning and Assessment	<ul style="list-style-type: none"> – Site suitability <ul style="list-style-type: none"> • proximity to sensitive receivers, • local character impacts • proposed industrial use in RU2 land zoning – permissible under the Infrastructure SEPP – Community engagement and consultation <ul style="list-style-type: none"> • local character (industrial use in RU2), amenity, cumulative traffic impacts, transport of Sydney waste) • approach to engagement – must be genuine, consider key messages – community benefits – Energy from Waste Policy Statement <ul style="list-style-type: none"> • Reference Facility – to provide confidence in performance • Consistency with technical requirements, resource recovery compliance and quality control – Air quality and odour – including consistency with EPA guidance and the Energy from Waste Policy Statement – Human health risk <ul style="list-style-type: none"> • eHealth Guidelines • drinking water catchment impacts (NorBE)
NSW EPA	<ul style="list-style-type: none"> – Compliance and consistency with the Energy from Waste Policy Statement – Reference facility, waste composition, quality assurance processes – Water quality – in respect to water quality objectives – Cumulative impacts of the proposal including other air quality impacts from other projects in the area and road traffic – Human health risk assessment – evidence based but importance of community license and social license to operate
NSW Health	<ul style="list-style-type: none"> – Impact on rainwater tanks – particularly for residents not connected to reticulated supply – Night time sleep disturbance – Perceptions of health impacts – Cumulative impacts and potential to exist with quarry and mining developments in the area in terms of air quality as well as trucks / traffic – Use of the Australian Exposure Factor Guide with regard to human health risk assessment parameters

Agency	Issues raised
Goulburn Mulwaree Council	<ul style="list-style-type: none"> – Transport and the state of Jerrara Road – Transport of other materials – water, outputs/residues – Water supply and sourcing – Impacts of the transmission line – possibility of the route/s transecting sensitive areas – Cumulative impacts of the locality – The need for long and meaningful consultation with the community through the EIS process, including an extended EIS exhibition period
DPIE – Biodiversity Conservation Division	<ul style="list-style-type: none"> – Correct mapping of vegetation on site (red stringy bark box gum woodland) – Asset protection zones and associated clearance requirements – Biodiversity impacts of the powerline, and adoption of a low impact approach to route selection given critically endangered species on road corridor and elsewhere in the broader area – Flooding impacts – in particular overland flow issues
DPIE – Agricultural Resources	<ul style="list-style-type: none"> – No specific comments
WaterNSW	<ul style="list-style-type: none"> – Water supply and need for a water balance – Water quality and the location within an area covered by the Sydney Drinking Water SEPP – Adoption of the recommended practices developments in a drinking water catchment – Effluent management during construction and capacity of the Marulan wastewater treatment plant – Proximity to Jerrara Creek – potential for erosion and sediment control due to highly erosive and dispersive soils
DPIE – Aboriginal Heritage	<ul style="list-style-type: none"> – Technical difficulties with sound. Issues to be provided to DPIE via email to passed on to the applicant.
Transport for NSW / Roads and Maritime	<ul style="list-style-type: none"> – No specific comments
DPIE – Regional Planning	<ul style="list-style-type: none"> – Potential for water quality impacts on Jerrara Creek
DPIE – Hazards	<ul style="list-style-type: none"> – Fly ash and proposed disposal location

Random-selected tools

Feedback was also collected through a random phone survey of residents aged 18 and over who lived in the Goulburn Mulwaree LGA (Jerrara Power 2021). The survey commenced 10 days post proposal announcement and was completed by 405 residents in the Goulburn Mulwaree LGA (1.8 per cent of 23,114 residents aged 18 and over) (Australian Bureau of Statistics 2016).

The purpose of the survey was to:

- gauge resident levels of concern about environmental sustainability issues
- understand perceptions of the level of personal and shared responsibility residents believe they have for managing environmental sustainability
- explore awareness and support of the energy from waste process generally in Australia
- measure level of support for an energy from waste facility proposal at Bungonia.

Survey respondents were chosen by a computer-based random selection process. Residents in Bungonia, Marulan and Windellama comprised of 16 per cent of the sample and were deliberately oversampled given their proximity to the proposal site.

General support for building and operating energy from waste facilities in Australia is high, with 348 residents (86 per cent) who participated in the survey at least somewhat supportive of this idea.

Support for building an energy from waste facility near Bungonia was lower than overall support for this type of facility, though 75 per cent of residents were still at least somewhat supportive of this proposal.

Respondents were given the opportunity to provide open-ended reasons for supporting or not supporting energy from waste facilities in general, and an energy from waste proposal at Bungonia. They were also able to provide any further comments about the proposal or energy from waste.

The main reason for some respondents not supporting energy from waste was a desire for more communication. This was one of the main open-ended responses provided both in terms of not supporting energy from waste in general and not supporting the proposal. It was also the main open-ended response on the final “any other comments” question.

Among those living in the three areas closest to the proposed facility (Marulan, Bungonia and Windellama), overall awareness of energy from waste was 79 per cent, and even more (83 per cent) were aware of the proposal at Bungonia. This suggests that perhaps a lot of the general awareness of energy from waste in the community is coming from what is known about the proposal. Those aware of the proposal were significantly less supportive of the proposal than were those who were not previously aware.

The issues and concerns identified by residents surveyed are summarised in Table 6.4. The issues are listed in order of their prevalence.

Table 6.4 Issues identified by community and stakeholders from random-selected tools

Issue	Detail
Communication	– more information about the facility and its impacts is needed
Air quality	– concern about the amount of pollution/smell the facility will produce/impacts on the environment
Environment	– concern about the impacts of the facility on the environment and wildlife – concern about bi-products management
Governance/regulation	– lack of trust in private companies – lack of trust in regulation and management – perception that these facilities should be funded and operated by government – concern that private industries will profit too much
Road safety	– concern about the safety of roads in the area/increased trucks on the road/ how the waste will be transported
Location	– do not believe this is a suitable location/do not want it near my house – waste should be managed in the area where it is created

Issue	Detail
	<ul style="list-style-type: none"> – it will ruin the rural/country town feel of the area – would prefer the facility to be built somewhere else
Community benefits	<ul style="list-style-type: none"> – do not believe it would benefit the community – creates jobs/income – money should be given back to the community
Water	<ul style="list-style-type: none"> – concern about how the local water quality and supply will be affected
Health	<ul style="list-style-type: none"> – concern about any possible health impacts for humans and animals
Waste	<ul style="list-style-type: none"> – believe there are better ways to get rid of/reduce the amount of waste and generate energy – concerned about where the waste would be stored – everyone should be accountable/responsible for reducing waste going to landfill – as rural landowners we are responsible for getting rid of our own waste
Property values	<ul style="list-style-type: none"> – concern that the value of housing and land in the area will decrease
Electricity supply	<ul style="list-style-type: none"> – there will be an oversupply of electricity/there is already enough energy
Consultation	<ul style="list-style-type: none"> – the issue needs to be considered by all residents first – more community involvement in the building of the facility/listen to community feedback

6.3 Engagement during preparation of the EIS

Community and stakeholder engagement and regular communication are important parts of the development of the proposal. Jerrara Power would proactively engage, inform and involve the stakeholders and the community about the proposal and provide opportunities for feedback. Issues raised during the engagement process would be provided to the project team to inform proposal development, environmental assessment and the preparation of the EIS.

6.3.1 Principles of engagement

Jerrara Power has developed a clear and comprehensive approach to engaging with the community and stakeholders for the proposal. This approach is based around the principles of regular communication, being responsive to all stakeholders, providing information about the proposal and its impacts, explaining how community feedback is used and providing ongoing opportunities for feedback.

Jerrara Power encourages feedback and would continue to seek input as the proposal progresses.

6.3.2 Communication and engagement approach

Jerrara Power has developed a communication and engagement approach for the proposal that aligns with the International Association for Public Participation spectrum to inform the level of engagement required for the proposal's activities. This engagement would build on the communication and stakeholder relationships formed during the scoping phase and would continue to provide information about the proposal and seek feedback on issues, impacts and opportunities.

6.3.3 Planned engagement activities

A range of communication and engagement activities would occur during preparation of the EIS. Jerrara Power would continue to provide information about the proposal, the assessment of the proposal's environmental impacts and opportunities for formal submissions during the EIS exhibition.

A community reference group would be established during preparation of the EIS. This group would be a structured group of community and stakeholder representatives that meet on a regular basis to provide a two-way forum for information sharing and consultation between Jerrara Power and the community. The terms of reference

for the community reference group would be developed in consultation with the community and other stakeholders. It would also be facilitated by a person independent to Jerrara Power.

Other community and stakeholder engagement activities during the preparation of the EIS would include:

- regular updates to the proposal website
- ongoing responsiveness to the dedicated proposal phone line and email
- regular updates to the proposal Facebook page and responsiveness to stakeholder comments and private messages
- ongoing consultation with neighbouring and nearby property owners
- an extended letterbox dropping program with proposal information to incorporate Windellama, Tallong and Goulburn
- pop-up consultations at community events including markets and the Bungonia Hall Sunday Café
- a second round of market research and sentiment analysis via a random phone survey
- regular briefings with Goulburn Mulwaree Council and state and local Members of Parliament
- targeted meetings with proposal stakeholders
- proposal advertising
- media releases to advise of activities, events and updates.

6.4 Future engagement

6.4.1 Engagement during public exhibition of the EIS

The EIS would be placed on public exhibition for a period of at least 28 days.

Community information sessions and/or a drop-in sessions, targeted stakeholder briefings and proposal advertising would be undertaken during this period. Advertising would provide details of where the EIS can be viewed and information about other feedback opportunities during the exhibition period.

During the exhibition period, any stakeholder can make a formal submission on the proposal. Submissions would be collated into a report and would be considered in the assessment of the EIS and further development of the proposal.

6.4.2 Engagement following exhibition of the EIS

Following the exhibition period, Jerrara Power would respond to submissions received during exhibition of the EIS. Jerrara Power may undertake further engagement to respond to issues raised. If this process extends over a long period of time, Jerrara Power would provide regular updates on the status of the proposal.

Subject to obtaining planning approval, Jerrara Power would continue to engage with the stakeholders and the community during the construction phase. Jerrara Power would develop and lead a construction community engagement program including ongoing communication and engagement with the community reference group.

The construction program would respond to community and stakeholder expectations on ongoing involvement, the details of the approved proposal and the terms of its approval. Jerrara Power would continue to be the single point of contact about the proposal for all stages of the development.

Once the proposal is operational, Jerrara Power would continue to maintain a high level of engagement with the community, through the creation of a Community Consultative Committee, education and visitor centre and regular updates in local media.

7. Key environmental issues

7.1 Scoping process

As part of developing this Scoping Report, a preliminary environmental assessment has been carried out to identify relevant environmental matters for consideration in the EIS. This process involved describing the existing environment and identifying activities that could impact the relevant environmental, social and economic matters. Activities were identified by reviewing previous reports, investigations, studies and assessments. This process was also informed by the desktop searches and site inspections carried out in September and November 2020 and in early 2021.

The relevant environmental matters and the potential impacts of the proposal on these environmental matters are further described in this section. The detailed scope of these assessments would be considered following the receipt of the SEARs for the proposal.

7.2 Waste

7.2.1 Key features of the existing environment

The existing environment for feedstock management and waste is described in section 3.3.

7.2.2 Potential impacts

Construction

Construction activities have the potential to generate waste or litter through excess construction materials, waste generation from construction offices and the temporary construction workforce accommodation facility and excess spoil from excavation and foundation works. A construction environmental management plan would be developed by the construction contractor that addresses waste management and reduction practices.

Operation

Operational waste management is a key element of this proposal. The proposal would have the capacity to reduce the amount of municipal and commercial and industrial waste that would ordinarily be directed to landfill. The bottom ash would be processed to remove metals, and the aggregate component would be suitable for reuse for construction purposes. Flue gas treatment residues would be landfilled after treatment, and would likely comprise about three to four per cent of the volume of incoming waste.

The potential risks associated with acceptance of non-conforming wastes damaging plant and equipment or resulting in unacceptable emissions is considered to be extremely low. The waste reception hall would be enclosed and managed appropriately to reduce the risk of attracting vermin and pests.

7.2.3 Indicative assessment scope

The EIS would include a waste management assessment that would assess the waste generated from the construction and operation of the proposal and provide waste management measures to mitigate potential environmental impacts.

It would also include a standalone waste sourcing study to demonstrate the availability of suitable residual waste from Sydney and other areas and justify the scale of the proposal. The waste management assessment would draw on this study to provide information on the anticipated sources, classifications, quantities, and compositions of the waste streams to be received at the proposal site.

The waste assessment would describe the waste receipt, processing and control procedures for all incoming waste streams. It would also identify the likely quantities, composition, classification and proposed handling, treatment and disposal of process residues (e.g. bottom ash and flue gas treatment residues).

As outlined in section 5.3, the EIS would evaluate the consistency of the proposal with respect to the requirements of the *NSW Energy from Waste Policy Statement* (NSW EPA 2021). Relevant details from this evaluation would be included in the waste assessment.

The waste management assessment would be undertaken with reference to the following documents:

- *NSW Waste and Sustainable Materials Strategy 2041*
- *NSW EPA 2016 Waste Classification Guidelines*

7.3 Air quality and odour

7.3.1 Existing environment

Air quality within the vicinity of the proposal site is characteristic of inland rural areas. The main influences on air quality within the vicinity of the proposal site are regional sources (including bush fires and dust storms), local agricultural and existing extractive industries. Given the proposal site and surrounds are outside of the Sydney basin, and are separated from any major industrial operations, urban centres and highly trafficked roadways, it is expected that background concentrations of gaseous air pollutants would be low, and reflective of a rural setting rather than urban areas.

Consultation with NSW Health and EPA during the first phase of engagement indicated there are some existing community concerns within Goulburn Mulwaree LGA related to air quality (silica dust), health (silicosis) and impacts on drinking water associated with industry (quarrying operations) in the LGA. The closest quarry to the proposal site is the Ardmore Park Quarry, and is located about nine kilometres to the south.

It is unlikely that emissions from the proposal and those from the Ardmore Park Quarry would combine to contribute to any significant cumulative impact at local residences. However it is understood that Jerrara Road is a transport route for quarry trucks, and consequently roadside particulate matter levels may be elevated. Consultation with residents would be undertaken to distinguish if these issues are confined to areas north of the highway or near the proposal site.

There is an existing air monitoring station located in Goulburn at Leggett Park, about 22 kilometres north-west of the proposal site. The monitoring station records meteorological parameters as well as particulate matter (PM_{2.5}, PM₁₀), nitrogen dioxide (NO₂), and ozone (O₃)

Whilst measurements at Goulburn monitoring station are likely to provide a reasonable characterisation of the existing air quality environment at the proposal site, given community concerns about particulate matter and the minimal local sources of particulate matter than have been identified, site meteorological and air quality monitoring (PM₁₀ and PM_{2.5}) would be carried out on the proposal site to further understand the existing air quality environment.

An inspection of the proposal site from publicly accessible areas and review of aerial imagery has identified that there are two residential dwellings within 500 metres of the proposal site and a further six within one kilometre (see Figure 2.3).

The sensitivity of the existing environment to air quality impacts is considered high and is based on the following key factors:

- air quality impact assessment criteria for critical air pollutants are assessable at or beyond the proposal site boundary and consequently any location external to the proposal site is considered potentially sensitive to air impacts.
- there is existing concern within the wider community with regards to particulate matter levels and as such any further increase or perceived increase in particulate levels would contribute to community concerns.
- there is concern amongst the community with regards to what is released from the stack and the potential impacts to domestic stock, wildlife, the status of their organic certification for produce and animals and residential rainwater tanks.
- given the rural setting and overall lack of local particulate matter sources, it is expected that that community perceives good air quality as a key environmental value.

7.3.2 Potential impacts

Potential impacts associated to air quality and odour would be mitigated by the enclosure of the waste reception area and implementation of ventilation controls and treatment technology that meets stringent emissions targets. Potential air quality and odour issues are identified as follows.

- human health and amenity associated with particulate matter (dust) during construction
- human health associated with gases, particulate matter during operation
- amenity associated with odour emissions during operation
- cumulative air quality impacts from existing industrial and resource operations and the proposal

Construction

Construction activities, including earthworks and movement of construction materials, have the potential to generate some short-term, temporary particulate matter emissions. Increased traffic on the local road network as a result of construction activities also have the potential to generate impacts to air quality within the vicinity of the proposal site.

The geographic extent of the impact is anticipated be to limited to the areas immediately surrounding the proposal site and right of way, as well as the approximate 10 kilometres of Jerrara Road that would see increased heavy vehicle traffic. The duration of the impact is limited to a period of about three years.

Any significant air quality impacts during construction of the proposal would be directly associated with earthworks, construction of structures, and increased heavy vehicle traffic on Jerrara Road. There is potential for cumulative impacts associated with existing and increased heavy vehicle traffic on Jerrara Road.

Operation

Operational activities, primarily including thermal processing of wastes, waste receipt and ingoing/outgoing heavy vehicles would generate emissions to air with the potential to have air quality impacts. Exhaust gases would exit the proposal, after a number of stages of treatment, via an elevated stack.

The geographic extent of the impact is anticipated to be limited to the areas immediately surrounding the proposal site, as well as the approximate 10 kilometres of Jerrara Road that would see increased heavy vehicle traffic. The duration of the impact would be for the lifetime of the proposal.

The potential for cumulative impacts exists for particulate matter only and is associated with existing and increased heavy vehicle traffic on Jerrara Road.

The proposal would be designed to achieve highly stringent air emission targets, as outlined in the NSW *Protection of the Environment Operation Act 1997* and the European IPPC Bureau 'Industrial Emissions Directive', BAT (Best Available Techniques) Reference Document (BREF). The HZI technology includes a comprehensive gas treatment system designed to operate comfortably within the air emission targets. Operational procedures during start-up, normal operation and any routine/emergency shut-down would be developed with safe-guards in place to further reduce likelihood of high levels of air emissions.

7.3.3 Indicative assessment scope

Construction and operational air quality impacts require further assessment in the EIS. The EIS would include a detailed air quality assessment which would consider both construction and operational impacts. Mitigation measures associated to control and management of emissions during construction and operation from the proposal site would be identified.

As outlined in section 5.3, the EIS would evaluate the consistency of the proposal with respect to the requirements of the *NSW Energy from Waste Policy Statement* (NSW EPA 2021). Relevant details from this evaluation would be included in the air quality and odour assessment such as:

- how the proposal would be using current international best practice with respect to process design and control, emission control practices, and emissions monitoring and feedback

- how the proposal would meet the technical criteria described in the policy statement, particularly with respect to emission standards, process monitoring proof of performance and ongoing emissions monitoring.

Construction

Assessment of potential construction air quality impacts would include:

- identifying sensitive receivers and places with potential for impact during construction
- documenting key construction activities and those measures which would be employed to mitigate any dust emissions from construction of the proposal and construction related traffic
- completing a qualitative construction dust impact assessment for activities conducted within the proposal site
- completing a quantitative dispersion modelling assessment of potential cumulative impacts associated with heavy vehicle movements on Jerrara Road.

The construction air quality assessment would be undertaken in accordance with the following guidelines:

- *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW EPA 2016)*
- *IAQM Guidance on the assessment of dust from demolition and construction (Holman et al 2014).*

Operation

Assessment of potential operational air quality impacts would include a quantitative Level 2 air quality impact assessment in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (Approved Methods) (NSW EPA 2016), including tasks as identified below:

- identifying all sensitive receptors and places with potential for impact during operation. Receptors would be identified within five kilometres of the proposal and also within 500 metres of Jerrara Road. Any non-human receptors would be identified as required for input into the health risk assessment.
- describing in detail the receiving environment, including background air quality and matters influencing dispersion of pollutants such as meteorology, topography, surrounding land use and climate. Site-specific meteorological and particulate matter monitoring would commence prior to development of the EIS would inform the assessment of the receiving environment.
- outlining details of the proposal, including identification of all activities and/or processes with potential to generate emissions to air. For each source of air emissions identified, estimate the rate of emissions using reliable, site-representative data.
- conducting a quantitative assessment of odour impacts associated with receipt of waste to the proposal.
- definition of all proposed emission control techniques, including comparison of expected combustion gas treatment system performance to the European IPPC Bureau 'Industrial Emissions Directive', BAT (Best Available Techniques) Reference Document (BREF) and the *NSW Energy from Waste Policy Statement* (NSW EPA 2021).
- for emission of combustion gases, emission performance would be demonstrated through data measured at representative (reference) facilities. Emission scenarios are to be developed for all operational situations including during start-up, normal operation and any routine and emergency shut-downs.
- complete air dispersion modelling assessment for all emission sources and emission scenarios to predict pollutant concentrations at sensitive receptor locations, and subsequently compare results to the ground level pollutant criteria as outlined in the 'Approved Methods'.
- completing an assessment of potential cumulative impacts associated with heavy vehicle movements on Jerrara Road.

The operational air quality assessment would be undertaken in accordance with the following guidelines:

- *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (NSW EPA 2016)*
- *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (NSW EPA 2006)*
- *Technical framework: Assessment and management of odour from stationary sources in NSW (Department of Environment and Conservation NSW 2006b).*

7.4 Greenhouse gases and climate change

7.4.1 Key features of the existing environment

Australia's national, state and territory greenhouse gas (GHG) emissions inventories are reported by the Department of Industry, Science, Energy and Resources. Australia's national GHG emissions, by sector, for the year up to March 2020 and year 2018 can be seen in Table 7.1. Total emissions for the year to March 2020 are 528.7 million tonnes of carbon dioxide equivalent (MtCO₂-e), and 537.4 MtCO₂-e for the year 2018.

