Moama Ethanol Plant

Scoping Report

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Scoping Report

Client: Murray River Energy Pty Ltd

ABN: 77 628 094 879

Prepared by

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Executive Summary

The Project involves the construction and operation of an ethanol plant at Centre Road, Moama. The Project would have the capacity of producing 115 megalitres (ML) of ethanol per annum and would include several grain storage silos, a wastewater treatment facility and a workshop area. The Project would operate 24 hours per day, seven days a week for 330 days per year; with a scheduled shut down period.

The site is located on land legally designated as Lot 3 in Deposited Plan 813704, commonly referred to as Centre Road, Moama. The Project site is located on the east of Centre Road and west of the Cobb Highway; approximately 10 kilometres north of Moama township. The local area is dominated by agricultural farmland, split between cropping and pasture related activities. The topography of the area is typical of the wider Murray region; with predominantly lowland arable plains with little variation in elevation.

Key elements of the Project would include:

- Ethanol plant infrastructure for processes including closed system grain milling, liquefaction of grain flour, fermentation, distillation and dehydration and centrifuge and drying of dried distiller's grain (DDG).
- A natural gas-fired steam boiler, which would also take recovered biogas from the process.
- Associated office, control room and maintenance room.
- Storage area and silos for input grain.
- Storage area for DDG output.
- Onsite ethanol storage.
- A wastewater treatment plant including anerobic and aerobic treatment processes and generation of a liquid fertiliser coproduct.
- Staff car park and visitor car parking area.
- Associated internal road network.
- Stormwater infrastructure including vegetated swales and bio-retention and flood retention basin.
- Research and development centre.

The site is mapped as RU1 Primary Production under the Murray Local Environmental Plan 2011 (LEP). The Project is defined as '*agricultural produce industry*' under the Murray LEP 2011. Agricultural produce industries are a type of *rural industry*, which is permissible with consent in the RU1 Primary Production land use zone under the Murray LEP 2011. Consequently, the Project is considered to be permissible with development consent under Part 4 of the *Environmental Planning and Assessment Act 1979*.

The Project is classified as State Significant Development (SSD) pursuant to clause 3 of *State Environment Planning Policy (State and Regional Development) 2011* (SRD SEPP). The Project is permissible with consent within the RU1 Primary Production land use zone

Following a review of the Project and the location and sensitivities of the Project site and surrounding area, a number of potential impacts relating to the following environmental aspects were identified. These issues would be further confirmed as part of EIS preparation including consideration of additional issues or aspects identified during detailed EIS investigations and stakeholder and community consultation.

The environmental aspects (Key issues and Other issues) identified for further consideration include:

Key issues

- Traffic and transport
- Hazard and risk
- Landscape and visual character
- Hydrology and water quality
- Groundwater
- Noise and vibration
- Social and economic
- Air quality and odour
- Co-products and waste management
- Greenhouse gas emissions
- Soils and contamination

Other issues

- Biodiversity
- Aboriginal Cultural heritage
- Non-Aboriginal Cultural Heritage

For each of the above environmental aspects, a review of the existing environment, the potential for impacts (issues for consideration) and proposed EIS assessment scope has been identified. The EIS assessment scope has been informed by:

- Identified sensitivities of the Project site and existing receptors and environment;
- Level of community and stakeholder concern;
- Likely scale and nature of potential Project impacts;
- Regulatory discussions and expectations for projects of this nature;
- Accepted regulatory standards and environmental impact assessment guidelines in NSW; and
- Applicable policy and legislation.

Each aspect is described in **Section 8.0**.

Murray River Energy is committed to engaging in a transparent and meaningful way with stakeholders at all stages of the environmental impact assessment process. This includes surrounding landowners and businesses, members of the broader community, regulatory agencies and Government (including elected representatives), Murray River Council and other interest groups (e.g. utilities and service providers, peak bodies, industry associations) and the media.

The Department of Planning, Industry and Environment (DPIE) was contacted early in the process on 13 September 2018 to discuss the Project and to establish the planning pathway. AECOM presented the Project to the Mayor, the Murray River Council (MRC) executive and senior council staff by teleconference on Wednesday 25 March 2020 owing to COVID 19 restrictions on travel to Moama. In addition, consultation letters were sent to neighbouring landowners advising of the Project and seeking one on one phone meetings to discuss matters which may be of interest to them on 30 March 2020. Outcomes of this consultation has been summarised in **Section 9.0**.

1.0 Proponent details

The details of the Proponent are provided in **Table 1**.

Table 1 Proponent Details

Name	Murray River Energy Pty Ltd
Postal address	PO Box 45 Cororooke, Victoria 3253
ABN	77 628 094 879
Nominated contact	Greg Finn
Site owner	Murray River Council
Scoping Report	Prepared by AECOM Australia Pty Ltd

Murray River Energy would develop the Project in collaboration with Dongmun IRS, founded by Sungho Joo in 1996, which specialises in the construction and installation of anaerobic fermentation facilities which convert agricultural product (i.e. wheat) into useful, sustainable energy products such as ethanol.

2.0 Introduction

2.1 Overview

Murray River Energy Pty Ltd (Murray River Energy) is seeking development consent to construct an ethanol plant (the Project) at Centre Road, Moama (the Project Site). The Project would have a capacity of producing 115 megalitres (ML) of ethanol per annum and would include several grain storage silos, process plant and utilities, a wastewater treatment system and a workshop area. The Project is identified as State Significant Development (SSD) under the *Environmental Planning and assessment Act 1979* (EP&A Act) by virtue of meeting the thresholds defined in *State Environmental Planning Policy (State and Regional Development) 2011* (SEPP SRD).

Murray River Energy is committed to working with key stakeholders, including State government agencies and Murray River Council, to deliver a high-quality development, which generates economic benefits and employment opportunities for the Murray River residents and visitors.

The planning approval pathway and permissibility for the Project is discussed further in **Section 6.1.1** and **6.1.2** of this Scoping Report, respectively.

This Scoping Report has been prepared to seek Secretary's Environmental Assessment Requirements (SEARs) for the Project. These SEARs would allow the preparation of an EIS in line with the expectations of the regulators and in accordance with Part 4 of the EP&A Act

2.2 Background to the project

Dongmun Greentec obtained approval for the construction and operation of an ethanol plant capable of producing 115 mega litres (ML) of ethanol annually at Deniliquin in July 2016 (SSD 6281). In early 2019, Dongmun Greentec Pty Ltd sought a modification of SSD 6281 to change the name of the applicant specified in the consent (being Dongmun Greentec Pty Ltd) and record the applicant's name as Deniliquin Ethanol Plant Pty Ltd. In the intervening period, the Company has changed its name to Murray River Energy.

Given some of the constraints to construction of the ethanol plant at Deniliquin including proximity to rail and gas infrastructure, biodiversity matters and Aboriginal heritage, Murray River Energy has over the last two years been investigating several other sites in the general region which are considered preferable locations for the plant. These sites offer more ready access to transport routes and to infrastructure services such as gas and water. Murray River Energy is the proponent for the Murray River Energy project (the Project) which favours development of an ethanol plant at Moama NSW.

The Project is identified as SSD, pursuant to clause 4.36 of Part 4 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) as it meets the requirements of Clause 8 of the SEPP SRD and falls under the provisions set out in Clause 3(b) of Schedule 1, of the SEPP.