Table 7.1 National and NSW emissions

Emissions source	Australia emissions year to March 2020 (MtCO ₂ -e) ¹	2018 Australia emissions (MtCO ₂ -e) ²	2018 NSW emissions (MtCO ₂ -e) ²
Energy – Electricity	172.9	183.2	52.1
Energy – Stationary Energy (excluding electricity)	102.7	97.1	15.3
Energy – Transport	99.7	100.8	28.7
Energy – Fugitive Emissions	55.8	54.4	13
Industrial Processes and Product Use	34.6	34.2	13.7
Agriculture	68	75.6	18
Waste	13.1	12.7	4.3
Land Use, Land Use Change and Forestry	-18.5	-20.6	-13.3
Overall Total	528.7	537.4	131.7

Source:

1. Table 3, Department of Industry, Science, Energy and Resources (2020a)
2. Table 4, Department of Industry, Science, Energy and Resources (2020b)

The major emission source for NSW was stationary energy, primarily for electricity generation, which contributed to 51.2 per cent of greenhouse gas emissions. The second largest source was the transport sector which contributed to about 21.8 per cent of the state's emissions.

7.4.2 Potential impacts

Construction

During construction, the proposal has the potential to generate greenhouse emissions by the use of fuels (use of equipment and machinery), the materials used and the clearance of vegetation. The volume of greenhouse gas emissions would largely depend on the type and quantity of construction materials used, construction methodologies and equipment used, and the overall design. Environmental mitigation measures during construction would be outlined in the construction environmental management plan for the proposal.

Operation

Operation of the proposal would require power and fuel which would generate greenhouse gases. The proposal would however divert waste from landfill, and displace coal fired power generation, resulting in a net reduction of greenhouse gas emissions equivalent to removing about 114,000 cars off the road (subject to assumptions made).

7.4.3 Indicative assessment scope

The EIS would include a quantitative assessment of greenhouse emissions generated during construction and operation of the proposal. This assessment would be undertaken in accordance with current national standards

and including the six gas types reported nationally (carbon dioxide (CO₂), methane (CH₄), nitrous oxide, perfluorocarbons, hydrofluorocarbons and sulphur hexafluoride (SF₆)).

It would include a quantitative assessment of Scope 1, 2 and 3 greenhouse gas emissions, proposal emissions as a proportion of NSW and Australia's greenhouse gas emission budgets and an assessment of reasonable and feasible measures to minimise greenhouse gas emissions and ensure energy efficiency.

It would also provide a description of the proposal site's climate patterns, climate change considerations, and qualitative high-level assessment of potential impacts of climate change (such as severe storms, extreme heat, reduced rainfall). Mitigation measures to reduce greenhouse gas emissions from the project would be identified.

7.5 Human health

7.5.1 Key features of the existing environment

The existing environment and sensitive receivers within the vicinity of the proposal site has been detailed in section 2.4 and is also relevant to the human health assessment. The human health assessment would consider the related human health risks and implications from other environmental issues such as air quality, contamination, bush fire, noise and hazards and risk.

7.5.2 Potential impacts

Construction

Risks to human health caused by construction activities would be managed by construction management plans that include appropriate WHS controls for site workers. Potential impacts associated with construction of the proposal are not considered to have the potential to result in any direct impact to human health.

Operation

The proposal would adopt best practice mitigation measures to control emissions from the proposal site and the plant would be operated to meet stringent emission standards. Contingency measures including automatic shutdown and safety controls would be in place. Uncontrolled air emissions from the stack as a result of a breakdown and failure of back up energy sources have the potential to impact human health as a result of potential unacceptable air quality emissions, and systems would be in place to manage these situations.

Other impacts such as noise and hazards also have the potential to impact human health exposure if not controlled. However mitigation measures would be in place to manage potential noise and hazard impacts.

7.5.3 Indicative assessment scope

The EIS would include a quantitative human health risk assessment of the potential emissions associated with the construction and operation of the proposal. The human health risk assessment would be undertaken in accordance with the enHealth (2012) *Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards* and include:

- identification of the issues to establish the objectives of the assessment and define the potential nature and extent of the facility emissions and possible human exposure scenarios.
- assessment of hazards with reference to Australian and international guidelines and the published scientific literature to establish the chemicals of concern (CoPC) for the facility.
- literature review of health impacts
- estimation of CoPC concentrations at which people experience adverse effects, including consideration of the environment fate and behaviour of the CoPC.
- assessment of chemical exposure that may be experienced by people within proximity of the facility. Exposure modelling would be used to estimate the extent of CoPC exposure and define risk.
- characterisation of risk to identify whether the facility emissions have the potential to be associated with adverse human health effects.

- assessment of uncertainty and sensitivity to evaluate the uncertainty associated with the human health risk assessment and sensitivity of the assessment outcomes.
- identification of the parameters most heavily influencing the risk assessment.
- outline of appropriate management and mitigation measures associated to human health.

The human health risk assessment would be undertaken with reference to the following additional guidelines:

- *Methodology for Valuing the Health Impacts of Changes in Particle Emissions* (PAEHolmes 2013)
- *Health Impact Assessment: A practical guide* (Harris, P et al 2007).

7.6 Social

7.6.1 Key features of the existing environment

The proposal site is located in the suburb of Bungonia, which is a small community in the Goulburn Mulwaree LGA. It is a small village with few services and facilities, with residents likely to travel to Goulburn for shopping and services.

The Bungonia district was settled in the early 1820s, with many of the original village residents being convicts. In the early 19th century, Bungonia was expected to become a major centre, however it subsequently proved unsuitable for intensive agriculture (Goulburn Australia n.d.).

A Phase 1 Social Impact Assessment (SIA) report has been prepared to support this scoping report with regard to the DPIE's *draft Social Impact Assessment Guideline for State significant projects* and is provided as Appendix A.

An analysis of the suburbs of Bungonia and Marulan, and the Goulburn Mulwaree LGA found that overall, they are characterised by:

- an older population living in Bungonia than in the rest of the social locality
- a high rate of the population who speak English at home and who were born in Australia
- lower rates of the population aged 15 years and over who have completed Year 12 in the social locality compared to Capital Region
- a less mobile population living in Bungonia than in the rest of the social locality
- lower income earners, with both the individual and household median income lower in the social locality than in Capital Region on average
- low rates of availability in the housing market across the social locality
- limited facilities available for short-term accommodation and limited social infrastructure and services

Top industries of employment vary across the social locality with construction employing the greatest proportion of the labour force in Bungonia and Marulan; and health care and social assistance, and public administration and safety being the top industries of employment in Goulburn Mulwaree LGA and Capital Region.

Unemployment levels were higher in Bungonia but the social locality experience similar rates of labour force participation. The dominant mode of transport used by residents across the social locality to travel to and from work is car, as either a driver or passenger.

Communities across the social locality share values associated with a strong connection to the heritage and rural character of the locality, as well as the relaxed, regional lifestyle.

Outcomes from the community engagement undertaken to date by Jerrara Power indicate that local stakeholders and community members are concerned about the potential environmental and human health impacts of the proposal, especially in relation to water and air quality. The local community in particular raised concerns about lack of positive outcomes for the local community resulting from the proposal, as well as the potential impacts to the rural character of the area.

7.6.2 Potential impacts

Construction

Construction of the proposal would have the potential to employ up to 300 people during the peak construction period, as well as lead to an increase in the purchase of local materials and services, and indirect workforce spending in the local area.

Construction mitigation measures would be implemented to minimise the potential to disturb and/or disrupt people's way of life, health and wellbeing due to noise emissions, increased movement of heavy vehicles on the local road network and the prolonged construction timeframe (36 months). A construction environmental management plan would be developed that includes mitigation of any impacts to the local community.

Operation

The proposal would generate local employment and procurement with employment of up to 60 people fulltime. It also has the potential to have positive social impacts due to the amount of waste being diverted from landfill and the reduced emissions associated with traditional electricity generation and landfills..

Operation of the proposal would have the potential to change the visual amenity of the surroundings, possibly impacting the community's way of life and connections to the land as it is introducing a new built form to the locality. The community has indicated significant concern with the impacts of the proposal on property values in the area, the landscape and character of the area, tourism to Bungonia National Park and their relaxed, rural lifestyle.

7.6.3 Indicative assessment scope

The EIS would include a Phase 2 SIA report which would be prepared in accordance with the *Draft Social Impact Assessment Guidelines* (2020) and build on the information and assessment in the Phase 1 SIA report. The Phase 2 SIA report would also include:

- targeted SIA consultation with key stakeholders and the community
- impact identification and assessment
- socio-economic impact management strategies.

7.7 Biodiversity

A desktop review of the biodiversity values of the proposal site was undertaken in September 2020 and initial rounds of seasonal surveys were undertaken in November 2020 and February 2021. The purpose of these surveys was to assess biodiversity impacts within the proposal site (see Figure 7.2).

7.7.1 Key features of the existing environment

Vegetation

Existing vegetation reflects a history of disturbance from the continued grazing by livestock. The derived native grassland on Lot 8 comprises of a diverse number of native grasses, forbs, orchids and shrubs. The patch of grassland on Lot 12 comprises mostly exotic grass and forb species.

The vegetation zones shown in Table 7.2 are located within the proposal site and within the broader study area.

Table 7.2 **Vegetation zones**

PCT	Condition	Vegetation integrity scores	BC Act listing	EPBC Act listing	Location
PCT 1103 Ribbon Gum - Yellow Box grassy woodland on undulating terrain of the eastern tablelands, South Eastern Highlands Bioregion	Poor condition	13.9	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed as Critically Endangered Ecological Community		Small patch in north portion of Lot 12
PCT 731 Broad-leaved Peppermint – Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion	Poor condition/ derived native grassland	44			Covers most of Lot 8
PCT 731 Broad-leaved Peppermint – Red Stringybark grassy open forest on undulating hills, South Eastern Highlands Bioregion	Poor condition/ex otic grassland	19.2			Covers most of Lot 12
PCT 888 Inland Scribbly Gum - Brittle Gum low woodland of the eastern tablelands, South Eastern Highlands Bioregion	Medium condition	67.2			Occurs as a thin strip along Jerrara Road
PCT 1299 - Wetlands on alluvial valley floors of the South Eastern Highlands Bioregion	Poor condition				Occurs as an emergent vegetation in the man made farm dams. Not impacted by the construction footprint
PCT 1103 Ribbon Gum - Yellow Box grassy woodland on undulating terrain of the eastern tablelands, South Eastern Highlands Bioregion	Medium condition		White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed as Critically Endangered Ecological Community	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed as Critically Endangered Ecological Community	Not on the proposal site. Occurs in the riparian zone adjoining Jerrara Creek.
PCT 1330 Yellow Box - Blakely's Red Gum grassy woodland on the tablelands, South Eastern Highlands Bioregion -	Good condition		White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed as Critically Endangered Ecological Community	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed as Critically Endangered Ecological Community	Not on the proposal sight. Occurs to the south of the site, upslope of the riparian zone adjoining Jerrara Creek.

Figure 7.1 provides an overview of the vegetation mapped within the region (Tozer et al 2010). Figure 7.2 provides an overview of the plant community types (PCTs) identified during the seasonal survey and survey locations.

Threatened flora species

A population of the Hoary Sunray (*Leucochrysum albicans* var. *tricolor*) was recorded in the derived native grassland in Lot 8 (Figure 7.3). The population comprises about 69 plants growing on the west-facing slope between the two dams. *Leucochrysum albicans* var. *tricolor* is listed as an endangered species under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

No additional threatened flora species were recorded during the targeted flora surveys in March. Visibility across the subject site was good, with minimal midstorey vegetation present, which allowed for easy sighting of all species in the understorey and midstorey. The site was also easily traversed on foot, with no barriers to human movement encountered during the field survey.

As such, field staff were able to traverse all areas of potential threatened flora habitat on foot, in a manner that reflected threatened species survey guidelines (DPIE, 2020; Cropper, 1993). It is unlikely that any other threatened flora species occur within the site, given they were not located by the team under suitable survey conditions.

The November and March survey rounds have now ensured that each of the candidate threatened flora species potentially present at the site have been surveyed at an appropriate time according to the Biodiversity Assessment Method 2020 (BAM).

Fauna habitat

The proposal site comprises a highly modified environment that has low structural and floristic diversity and provides limited habitat value for native fauna. Four fauna habitat types occur within the proposal site, including:

- Paddock trees
- Tableland Low Woodland
- Mixed species open grasslands
- Dams.

Native fauna species observed at the proposal site are those typical of modified agricultural landscapes, in particular bird species that forage in or over grassland areas.

The intact riparian vegetation adjoining Jerrara Creek is likely to provide habitat for a range of fauna species including insectivorous bats, woodland birds and mammals.

Threatened fauna species

The Large-eared Pied Bat (*Chalinolobus dwyeri*) was recorded on an Anabat device located on the site during the November surveys. The Large-eared Pied Bat is listed as a vulnerable species under the *Biodiversity Conservation Act 2016* (BC Act) and EPBC Act. Three other species listed under the BC Act had probable calls recorded on the site namely, Large Bent-wing Bat (*Miniopterus orianae oceanensis*), the Southern Myotis (*Myotis macropus*) and the Greater Broad-nosed Bat (*Scoteanax rueppellii*).

The Large-eared Pied Bat and Southern Myotis are likely to require species credits to offset the impact to the native vegetation on the site. Depending on the finalised footprint, any impacts to potential habitat for the threatened microbat species would be determined.

Figure 7.3 shows the location of threatened species and habitat resources.

7.7.2 Potential impacts

Construction

The biodiversity impacts associated to construction activities are limited as the proposal site is primarily located on land cleared of native vegetation. Construction activities associated with the connection of overhead power lines to

a 66 kilovolt substation would also have the potential to result in loss of fauna habitat and impacts on threatened/migratory species and endangered populations due to clearing of vegetation and/or tree removal. Impacts on terrestrial flora, habitat fragmentation and connectivity and impacts to fauna associated with noise and light also have the potential to occur as a result of construction activities. Noise mitigation measures would be addressed in the construction environmental management plan.

Operation

The proposal would be designed to minimise uncontrolled emissions or runoff to vegetated areas adjacent to the proposal site. Operation, including the introduction of artificial lighting, would be unlikely to have significant potential to impact on biodiversity.

7.7.3 Indicative assessment scope

The EIS would include a Biodiversity Development Assessment Report (BDAR), as well as a Vegetation Management Plan.

The BDAR would identify the terrestrial biodiversity values likely to be impacted by the proposal, describe avoidance measures undertaken to minimise impacts and identify offset requirements (if necessary).

The Vegetation Management Plan would outline the measures that would be applied to rehabilitate and manage vegetation being retained within the proposal site.

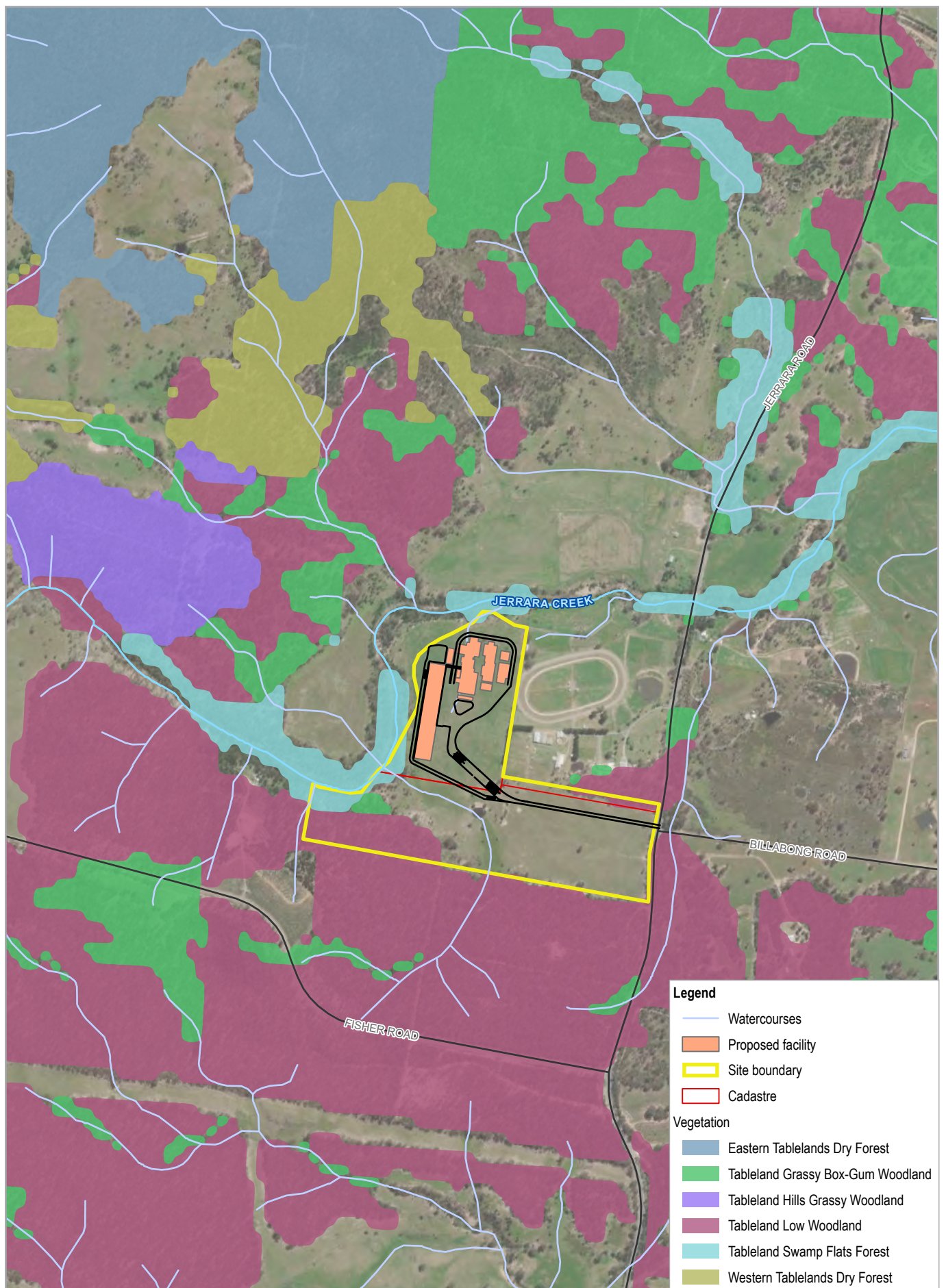
The proposed scopes for the BDAR and Vegetation Management Plan are outlined below.

BDAR

- processing of field data to describe the existing environment
- identification of the suite of potentially affected threatened biota
- assessment of impacts, including identification of steps taken to avoid or mitigate impacts
- BAM credit calculations (ecosystem and species credits, as applicable)
- detailed discussion of direct and indirect impacts on threatened biota, including assessment of impacts prescribed by the *Biodiversity Conservation Regulation 2017*
- assessment of potential impact on Groundwater Dependent Ecosystems
- identification of appropriate management and mitigation measures to avoid, minimise and mitigate the potential biodiversity impacts, including an assessment of options for offsetting impacts in accordance with the BAM.

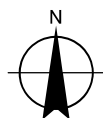
Vegetation Management Plan

- description of the vegetation being retained within the proposal site
- description of the restoration program to be applied to rehabilitate and manage retained vegetation
- assessment of the long term maintenance requirements
- description of a suitable monitoring and reporting program for retained vegetation
- an estimation of rehabilitation and management costs associated with implementing the Vegetation Management Plan.



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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

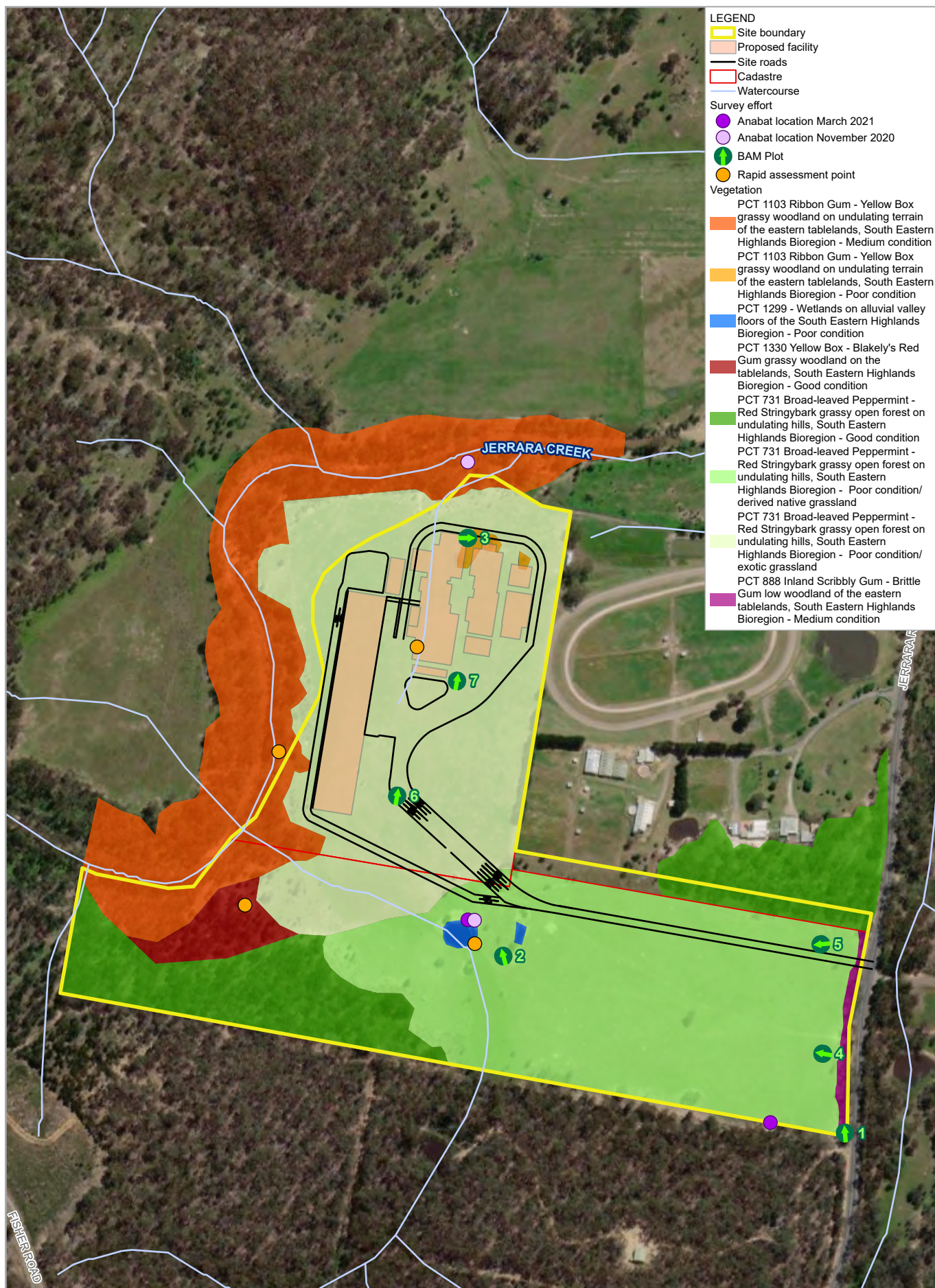


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Project No. 12533008
Revision No. 1
Date 25/05/2021

Vegetation map

FIGURE 7.1

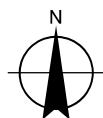


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Grid: GDA 1994 MGA Zone 55

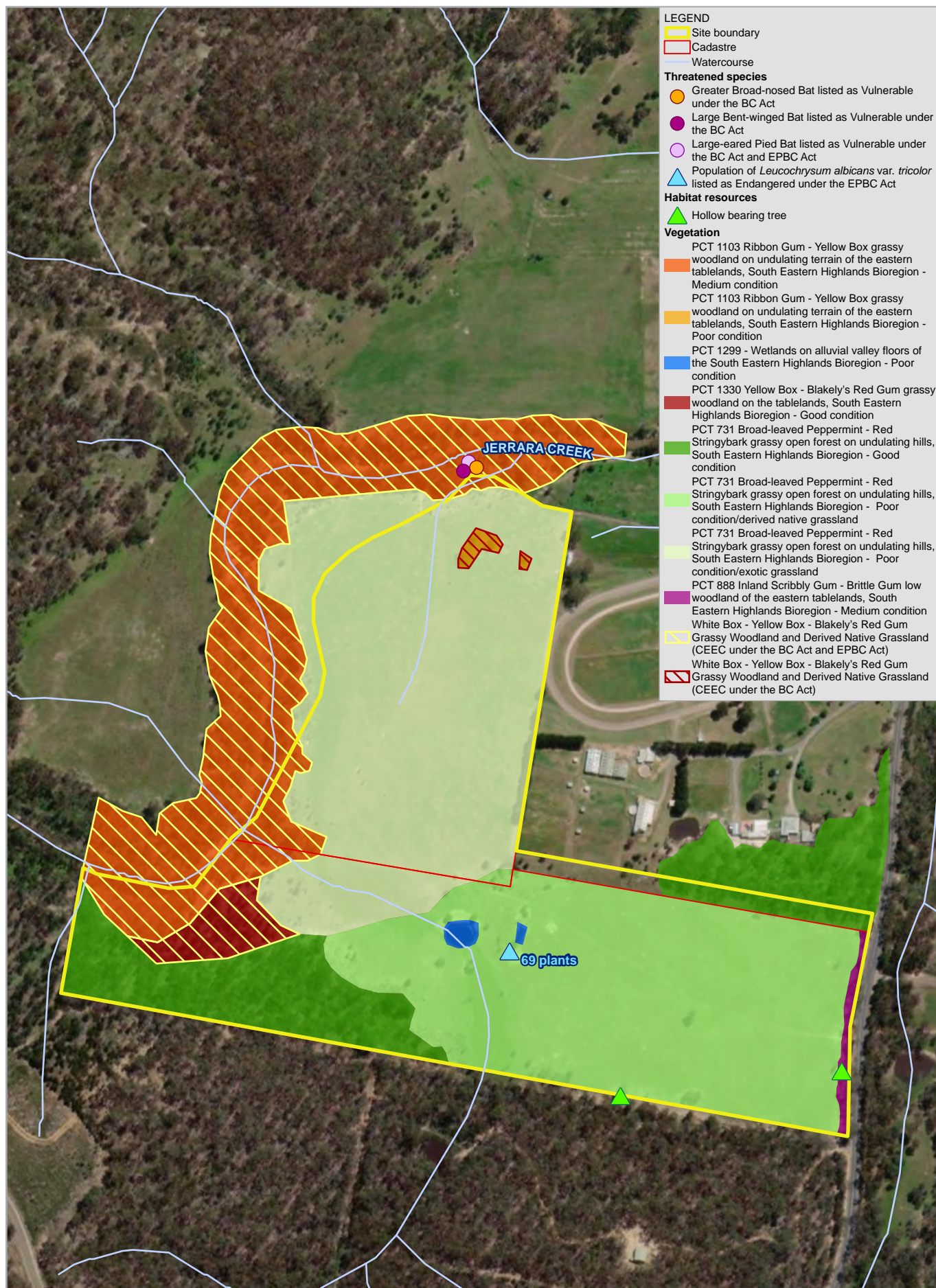


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Project No. 12533008
Revision No. 1
Date 25/05/2021

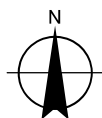
Vegetation and survey effort

FIGURE 7.2



Paper Size ISO A4
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Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



Jerrara Power Pty Ltd
Jerrara Power Energy from Waste Facility

Threatened biota and
habitat resources

Project No. 12533008
Revision No. A
Date 10 Jun 2021

FIGURE 7.3

7.8 Soil and surface water

7.8.1 Key features of the existing environment

The Goulburn 1:1000,000 Geological Map (Sheet 8828) shows the proposal site lithology as underlain by quaternary sediments including aeolian sand lunette deposit (Thomas et al. 2013).

The Great Soil Group classified on the proposal site are Red Podzolic Soils (OEH 2017). The proposal site is not mapped as containing acid sulphate soils.

The proposal site is located to the south of Jerrara Creek. A review of the mapped drainage line network, aerial imagery, as well as the requirements of the *Water Management Act 2000* was undertaken in September 2020.

The *Water Management Act 2000* uses the Strahler Stream Classification to categorise drainage lines that in turn determine the requirements for riparian setbacks (corridors). Drainage lines have been identified and mapped at the proposal site according to the Strahler, A (1952) methodology, as can be seen on Figure 7.6.

Watercourses mapped at the proposal site have been listed in Table 7.3.

The review of available mapping and aerial imagery also identified that several of the smaller drainage lines noted in Table 7.3 have potentially been altered through earthworks and now appear as 'cut channels' and are considered 'overland flow paths'.

The proposal site is located within the Sydney drinking water catchment – Shoalhaven Catchment.

A copy of these guidelines can be found in Appendix B.

Table 7.3 Watercourses and waterfront land at the proposal site

Watercourse ID	Mapped watercourse (NSW Department of Finance, Services and Innovation 2017)	NSW Department of Industry (DoI) Water's guidelines for riparian corridors (NSW Department of Industry 2018)
1	A 1st order stream which flows from the centre of Lot 12 north into Jerrara Creek.	1st order streams require a 10 metre setback on both sides of the drainage line measured from the 'top of bank' (total 20 metres plus channel width).
2	A 2nd order stream which enters Lot 8 from the higher land in the south and drains to Jerrara Creek via a dam in the centre of Lot 8.	2nd order streams require a 20 metre setback on both sides of the drainage line measured from the 'top of bank' (total 40 metres plus channel width).
3	The riparian corridor of Jerrara Creek, a 4th order stream.	4th order streams require a 40 metre setback on both sides of the drainage line measured from the 'top of bank'.
4	Dams	N/A

Flooding

The catchment size draining to the proposal site is about 52.08 km². A high-level flood assessment was undertaken in September 2020 using the Regional Flood Frequency Estimation (RFFE) model. The RFFE model identified that the 100 Average Exceedance Probability (AEP) event discharge is about 181 cubic metres per second through Jerrara Creek.

These results were comparable to an alternative method using the Rational Method. The results of this comparison identified that flooding during the 100-year AEP is possible, although unlikely.

7.8.2 Potential impacts

Construction

Construction activities, including earthworks and excavation, have the potential to impact existing surface water overland flow patterns across the proposal site. There is also the potential for erosion and sediment dispersion to impact the water quality within the vicinity of the proposal site. A sediment and erosion control plan would be implemented during construction to mitigate environmental impacts associated to surface water runoff.

Construction activities have the potential to locally alter existing flood behaviour due to the loss of flood plain storage (due to stockpiling construction materials and spoil) and in situations where alterations to existing stormwater drainage infrastructure are required.

Operation

Operation, including the permanent increase in the impervious area of the proposal site, has the potential to impact existing surface water flows.

A surface water management system would be implemented at the proposal site to manage flooding risks and runoff from the proposal site. The facilities would be located on a relatively higher elevation of the site.

Operation would have the potential to impact flood behaviour surrounding the proposal site as a result of the establishment of infrastructure within flood-prone areas and the need to protect this infrastructure from certain flood events.

The proposal would have a net water demand of around 70,000 kilolitres per year. Water would be sourced from a combination of rainwater harvesting on site and tankering to site.

During consultation, the community indicated concern with water run-off and any potential impacts to Jerrara Creek and the wider catchment area.

7.8.3 Indicative assessment scope

The EIS would include an assessment of potential impacts of the proposal on soils and water in the form of a soil and water impact assessment report. This would also include a qualitative flood assessment to review the potential for the adjacent waterway to impact on flooding.

A water balance assessment would be developed for operation of the proposal site that considers water supply, demand and reuse.

7.9 Hazards and risks

7.9.1 Key features of the existing environment

The existing environment and sensitive receivers within the vicinity of the proposal site has been detailed in section 2.4 and is also relevant to the hazards and risk assessment. In addition, the existing environment described in section 7.13 in relation to bush fire risk is also relevant to the hazards and risk assessment.

7.9.2 Potential impacts

Construction

Hazards and risks as a result of construction activities would be addressed through development of a construction environmental management plan. The plan would outline procedure and mitigation measures for any of the following that have the potential to cause health and environmental risks:

- accidental spills and leaks from materials handling, transport, transfer, use and the disposal of construction materials
- encountering contaminated land

- fire source through the operation of equipment, machinery and vehicles, careless acts by individuals or power supplies
- damaging or rupturing buried services and utilities.

Injuries to construction personnel have the potential to arise during construction as a result of working on a live construction site associated with the use of equipment and machinery and working near open excavations. Natural events such as flooding and adverse weather also have the potential to cause injuries and environmental risks.

Operation

Health and environmental impacts have the potential to arise during operation as a result of the following:

- fires within the bunker
- onsite emergencies
- diesel leaks from storage tanks
- equipment failure
- accidents
- onsite storage of waste
- use of hydraulically actuated processing equipment
- flue gas filtration systems
- use of combustion engine-powered loading shovels
- atypical conditions.

Appropriate control measures would be in place to mitigate impacts associated to hazards and incidents associated to dangerous goods such as hydrant systems, bunding, and spill kits.

7.9.3 Indicative assessment scope

The EIS would include a Preliminary Hazard Analysis (PHA) undertaken in accordance with the *Department's Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis' and Multi-Level Risk Assessment* (NSW Department of Planning 2011), including:

- details of fire/emergency measures and procedures
- detailed contingency measures for any potential incidents or equipment failure or in the event of a shutdown.

7.10 Noise and vibration

7.10.1 Key features of the existing environment

Background noise within the vicinity of the proposal site is considered to be characteristic of rural areas with low ambient noise levels. Noise would be associated with agricultural activities and road traffic.

As per section 7.3, a review of aerial imagery has identified that there are two residential dwellings within 500 metres of the proposal site and a further six within one kilometre (see Figure 2.3).

7.10.2 Potential impacts

Construction

Construction activities including earthworks, delivery of construction materials and operation of construction plant and equipment have the potential to generate noise and vibration impacts experienced by sensitive receivers, and specifically residences within close proximity to the proposal site. These impacts would be limited to the extent and duration of activities associated with construction of the proposal.

Operation

Operation has the potential to generate increased noise emissions within proximity to the proposal site. These impacts would be related to noise associated with the plant and equipment, as well as increased road traffic associated with the delivery of waste on Jerrara Road. All waste unloading would take place within the enclosed buildings. During consultation, the community expressed concern associated with potential noise from the operation of the facility and the additional truck movements on Jerrara Road.

7.10.3 Indicative assessment scope

The EIS would include a quantitative specialist noise and vibration assessment which would include:

- identifying noise and vibration sensitive receivers and other places
- documenting key design, construction, operating and modelling assumptions
- assessment of noise impacts from construction, including all stationary and mobile sources and construction traffic
- developing a strategy for managing construction noise and vibration if required for out of hours activities
- developing a strategy for managing operation noise and vibration.

The noise and vibration assessment would be undertaken with reference to the following guidelines:

- NSW Noise Policy for Industry (NSW EPA 2017)
- The Interim Construction Noise Guideline (Department of Environment and Climate Change NSW 2009)
- NSW Road Noise Policy (Department of Environment, Climate Change and Water NSW 2011)
- Assessing vibration: A technical guideline (Department of Environment and Conservation NSW 2006a).

7.11 Traffic, transport and access

7.11.1 Key features of the existing environment

The road network within the vicinity of the proposal site consists mainly of local roads and private rural roads. The main road within the vicinity of the proposal site is the Hume Highway which provides access to Jerrara Road via a southbound exit.

The proposal site is about 10 kilometres south of the Hume Highway and within 130 kilometres of Canberra, 140 kilometres of Wollongong and 180 kilometres of Sydney. Jerrara Road is a two-lane road frequented by heavy vehicles associated with quarrying activities to the south of the proposal site.

The proposal site is accessed via Jerrara Road which is adjacent to the eastern site boundary. Jerrara Road is accessed via the Marulan South and Bungonia exit on the Hume Highway to the north, and King Street to the south.

7.11.2 Potential impacts

Construction

Construction activities, including the increase of heavy vehicle movements on the local road network, have the potential to impact traffic along the haulage route and at key junctions.

Operation

During operation, there would be up to 52 heavy vehicles per day associated with delivery of waste, delivery of water, delivery of consumables and export of treated residuals. These vehicles would be multi-axle articulated vehicles (including some B-doubles).

During operation it is expected that the proposal would generate up to 30 personal vehicles per day (for staff).

The combination of these would have the potential to impact traffic and transport along the haulage route and at key junctions. During consultation, the community expressed concern about additional heavy vehicles on Jerrara Road. Their concerns include the current condition of the road, speed limit, school bus pick-ups and drop-offs, and the potential for an increase in wildlife collisions due to additional vehicles in the locality.

Operation of the proposal has the potential to require slight modifications to Jerrara Road, primarily acceleration/deceleration lanes at the proposal site entry/exit.

7.11.3 Indicative assessment scope

The EIS would include a specialist traffic, transport and access assessment which would include:

- confirmation of the existing traffic and transport environment
- identification and assessment of potential traffic impacts, including site access requirements
- proposed construction and operation traffic volumes, the nature of existing traffic and the need to apply traffic management measures
- identification and assessment of other potential transport impacts to public roads, including Jerrara Road and Hume Highway
- identification and assessment of potential access impacts
- consideration of the potential for cumulative impacts
- identification of mitigation measures.

The traffic, transport and access assessment would be undertaken with reference to the following guidelines:

- Roads and Maritime Services Guide to Traffic Generating Developments (Transport Planning Section, Sydney Client Service 2002)
- Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (Austroads 2020).

7.12 Landscape character and visual amenity

7.12.1 Key features of the existing environment

The landscape character of the area immediately surrounding the proposal site is defined by its rural and agricultural setting and is dominated by several large, self-contained blocks of land.

The proposal site is currently screened by dense, mature trees along Jerrara Road (see Figure 7.4).

There are three protected areas in the surrounding area. These include:

- Bungonia National Park (located seven kilometres east of the proposal site)
- Bungonia State Conservation Area (located seven kilometres south east of the proposal site)
- Pomaderris Nature Reserve (located 13 kilometres west of the proposal site).

The wider area around the proposal site is engaged in primary industry and includes a number of quarries and mines located on recognised resource and mineral land, forestry and agricultural farmlands. These quarries and mines include:

- Holcim, Lynwood Quarry (located 12 kilometres north of the proposal site)
- Gunlake Quarry (located 16 kilometres north of the proposal site)
- Boral Peppertree Quarry (located 10 kilometres north east of the proposal site)
- Boral Marulan South Limestone Mine (located 10 kilometres north east of the proposal site)
- Ardmore Park Quarry (located 9 kilometres south of the proposal site).



Figure 7.4 Existing screening on Jerrara Road

Source: GHD 2020

7.12.2 Potential impacts

Construction

The landscape character of the proposal site has the potential to be impacted as a result of construction activities. Additionally, construction activities would have the potential to result in visual impacts for nearby sensitive receivers including residential dwellings in the vicinity of the proposal site and users of Jerrara Road. Visual impacts to receivers along Jerrara Road would be limited by the existing screening vegetation.

Operation

The mass and scale of the proposal, as well as the stack and any visible plume, has the potential to impact the visual amenity of sensitive receivers within the vicinity of the proposal site and users of Jerrara Road. The proposal would also introduce a new built form to the locality.

During consultation, the community expressed some concern about the potential impact of the proposal on landscape character and visual amenity. The proposal would be designed in accordance with architectural principles to blend into the surrounding environment as much as possible.

7.12.3 Indicative assessment scope

The EIS would include a landscape and visual impact assessment to identify the potential visual impacts of the proposal on the nearest sensitive receivers, such as public roads, places of residence, work and recreation and provide mitigation measures. As part of this assessment, existing landscape character and sensitivity to change would be identified and an impact assessment completed based on the change to the landscape character and visual impacts as a result of the proposal.

The landscape and visual impact assessment would include photomontages, representing day images of the views of the proposal following completion of the proposed works from selected sensitive receiver locations. The photomontages would be prepared in accordance with accepted industry standards for visual impact assessment. A landscape concept plan would also be prepared.

The visual impact assessment would help to inform the social impact assessment.

7.13 Land use

7.13.1 Key features of the existing environment

The proposal site is located within 500 metres of two rural residential properties, and a further six within one kilometre (see sections 7.3). The existing use of the proposal site is livestock grazing. The proposal site is not identified as Biophysical Strategic Agricultural Land, which is land with high quality soil and water resources capable of sustaining high levels of productivity.

The proposal site is zoned RU2 Rural Landscape and surrounding land zoning includes E3 Environmental Management to the north and RU2 Rural Landscape to the east, south and west. Land uses within the vicinity of the proposal site include livestock grazing, rural landscape and unused land.

An overview of the land use zoning within the locality is provided in Figure 2.2.

7.13.2 Potential impacts

Construction

Construction activities and general work have the potential to introduce temporary changes in land use from the existing use of the proposal site to construction purposes.

Operation

During operation, direct land uses impacts have the potential to result from any change in use associated with the operation of the proposal and its associated facilities, including the loss of land for livestock grazing.

7.13.3 Indicative assessment scope

The EIS would include a high-level assessment of land-use impacts including the potential impacts of the proposal on property and land use.

7.14 Fire prevention and management

7.14.1 Key features of the existing environment

According to the Section 10.7 (2) Planning Certificate, the proposal site and surrounding land is defined as bush fire prone land. The land occupied by the proposal site (as defined in section 7.2) is classed as Bush fire Prone Land Vegetation Category 3 and adjoins large areas of heavily vegetated Bush fire Prone Land Vegetation Category 1.

Figure 7.5 provides an overview of the bush fire prone land within the vicinity of the proposal site.

7.14.2 Potential impacts

Construction

Construction, including operation of construction plant, equipment and machinery, has the potential to pose a bush fire risk.

Operation

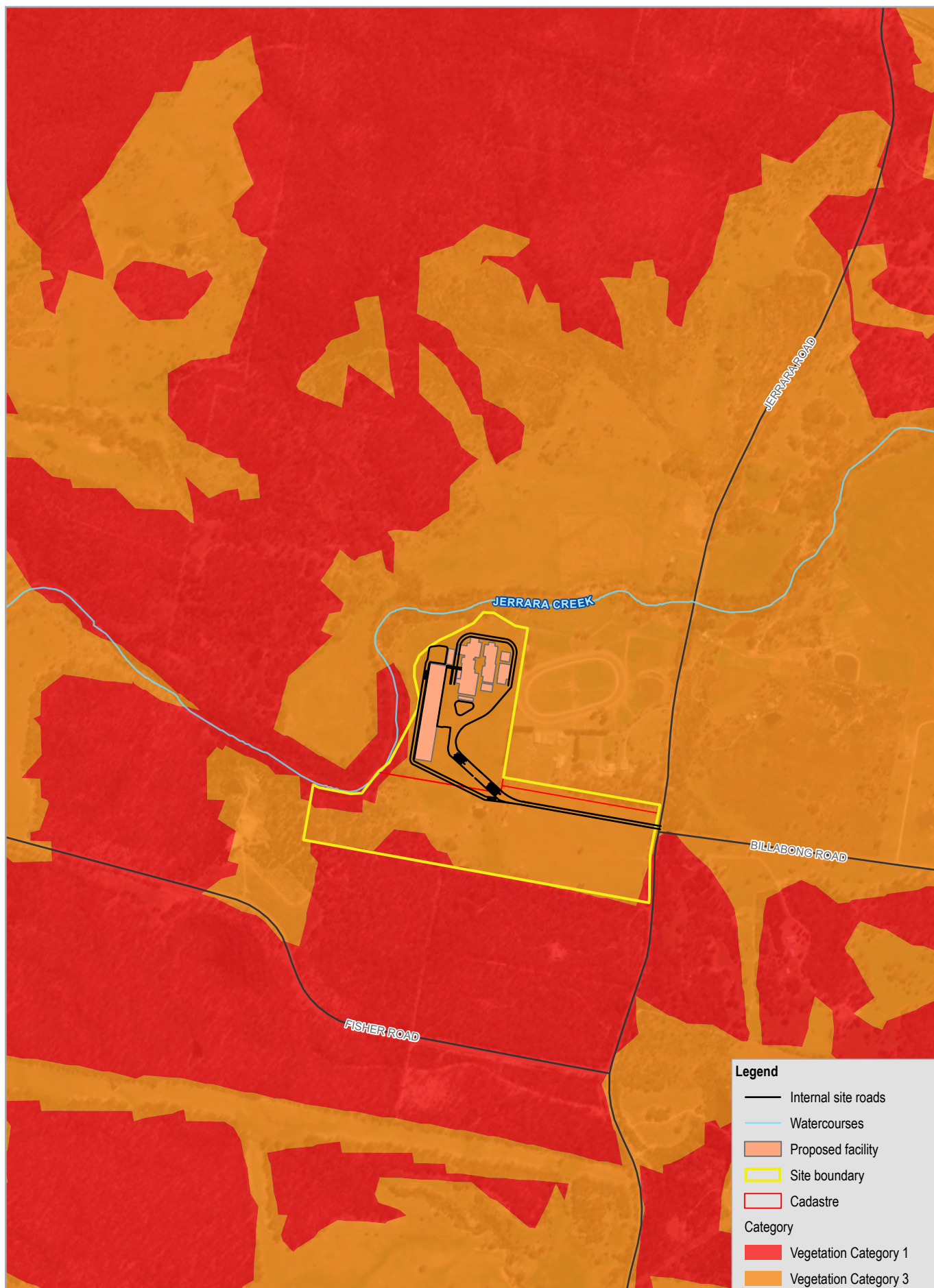
The overall nature of the operations of the proposal, including the storage of feedstock in the bunker, is an inherent fire risk. During consultation, the community expressed concern about potentials bush fire risk.