Clause 3(b) of Schedule 1 of SEPP SRD relates to development for the purpose of agricultural produce industries and food and beverage processing that has a capital investment greater than $30 million. The Project falls within this definition and has a capital investment value in the order of $**90** million. Accordingly, an Environmental Impact Statement (EIS) would be required to support the SSD Application for the Project. The permissibility and planning approval pathway for the Project is discussed further in **Section 6.1**.

Murray River Energy met with the Department of Planning, Industry and Environment (DPIE) on 13 September 2018 to discuss the Project and the preparation of a Scoping Report prior to setting up a Planning Focus Meeting for the Project. This Scoping Report provides an outline of the Project, the proposed planning pathway and assessments to be carried out.

It has been prepared to seek SEARs for the Project. These SEARs would allow the preparation of an EIS in line with the expectations of the regulators and in accordance with Part 4 of the EP&A Act.

The Project would be constructed and operated in the same manner as the Deniliquin Ethanol plant. The plants are like-for-like in terms of the actual plant, processes and equipment and both plants have the same number and sizes of vessels, operating conditions and flow rates. The Project footprint and site configuration would also remain the same.

2.3 Document structure

This Scoping Report has been prepared generally in accordance with the *Scoping and Environmental Impact Statement – Draft Environmental Impact Assessment Guidelines* (DPIE, 2017), and includes:

- Applicant details (**Section 1.0**)
- Introduction (**Section 2.0**)
- Site analysis (**Section 3.0**)
- Project description (**Section 4.0**)
- Project alternatives (**Section 5.0**)
- Planning and assessment process (**Section 6.0**)
- Key and other issues (**Section 7.0**)
- Consultation activities (**Section 0**)
- Conclusion (**Section 9.0**).

3.0 Site analysis

3.1 Regional context

3.1.1 Overview of the Murray region

The Project Is located in the Murray region, which stretches 400 kilometres (km) east to west across NSW, covering an area of approximately 78,869 km^2. The Murray region is situated along the Murray River. The region is known for its agriculture and food markets, having both rich alluvial soil and leveraging the irrigation opportunities presented by the River. The Murray region relies heavily on the agricultural sector for its economic prosperity.

Land use and land management practices have a profound impact on Australia's natural resources, the environment and agricultural production. The Murray region spans three states, NSW, South Australia and Victoria and covers a significant area of land incorporating a huge diversity of natural environments and land use types. In the NSW part of the Murray region, major land uses include irrigated and dryland cropping, horticulture, wool and meat production, water storage, mining, tourism, recreational fishing, forestry and nature conservation.

3.1.2 Regional context

The Project is located in the Murray-Lower Darling region of south western NSW and is approximately 200 km north of Melbourne, 400 km west of Canberra and 630 km south west of Sydney (see **Figure 1**). The area surrounding the Project site is the agricultural intensive Riverina region, where the majority of the wheat grain would be sourced for the production of ethanol. This region is bounded to the west by the Great Dividing Range and situated within the drainage basin of the Murray River.

Produce from the region varies, providing significant contributions of food produce, such as wheat, rice, maize, citrus and wine grapes, to the wider State.

3.2 Project site

3.2.1 Site location

The site is located on land legally designated as Lot 3 in Deposited Plan 813704, Centre Road, Moama (see **Figure 2**). The Site is located in the township of Moama, which is part of the Murray River Council Local Government Area (LGA). The Site area is approximately 193 ha, with a western frontage (782m) facing Centre Road, and eastern frontage ((848 m) facing Mathoura Line Road. The proposed development would be situated on the western side of the Site, with access being provided via a road reserve extending from Centre Road west to the Project site.

3.2.2 Site context

The site is located in an RU1 primary Production land use zone under the *Murray Local Environmental Plan 2011* (Murray LEP). The surrounding area is similarly zoned RU1 Primary Production, with the exception to a strip to the east of the Site zoned SP2 Infrastructure. This adjoining parcel of land supports the Moulamein railway line, a decommissioned railway which links to the Deniliquin railway to the south . **Figure 3** provides an illustration of where these zones are located relative to the site. The surroundings of the site are characterised by primary production and agriculture, which is representative of the broader Murray LGA.

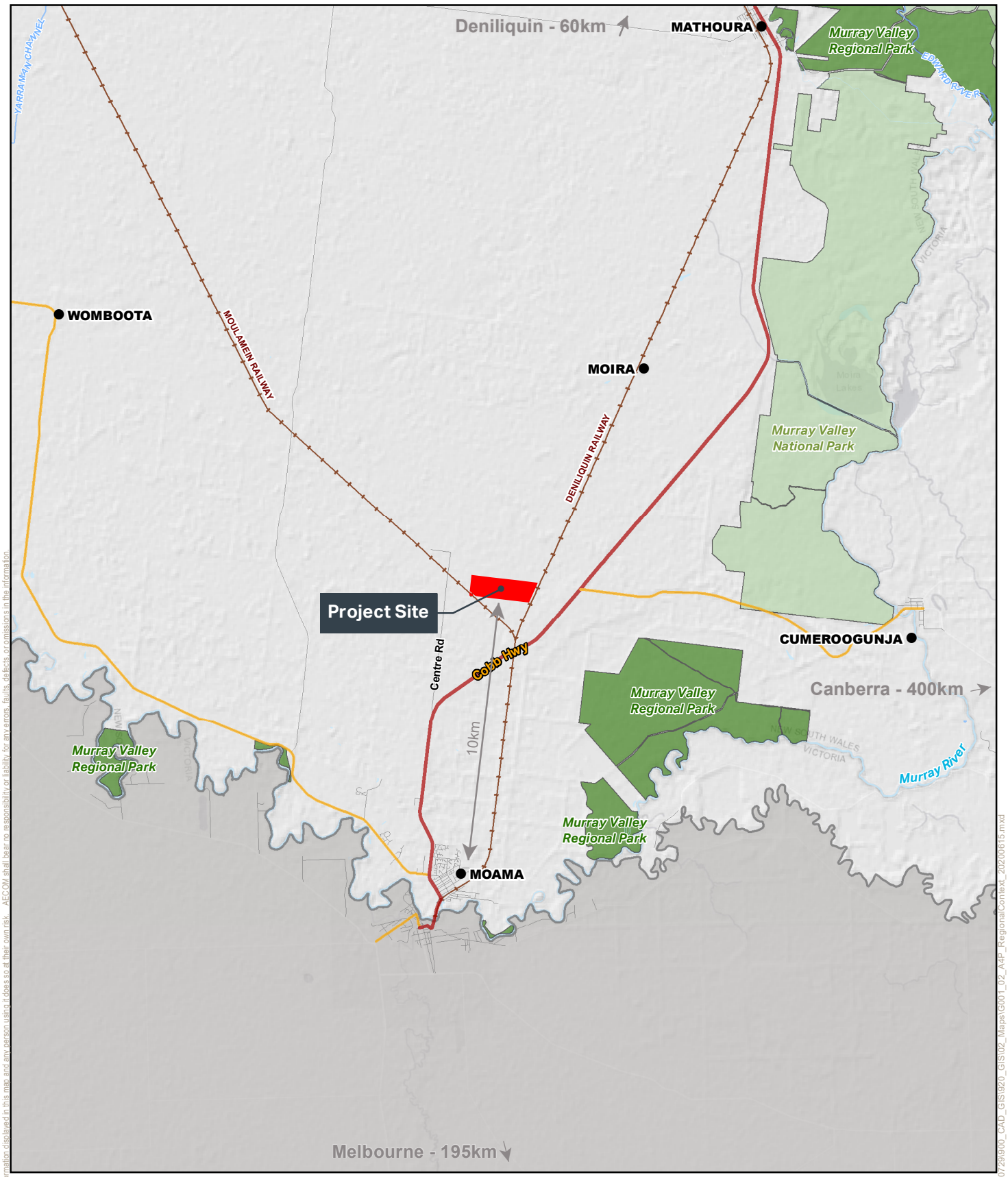
More broadly, the Project site is located on the east of Centre Road and west of the Cobb Highway; approximately 10 km north of Moama township. The local area is dominated by agricultural farmland, split between cropping and pasture related activities. The topography of the area is typical of the wider Murray region; with predominantly lowland arable plains with little variation in elevation. The relatively flat topography of the landscape, in conjunction with historical land clearing and current day cropping and agricultural land uses, has resulted in a wide, open planar landscape. This landscape is characterised by a mosaic pattern of land cover defined primarily by land use, including broad, regularly shaped, cropping areas with isolated stands of remnant trees and perimeter tree planting grown as wind breaks. Vegetation in the area surrounding the site consists of isolated stands of remnant and planted vegetation with some riparian vegetation but generally the landscape is cleared and has been extensively farmed over an extended timeframe.