7.14.3 Indicative assessment scope

The EIS would include a Fire Management Plan that is prepared in consultation with the local NSW RFS District Fire Control Centre and addresses the following:

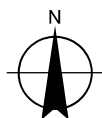
- potential bush fire threats to the facility
- potential hazards to fire fighters
- fire fighting water supplies
- vehicle access and defendable space
- bush fire mitigation opportunities to prevent or reduce impacts on the facility
- proposed emergency management procedures
- Bush fire Attack Levels and associated National Construction Code compliance requirements.

The bush fire assessment would also include the specific compliance requirements for the Planning for Bush Fire Protection 2019 (NSW Rural Fire Service, 2019).



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Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



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Bush fire prone land

FIGURE 7.5

7.15 Land contamination

7.15.1 Key features of the existing environment

A search of the EPA Contaminated Land Record website undertaken for Goulburn Mulwaree LGA indicated that no notices have been issued in the vicinity of the proposal site under the *Contaminated Land Management Act 1997*.

A search of the List of NSW Contaminated Sites Notified to the EPA on 17 December 2020 indicated that no notifications of contaminated land have been received by the EPA in the vicinity of the proposal site.

7.15.2 Potential impacts

Construction

The migration of potential contaminants during construction would be managed under the construction environmental management plan to be developed for the proposal site. Construction, including the erosion of soils, spills and leaks from construction equipment and vehicles, the storage of fuel and the inappropriate disposal of general waste or litter, has the potential to cause contamination issues.

Operation

The proposal site would be designed and operated to contain waste materials or litter from incoming trucks and leaks and spills from plant and equipment that have the potential to cause contamination issues. Incident response procedures would be addressed in operational management plans and reported in accordance with licencing conditions.

7.15.3 Indicative assessment scope

The EIS would include a preliminary site investigation report that would assess the potential for widespread and/or gross contamination to exist at the proposal site from past or present activities. The preliminary site investigation report would also include a review of published information geology, topography, acid sulphate soils and soil landscape maps, as well as recommendations for further investigations and/or contamination management in relation to the proposal (if applicable).

The preliminary site investigation would be undertaken with reference to the NSW EPA (2020a) *Consultants Reporting on Contaminated Land – Contaminated Land Guidelines*; and the State Environmental Planning Policy No 55 – Remediation of Land (1998) and reviewed and/or approved by a certified environmental practitioner (site contamination).

7.16 Groundwater

7.16.1 Key features of the existing environment

The proposal site is located proximate to the Mulwaree Hydrogeological Landscape based on geology sheets Goulburn 1:100,000 and Taralga 1:100,000. The Mulwaree Hydrogeological Landscape incorporates a large area to the north and south of Goulburn.

Aquifers in the landscape are unconfined with groundwater flow primarily through fractures in bedrock and saprolite. Recharge of the aquifers are moderate to high with short to intermediate flow lengths. The aquifer transmissivity is estimated to be low with a range less than two m²/day. Further investigation would be undertaken as part of the EIS to characterise groundwater conditions at the site.

7.16.2 Potential impacts

Construction

Below ground construction activities such as excavation for the waste bunker would have the potential to impact on groundwater. Potential impacts to groundwater would be confirmed following a groundwater investigation, which would identify the depth to groundwater and quality of existing groundwater. An erosion and sediment control plan would be developed to mitigate potential impacts to groundwater arising from on site management of construction water.

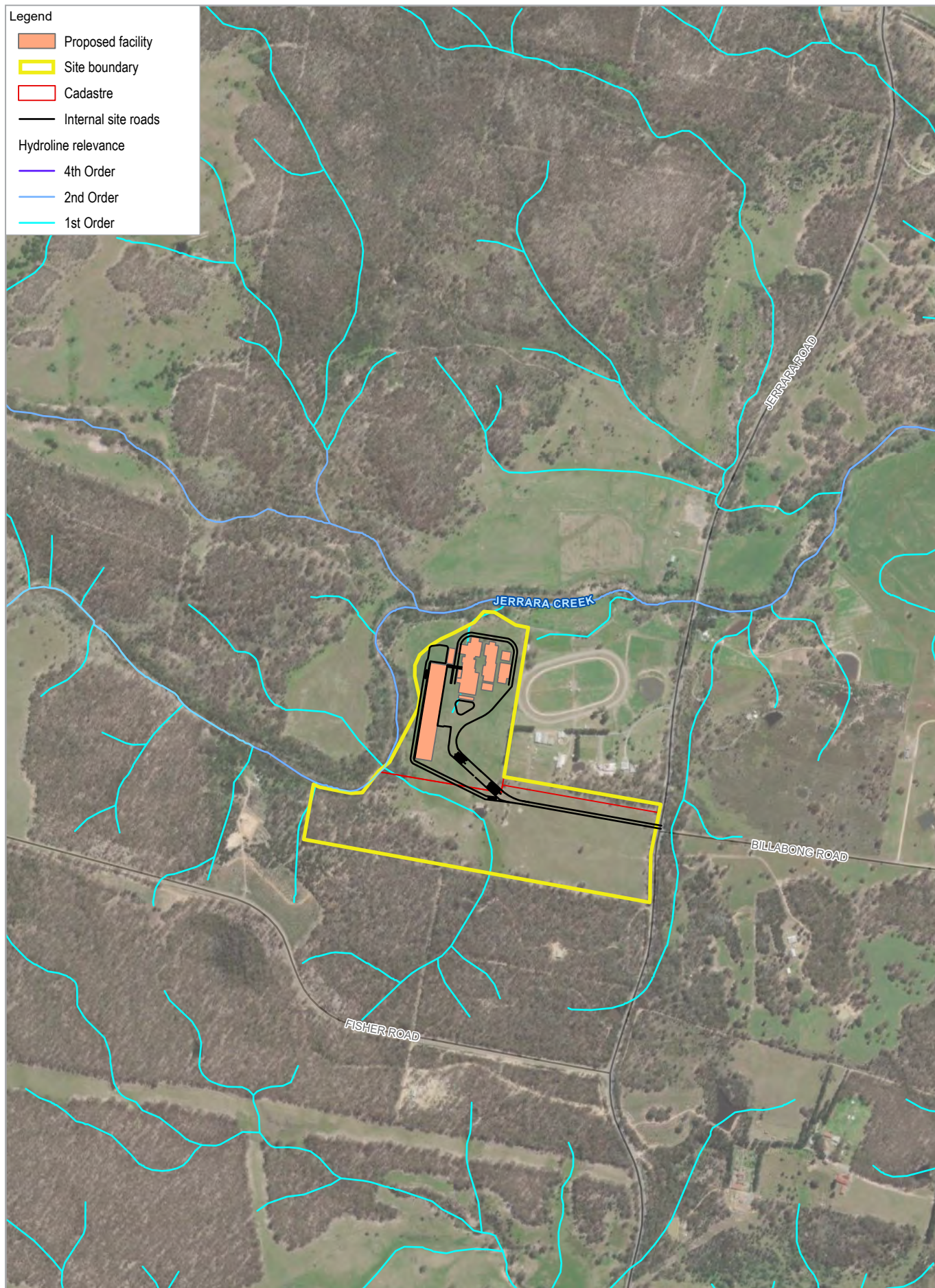
Operation

Operation, including the permanent increase in the impervious area of the proposal site, has the potential to impact groundwater recharge. The introduction of below ground structures such as the waste receival bunker, waste storage bunkers (subject to design development) and foundations has the potential to impact groundwater.

During consultation, the community expressed concern about potential impacts of the proposal on groundwater.

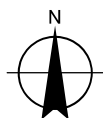
7.16.3 Indicative assessment scope

A qualitative assessment would be undertaken to review potential impacts to groundwater. As part of the assessment, a site investigation would take place including installation of groundwater monitoring bores to provide information on groundwater depth. Appropriate mitigation measures would be identified.



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Map Projection: Transverse Mercator
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**Drainage lines associated
with the site**

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FIGURE 7.6

7.17 Aboriginal heritage

7.17.1 Key features of the existing environment

A preliminary search of the Aboriginal Heritage Information Management Systems (AHIMS) was undertaken to identify items of Aboriginal heritage cultural significance within one kilometre of the proposal site.

No items of Aboriginal cultural heritage significance have been recorded within one kilometre of the proposal site.

A summary of the AHIMS search results can be found in Appendix C.

7.17.2 Potential impacts

Construction

Construction would not result in any direct or indirect physical impacts to any known items of Aboriginal cultural heritage significance.

Operation

Operation would not result in any direct or indirect physical impacts to any known items of Aboriginal cultural heritage significance.

7.17.3 Indicative assessment scope

The EIS would include a due diligence assessment of Aboriginal heritage.

7.18 Non-Aboriginal heritage

7.18.1 Key features of the existing environment

A desktop search of the relevant NSW and Commonwealth databases, and of the Goulburn Mulwaree LEP was undertaken in September 2020 for items of non-Aboriginal heritage cultural significance within the suburbs of Marulan and Bungonia. A search of these suburbs was undertaken due to their proximity to the proposal site.

No items of non-Aboriginal cultural heritage significance were identified within 200 metres of the proposal site.

7.18.2 Potential impacts

Construction

Construction would not result in any direct or indirect physical impacts to any known items of non-Aboriginal heritage cultural significance.

Operation

Operation would not result in any direct or indirect physical impacts to items of non-Aboriginal cultural heritage significance.

7.18.3 Indicative assessment scope

The EIS would include a general assessment of non-Aboriginal heritage.

8. Conclusion

Jerrara Power is proposing to construct and operate an energy from waste facility to process up to 330,000 tonnes of residual municipal solid waste and commercial and industrial waste each year to generate sustainable baseload electricity.

The proposal is permissible with consent and is considered SSD. An EIS would be prepared to accompany the SSD application for the proposal. The EIS would be prepared in consultation with key stakeholders and the community and would consider the potential environmental impacts of the proposal.

The proposal responds to the NSW Government's *Waste and Sustainable Materials Strategy 2041*, which identifies the need for energy recovery facilities to assist in managing residual wastes in the future, as part of an integrated approach to waste management in NSW.

The scoping report has been prepared to provide an overview of the proposal, key features of the existing environment, potential impacts and indicative assessment scopes and to enable DPIE to issue SEARs for preparation of the EIS.

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Appendices

Appendix A

Phase 1 Social Impact Assessment Report

Energy from Waste Facility

Phase 1 Social Impact Assessment

Jerrara Power Pty Ltd

27 May 2021



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Abbreviations and glossary of terms

Term	Definition
ABS	Australian Bureau of Statistics
Amenity and character	The noise, air quality, and visual amenity of the area provide for the enjoyment of residents and create a recognizable and distinctive character (Wood et al. 2008)
Community values	Community values, or a sense of community, are the social ties established within a community, in part based around the features and qualities of the built environment that encourage these social ties and contribute to quality of life and wellbeing. A project may impact on these aspects of a community for example through changes in noise and air quality, visual amenity, traffic and access, barriers to movement across the community, and use of enjoyable community spaces (Maller and Nicholls 2014, 17–32).
Community infrastructure	Community infrastructure refers to the “community facilities, services and networks which help individuals, families, groups and communities meet their social needs, maximize their potential for development and enhance community wellbeing. They include: universal facilities and services such as education, training, health, open space, recreation and sport, safety and emergency services, religious, arts and cultural facilities, and community meeting places lifecycle-targeted facilities and services, such as those for children, young people and older people targeted facilities and services for groups with special needs, such as families, people with disabilities, and Indigenous and Cultural and linguistically diverse people” (Clarence Valley Council 2009, 7).
DPIE	Department of Planning, Industry and Environment
EIS	Environmental impact statement
IRSAD	Index of Relative Socio-economic Advantage and Disadvantage
LGA	Local government area
NSW	New South Wales
Secretary’s environmental assessment requirements (SEARs)	Requirements and specifications for an environmental assessment prepared by the Secretary of the Department of Planning and Environment under section 5.16 of the Environmental Planning and Assessment Act 1979 (NSW).
SEIFA	Socio-Economic Indexes for Areas includes a range of indexes developed by the Australian Bureau of Statistics to rank areas in Australia according to relative socio-economic advantage and disadvantage.
SIA	Social impact assessment
Social cohesion	Social or community cohesion can be understood as “the bonds and relationships people have with their family, friends and the wider community. Day to day interactions between people in a community build trust and reciprocity and contribute to cohesion” (ABS, 2010).
SSC	State Suburb Code
Stakeholder	Person or group affected by or concerned with an issue.
Vulnerable group	The inability of people to withstand or adapt to change due to characteristics of the group they are a part of. This report considers the following groups: socio-economically disadvantaged persons as identified by the Index of Relative Socio-Economic Advantage and Disadvantage, the elderly and very young, culturally and linguistically diverse people, people who need assistance with core activities such as self-care, movement and communication due to a severe or profound disability.

1. Introduction

1.1 Overview

Jerrara Power Pty Ltd (Jerrara Power) proposes to construct and operate an energy from waste facility (the proposal) in Bungonia. The proposal would have the capacity to thermally treat up to 330,000 tonnes per year of residual municipal and commercial and industrial waste that would ordinarily be directed to landfill. The treated waste would be converted to electricity, generating up to 30 megawatts of power. This is enough electricity to power 43,000 homes (GHD 2021).

The proposal is located in the Goulburn Mulwaree Local Government Area (LGA) at 974 Jerrara Road, Bungonia (Lot 8 and Lot 12 of DP 750022). Goulburn is the nearest regional city located about 21 kilometres north-west of the proposal site.

1.2 Purpose of this report

This Phase 1 Social Impact Assessment (SIA) report has been prepared to support the Environment Impact Assessment (EIS) Scoping Report to inform the Secretary's environmental assessment requirements (SEARs) for the preparation of an EIS. This report has been prepared with regard to the Department of Planning, Industry and Environment's (DPIE) *Draft Social Impact Assessment Guideline. State significant projects* (2020).

2. Methodology

This section describes the steps GHD undertook to prepare this Phase 1 SIA, which has been informed by the *Draft Social Impact Assessment Guideline. State significant projects.* (DPIE 2020). The purpose of this Phase 1 SIA is to explain the rationale, assumptions and likely evidence to be used in the SIA, as well as the intended process for delivering the Phase 2 SIA. Specifically, this report:

- describes characteristics of the social locality (see section 2.1)
- identifies potential social impacts, issues and benefits of the proposal
- identifies next steps and opportunities for community engagement required to inform the Phase 2 SIA.

2.1 Understanding the social locality

A preliminary social locality was identified based on the project site, and the communities that are considered most likely to experience impacts or benefits as a result of the proposal. This is outlined in Table 2.1 and Figure 2.1.

Table 2.1 Preliminary social locality study area

Area (Census area)	Interaction with proposal
Bungonia (State Suburb Code (SSC))	The proposal site is located within the suburb of Bungonia. Local residents, businesses and users of social infrastructure and services in Bungonia are likely to experience the impacts and benefits during construction and operation of the proposal.
Marulan (SSC)	The proposal site adjoins the suburb of Marulan on its northern boundary. Local residents, businesses and users of social infrastructure and services in Marulan may experience some impacts and benefits during construction and operation of the proposal due to its proximity to the proposal site.
Goulburn Mulwaree LGA	Bungonia and Marulan are located in Goulburn Mulwaree LGA. Communities across the LGA may experience some regional impacts and benefits during construction and operation of the proposal.

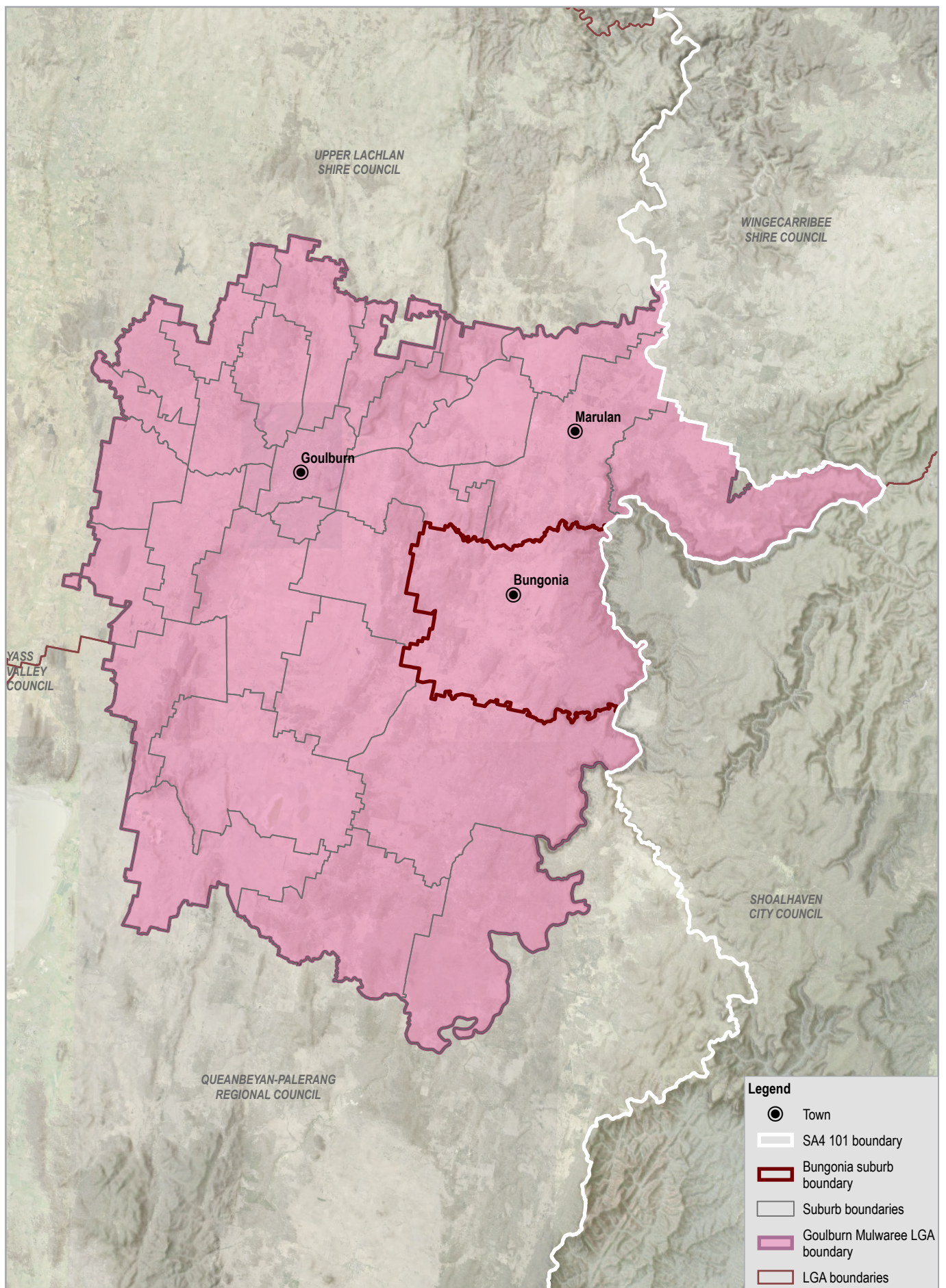
Characteristics of the social locality have been analysed and described (section 3), which include a summary of:

- key features and amenity
- access and connectivity
- population characteristics
- economic and employment profile
- indicators of community vulnerability
- housing and accommodation availability
- community facilities and services in Bungonia.

The purpose of this analysis was to identify defining characteristics of the communities in the social locality and any vulnerable groups, communities, or stakeholders. Key findings of this analysis are outlined in section 3.8. Data used to inform this analysis included:

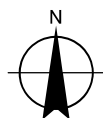
- Jerrara Power Energy from Waste Facility EIS Scoping Report
- Australian Bureau of Statistics (ABS) Census 2016
- employment / economic data (such as REMPLAN and profile.id)
- local government websites and publications
- various online sources
- relevant online media articles.

A list of references is available in section 6.



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Kilometres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



Jerrara Power Pty Ltd
Jerrara Power Energy from Waste Facility

Project No. 12533008
Revision No. 1
Date 25/05/2021

Social locality

FIGURE 2.1

2.2 Preliminary evaluation of social impacts and benefits

In accordance with *Draft Social Impact Assessment Guideline. State significant projects* (DPIE 2020), a social impact is defined as a consequence experienced by people due to changes associated with a proposal. To inform the next steps for the SIA and community engagement, a preliminary evaluation of potential social impacts and benefits was undertaken.

Potential social impacts have been identified based on the potential impacts identified and described in the EIS Scoping Report, understanding of the social locality (section 3), and professional experience. Following the approach taken in the Scoping Report, impacts have been identified based on whether they would occur during the pre-construction and construction phases, and during the operation phase. Impacts have been grouped according to the categories outlined in Table 2.2, which have also been informed by the social impact categories described in *Draft Social Impact Assessment Guideline. State significant projects* (DPIE 2020).

Table 2.2 Social impact categories

Social impact category	Social impact categories as per DPIE Draft SIA Guideline							
	Way of life	Community	Accessibility	Culture	Health and wellbeing	Surroundings	Livelihoods	Decision making systems
Property and land use	X	X			X		X	X
Amenity and character		X			X	X		
Access and connectivity	X		X					
Economy, employment and business	X						X	
Housing and accommodation	X							
Social cohesion	X	X		X				

The identified social impacts have been described (refer Table 4.1) according to the five characteristics described in Table 2.3.

Table 2.3 Characteristics of social impact magnitude

Social impact characteristics	Details needed to enable assessment
Extent	Who specifically is expected to be affected (directly, indirectly, and/or cumulatively), including any potential vulnerable people? Which location(s) and people are affected? (e.g. near neighbours, local, regional)
Duration	When is the social impact expected to occur? Will it be time-limited (e.g. over particular project phases) or permanent?
Severity or scale	What is the likely scale or degree of change? (e.g. mild, moderate, severe)
Sensitivity or importance	How sensitive/vulnerable (or how adaptable/resilient) are affected people to the impact, or (for positive impacts) how important is it to them? This might depend on the value they attach to the matter; whether it is rare/unique or replaceable; the extent to which it is tied to their identity; and their capacity to cope with or adapt to change
Level of concern / interest	How concerned/interested are people? Sometimes, concerns may be disproportionate to findings from technical assessments of likelihood,

Social impact characteristics	Details needed to enable assessment
	duration and/or severity. Concern itself can lead to negative impacts, while interest can lead to expectations of positive impacts

Based on the impact descriptions, a preliminary assessment was undertaken to identify which social impacts or benefits may be significant for different groups in the social locality. Significance of social impacts and benefits has been assessed using responses outlined in Table 2.4.

Table 2.4 *Significance responses*

Response	Description
Yes	The social impact / benefit is likely to be significant
No	The social impact / benefit is unlikely to be significant
Unknown	It is unknown whether the social impact is likely to be significant

A level of assessment has then been identified for each social impact. This will assist with determining the extent of effort and data required to assess the impact in a Phase 2 SIA. Table 2.5 outlines the thresholds that have generally been considered to inform the level of assessment for each impact.

Table 2.5 *Guide to determining levels of assessment*

Threshold	Level of assessment of the impact	Meaning
Three or more 'yes' or 'unknown' significant characteristics	Detailed assessment	Impact will not be assessed in other EIS technical studies and will be primarily assessed by specialists in the Phase 2 SIA.
Two 'yes' or 'unknown' significant characteristics	Standard assessment	Impact will be partially assessed in other EIS technical studies, however further information and evaluation is required.
One 'yes' or 'unknown' significant characteristics	Desktop integration assessments	Impact will be mostly assessed in other technical studies in the EIS, and desktop review will cross-reference and integrate those studies in the SIA Report.
No 'yes' or 'significant' characteristics	No further assessment	The social impact is unlikely to be experienced by anyone, although a monitoring framework will incorporate mechanisms to respond to unanticipated impacts.

It should be noted that the assessment of significance is preliminary and therefore does not assess the magnitude or likelihood level or level of significance for identified social impacts. This would be undertaken in a Phase 2 SIA if undertaken during the EIS.

2.3 Identifying next steps

The proposed approach to a Phase 2 SIA is outlined in section 5 which is based on the outcomes of the preliminary evaluation of social impacts and benefits described in section 4. Research methods to explore social impacts have been identified to confirm the approach for Phase 2 SIA, including recommended consultation considerations for the SIA and EIS.

3. Social locality

3.1 Overview of the social locality

The proposal site is located in the suburb of Bungonia, which is a small community in the Goulburn Mulwaree LGA. Goulburn Mulwaree LGA is located approximately one hour from Greater Sydney, one hour from Canberra and within the Southern Tablelands of NSW (Goulburn Mulwaree Council 2020). Two thirds of its residents live in the township of Goulburn, however there are also a number of rural localities that service local rural communities. These include Marulan, Middle Arm, Tarago, Tallong, Bungonia, Lake Bathurst, Towrang, Windellama and Parkesbourne (Goulburn Mulwaree Council 2020). The community's sense of identity is shaped by its strong rural character, natural environment and historic heritage (Goulburn Mulwaree Council n.d.).

The main south (southern highlands) rail line provides an important link between Sydney and the Goulburn Mulwaree LGA (Transport for NSW 2016). This line has train stations in Tallong, Marulan and Goulburn, and allows travellers to commute to Sydney via Macarthur and Campbelltown Stations (Transport for NSW 2016). It is also serviced by the Hume Highway and the Federal Highway (.id community n.d).

Bungonia is located approximately 21 kilometres south-east of Goulburn. It is characterised by its rural and agricultural setting and is dominated by several large, self-contained blocks of land (GHD 2021). The proposal site is currently used for livestock grazing and is within one kilometre of four rural residential properties, and a further two within 500 metres (GHD 2021). It is located to the north of Mountain Ash Road, to the west of Jerrara Road and to the south of Hume Highway. The proposal site also adjoins the suburb of Marulan, which is known for its four quarries located on recognised resource and mineral land, forestry and agricultural farmlands (GHD 2021).

The Bungonia district was settled in the early 1820s, with many of the original village residents being convicts. In the early 19th century, Bungonia was expected to become a major centre, however it subsequently proved unsuitable for intensive agriculture (Goulburn Australia n.d.).

There are three protected areas in the surrounding area. These include:

- Bungonia National Park (located seven kilometres east of the proposal site)
- Bungonia State Conservation Area (located seven kilometres south east of the proposal site)
- Pomaderris Nature Reserve (located 13 kilometres west of the proposal site).

Bungonia is a small village with few services and facilities (discussed in section 3.5), with residents likely to travel to Goulburn for shopping and services. Bungonia is accessed from the Hume Highway via Jerrara Road and Mountain Ash Road.

3.2 Demographic characteristics

3.2.1 Population

In 2019, the estimated resident population of Goulburn Mulwaree LGA was 31,132 people. This increased from 27,654 people in 2009. In 2016, the suburb of Bungonia had a population of 367 people, representing 1.2 per cent of the Goulburn Mulwaree LGA (Table 3.1).

Table 3.1 Total population

	Total population
Bungonia	367
Marulan	1,178
Goulburn Mulwaree LGA	29,609

Source, ABS Census 2016

In 2016, there was a higher proportion of Indigenous residents in Bungonia (5.2 per cent) compared to Marulan (3.9 per cent), Goulburn Mulwaree LGA (4.0 per cent) and Capital Region (3.6 per cent) (Table 3.2). However, it is important to note the very small population size of Bungonia.

Table 3.2 *Indigenous population, 2016*

	Aboriginal or Torres Strait Islander	
	%	No.
Bungonia	5.2%	19
Marulan	3.9%	46
Goulburn Mulwaree LGA	4.0%	1,185
Capital Region	3.6%	7,875

Source, ABS Census 2016

3.2.2 Age and sex profile

As shown in Table 3.3, in 2016, the social locality had a balanced sex profile.

Table 3.3 *Sex profile, 2016*

	Male	Female
Bungonia	47.1%	43.9%
Marulan	51.9%	47.6%
Goulburn Mulwaree LGA	50.5%	49.4%
Capital Region	49.9%	50.1%

Source, ABS Census 2016

N.B: Sums may not equate to 100.

The population pyramid, as shown in Figure A.1 indicates that there was a greater proportion of females aged 10 to 14 years than males in 2016. There was a balanced ratio of males and females aged 35 to 79 years, and no male residents aged over 84 years. Further to this, there were also no females aged 20 to 24 years in Bungonia in 2016.

The median age for Bungonia was 49 years, which was higher than Marulan (41 years), Goulburn Mulwaree LGA (42 years) and Capital Region (44 years). This is reflected in the age profile shown in Figure 3.1.

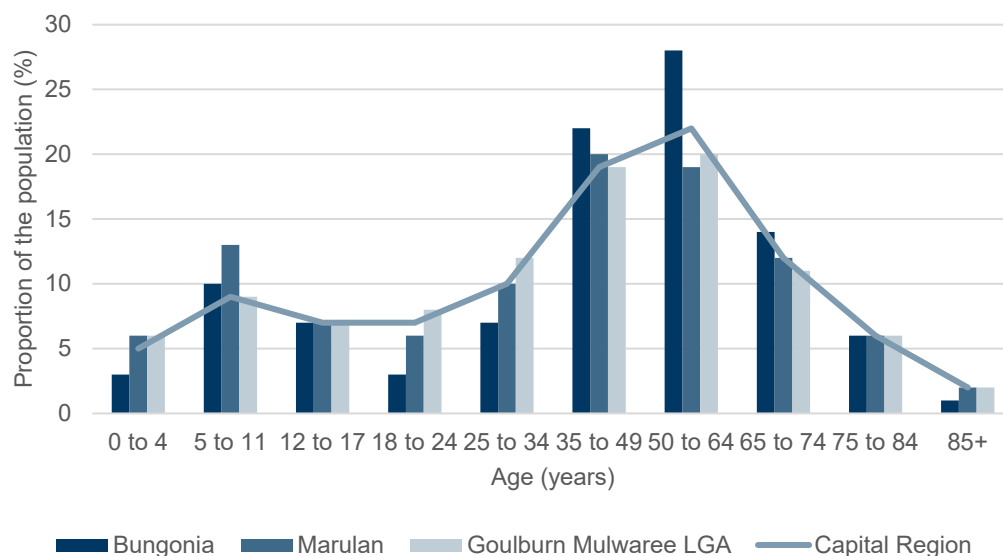


Figure 3.1 Age profile, 2016

Source, ABS Census 2016

3.2.3 Cultural diversity

As shown in Figure 3.2, small proportions of the population across the social locality spoke a language other than English at home. The majority of residents in the social locality were born in Australia.

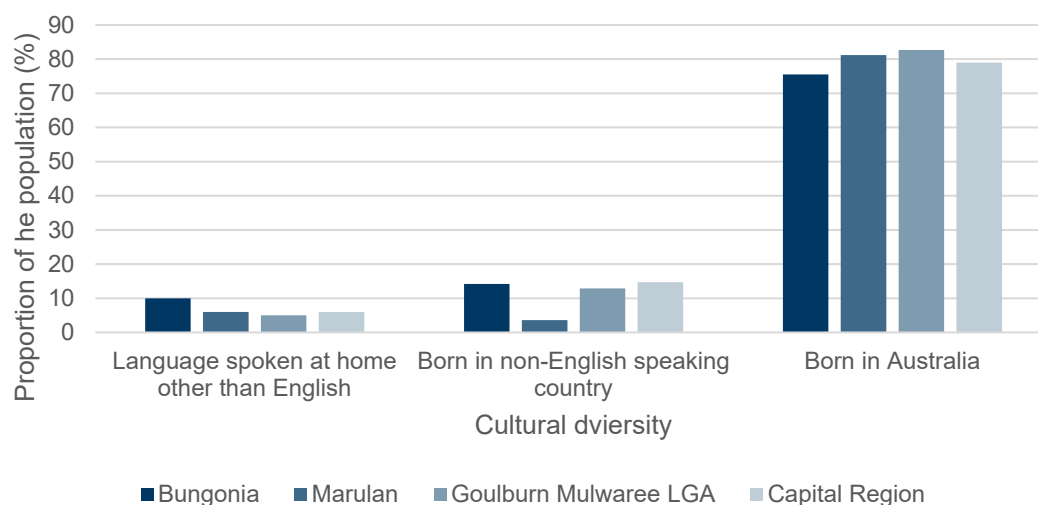


Figure 3.2 Languages spoken, 2016

Source, ABS Census 2016

3.2.4 Family and households

Average household sizes are generally consistent across the social locality, from 2.3 persons per household in Bungonia, to 2.6 in Marulan and 2.4 in Goulburn Mulwaree LGA and Capital Region.

Household composition is consistent across the social locality, with the majority of households being family households (Figure 3.3). However, family composition differs slightly, with Bungonia and Marulan having more families without children compared to the LGA (50 per cent, 44.3 per cent, 41.3 per cent respectively) (Figure 3.4).

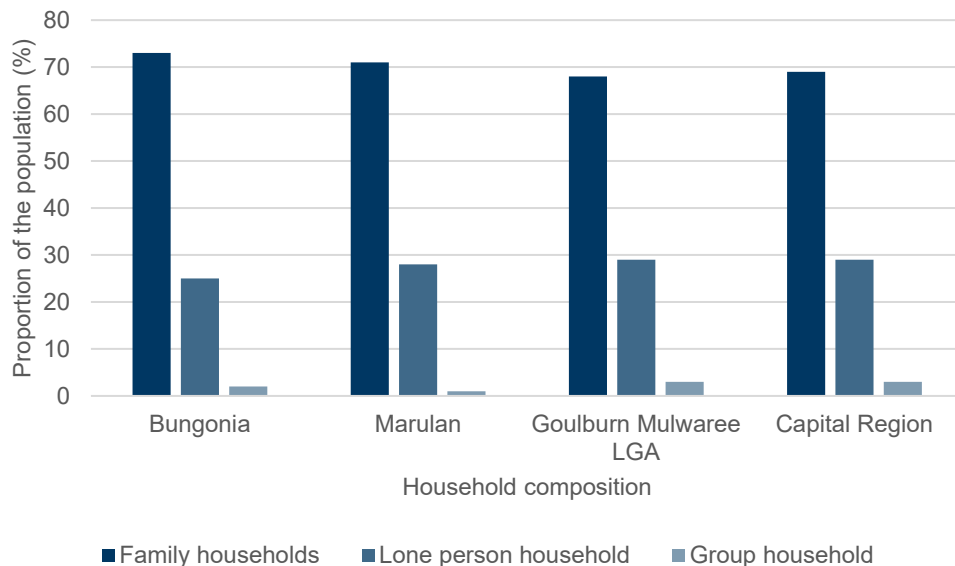


Figure 3.3 Household composition, 2016

Source, ABS Census 2016

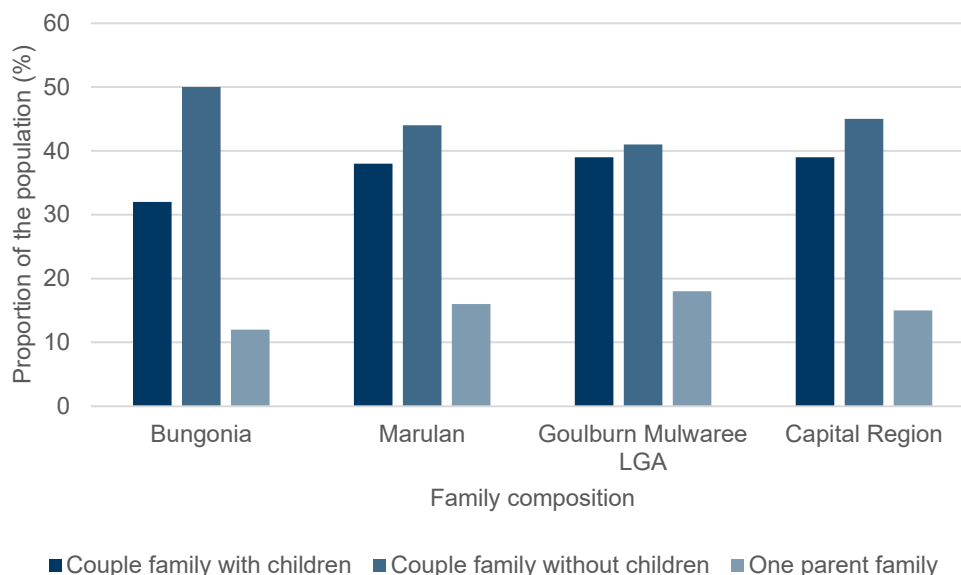


Figure 3.4 Family composition, 2016

Source, ABS Census 2016

3.2.5 Education and training

Overall, education levels are fairly consistent across Bungonia, Marulan and the Goulburn Marulan LGA. However, compared to the Capital Region, less residents aged 15 years and over have completed Year 12 (Figure 3.5)

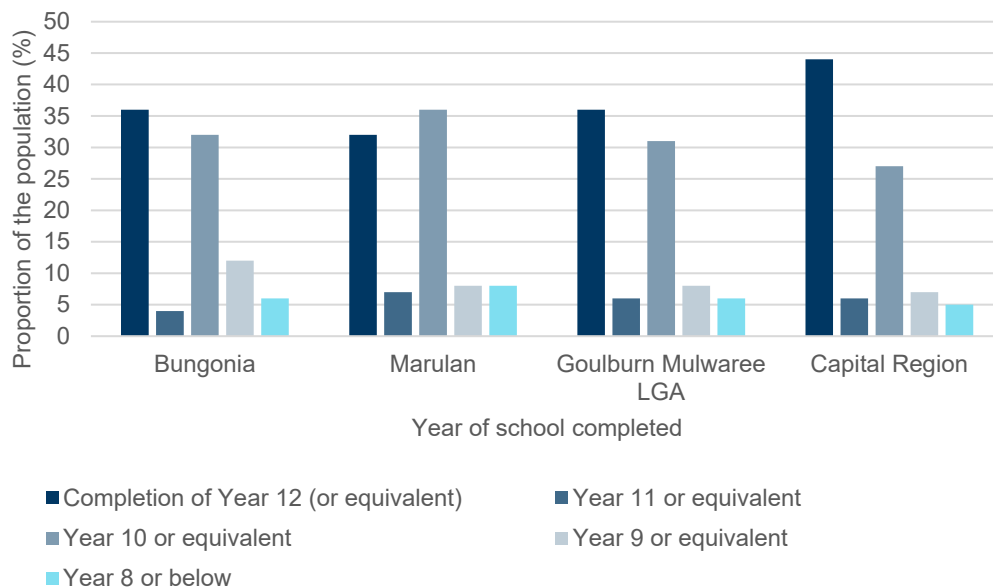


Figure 3.5 Highest year of secondary school completed, 2016

Source, ABS Census 2016

As shown in Figure 3.6, Bungonia residents with post-school qualifications are less likely to have a post-graduate degree or graduate diploma, while Marulan residents are more likely to have a certificate level post-school qualification.

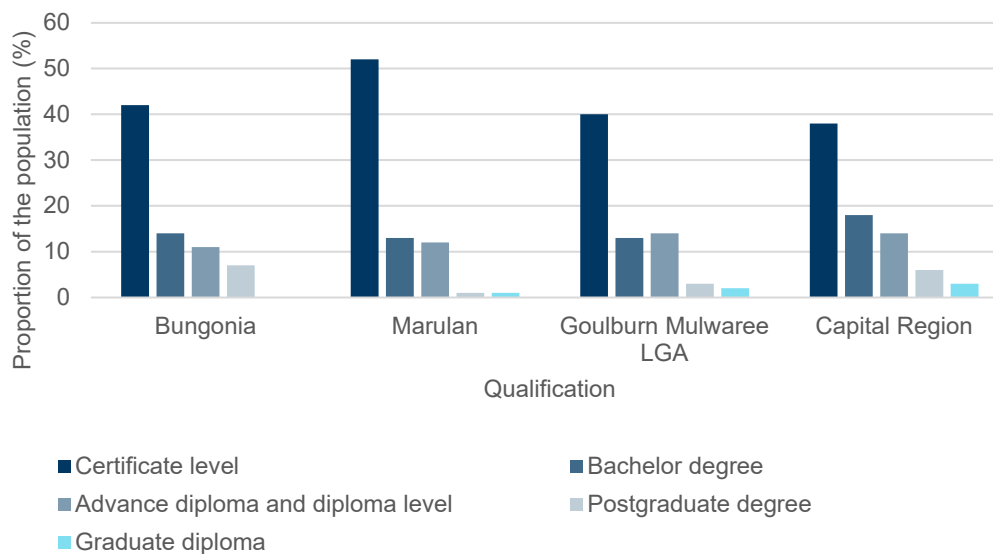


Figure 3.6 Non-school qualification, 2016

Source, ABS Census 2016

3.3 Economic profile

As shown in Table 3.4, the labour force participation rate in 2016 was comparable across the social locality, however Bungonia had a higher unemployment rate.

Table 3.4 Labour force participation, 2016

	Labour force participation		Unemployed persons	
	%	No.	%	No.
Bungonia	56.4%	176	10.2%	18
Marulan	56.7%	522	5.7%	30
Goulburn Mulwaree LGA	56.0%	13,573	6.3%	851
Capital Region	56.8%	102,283	4.9%	4,985

N.B: The number of persons in the labour force expressed as a percentage of persons aged 15 years and over.

Source, ABS Census 2016

As shown in Figure 3.7, the top industries of employment vary across the social locality, with the construction and agriculture, forestry and fishing industries highest in Bungonia, while the highest industries for Marulan were construction; accommodation and food services; health care and social assistance; and transport, postal and warehousing. The highest industries for employment in the Goulburn Mulwaree LGA and Capital Region were health care and social assistance; public administration and safety; and retail trade.