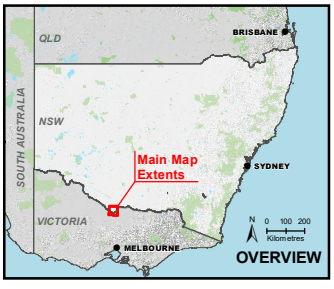
Further afield there are grain storage facilities, industrial land, the Moama Sewerage Treatment Plant and Moama Waste Management Facility. In closer proximity are scattered rural residences to the north west and south west of the site.

3.2.3 Site characteristics

The site has been extensively disturbed in the past and is currently subject to cropping with the exception of a small dam located in the south west corner and another in its epicentre. The road reserve to be used as the site access road from Centre Road is also predominately cleared. A narrow strip of trees lies along the southern and south eastern boundary of the Project site and an isolated copse of trees to the north. All of the remaining land is cleared and subject to intensive cropping. Vegetation on the southern boundary consists of a range of native and exotic species. The site is relatively flat, with a very-gentle slope from east to west. The surrounding land morphology generally slopes down towards the closest waterway; located about 1,700m to the north west.

Local Context





LEGEND

- Locality
- Freeway; Highway
- Main Road
- Other Roads
- Railway
- Major River / Watercourse
- Minor Watercourse
- Project Site
- Victoria

NSW Protected Areas

- Regional Park
- National Park
- Nature Reserve

Data Sources:
1. Roads, Railway, Parks, Drainage, Suburbs: @ Street Pro, 2011
2. Base Map Layer: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community
3. Parks and Reserves: An area of land, the boundaries of which have been determined by the Governor by proclamation in the Government Gazette, which has been reserved for various protection purposes defined in instruments administered by Department of Environment and Climate Change (Parks & Wildlife Division).

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Kilometres

FIGURE 1

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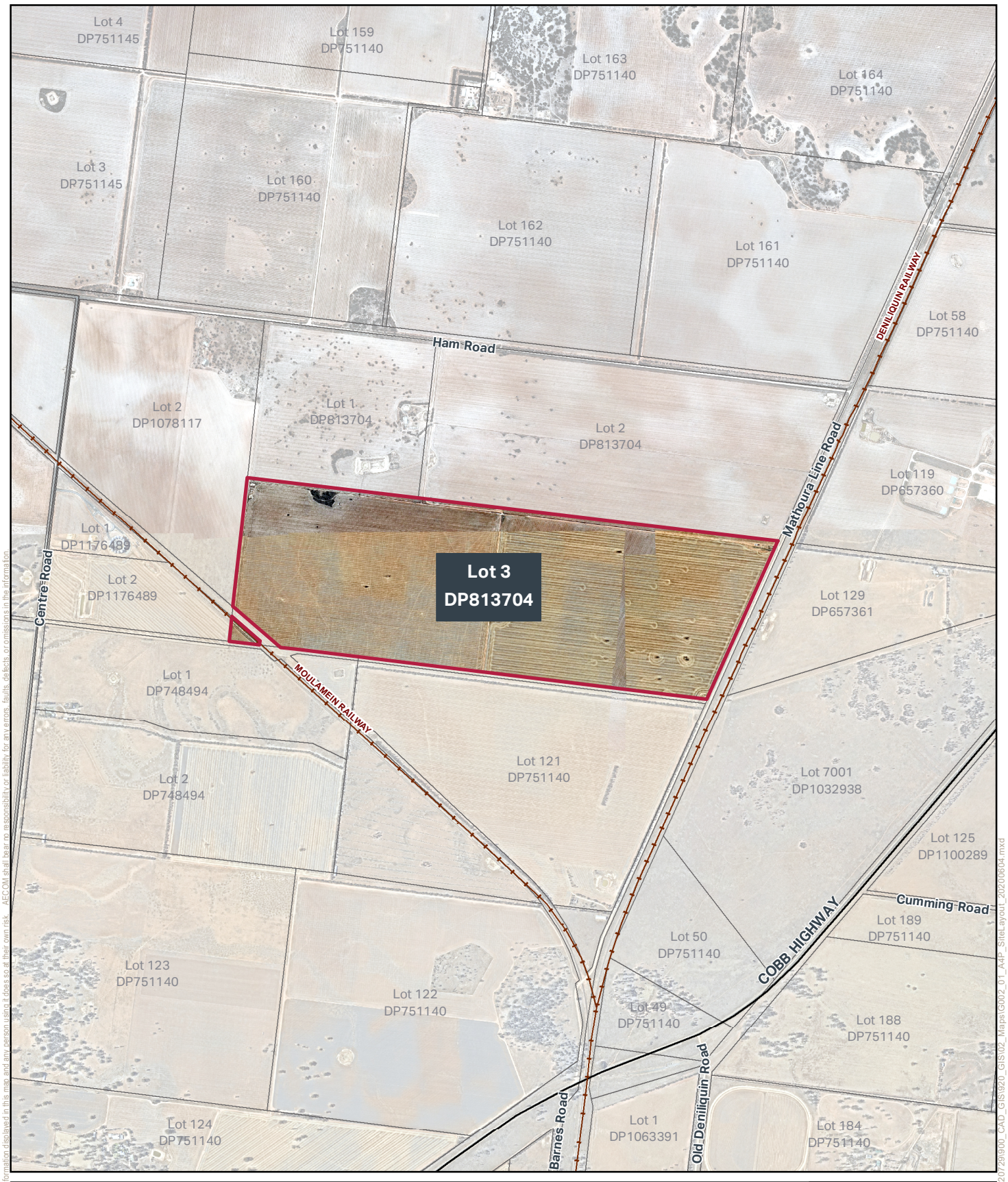
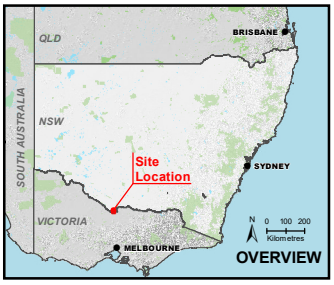
Site Location





LEGEND

- Project Site
- Cadastral Boundaries

Data Sources:
1.Imagery: © Nearmap, 2020.
2. Roads, Railway, Drainage, Suburbs, Parks, Localities: @ Street Pro, 2011
3. Key Map Base Layer: ESRI Online
4. Site Layout: based on CAD Drawingd prepared by DONGMUN I.R.S. Co. Ltd.

Disclaimer:
Site Layout is indicative only. To be used for information only. For detailed design reffer to CAD Drawings

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DATUM GDA 1994, PROJECTION MGA ZONE 55

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Metres

FIGURE 2

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Moama Ethanol Plant Environmental Impact Statement

Land Zoning

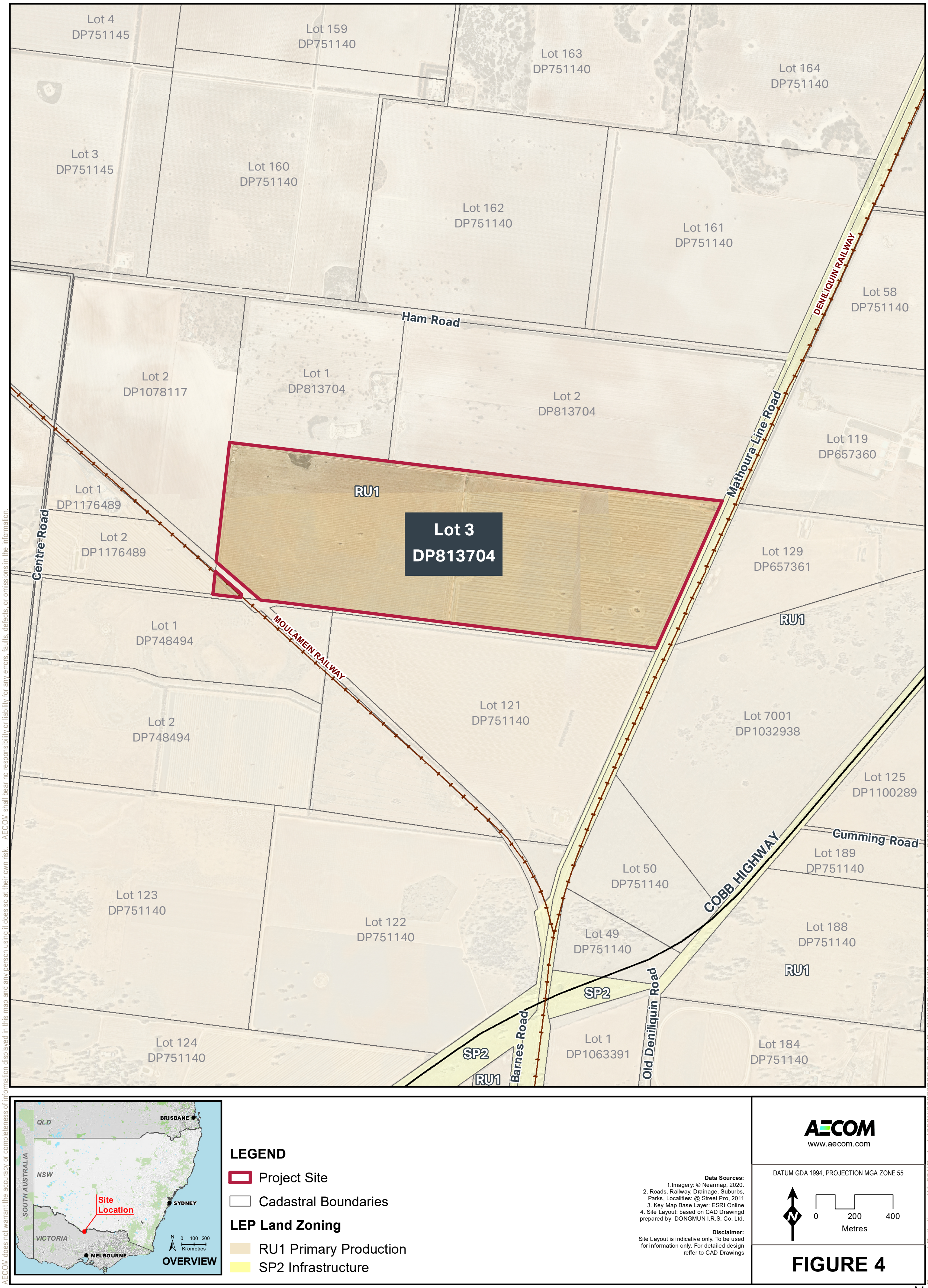

FIGURE 4

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4.0 Project description

4.1 Details of the project

The Project would have a capacity of producing 115 megalitres (ML) of ethanol per annum and would include several grain storage silos, a wastewater treatment facility and a workshop area. The Project would operate 24 hours per day, seven days a week for 330 days per year with a scheduled shut down period. The Project would process approximately 300,000 tonnes (t) of locally grown grain of wheat per annum. Utilising the carbohydrate (starch) in the wheat, the primary output from the production is fuel grade ethanol, which would be sold to the major petroleum companies as an additive to regular unleaded petrol (ULP) to produce E10 or would be exported. The co-products of the ethanol production process would be dried distiller's grain (DDG), Dried Distiller Grain with Solubles (DDGS), distiller's syrup and liquid fertiliser. DDG, DDGS and distiller's syrup would be sold as high nutrient agricultural protein meal supplements. The liquid fertiliser would be sold, as a land-based fertiliser to the agricultural sector.

4.2 Project objectives

The Project objectives incorporate environmental, social and economic considerations as follows:

- To supply the domestic fuel grade ethanol market with approximately 115 ML of ethanol per year
- To provide sellable co-products DDG, DDGS, distiller's syrup and liquid fertiliser) to the agricultural sector
- To generate employment opportunities for local residents during construction and operations phases
- To utilise local grain supplies in the production of ethanol
- To minimise impacts on the natural and built environment through sensitive design and appropriate environmental management practices
- To provide economic stimulus to local and regional economies
- To effectively engage with surrounding landowners at all stages of the planning process.

4.3 Project components

The following project components form part of the Project concept design. The Project layout would remain the same as the approved Deniliquin Ethanol Plant and would be contained within the same indicative project footprint (see **Figure 4**). Project components include:

- Ethanol plant infrastructure for processes including closed system grain milling, liquefaction of grain flour, fermentation, distillation and dehydration and centrifuge and drying of DDG;
- A natural gas-fired steam boiler which would also take recovered biogas from the process;
- Associated office, control room and maintenance room;
- Storage area and silos for input grain;
- Storage area for DDG output;
- On-site ethanol storage;
- A wastewater treatment plant including anaerobic and aerobic treatment processes and generation of a liquid fertiliser co-product;
- Staff and visitor car parking area;
- Internal road network;
- Stormwater infrastructure;
- Research and development centre;
- Perimeter fence and signage; and
- Boom gates to enter from visitor carpark and office.

4.4 Access to the Project site would be via a dedicated access road off Centre Road to the south of the site, which would be constructed to B double standards by Murray River Council (see Figure 4) Service infrastructure

Infrastructure requirements are provided in **Table 2**.