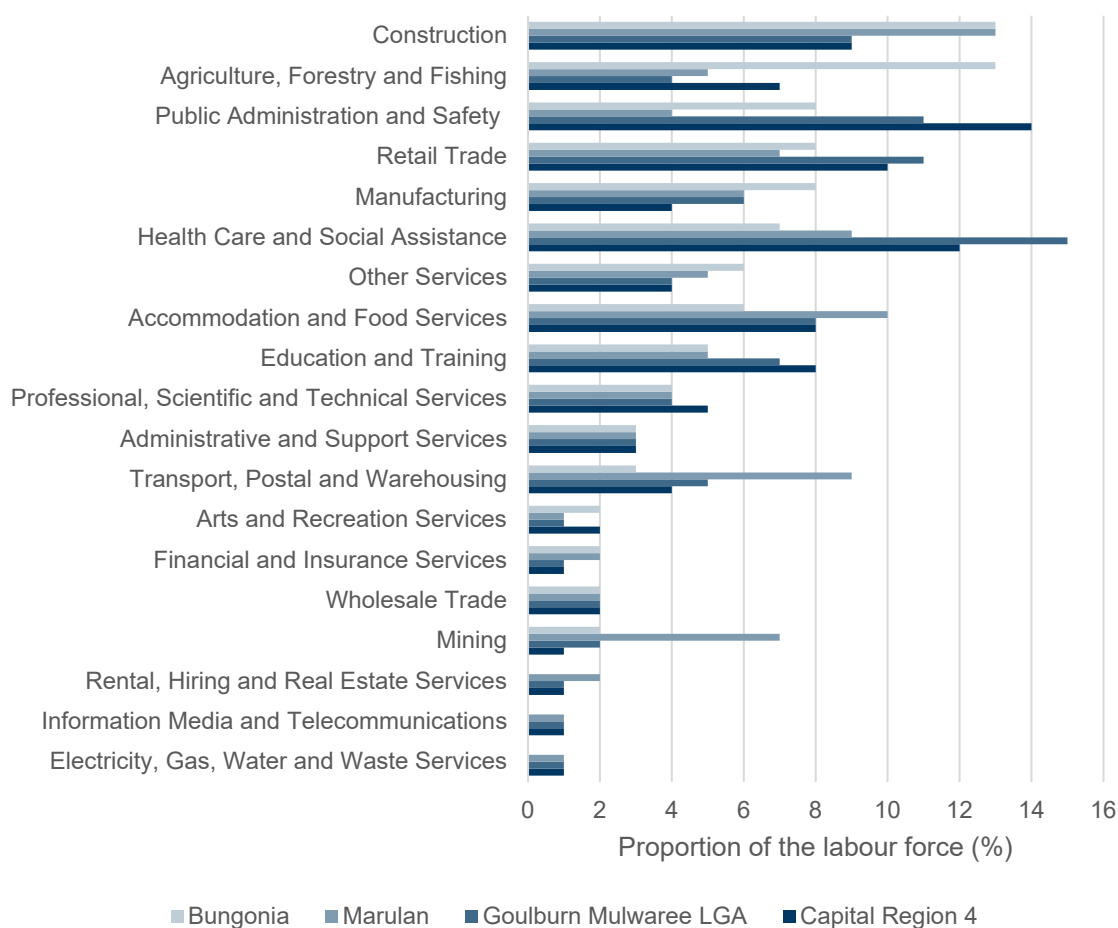


Figure 3.7 Industry of employment, 2016

Source, ABS Census 2016

The top industries of employment are reflected in the occupational profile as shown in Figure 3.8.

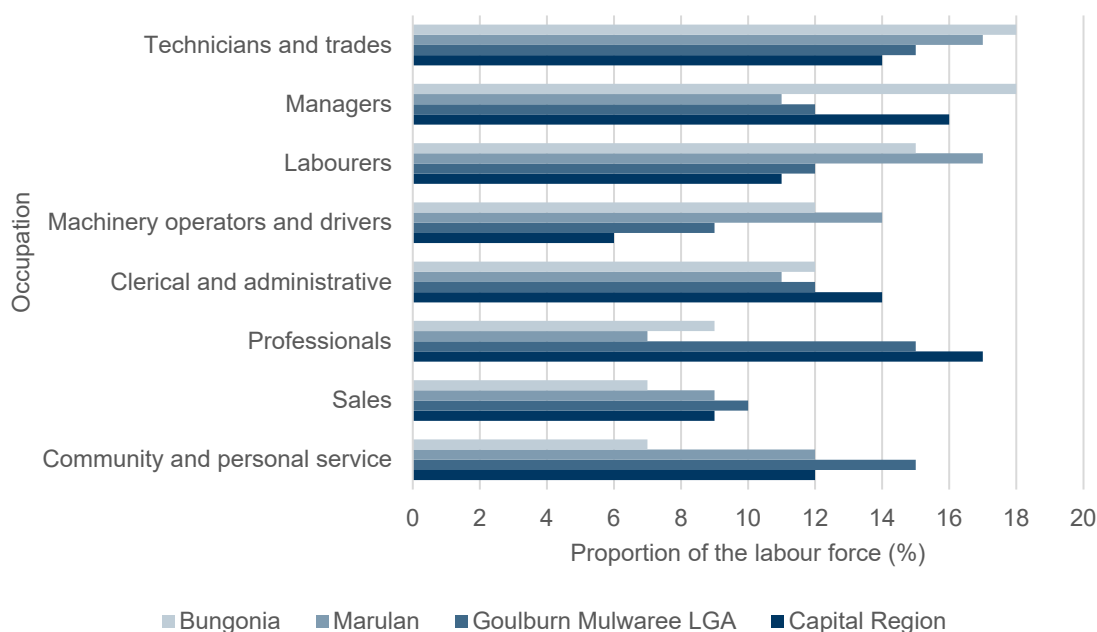


Figure 3.8 Occupation, 2016

Source, ABS Census 2016

3.3.1 Journey to work

In 2016, travel to work by car as either a driver or passenger was the dominant mode for residents across the social locality as shown in Table 3.5

Table 3.5 Journey to work, 2016

	Car as driver or passenger	Used public transport	Active transport	Worked from home
Bungonia	64.3%	0.0%	5.10%	12.1%
Marulan	71.7%	0.0%	4.1%	5.3%
Goulburn Mulwaree LGA	76.3%	1.0%	3.4%	4.3%
Capital Region	72.9%	1.1%	4.4%	6.3%

Source, ABS Census 2016

As shown in Table 3.9, there was a lower proportion of households without a motor vehicle in Bungonia compared to Marulan, Goulburn Mulwaree LGA and Capital Region. There was a significantly higher proportion of households in Bungonia with two or three motor vehicles (63.3 per cent), in comparison to Marulan (55.0 per cent), Goulburn Mulwaree LGA (47.6 per cent) and Capital Region (50.1 per cent). Bungonia also had the lowest proportion of households with four or more motor vehicles (7.2 per cent).

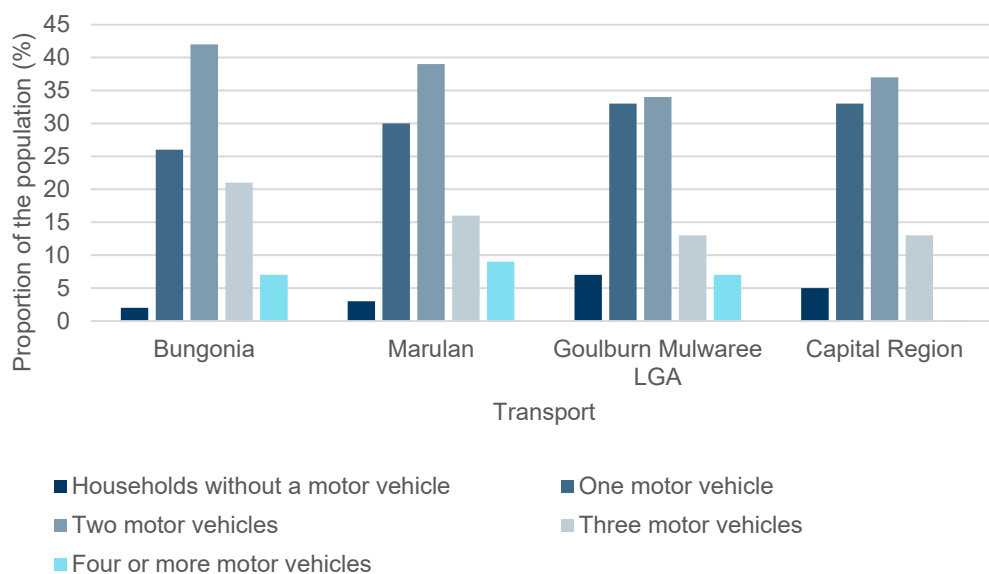


Figure 3.9 Transport, 2016

Source, ABS Census 2016

3.4 Community vulnerability

3.4.1 Socio-economic disadvantage

Socio-Economic Indexes for Areas (SEIFA) is an ABS product that ranks areas in Australia according to relative socio-economic advantage and disadvantage. The indexes are based on information from the five-yearly Census of Population and Housing. SEIFA 2016 has been created from Census 2016 data and consists of four indexes:

- The Index of Relative Socio-economic Disadvantage
- The Index of Relative Socio-economic Advantage and Disadvantage (IRSAD)
- The Index of Education and Occupation
- The Index of Economic Resources (ABS, 2018).

In 2016, Bungonia had an IRSAD quintile of 2, meaning that compared to other areas in Australia, it experienced higher levels of disadvantage. This is lower than the IRSAD quintile of Marulan (1) and equivalent to that of the LGA (2).

3.4.2 Need for assistance

In 2016, the proportion of the population who required assistance with daily activities in Bungonia was slightly higher than Marulan, but lower than Goulburn Mulwaree LGA (see Table 3.6).

Table 3.6 Need for assistance, 2016

	People who require assistance
Bungonia	5.2%
Marulan	4.6%
Goulburn Mulwaree LGA	6.4%
Capital Region	5.5%

Source, ABS Census 2016

3.4.3 Mobility

Figure 3.10 shows that overall, residents of Bungonia are more likely to have lived in their current address five years ago compared to Marulan, Goulburn-Mulwaree LGA, and the Capital Region.

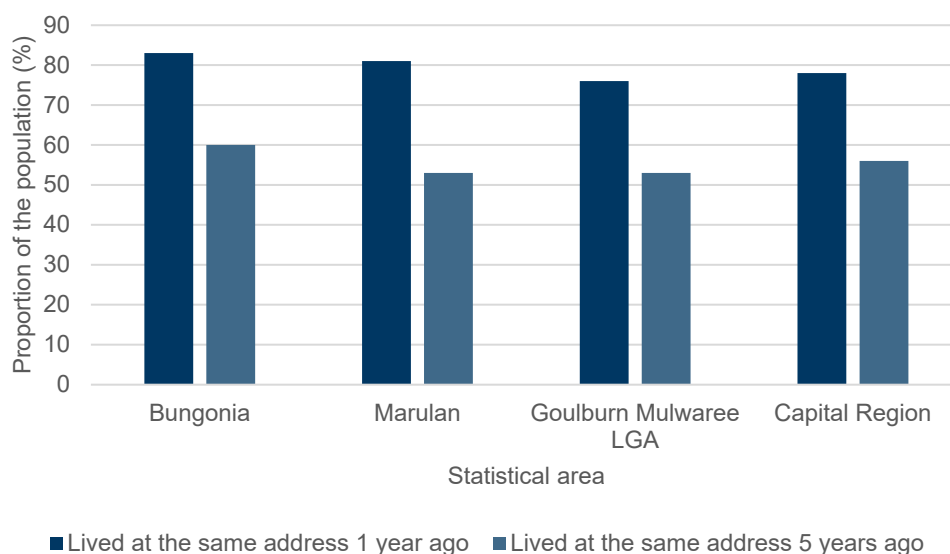


Figure 3.10 Population mobility, 2016

Source, ABS Census 2016

3.4.4 Income

As shown in Table 3.7, the median weekly individual income is lower in Bungonia compared to Marulan, Goulburn Mulwaree LGA and Capital Region.

Table 3.7 Median weekly income, 2016

	Median individual weekly income	Median household weekly income
Bungonia	\$544	\$1,025
Marulan	\$562	\$1,143
Goulburn Mulwaree LGA	\$625	\$1,196
Capital Region	\$655	\$1,228

Source, ABS Census 2016

However, as shown in as shown in Table 3.8, there was a lower proportion of low income households in Bungonia compared to Marulan, Goulburn Mulwaree LGA and Capital Region.

Table 3.8 Proportion of high and low income households, 2016

	Below \$650 per week	Greater than \$2,000 per week
Bungonia	13.1%	18.0%
Marulan	24.1%	23.2%
Goulburn Mulwaree LGA	21.5%	24.5%
Capital Region	19.9%	26.1%

Source, ABS Census 2016

3.5 Social infrastructure and services

Bungonia has few social infrastructure and services, with most residents likely to travel to Goulburn. Local community facilities located in Bungonia include Bungonia Progress Association Hall/Community Hall and Windellama Public School. Windellama Public School caters for students in Kindergarten to Year 6 and had a total of 32 students in 2020 (My School n.d.).

3.6 Housing and accommodation

3.6.1 Dwellings

As shown in Table 3.9, there is a high proportion of unoccupied private dwellings in Bungonia compared to other parts of the social locality. As an agricultural area, this may be due to several properties being secondary places of residence for property owners, who may visit their properties on weekends.

Table 3.9 Dwellings, 2016

	Total occupied dwellings	Unoccupied private dwellings
Bungonia	52.3%	46.2%
Marulan	77.8%	22.2%
Goulburn Mulwaree LGA	85.0%	15.0%
Capital Region	80.5%	19.5%

Source, ABS Census 2016

3.6.2 Household tenure

As shown in Figure 3.11, dwellings across the social locality are primarily owned outright or with a mortgage, with a lower proportion of rented dwellings in Bungonia compared to other parts of the social locality.

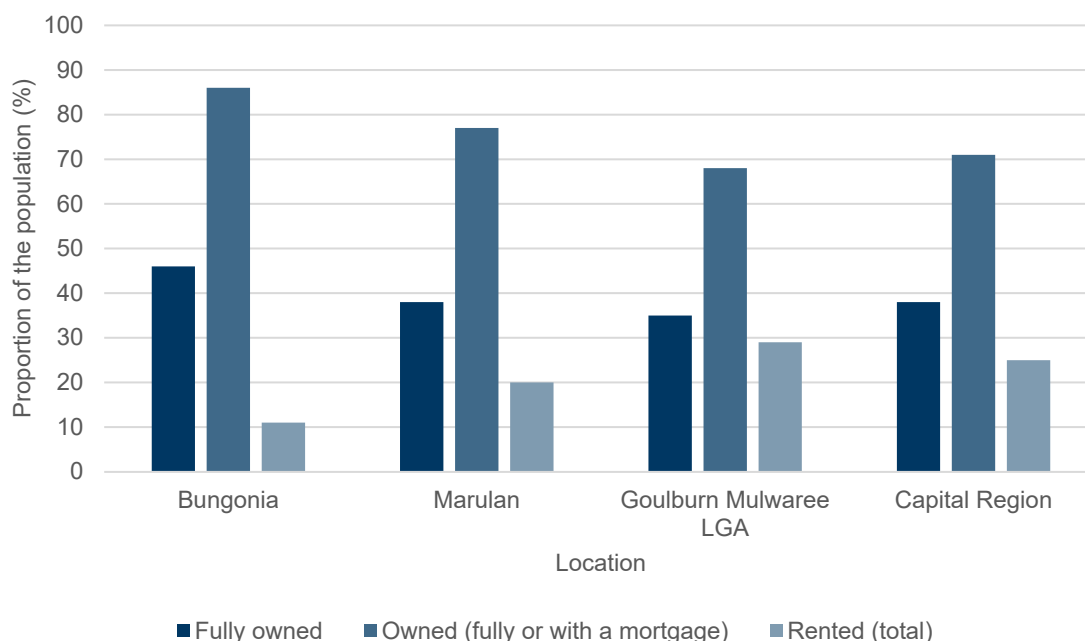


Figure 3.11 Household tenure, 2016

Source, ABS Census 2016

3.6.3 Housing availability and affordability

As of 10 May 2021 (with a search on realestate.com) there were no available properties to rent in Bungonia and five available properties for sale. Realestate.com also reported that between April 2020 and March 2021, the average demand for properties was lower in Bungonia (952 visits per property advert) compared to NSW on average (1,751 visits per property advert). During this same time period in Marulan, there were three available properties for rent, 15 properties for sale and 734 visits per property advert. Further, there were 49 available properties for rent and 110 properties for sale in Goulburn, with 312 visits per property advert.

It is generally accepted that if housing costs exceed 30 per cent of a low-income household's gross income, the household is experiencing housing stress (30/40 rule). SGS Planning, National Shelter, Community Sector Banking, and Brotherhood of St Laurence (2019) released a Rental Affordability Index that calculates rental affordability for groups identified as 'low income households'. The results of the 2020 index show that housing in Bungonia was:

Unaffordable or severely unaffordable for:

- Single person on benefits
- Pensioner couple
- Single pensioner.

Similar data for the suburb of Goulburn during this time indicated that housing was unaffordable for pensioner couples. Similar data for Marulan was not available during this time period.

An article by ABC News published in February 2021 reported that the property values in rural and regional NSW rose by close to 10 per cent in 2020 which is five times the typical annual growth rate in Sydney (ABC News 2021). The article noted that this is believed to be due to an increase of residents from metropolitan areas moving to rural and regional NSW, and lower mortgage rates as a result of the COVID-19 pandemic (ABC News 2021). Further, a report by KPMG published in January 2021 found there is potential for domestic tourism to accelerate and remain elevated for some time as a result of the strong momentum for domestic travel sparked by the COVID-19 pandemic (KPMG 2021).

3.6.4 Short term accommodation

A search on Google identified that short term accommodation is limited in Bungonia to two campgrounds, a farm stay and "tiny house" cabin. It was also identified that there are two hotels and a motor inn in Marulan, and 29 accommodation facilities in Goulburn. These include a mix of hotels, serviced apartments and motels.

3.7 Community values and issues

The following relevant community plans and strategies have been reviewed to broadly understand community values and issues within the Goulburn Mulwaree LGA:

- Draft Goulburn Social Sustainability Strategy and Action Plan 2019-2029
- The Tablelands 2016-2036 Regional Community Strategic Plan
- Goulburn Mulwaree Council Local Strategic Planning Statement

A summary of the community values and issues identified within these documents is shown in Table 3.10. Outcomes from the first phase of community and stakeholder engagement undertaken for the proposal has also been reviewed and is included in Table 3.10.

Table 3.10 *Community values and issues*

	Community values and issues
Draft Goulburn Social Sustainability Strategy and Action Plan 2019-2029	<p>The Plan identifies that Goulburn Mulwaree LGA:</p> <ul style="list-style-type: none"> – values the strong heritage character of the locality and the natural environment, parks and open spaces available to daily recreation, relaxation and social connection – is a relatively safe place to live and has a strong sense of community – has a relaxed regional lifestyle and atmosphere – prioritises economic growth and development through improving local training opportunities and access to high quality employment – promotes local Aboriginal pride – is a relatively affordable place to live compared to major cities, but a lack of affordable housing is seen to be a challenge for many community members. – issues include lack of employment opportunities for young people (school leavers), lack of public transport connections and limited succession planning for volunteers. – has an ageing population.
The Tablelands 2016-2036 Regional Community Strategic Plan	<p>The Plan identifies that Goulburn Mulwaree LGA:</p> <ul style="list-style-type: none"> – values its strong community spirit, social cohesion and collaboration – prioritises maintaining its rural character, natural environment and historic heritage, as well as attracting resources for the local community and the region – has a strong connection with its “country town” atmosphere and heritage buildings, but believes these are of little concern in comparison to jobs and growth – promotes environmentally sustainable practices – has a strong regional economy – values its network of vibrant, inclusive and diverse communities and fosters and encourages positive social behaviours that will maintain the safe, healthy and connected community.
Goulburn Mulwaree Council Local Strategic Planning Statement	<p>The Statement identifies that Goulburn Mulwaree LGA:</p> <ul style="list-style-type: none"> – values the heritage character of the Goulburn town – would like to facilitate economic development within the LGA to provide opportunities for the region’s young people, including taking advantage of its proximity to Sydney and Canberra – prioritises community groups and organisations to support social connections – supports vulnerable community members – values parks and open spaces
Outcomes from the first phase of community and stakeholder engagement (GHD 2021) ^t	<p>The first phase of community and stakeholder engagement identified the following key concerns:</p> <ul style="list-style-type: none"> – potential environmental and human health impacts of the proposal, especially in relation to water and air quality – site location – uncertainty about the new technology and lack of comparative waste facilities in operation in NSW – compliance with regulations – safety of the local road network due to the increased number of heavy vehicles during construction and operation – impacts on rural character and country feel of the area – lack of local community benefits

3.8 Key findings

The analysis of the social locality found that overall, it is characterised by:

- an older population living in Bungonia than the rest of the social locality
- a high rate of the population who speak English at home and who were born in Australia
- lower rates of the population aged 15 years and over who have completed Year 12 in the social locality compared to Capital Region
- a less mobile population living in Bungonia than in the rest of the social locality
- lower income earners, with both the individual and household median income lower in the social locality than in Capital Region on average
- low rates of availability in the housing market across the social locality
- limited facilities available for short-term accommodation and limited social infrastructure and services

Top industries of employment vary across the social locality with construction employing the greatest proportion of the labour force in Bungonia and Marulan; and health care and social assistance, and public administration and safety being the top industries of employment in Goulburn Mulwaree LGA and Capital Region.

Unemployment levels were higher in Bungonia but the social locality experience similar rates of labour force participation. The dominant mode of transport used by residents across the social locality to travel to and from work is car as either a driver or passenger.

Communities across the social locality share values associated with a strong connection to the heritage and rural character of the locality, as well as the relaxed, regional lifestyle.

Outcomes from the community engagement undertaken to date by Jerrara Power indicate that local stakeholders and community members are concerned about the potential environmental and human health impacts of the proposal, especially in relation to water and air quality. The local community in particular raised concerns about lack of positive outcomes for the local community resulting from the proposal, as well as the potential impacts to the rural character of the area.

4. Preliminary evaluation of social impacts and assessment level

This section describes the potential social impacts and benefits that may result from the project based on information presented in previous sections, the EIS Scoping Report, and professional judgement. The potential social impacts have been evaluated according to the characteristics of magnitude described in section 2.2. The potential impacts have been assessed based on the likelihood they would be significant or not.

Table 4.1 Potential social impacts and assessment level

Impact category	Potential impact description	Characteristics of social impact magnitude	Phase	Significance	Assessment required
Property and land use	Land use requirements for the proposal could reduce availability of some land currently used for agricultural purposes. This includes grazing of livestock.	<p>Extent: Local agricultural industry</p> <p>Duration: Long term, starting in construction and continuing in operation</p> <p>Severity: Low</p> <p>Sensitivity/important: Loss of agricultural land may be a concern to some stakeholders given values placed on agriculture and rural character</p> <p>Level of concern/interest: Some community members may be concerned about loss of agricultural land</p>	Construction Operation	Unknown	Standard – impact would be assessed in a land use and property assessment in the EIS.
Amenity and character	Changes to local amenity (e.g. noise and vibration, dust, visual changes) for people located close to construction activities. These changes may disturb daily activities for some people and/or reduce the enjoyment of some outdoor spaces.	<p>Extent: a small number of residents located close to construction areas</p> <p>Duration: Temporary and some impacts (e.g. noise, vibration, dust) likely to be intermittent during construction phase.</p> <p>Severity: Minor as impacts would be managed with standard construction mitigation measures.</p> <p>Sensitivity/importance: Some residents may be sensitive to changes to local amenity, particularly if they value highly value local amenity (e.g. strong heritage character and rural landscape) with some</p>	Construction	Yes	Standard – changes to local amenity and character are expected to be relatively localised and would be assessed in studies such as noise and vibration, air quality and landscape and visual.