Table 2 Service infrastructure

Utility Infrastructure	Description
Electricity	Power estimated between 6 megawatts (MW) and 8 MW would be provided to an onsite substation from the nearby network along Mathoura Line Road.
Gas	Gas requirements would be supplied from an offsite storage facility owned by gas provider, Elgas. Options for gas supply and delivery including by pipeline are currently being investigated and would be described and assessed in the EIS.
Water	The plant would use some 2.6 ML of water during normal operation, and 148ML during commissioning. Approximately 1.3 ML of treated process wastewater would be recycled into the plant daily. The sizing of key components would be confirmed during detailed design. However, the volume supplied by each system would exceed the required volume to ensure a reliable supply of recycled water to the ethanol production process. The balance of water requirements is still being investigated. A number of potential sources include a private irrigation scheme with general security water, recycled water from Council's sewerage farm or other sources.
Wastewater	An on-site wastewater treatment plant would be used to treat process wastewater generated by the Project. Treated wastewater would be recycled back into the plant as process water. Options are being investigated to treat sewage in the anaerobic digestor or alternatively a septic system designed in accordance with AS/NZA 1546.1:2008 On-site Domestic Wastewater Treatment Units.
Stormwater	Stormwater would be directed to a concrete lined underground holding tank and rainwater falling on roof surfaces would be harvested and stored in rainwater tanks for potable water use. A stormwater management system would be designed with capacity to capture stormwater from the hardstand areas (refer **Section 8.1.5**).
Groundwater	Abstraction of groundwater may be considered to supplement water supply.

4.5 Ethanol production process

The ethanol production processes are briefly described in **Table 3**. A full description of each of the five stages would be provided in the EIS.

Table 3 Ethanol production process

Stage	Description
Grain intake and processing	• Trucks deliver grain • Closed system grain silos – dust filtered by bag filters • Milling of wheat to flour
Fermentation	• Mixing flour, process water and enzymes • Slurry after liquefaction, saccharification, pre-fermentation, pumped to fermentation tank • Ethanol and carbon dioxide produced • Carbon dioxide emitted during the fermentation process vented to carbon dioxide vent scrubbers prior to release to the atmosphere.
Distillation	• Mash isolated to ethanol vapour and ethanol while stillage by steam temperature • Ethanol vapour and inert gas exhausted by ventilation system • Wastewater treated in wastewater treatment plant.
Production (bioethanol)	• More than 99.5% of ethanol generated in the dehydration system stored in onsite storage tanks • Ethanol vapour generated in the tank collected by vent scrubber when vented through the exhaust system • Ethanol vapours collected safely by a vapour collection system
Dried distillers' grain	• A closed system used for the cooling, transporting, storing and packing process of DDGS • Any dust generated by this process collected by bag dust filters • Organic waste generated in the production process and final sludge generated from the wastewater treatment facilities, aerobically digested to generate liquid fertiliser • Organic waste stored in holding tanks located next to the digester solid waste • Biogas would be transferred to the boiler to be reused.

4.6 Workforce and timing

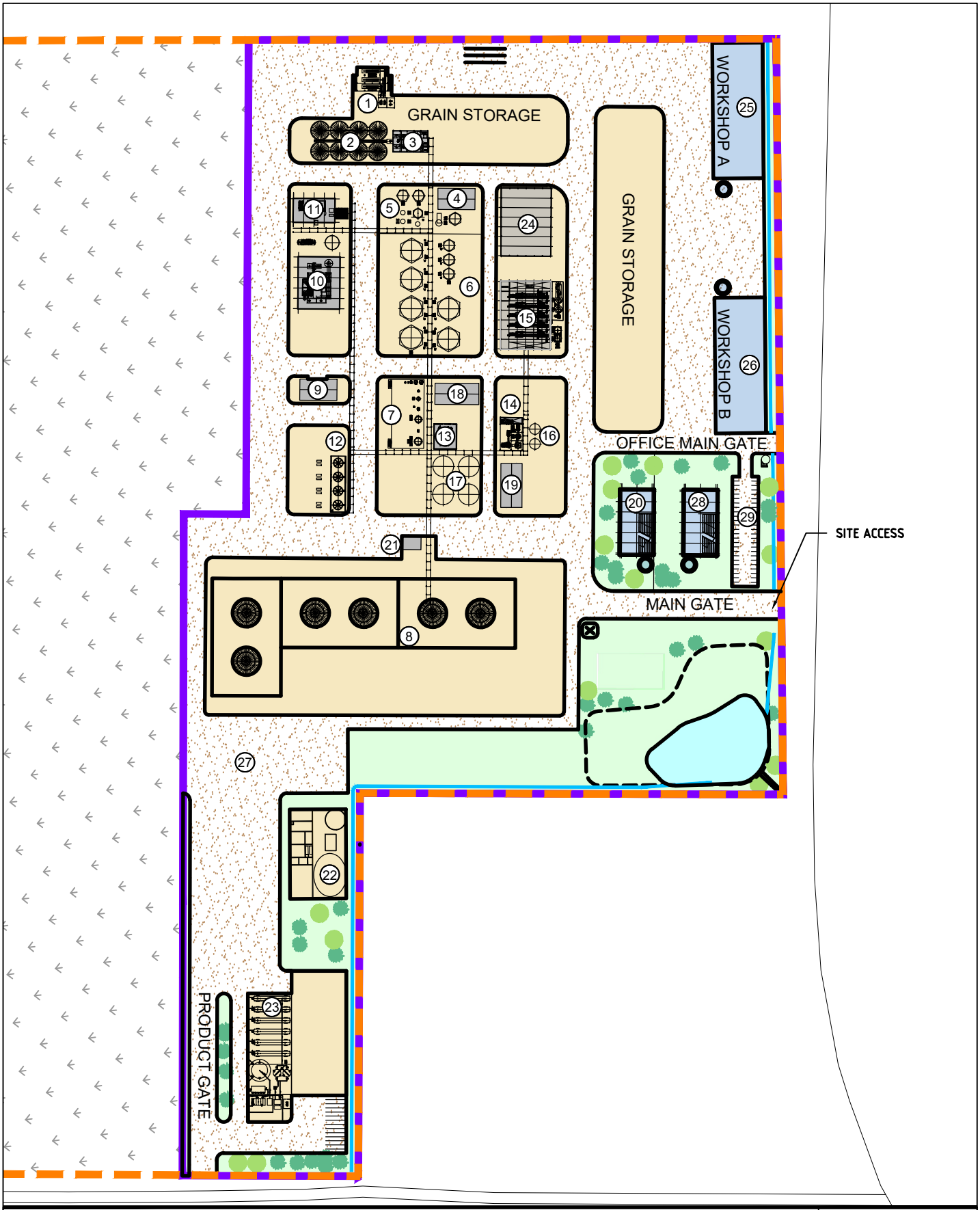
The Project is proposed to be constructed over a 14 to 16-month period during standard construction hours generating approximately 350 jobs. During operation and ongoing management of the Project, it is anticipated that the workforce would comprise up to a peak of 50 full-time staff (including staff-rotation). The daily on-site workforce includes approximately eight administration staff that would be present only during standard working hours (i.e. 8.00 am to 5.00 pm). There would typically be three shifts per day for the technical staff with each shift employing around eight staff members. There would also be four Research and Development (R&D) staff per shift. Shifts would nominally be 7.00 am to 3.00 pm, 3.00 pm to 11.00 pm and 11.00 pm to 7.00 am. To meet the processing requirements, the Project would operate 24 hours a day, seven days a week. An annual scheduled four-week shutdown would allow for plant maintenance

4.7 Environmental management

An Integrated Health, Safety and Environmental Management System (IMS) would be developed following approval of the Project. The purpose of the IMS would be to set out measurable commitments, objectives, targets, and management mechanisms for managing health, safety and the environment (HSE) at the Project in accordance with State and Commonwealth legislation, applicable Australian and international standards, and in general accordance with ISO 14001, ISO 18001, and ISO 9001. The IMS would provide a platform for preparing and implementing site-specific management plans, programs.

A Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP) would incorporate a suite of environmental management practices and measures as well as procedures for monitoring of environmental performance. An Emergency Response and Incident Management Plan would be developed for the operation of the Project as part of the IMS. A Quality Assurance/Quality Control (QA/QC) Program would ensure that the accuracy, precision, and reliability of environmental monitoring data are consistent with the requirements of NSW legislation and guidelines.

INDICATIVE SITE LAYOUT



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LEGEND

- ROADWAY
- SITE BOUNDARY
- PROJECT BOUNDARY
- LANDSCAPING
- RAIN HARVESTING TANK
- PAVEMENT AREA
- HARDSTAND AREA
- ROOFWATER CATCHMENT
- BIO-RETENTION & FLOOD DETENTION BASIN
- VEGETATED SWALE
- STORMWATER HOLDING TANK
- PARKING

1. Grain Intake
2. Grain Storage
3. Grain Preparation & Milling
4. Enzyme Storage
5. Gelatinization & Liquefaction
6. Fermentation
7. Distillation (Mash Tower, Rectifier Tower, Sieve Column & Dehydration)
8. Product Storage
9. Substation
10. Boiler & Air compressor
11. Water Treatment
12. Cooling Tower
13. Decanter
14. Evaporator
15. Dryer
16. Syrup Tank
17. Stillage Storage Tank
18. Control Room
19. Maintenance Room
20. Office
21. Ethanol Loading
22. Waste Water Treatment
23. Anaerobic Digestion
24. DDGS Storage & Loading Area
25. Workshop A
26. Workshop B
27. Impermeable Pavement
28. Training & Development Centre
29. Staff & Visitor Car Park

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FIGURE 4

5.0 Project alternatives

Murray River Energy has considered alternatives to the Project in the planning and pre-feasibility stages of the Project's development including alternate processing methods; water management alternatives; gas supply alternatives; transport alternatives and Project layout alternatives. These would all be documented in the EIS.

When addressing locality alternatives, Murray River Energy considered a range of options including construction of the approved Deniliquin Ethanol Plant at Barham Road, Deniliquin. However, construction of the Project in this location was not pursued as the Project site provides significant advantages over the selected site in Deniliquin including ready access to service infrastructure and transport modes.

The option of not proceeding with the Project was discounted as it would not realise the important economic benefit to the local and wider region referred to above and an opportunity to assist NSW in meeting its ethanol mandate of four percent would be lost.

5.1 Justification of preferred option

The Project site has a wide range of benefits. It is located:

- Central to a major agricultural area for the efficient supply of input grain
- Central to the major agricultural market for the sale of DDG, DDGS and distiller's syrup
- In a sparsely populated area, located on land previously disturbed for agricultural activities
- Within easy access to the domestic fuel market
- Within close proximity to Mathoura Line Road, Centre Road and the Cobb Highway
- Immediately adjacent to the decommissioned Moulamein railway which connects to the Deniliquin railway to the south.

The Project:

- Has access to a skilled workforce.
- Satisfies demand for co-products within the agricultural sector: DDG and DDGS are excellent, lower cost alternative feed ingredients that continue to be produced in large quantities by the dry-grind fuel ethanol industry. The high energy, mid-protein and high digestible phosphorus content of DDG and DDGS make them a very attractive, partial replacement for some of the more expensive, traditional energy, protein and phosphorus inputs used in animal feeds
- Would provide economic benefits to the local, regional and State economies, in particular through providing improved opportunities for grain markets in the Riverina area and NSW in general.

The additional key benefits provided by the Project include:

- Jobs: The facility would generate approximately 350 jobs during construction, 50 permanent jobs for operation and ongoing management, contributing to the local employment market
- Trades: Ongoing plant maintenance would require a diverse range of local trades
- Sourcing inputs: The purchase of grain input would inject revenue into the local economy and provide a stable local market for growers
- Ethanol mandates: The Project satisfies the established ethanol mandates in NSW and Queensland (further discussed in **Section 5.1.1**).

5.1.1 Ethanol Mandates

The NSW Government has set an ethanol target since 2007. Ethanol mandates are designed to encourage broader use of ethanol and other biofuels in NSW. A summary of the history of the NSW mandate is detailed below:

- A state-wide two percent average ethanol content was achieved in September 2008, less than 12 months after the commencement of the mandate (Department of Industry: Resource and Energy, 2015).
- Amending legislation commenced on 1 October 2009, which increased the volumetric ethanol mandate to four percent (from 1 January 2010) and later 6 percent (from 1 January 2011, later deferred until 1 October 2011), before requiring all regular grade unleaded petrol to become E10 from 1 July 2011 (later deferred until 1 July 2012 and then repealed on 29 May 2012) (Department of Industry: Resource and Energy, 2015).
- The 2009 amendments also introduced a volumetric biodiesel mandate, initially two percent (from 1 January 2010), increasing to five percent when sufficient supply of biodiesel is available, and broadened the volumetric mandate obligations to apply to major retailer's, as well as primary wholesalers (Department of Industry: Resource and Energy, 2015).
- On 28 September 2011 the mandate was increased to six percent from October 2011 (Biofuels Association of Australia, 2014).
- A similar increase in the biodiesel mandate was suspended in December 2011 following realisation that the local supply of biodiesel could not meet the mandate target (Department of Industry: Resource and Energy, 2015).
- In February 2012, the NSW Government requested the Independent Pricing and Regulatory Tribunal (IPART) to report on supply and demand for ethanol. IPART's report found there is sufficient production capacity to meet the six percent mandate; however, it has identified some factors that may make achieving the mandate challenging (Department of Industry: Resource and Energy, 2015).

Mandates are critical to drive market demand for ethanol as are new ethanol production developments to help achieve the mandate targets. Between NSW and QLD, a move to reinstate 6 percent and 5 percent mandate targets respectively would require the additional production of 835 ML of ethanol per year. Murray River Energy Pty Ltd has identified a potential for demand in ethanol production into the future to supply local markets, based on the government retaining the mandates currently in place.

6.0 Planning and assessment process

6.1 Environmental Planning and Assessment Act 1979

Development and planning in NSW is governed under the EP&A Act and the EP&A Regulation. Environmental planning instruments, including State Environmental Planning Policies (SEPPs) and LEPs, are legal documents enacted under Part 3 of the EP&A Act that regulate land use and development. Specifically, environmental planning instruments determine the permissibility of a proposed development and the environmental assessment pathway.

6.1.1 Planning Pathway

Section 4.36 of the EP&A Act outlines development that is considered SSD. This section notes that a development can be declared SSD by an environmental planning instrument (such as a SEPP) or by the NSW Minister for Planning and Public Places. Most developments are declared as State significant if they meet the requirements of SEPP SRD.

The Project would be considered State significant as the scope of the works fall within Schedule 1 to SEPP SRD. Under Schedule 1 of the SEPP, this Project is considered to be SSD as it meets the criteria under development type: Agricultural produce industries and food and beverage processing. It is an ethanol plant that has a capital investment value of more than $30 million (Schedule 1, clause 3(b)).

6.1.2 Permissibility

The site is mapped as RU1 Primary Production under the Murray LEP 2011. The Project is defined as '*agricultural produce industry*' under the Murray LEP 2011.

Agricultural produce industries are a type of *rural industry*, which is permissible with consent in the RU1 Primary Production land use zone under the Murray LEP 2011. Consequently, the Project is considered to be permissible with development consent under Part 4 of the *EP&A Act 1979*.