Impact category	Potential impact description	Characteristics of social impact magnitude	Phase	Significance	Assessment required
		<p>community members (e.g. Aboriginal community members, elderly residents, people with a disability, children) likely to be more vulnerable.</p> <p>Level of concern/interest: Some community members are likely to have a high level of concern or interest, such as residents located close to construction activities.</p>			
Amenity and character	Changes to rural amenity and character of the proposal site and surrounds due to operations of the waste facility. This may include views of the facility, increased noise and potential changes to air quality.	<p>Extent: a small number of residents located close to the proposal</p> <p>Duration: Long term, during operation</p> <p>Severity: Minor to moderate depending on proximity to the facility</p> <p>Sensitivity/importance: Some residents may be sensitive to changes to local amenity and character depending on their proximity to the facility. Some community members may be more vulnerable to changes to noise and air quality changes (e.g. elderly residents, people with a disability, children).</p> <p>Level of concern/interest: Consultation to inform the Scoping Report found some community members are concerned about potential impacts to the rural character of the area.</p>	Operation	Unknown	Standard – changes to local amenity and character are expected to be relatively localised and would be assessed in studies such as noise and vibration, air quality and landscape and visual.
Access and connectivity	Changes to the local road network during construction (e.g. road closures, increased construction traffic and upgrades to Jerrara Road) may lead to delays and detours, which could increase travel times for people using the local road network.	<p>Extent: Community members using the road network affected by construction activities</p> <p>Duration: Temporary during construction.</p> <p>Severity: Minor as appropriate traffic controls would be implemented.</p> <p>Sensitivity/importance: Some residents may be sensitive to potential increased travel times, particularly with some</p>	Construction	Unknown	Standard – changes to access and connectivity would be assessed in a traffic impact assessment

Impact category	Potential impact description	Characteristics of social impact magnitude	Phase	Significance	Assessment required
		<p>community members (e.g. elderly residents, people with a disability) likely to be more vulnerable to these changes.</p> <p>Level of concern/interest: Consultation to inform the Scoping Report found some community members are concerned about changes to increased activity on the local road network and the safety implications of this.</p>			
Economy, employment and business	<p>Increased demand for a skilled and unskilled labour force during construction of the proposal which may lead increased employment opportunities, as well as opportunities for training and Indigenous community involvement.</p> <p>60 long term employment opportunities would be available during operation for skilled labour force.</p>	<p>Extent: Approximately 300 opportunities during peak construction periods and 60 long term employment opportunities for local and regional skilled and unskilled workforce.</p> <p>Duration: Temporary, during construction, long term during operation.</p> <p>Severity: Minor to moderate</p> <p>Sensitivity/importance: Employment opportunities are likely to be viewed positively by local communities, particularly given high unemployment rate in Bungonia.</p> <p>Level of concern/interest: Local community members and stakeholders may have a minor to moderate level of interest in local employment opportunities, particularly given consultation to inform the Scoping Report found there are concerns about lack of local benefits.</p>	Construction Operation	Yes	Detailed – impact will not be assessed in other studies. Local communities are likely to be interested in employment opportunities.
Housing and accommodation	<p>Based on the proposal description, a temporary workforce accommodation facility is proposed to accommodate up to 300 workers during peak construction period. Section 3.6 shows there is low availability of private housing and short term accommodation in the</p>	<p>Extent: Accommodation providers, local businesses, and community members</p> <p>Duration: Temporary, during construction, long term during operation.</p> <p>Severity: Minor to moderate depending on workforce accommodation strategy during</p>	Construction Operation	Yes	Detailed – impact will not be assessed in other studies. Local communities likely to be interested potential housing and

Impact category	Potential impact description	Characteristics of social impact magnitude	Phase	Significance	Assessment required
	<p>social locality, therefore most construction workers are expected to stay in the proposed accommodation facility which would limit impacts on local accommodation availability and affordability. However, this would also reduce potential benefits for accommodation providers.</p> <p>Operation of the facility has the potential to attract skilled workers and their families to live in the area which may have a minor impact on local housing availability and affordability.</p>	<p>construction, and housing availability during operation.</p> <p>Sensitivity/importance: Stakeholders and communities may be sensitive to changes to accommodation and housing availability and affordability, particularly given recent fluctuations in regional areas due to COVID-19 (see section 3.6.4).</p> <p>Level of concern/interest: Stakeholders such as accommodation providers and tourism businesses are expected to have a moderate to high level of interest in potential impacts on housing and accommodation availability.</p>			accommodation impacts due to the project.
Social cohesion	<p>There is the potential for the non-resident construction workforce to temporarily increase the population in Bungonia due to non-resident workforce which may have the potential to affect local community cohesion and potentially lead to concerns about safety.</p>	<p>Extent: Community members in Bungonia, Marulan and Goulburn.</p> <p>Duration: Temporary, during construction.</p> <p>Severity: Minor to moderate depending on the level of interaction that construction workers have with the towns of Bungonia, Marulan and Goulburn and the capacity of services and facilities.</p> <p>Sensitivity/importance: Some community members may be more sensitive to increased demand on services and potential community cohesion impacts.</p> <p>Level of concern/interest: Some community members are likely to have a high level of concern or interest, such as accommodation and tourism businesses and residents located close to construction activities, and Aboriginal stakeholders.</p>	Construction	Unknown	Detailed – impact will not be assessed in other studies. Given the small population of the town, an increase due to non-resident workforce is likely to be noticeable.
Accessibility	<p>Increase non-resident construction workforce may temporarily increase demand for community</p>	<p>Extent: A portion of the 300 construction workers and 60 operational workers may be non-residents</p>	Construction Operation	Yes	Detailed – impact will not be assessed in other studies. Given the

Impact category	Potential impact description	Characteristics of social impact magnitude	Phase	Significance	Assessment required
	<p>facilities and services (e.g health and emergency services).</p> <p>Operation of the facility has the potential to attract skilled workers and their families to live in the area which may increase demand for community facilities and services (e.g. child care, education).</p>	<p>Duration: Temporary, during construction, long term during operation.</p> <p>Severity: Minor to moderate.</p> <p>Sensitivity/importance: Some community services may be more sensitive to increased demand e.g. emergency services.</p> <p>Level of concern/interest: Most services are expected to have a high level of interest in increased demand.</p>			regional location, an increase in demand for community services and facilities is likely to be noticeable.
Economy, employment and business	<p>Potential for local and regional businesses to participate in procurement opportunities during construction. Local businesses may also benefit from construction workers spending money at businesses, such as restaurants, cafes, pubs and retail shops.</p>	<p>Extent: Local businesses in the region and businesses located in close proximity to construction areas and temporary construction workforce accommodation facility</p> <p>Duration: Temporary, during construction.</p> <p>Severity: Mild to moderate</p> <p>Sensitivity/importance: Potential procurement opportunities and increased patronage is likely to be viewed as important to local and regional businesses</p> <p>Level of concern/interest: Some business owners are expected to have a high to moderate level of interest in procurement/increased patronage</p>	Construction	Yes	Detailed – impact will not be assessed in other studies. Local communities are likely to be interested in economic benefits.
Health and wellbeing	<p>Perceived health impacts of the thermal treatment of waste may lead to opposition of the proposal during pre-construction, construction and operation.</p>	<p>Extent: Community members in Bungonia and surrounding regions</p> <p>Duration: Long term, during pre-construction, construction and operation.</p> <p>Severity: Moderate</p> <p>Sensitivity/importance: Moderate to high</p> <p>Level of concern/interest: Consultation to inform the Scoping Report found some community members are concerned about</p>	Pre-construction Construction Operation	Yes	Standard – perceived health impacts would be assessed in the human health assessment.

Impact category	Potential impact description	Characteristics of social impact magnitude	Phase	Significance	Assessment required
		potential impacts on human and animal health.			

4.1 Cumulative impacts

There may be some cumulative impacts as a result of other projects that may occur in the region, however at this stage they are unknown. Cumulative impacts would therefore require further assessment by technical studies through the preparation of the EIS.

It is possible that the nature or intensity of social impacts identified in section 4, may increase as a result of cumulative impacts. This would be further assessed during the Phase 2 SIA, through a review of other technical reports, and supported by SIA consultation (see section 5).

5. Next steps

This section outlines the next steps for the preparation of a Phase 2 SIA, recommended project refinements, and future engagement opportunities for the EIS and Phase 2 SIA.

5.1 Approach to Phase 2 SIA

As outlined in Table 4.1, several social impacts have been identified as potentially significant, or unknown. In line with the guidance outlined in section 2.3, it is expected that a detailed and standard level of assessment would be required to assess the identified social impacts.

Table 5.1 outlines potential SIA research methods for the identified social impacts. These research methods would be refined during preparation of the detailed methodology including research approach and stakeholder consultation plan for the Phase 2 SIA.

Table 5.1 SIA research methods suggested for identified social impacts

Impact category	Potential impact description	Assessment required	Research methods
Property and land use	Land use requirements for the proposal could reduce availability of some land currently used for agricultural purposes. This includes grazing of livestock.	Standard	SIA stakeholder interviews e.g. Council EIS community engagement team direct consultation with adjacent land holders
Amenity and character	Changes to local amenity (e.g. noise and vibration, dust, visual changes) for people located close to construction activities. These changes may disturb daily activities for some people and/or reduce the enjoyment of some outdoor spaces.	Standard	SIA stakeholder interviews e.g. Council, business chamber EIS community engagement team direct consultation with affected property owners
Amenity and character	Changes to rural amenity and character of the proposal site and surrounds due to operations of the proposal. This may include views of the facility, increased noise and air quality changes.	Standard	SIA stakeholder interviews e.g. Council, EIS community engagement team direct consultation with local property owners and community members
Access and connectivity	Changes to the local road network during construction (e.g. road closures, increased construction traffic and upgrades to Jerrara Road) may lead to delays and detours, which could increase travel times for people using the local road network.	Standard	SIA stakeholder interviews e.g. Council, emergency services
Economy, employment and business	Increased demand for a skilled and unskilled labour force during construction of the proposal which may lead increased employment opportunities, as well as opportunities for training and Indigenous community involvement. 60 long term employment opportunities would be available during operation for skilled labour force.	Detailed	Review relevant government employment data, strategies and reports SIA stakeholder interviews e.g. council, business chamber, Regional Development Australia Southern Inland

Impact category	Potential impact description	Assessment required	Research methods
Housing and accommodation	Based on the proposal description, a temporary workforce accommodation facility is proposed to accommodate up to 300 workers during peak construction period. Section 3.6 shows there is low availability of private housing and short term accommodation in the social locality, therefore most construction workers are expected to stay in the proposed accommodation facility which would limit impacts on local accommodation availability and affordability. However this would also reduce potential benefits for accommodation providers. Operation of the facility has the potential to attract skilled workers and their families to live in the area which may have a minor impact on local housing availability and affordability.	Detailed	Housing and accommodation analysis SIA stakeholder interviews e.g. Council, business chamber, accommodation providers, tourism businesses, real estate agents
Social cohesion	There is the potential for the non-resident construction workforce to temporarily increase the population in Bungonia due to non-resident workforce which may have the potential to affect local community cohesion and potentially lead to concerns about safety.	Detailed	SIA stakeholder interviews e.g. Council, social infrastructure providers, emergency services
Accessibility	Increase non-resident construction workforce may temporarily increase demand for community facilities and services (e.g health and emergency services). Operation of the facility has the potential to attract skilled workers and their families to live in the area which may increase demand for community facilities and services (e.g. child care, education).	Detailed	SIA stakeholder interviews e.g. Council, social infrastructure providers, emergency services
Economy, employment and business	Potential for local and regional businesses to participate in procurement opportunities during construction. Local businesses may also benefit from construction workers spending money at businesses, such as restaurants, cafes, pubs and retail shops.	Detailed	Review relevant government economic data, strategies and reports SIA stakeholder interviews e.g. Council, business chamber, Regional Development Australia Southern Inland
Economy, employment and business	Increased demand for a skilled and unskilled labour force during operation of the proposal which may lead to increased employment opportunities, as well as opportunities for training and Aboriginal community involvement. This may also lead to a reduction of unemployed persons in	Detailed	Review relevant government employment data, strategies and reports SIA stakeholder interviews e.g. Council, business chamber Regional Development Australia Southern Inland

Impact category	Potential impact description	Assessment required	Research methods
	Bungonia and surrounding suburbs.		
Health and wellbeing	Perceived health impacts of the thermal treatment of waste may lead to opposition of the proposal during pre-construction, construction and operation.	Standard	SIA stakeholder interviews e.g. Council, EIS community engagement team direct consultation with local property owners and community members

5.1.1 SIA consultation

The SIA research methods would include primary research and direct consultation with key stakeholders as identified in Table 5.1. The approach to consultation and specific tools and research methods would be further refined during the Phase 2 SIA, however at this stage it is expected key stakeholders who would be interviewed to inform the SIA would likely include:

- relevant council officers from Goulburn Mulwaree Council (e.g social planners, strategic planners, community development officers, managers of council facilities)
- Regional Development Australia (Southern Inland)
- Goulburn Chamber of Commerce
- social infrastructure located in the social locality which may include emergency services, health and education providers
- local Aboriginal stakeholders such as Pejar Local Aboriginal Land Council
- local accommodation providers and real estate agents

The SIA consultation would be undertaken in addition to the overall community and stakeholder engagement program being implemented to support the EIS. The SIA team would work closely with the EIS community engagement team to ensure the SIA is informed by the outcomes of these broader activities, and where appropriate, the SIA team participates in these activities to hear community concerns.

5.2 Project refinements

This Phase 1 SIA did not identify any opportunities for project refinement in response to preliminary impact evaluation.

5.3 Mitigation and enhancement methods

The Phase 2 SIA would identify appropriate mitigation / enhancement measures for identified social impacts based on outcomes from stakeholder and community consultation for the SIA and EIS.

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Appendices

Appendix A

Additional demographic indicators

A-1 Population pyramid

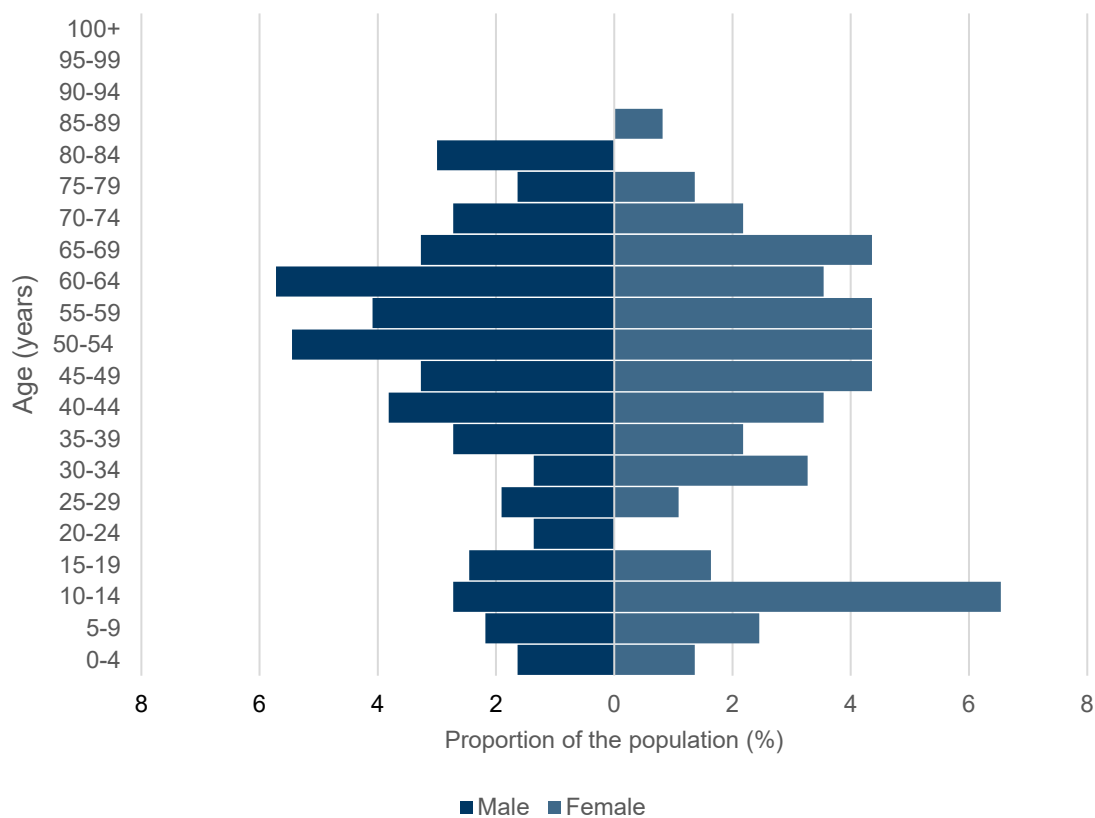


Figure A.1 Bungonia population pyramid, 2016

Source, ABS Census 2016



Appendix B

**Guidelines for controlled activities on
waterfront land – Riparian corridors (NSW
DoI 2018)**



Natural Resources Access Regulator

Guidelines for controlled activities on waterfront land

Riparian corridors

Published by NSW Department of Industry

Guidelines for controlled activities on waterfront land—Riparian corridors

First published May 2018.

More information

Natural Resources Access Regulator

industry.nsw.gov.au/nrar

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Guidelines for controlled activities on waterfront land

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Natural Resources Access Regulator

The Natural Resources Access Regulator (NRAR) is an independent regulator established under the NSW *Natural Resources Access Regulator Act 2017*. The current regulatory focus of NRAR is water regulation, a key part of which is to prevent, detect and stop illegal water activities.

The NRAR seeks to ensure effective, efficient, transparent and accountable compliance and enforcement measures through the natural resources management legislation and, in doing so, maintain public confidence in the enforcement of natural resources management legislation.

Controlled activities on waterfront land

Controlled activities carried out in, on, or under waterfront land are regulated by the *Water Management Act 2000* (WM Act). The NRAR administers the WM Act and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity.

Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary.

This means that applicants must obtain a controlled activity approval from the NRAR before commencing the controlled activity.

What is a riparian corridor?

A riparian corridor (RC) forms a transition zone between the land, also known as the terrestrial environment, and the river or watercourse or aquatic environment. Riparian corridors perform a range of important environmental functions such as:

- providing bed and bank stability and reducing bank and channel erosion
- protecting water quality by trapping sediment, nutrients and other contaminants
- providing diversity of habitat for terrestrial, riparian and aquatic plants (flora) and animals (fauna)
- providing connectivity between wildlife habitats
- conveying flood flows and controlling the direction of flood flows
- providing an interface or buffer between developments and waterways
- providing passive recreational uses.

The protection, restoration or rehabilitation of vegetated riparian corridors is important for maintaining or improving the shape, stability (or geomorphic form) and ecological functions of a watercourse.

Changes to controlled activities within riparian corridors

On 1 July 2012, new rules commenced regarding controlled activities within riparian corridors. The new rules amend the riparian corridor widths that apply to watercourses, providing more flexibility in how riparian corridors can be used and making it easier for applicants to determine the NRAR-controlled activity approval requirements. Key aspects of the changes include:

- provision of greater flexibility in the allowable uses and works permitted within riparian corridors
- the core riparian zone and vegetated buffer have been combined into a single vegetated riparian zone (VRZ)
- the width of the VRZ within the riparian corridor has been pre-determined and standardised for first, second, third and fourth-order and greater watercourses
- where suitable, applicants may undertake non-riparian corridor works or development within the

outer 50 per cent of a VRZ, as long as they offset this activity by connecting an equivalent area to the RC within the development site

- a new 'riparian corridors matrix' enables applicants to determine what activities can be considered in riparian corridors.

These changes will simplify the controlled activities application and assessment process; provide greater flexibility; help make more land available for housing; support floodplain, stormwater and bush fire management; and allow riparian corridors to be used for public amenity whilst continuing to deliver environmental outcomes required under the WM Act.

The riparian corridor consists of:

- the channel which comprises the bed and banks of the watercourse (to the highest bank) and
- the vegetated riparian zone (VRZ) adjoining the channel.

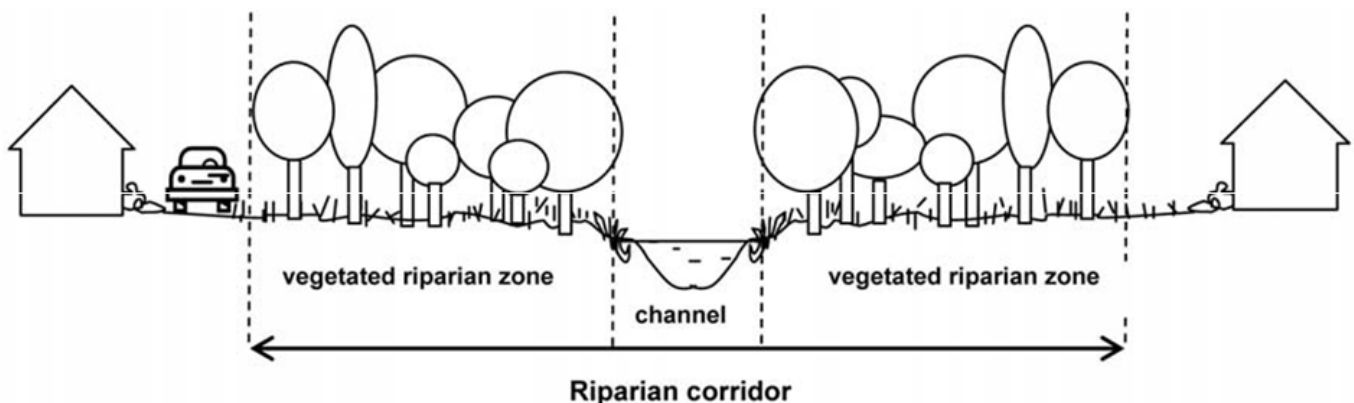


Figure 1. Riparian corridor

Riparian corridor widths

The NRAR recommends a VRZ width based on watercourse order as classified under the Strahler System of ordering watercourses and using Hydroline Spatial Data which is published on the department's website. The width of the VRZ should be measured from the top of the highest bank on both sides of the watercourse (see Figure 2 and Table 1).