6.1.3 Assessment process

The Project is of State significance and would be assessed by virtue of an EIS prepared under Part 4 Division 4.7 of the EP&A Act. Section 4.12(8) of the EP&A Act states that a "*development application for State significant development is to be accompanied by an environmental impact statement prepared by or on behalf of the applicant in the form prescribed by the regulations."* Schedule 2 of the EP&A Regulation sets out the requirements of an EIS and requires that the content of an EIS is '*subject to the environmental assessment requirements that relate to the EIS'*. The purpose of this document is to request SEARs for the EIS for the Project.

Following a Planning Focus Meeting involving key Government agencies and Murray River Council, DPIE would compile SEARs for the Project. The SEARs would guide preparation of an EIS and once prepared, the EIS would be lodged with DPIE for assessment. In line with section 4.5 of the EP&A Act, the consent authority for the Project would be the NSW Minister for Planning and Public Places or the Independent Planning Commission. As noted in section 4.40 of the EP&A Act, SSD applications are evaluated and determined in line with the requirements of section 4.15 of the EP&A Act. Matters for consideration include relevant environmental planning instruments, likely impacts to the built and natural environment and social and economic impacts, submissions made on the application, site suitability and the public interest.

Sections 4.41 and 4.42 of the EP&A Act identify authorisations that are not required for a SSD Project, and authorisations that cannot be refused if necessary, for carrying out a SSD respectively.

Environmental approvals that do not apply to or in respect of SSD, but which have been considered in the preparation of this Scoping Report are listed in **Table 4**.

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Table 4 Relevant approvals not required under section 4.42

Approval	Comment
A permit under section 201 of the *Fisheries Management Act 1994*	The Project would not involve dredging or reclamation works.
A permit under section 205 of the *Fisheries Management Act 1994*	No works are proposed in waterways. The Project would not impact on key fish habitat.
A permit under section 219 of the *Fisheries Management Act 1994*	No works are proposed in waterways. The Project would not result in the blockage of fish passage.
An approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*	No non-Indigenous items were identified to occur on the site or surrounding properties according to Murray LEP 2011 and/or the NSW heritage register. The Project is unlikely to impact non-Indigenous heritage items.
An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974*	A search of the OEH Aboriginal Heritage Information Management System (AHIMS) register in May 2020 did not identify any Aboriginal sites or places occurring on the Project site (refer to **Section 8.1.13**). Given the already highly disturbed nature of the Project site and surrounds from past cropping and agricultural activities, there is considered to be a low potential for previously unidentified Aboriginal artefacts to occur within the Project site. Potential impacts to Aboriginal heritage would be assessed in the EIS for the Project.
A bushfire safety authority under section 100B of the *Rural Fires Act 1997*	The Project site is not located on bushfire prone land.
A water use approval (section 89), a water management work approval (section 90) or an activity approval (other than an aquifer interference approval) (section 91) of the *Water Management Act 2000*	The Project would not involve taking of groundwater during construction works (aquifer interference). During the preparation of the EIS an assessment of potential impacts to surface or groundwater would be undertaken.

Table 5 discusses each of the approvals required under section 4.42 of the EP&A Act and their applicability to the Project.

Table 5 Relevant approvals required under section 4.42

Approval	Comment
An aquaculture permit under section 144 of the *Fisheries Management Act 1994*	The Project would not involve aquaculture therefore no aquaculture permit would be required.
An approval under section 15 of the Mine Subsidence Compensation Act 1961	The Project is not located within a mine subsidence district.
A mining lease under the *Mining Act 1992*	The Project does not require a mining lease and would not be undertaken within a lease area.
A production lease under the *Petroleum (Onshore) Act 1991*	The Project would not involve petroleum production.
An Environmental Protection Licence (EPL) under Chapter 3 of the *Protection of the Environment Operations Act 1997* (POEO Act)(for any of the purposes	The Project would be classified as a scheduled activity under Schedule 1 of the *POEO Act 1997.* An EPL would be required for the Project based on the following triggers:

Approval	Comment
referred to in section 43 of that Act)	Agricultural processing - General agricultural processing (capacity to process more than 30,000 t of agricultural produce per year). Brewing and distilling (capacity to produce more than 30 tonnes of alcohol or alcoholic products per day or 10,000 tonnes of alcohol or alcoholic products per year). Chemical production – agricultural fertiliser(phosphate) production (capacity to produce more than 20,000 tonnes of phosphate plant fertilisers per year). Chemical production – waste generation (involves having on site at any time more than 5 tonnes of prescribed waste, not including excluded material (where 1,000 litres of liquid is taken to weigh 1 tonne)). Composting (the site would receive over 5000 tonnes of organics per year and store more than 2000 tonnes of organics on site at any one time). Petroleum products and fuel production capacity to produce more than 100 tonnes of petroleum products per year.
Consent under section 138 of the *Roads Act 1993*	The Project site would be located off Centre Road Moama, within the Murray River Council LGA. Centre Road feeds into the Cobb Highway which is a classified road managed by Transport for NSW (Roads and Maritime Services). No works are required as part of the Project which would impact the Cobb Highway.
A licence under the *Pipelines Act 1967*	The Project may involve the operation of a pipeline that would require a licence under the *Pipelines Act 1967*.

6.2 State and Local Policies Pertaining to the Project

The following environmental panning instruments include provisions relating to issues that would or may be relevant to the environmental impact assessment of the Project and relevant provisions that would be considered in the EIS.

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

Under SEPP SRD, the Project is considered SSD, as the Project is for the purpose of agricultural produce industries and food and beverage processing and has a capital investment value (CIV) of more than $30 million as defined in Clause 3 of Schedule 1 of the SEPP. The relevant consent authority is the Minister (or the Independent Planning Commission)

Clause 11 of the SEPP applies to the Project, which makes it clear that the requirements of development control plans do not apply to SSD projects.

6.2.2 State Environmental Planning Policy No 33 – Hazardous and Offensive Development (SEPP 33)

SEPP 33 outlines the approach used in NSW for planning and assessing the risks and hazards associated with industrial development proposals. Through the policy, the permissibility of an industrial proposal is linked to its safety and pollution control performance. SEPP 33 applies to any proposals that fall under the policy's definition of 'potentially hazardous' or 'potentially offensive industry'. The policy states:

potentially hazardous industry means a development for the purposes of any industry which, if the development were to operate without employing any measures to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:

a. to human health, life or property, or

b. to the biophysical environment

and includes a hazardous industry and a hazardous storage establishment.

potentially offensive industry means a development for the purposes of an industry which, if the development were to operate without employing any measures to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would emit a polluting discharge (including for example, noise) in a manner which would have a significant adverse impact in the locality or on the existing or likely future development on other land, and includes an offensive industry and an offensive storage establishment.

For development proposals classified as 'potentially hazardous industry' the policy establishes a comprehensive test by way of a preliminary screening assessment and preliminary hazard analysis (PHA) to determine the risk to people, property and the environment. The hazard classification for the Project is based on both dangerous goods thresholds combined with some approximate effect zones from fire and explosion events associated with specific dangerous goods classes.

The EIS would include an assessment of potential hazards and risks in accordance with the requirements of *Applying SEPP 33: Hazardous and offensive Development Application Guidelines Multi-Level Risk Assessment* at the Project site. **Section 8.1.3** of this Scoping Report provides further details regarding the proposed assessment of hazards and risks associated with the Project.

6.2.3 State Environmental Planning Policy No 55 – Remediation of Land (SEPP 55)

The objects of SEPP 55 are to provide a State-wide planning approach for the remediation of contaminated land and to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.