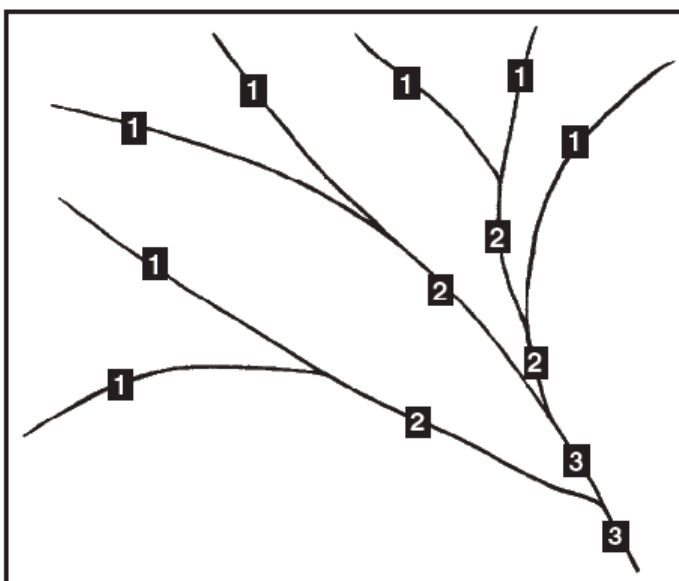


Figure 2. The Strahler System

Table 1. Recommended riparian corridor (RC) widths

Watercourse type	VRZ width (each side of watercourse)	Total RC width
1 st order	10 metres	20 metres + channel width
2 nd order	20 metres	40 metres + channel width
3 rd order	30 metres	60 metres + channel width
4 th order and greater (includes estuaries, wetlands and parts of rivers influence by tidal waters)	40 metres	80 metres + channel width

Note: Where a watercourse does not exhibit the features of a defined channel with bed and banks, the NRAR may determine that the watercourse is not waterfront land for the purposes of the WM Act.

Objectives for riparian corridor management

The overarching objective of the controlled activities provisions of the WM Act is to establish and preserve the integrity of riparian corridors.

Ideally, the environmental functions of riparian corridors should be maintained or rehabilitated by applying the following principles:

- identify whether or not there is a watercourse present and determine its order in accordance with the Strahler System
- if a watercourse is present, define the RC/VRZ on a map in accordance with Table 1
- seek to maintain or rehabilitate a RC/VRZ with fully structured native vegetation in accordance with Table 1
- seek to minimise disturbance and harm to the recommended RC/VRZ
- minimise the number of creek crossings and provide perimeter road separating development from the RC/VRZ
- locate services and infrastructure outside of the RC/VRZ. Within the RC/VRZ provide multiple service easements and/or utilise road crossings where possible.
- treat stormwater run-off before discharging into the RC/VRZ.

NRAR however, does allow for a range of works and activities on waterfront land and in riparian corridors to better meet the needs of the community, so long as they cause minimal harm as outlined in the riparian corridor matrix below.

What is the averaging rule?

Non-riparian corridor works and activities can be authorised within the outer riparian corridor, so long as the average width of the vegetated riparian zone can be achieved over the length of the watercourse within the development site. That is, where appropriate, 50 per cent of the outer vegetated riparian zone width may be used for non-riparian uses including asset protection zones, recreational areas, roads, development lots and infrastructure. However, an equivalent area connected to the riparian corridor must be offset on the site (see Figure 3) and the inner 50 per cent of the vegetated riparian zone must be fully protected and vegetated with native, endemic, riparian plant species.

Bridges, cycleways, paths, stormwater outlets and other essential services do not need to be offset, but must comply with the requirements set out in the riparian corridor matrix (Table 2) and other relevant controlled activities guidelines. Offline detention basins do not need to be offset so long as

there is an equivalent VRZ for the corresponding watercourse and they are built in compliance with *Controlled activities: Guidelines for watercourse crossings* and *Controlled activities: Guidelines for in-stream works*.¹

If a proposed basin will not have an equivalent VRZ for the corresponding watercourse, it may still be built in the outer 50 per cent of the VRZ but must be offset.

The averaging rule should generally be applied to cleared waterfront land. Development proposals involving waterfront lands that contain existing native vegetation should seek to preserve that riparian vegetation in accordance with the minimum riparian corridor requirements outlined in Table 1.

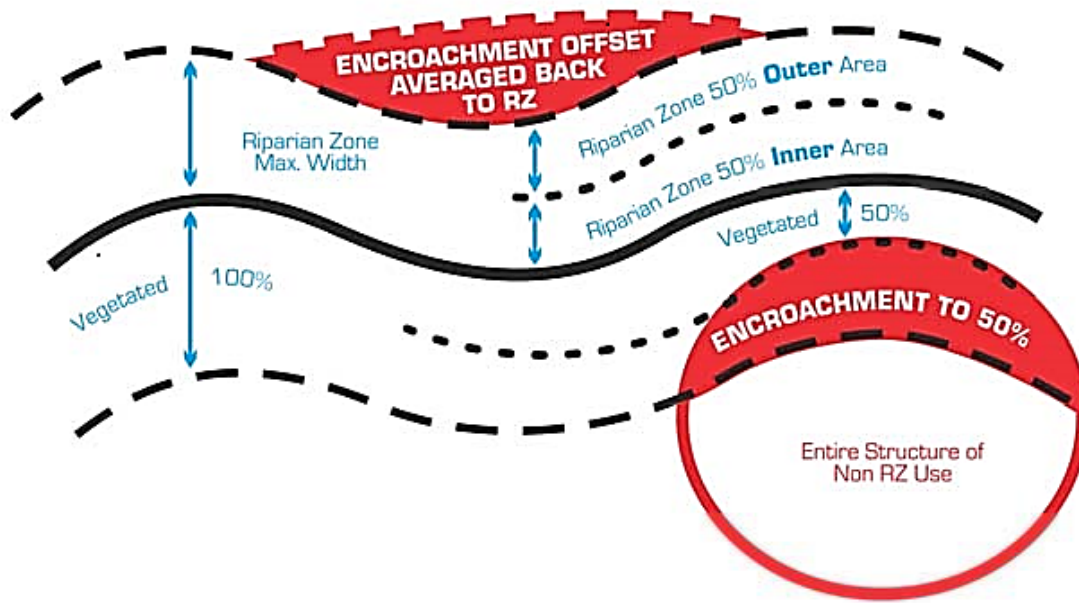


Figure 3. Averaging rule

Riparian corridor matrix

The riparian corridor matrix enables applicants to identify certain works and activities that can occur on waterfront land and in riparian corridors. Applicants should note that the matrix relates to controlled activity approvals under the WM Act only. Applicants are still required to comply with other relevant government legislation, such as threatened species, flood planning levels and fisheries guidelines.

¹ www.industry.nsw.gov.au/nrar

Table 2. Riparian corridor matrix

Stream order	Vegetated riparian zone (VRZ)	RC offsetting for non-RC users	Cycleways and paths	Detention basins		Stormwater outlet structures and essential services	Stream realignment	Road crossings		
				Only within 50% outer VRZ	Online			Any	Culvert	Bridge
1 st	10 m	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
2 nd	20 m	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
3 rd	30 m	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes
4 th	40 m	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes

Key

Stream order: The watercourse order as classified under the Strahler System using Hydrospatial data as published on the Department's website. A full list is provided at Part 2, Schedule 2 of the Water Management (General) Regulation 2011.

Vegetated riparian zone (VRZ): The required width of the VRZ measured from the top of the high bank on each side of the watercourse.

Riparian corridor (RC) off-setting for non RC uses: Non-riparian uses, such as Asset Protection Zones are allowed within the outer 50 per cent of the VRZ, so long as offsets are provided in accordance with the averaging rule as seen in Figure 3.

Cycleways and paths: Cycleways or paths no wider than four metres total disturbance footprint can be built in the outer 50 per cent of the VRZ.

Detention basins: Detention basins can be built in the outer 50 per cent of the VRZ or online where indicated. Online basins must:

- be dry and vegetated
- be for temporary flood detention only, with no permanent water holding
- have an equivalent VRZ for the corresponding watercourse order
- not be used for water quality treatment purposes.

Stormwater outlet structures and essential services: Stormwater outlets or essential services are allowed in the RC. Works for essential services on a fourth order or greater stream are to be undertaken by directional drilling or tied to existing crossings.

Stream realignment: Indicates that a watercourse may be realigned

Road crossings: Indicates permitted road crossing methods

Applications for controlled activity approvals

Applications for controlled activities approvals should be informed by the riparian corridor matrix shown in Table 2 and prepared using the *Application for a Controlled Activity Approval* for works on waterfront land form and the Guideline for completing an application for a Controlled Activity Approval.

Other controlled activity guidelines are available on the NRAR website and outline relevant considerations for applicants when proposing activities and works on waterfront lands.

Streamlined assessment

Where applications are presented in accordance with the riparian corridor matrix (Table 2) and other controlled activity guidelines, the NRAR will assess them under a streamlined process. This may decrease the amount of time it takes the NRAR to make a determination, saving applicants time and money.

Applications that do not conform to the matrix and/or relevant controlled activity guidelines will continue to be subject to merit assessment to ensure that the proposals meet the requirements of the WM Act. All applications will still need to demonstrate that minimal harm will occur to waterfront land before the NRAR will issue a controlled activity approval.

More information

Find out more about controlled activities on the NRAR website at www.industry.nsw.gov.au/nrar

Contact us

By phone on 1800 633 362 or by email at nrar.enquiries@nrar.nsw.gov.au

Appendix C

AHIMS search results

GHD- Castlereagh St Sydney - Individual users

Date: 12 November 2020

133 Castlereagh St

Sydney New South Wales 2000

Attention:

Email:

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 12, DP:DP750022 with a Buffer of 1000 meters, conducted on 12 November 2020.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette \(http://www.nsw.gov.au/gazette\)](http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Appendix D

Proposal overview

Proposal overview



What's proposed?

Jerrara Power Pty Ltd is proposing to build and operate a facility near Bungonia in NSW to process up to 330,000 tonnes of residual household, commercial and industrial waste each year to generate sustainable baseload electricity.

Residual waste, not suitable for recycling, would be sourced locally and from the Sydney basin and transported to the facility where the waste would be thermally processed at high temperature using world-leading grate combustion technology.

The heat from combustion would boil water to create steam. The steam drives a turbine connected to a generator to produce reliable baseload electricity. This would be fed into the grid to power homes and businesses.

Once fully operational, the facility would feed an average of 28 megawatts of power to the grid. This is enough electricity to supply 43,000* homes.

**Source: IPART 2020*

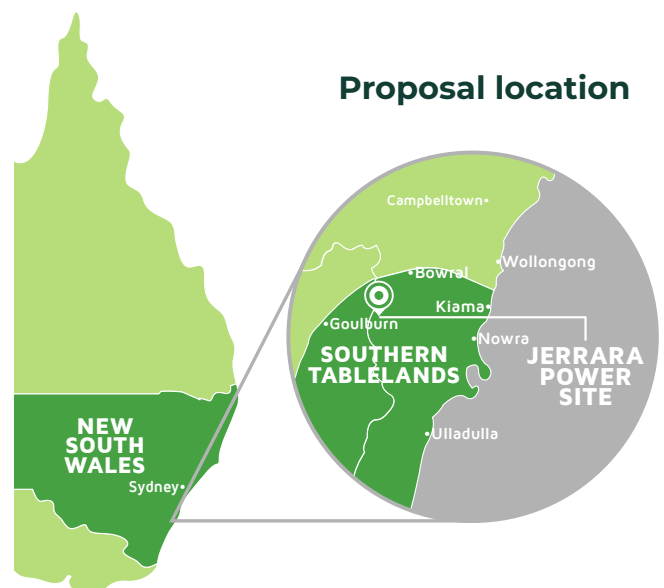
The Proposal is considered a State Significant Development under NSW planning legislation.

The Department of Planning, Industry and Environment will assess the Proposal and the consent authority will be either the Minister for Planning and Public Spaces or the Independent Planning Commission.

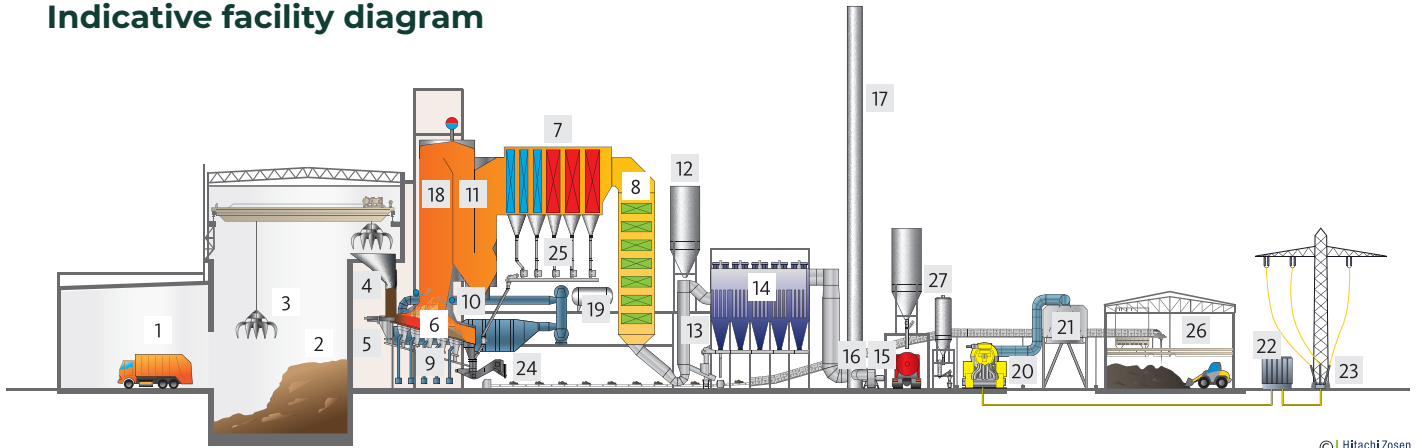
What else is included?

- a visitor and education centre
- car park for visitors and employees
- administration building
- weighbridges
- truck parking and hardstand areas
- internal roads
- stormwater and surface water management infrastructure
- fencing and landscaping
- temporary construction workforce accommodation facility
- overhead power lines to a 33kV substation

Proposal location



Indicative facility diagram



© Hitachi Zosen
INOVA

Waste delivery and storage

1. Delivery hall
2. Waste bunker
3. Waste crane

Combustion and boiler

4. Feed hopper
5. Ram feeder
6. HZI grate
7. Superheater
8. Economiser
9. Primary air
10. Secondary air
11. Five-pass boiler

Flue gas treatment

12. Activated carbon silo
13. HZI SemiDry sorption process
14. Fabric filter
15. Induced draught fan
16. Silencer
17. Stack (emits CO₂ and steam)
18. Selective non-catalytic reduction system

Energy recovery

19. Feed water system
20. Turbine
21. Air cooled condenser
22. Transformer
23. Electrical power generation

Residue handling and treatment

24. Bottom ash extractor
25. Boiler and fly ash extraction
26. Bottom ash treatment plant
27. Residue silos



Waste produced in NSW in 2018/19
19 million tonnes*



Waste sent to landfill in NSW in 2018/19
7 million tonnes*

**Source: National Waste Report 2020*

Why do we need energy from waste?

Despite our community's increasing efforts at reducing, reusing and recycling waste, we still have a lot of residual waste in NSW that has to be landfilled. We know that, over time, more wastes will become commercially viable for recycling but, right now, more than 3 million tonnes of unrecyclable wastes from the Sydney metropolitan area and about 7 million tonnes from all of NSW goes to landfill every year.

Energy from waste facilities are the missing link in Australia's waste reduction and landfill diversion goals. Energy from waste can bridge the gap between existing recycling systems and future systems that will eventually divert a greater proportion of wastes.

Energy from waste also produces reliable baseload electricity. This supports intermittent renewable energy generators such as wind and solar that depend on weather and offsets the use of unsustainable energy sources like coal-fired power stations.

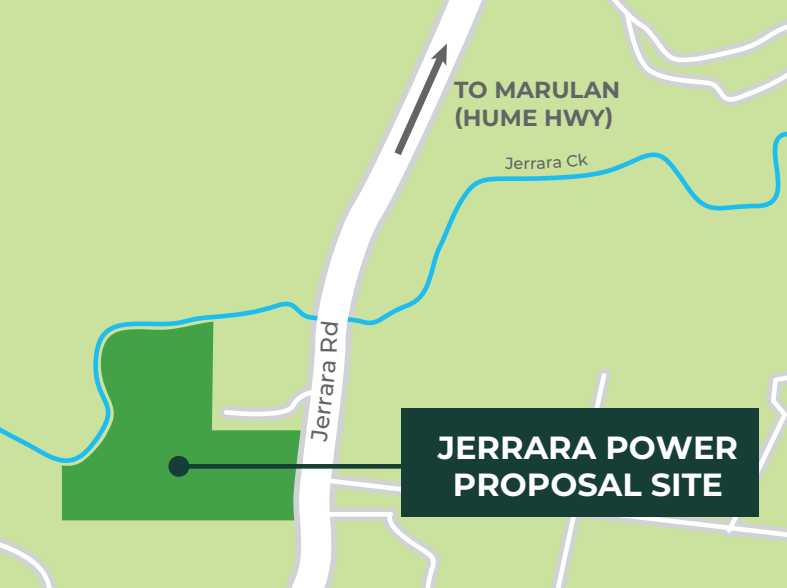


Artist's rendering of the energy from waste from waste facility under construction in Western Australia at East Rockingham

Hitachi Zosen Inova (HZI) is a world leader in energy from waste facilities and would design and build the Jerrara Power facility. HZI is constructing the East Rockingham energy from waste facility pictured above. The Jerrara Power facility would be a similar design.

There is a second energy from waste facility under construction in Western Australia at Kwinana and two more are approved for construction in Victoria at Laverton North and Maryvale.

Energy from waste technology is extensively used in the UK, Europe, Asia and the Middle East.



Location of the proposed site of the energy from waste facility at 974 Jerrara Road, Bungonia

What are the benefits?

The Proposal would reduce greenhouse gas emissions by displacing carbon dioxide emissions from coal-fired electrical generation and avoiding methane emissions by processing 330,000 tonnes of waste that would have gone to landfill. This Proposal has the potential to reduce overall greenhouse gas emissions by about 524,000 tonnes per year. This is equivalent to taking 114,000 cars off the road.

The Proposal would also provide new employment and training pathways for local people.

Jerrara Power is proposing a range of additional community benefits that would include indigenous traineeships, emergency response vehicles for community use, a community grants program and sponsorship opportunities.

What are the potential impacts?

As part of the assessment process, a variety of technical studies will be carried out to determine the Proposal's potential environmental issues.

These technical studies will address:

- Aboriginal and non-Aboriginal heritage
- Air quality and odour
- Biodiversity
- Bushfire
- Flooding
- Greenhouse gases and climate change
- Hazards and risks
- Human health
- Land contamination
- Landscape character and visual amenity
- Land use
- Noise and vibration
- Socio-economic
- Soils and geology
- Surface and groundwater
- Topography
- Traffic, transport and access
- Waste

How does this Proposal align with other plans?

State

In NSW, government policy encourages the recovery of energy from waste if this can deliver positive outcomes for people and the environment. Energy from waste is a reliable, proven and stringently controlled technology that has been used widely overseas for decades.

In 2015, the NSW Environmental Protection Authority (EPA) released the Energy from Waste Policy Statement to support increased investment in energy from waste infrastructure and deliver regulatory certainty to industry.

The **NSW Energy from Waste Policy** sets out a framework for the operation of new purpose-built facilities. It is the primary policy in NSW that governs assessment of energy from waste proposals. The Policy and the EPA's licensing framework ensures any facility is benchmarked and assessed against international best practice.

Regional

The **South East and Tablelands Regional Plan 2036** is a NSW Government plan that sets out the strategic directions and goals for the region. The Jerrara Power Proposal aligns with this plan and in particular **Goal 1**: A connected and prosperous community.

- **Direction 6**: Position the region as a hub of renewable energy excellence.
 - **Action 6.1** Identify opportunities for renewable energy industries
 - **Action 6.4** Promote best practice community engagement and maximise community benefits from renewable energy projects.

Local

The **Goulburn Mulwaree Local Strategic Planning Statement 2040** sets out a 20-year vision for land use planning. It was endorsed by Council after engagement and public exhibition with the local community. The Jerrara Power Proposal aligns with the planning priorities and principles of this plan.



Jerrara Power is a **privately-owned Australian** company



The total cost of the Proposal is about **\$600 million**



The facility would produce enough **electricity to power 43,000 homes**



300 direct construction jobs



60 full-time ongoing jobs



Construction duration including commissioning is about **3 years**



The facility will have an operational life of at least **25 years**



Where is the Proposal at now and what happens next?

We're in the Scoping phase which is the first step in the NSW Government's planning assessment process. This is where we work with technical experts to identify the possible environmental, economic and social impacts of the Proposal.

An important part of this phase is talking to the community and other stakeholders to hear what concerns they have about the Proposal.

We will also be asking our community:

- how they want to be consulted and communicated with
- how we can ensure everyone who wants to has a chance to participate.

This information will be included in our Scoping Report and provided to the Department of Planning, Industry and Environment (DPIE).

The DPIE will use this information to issue the Secretary's Environmental Assessment Requirements (SEARs). This will tell us what we need to do to progress the Proposal and what consultation is needed so we can lodge an Environmental Impact Statement (EIS).

How I can get in touch with Jerrara Power?

We're committed to engaging with the community and other stakeholders throughout the planning and assessment process. There will be opportunities for people to have their say about various issues during scoping, preparation of the Environmental Impact Statement (EIS) and when the EIS is placed on public exhibition.

Our consultation opportunities will be promoted locally through the media, on our website and our Facebook page.

We encourage you to register on our website for updates that we'll send via email. You can also call us toll-free or email us at any time.

 jerrarapower.com.au

 [@jerrarapower](https://www.facebook.com/jerrarapower)

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The planning and assessment process