SEPP 55 restricts consent authorities from issuing development consent on land that may be contaminated, unless the consent authority is satisfied that the land in question is suitable for the development proposed to be carried out or would be suitable if appropriate remediation is undertaken.

The EIS would identify contamination risks (based on historic land use) and appropriate mitigation measures for managing and dealing with any residual contaminated material that may be encountered on site during construction works (but which would not preclude the intended land use).

6.2.4 State Environmental Planning Policy (Rural Lands) 2008

The aims of this Policy are as follows:

a. *To facilitate the orderly and economic use and development of rural lands for rural and related purposes.*

b. *To identify the Rural Planning Principles and the Rural Subdivision Principles so as to assist in the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State.*

c. *To implement measures designed to reduce land use conflicts.*

d. *To identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations.*

e. *To amend provisions of other environmental planning instruments relating to concessional lots in rural subdivisions.*

The Project site is not located on State Significant Agricultural Lands. However, the Project is in keeping with the objectives of this policy in promoting economic development in rural areas.

6.2.5 State Environmental Planning Policy (Koala habitat Protection) 2019

The aims of the Policy are to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline

This policy applies only to the LGA's listed in Schedule 1 of the policy. The Project Site occurs within the Murray LGA, which is listed as an applicable LGA within the policy. Given that the Project site is predominately cleared as is much of the land in the near vicinity, the land is unlikely to contain koala habitat. Notwithstanding, the impact on potential koala habitat would be considered in the Biodiversity assessment.

6.2.6 Murray Local Environmental Plan 2011

The Project is located within the Murray River LGA, which is subject to the Murray LEP. Consequently. the Murray LEP 2011 would be considered in the EIS to ensure that the Project is developed consistent with the aims of the LEP, being '*to encourage sustainable economic growth and development within Murray'* and the objective of the RU1 Primary Production zone, being '*to encourage diversity in primary industry enterprises and systems appropriate for the area'.*

6.2.7 Murray River Community Strategic Plan 2018-2028

The *Murray River Strategic Plan* outlines the community's aspirations and long-term vision of the Murray River LGA. It aligns with the regional goals in the *Regional Development Australia Riverina Regional Plan 2036* of a 'growing and diverse economy'. It has five strategic themes relating to the built/physical environment, the natural environment, social wellbeing, economic growth and leadership and governance. Objective 4.1 relating to economic growth seeks to *identify new opportunities and actively encourage investment in agriculture, agribusiness, value added manufacturing, alternate and renewable energy, health, wellbeing, aged care, and education.* The Project aligns with this objective. The Strategic Plan identified that the Murray River and other waterways are highly valued, with the community noting that the waterways underpin agriculture related manufacturing, the natural environment, lifestyle, tourism and amenity.

6.3 Other polices and plans

6.3.1 Regional Development Australia Riverina Regional Plan 2036

The Regional Development Australia Riverina Regional Plan 2036 (RDA Riverina) outlines the key emerging priorities and issues, along with the goals to be achieved through this plan. RDA Riverina has four regionally focussed goals including:

- A growing and diverse economy
- A healthy environment with pristine waterways
- Efficient transport and infrastructure networks
- Strong, connected and healthy communities

The region's proximity and interface with Victoria and its ability to use the export potential of Melbourne is acknowledged as presenting the region with significant ongoing growth opportunities. The Project aligns with aspects of these emerging priorities for the region, including economic growth, diversity and industrial innovation.

6.3.2 Water Sharing Plan for the NSW Murray and Lower Darling Regulated Rivers Water Source 2016

The Water Sharing Plan for the NSW Murray and Lower Darling Regulated Rivers Water Sources includes rules for protecting the environment, extractions, managing licence holders' water accounts, and water trading in the plan area. The plan is not considered to apply to the Project as no significant waterways or waterbodies are located within the Project site. The nearest major waterway, the Murray River, lies approximately 11 km to the east of the Project site and there is no historic or anecdotal evidence suggesting that the Project site is at flood risk. No extractions or water trading are proposed as part of the Project.

6.3.3 Murray Catchment Action Plan 2013 - 2023

The Murray Catchment Action Plan (MCAP) is a ten-year strategic plan that was prepared by Murray Catchment Management Authority now known as the Murray Local Lands service (LLS). The MCAP helps to identify strategic programs to improve the health, productivity and resilience of the landscape and its communities.

The Project aligns with a number of strategic goals outlined in the MCAP including supporting productive and sustainable businesses and farming systems.

6.3.4 The Basin Plan 2012

The Basin Plan 2012 aims to maintain a sustainable level of water use for environmental, social, cultural and economic activity in the Murray-Darling Basin. Water quality objectives for the Project would be in accordance with the requirements of the Basin Plan.

6.3.5 Water Sharing Plan for the Lower Murray Shallow Groundwater Source Sharing Plan 2012

The vision for this Plan is to achieve healthy aquifer systems, sustaining communities and ecosystems. The Project area is located in the Lower Murray Shallow Groundwater Source Water Sharing Plan area. This plan is applicable should the abstraction of groundwater be proposed as part of the Project.

6.3.6 The Aquifer Interference Policy 2012

The Aquifer Interference Policy 2012 explains the process of administering water policy under the *Water Management Act 2000*. The Aquifer Interference Policy (2012) outlines minimal impact considerations that must be met as a result of the Project. This policy is applicable should the abstraction of groundwater be proposed as part of the Project.

6.3.7 Murray Unregulated and Alluvial Water Sharing Plan 2011

The Project is located in the Murray Unregulated and Alluvial Water Sharing Plan area that commenced on 30 January 2012. The vision for this Plan is to provide for healthy and enhanced water sources and water dependent ecosystems and for equitable water sharing among users in these water sources. It contains the following objectives:

a. *protect, preserve, maintain and enhance the important river flow dependent and high priority groundwater dependent ecosystems of these water sources*

b. *protect, preserve, maintain and enhance the Aboriginal, cultural and heritage values of these water sources*

c. *protect basic landholder rights*

d. *manage these water sources to ensure equitable sharing between users*

e. *provide opportunities for enhanced market- based trading of access licences and water allocations within environmental and system constraints*

f. *provide water allocation account management rules which allow sufficient flexibility in water use*

g. *contribute to the maintenance of water quality*

h. *provide recognition of the connectivity between surface water and groundwater*

i. *adaptively manage these water sources, and*

j. *contribute to the environmental and other public benefit outcomes identified under the Water Access Entitlements and Planning Framework in the Intergovernmental Agreement on a National Water Initiative (2004)*

The assessment of surface water as part of the EIS would consider the objectives of the Murray Unregulated and Alluvial Water Sharing Plan within the assessment of potential impacts and the development of mitigation measures.

6.3.8 The NSW State Groundwater Policy 1997

The NSW State Groundwater Policy (Framework Document) was adopted in 1997 and aims to manage the State's groundwater resources to sustain their environmental, social and economic uses. The policy has three component parts:

- The NSW Groundwater Quality Protection Policy adopted in December 1998.
- The NSW State Groundwater Dependent Ecosystems Policy adopted in 2002.
- The NSW Groundwater Quantity Management Policy.

Abstraction of groundwater may be considered to supplement water supply. The EIS would consider the NSW State Groundwater Policy in the event groundwater is required to support the Project

6.4 Commonwealth Matters

6.4.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires the approval of the Commonwealth Minister for the Environment for actions that may have a significant impact on a controlling provision, including Matters of National Environmental Significance (MNES). Approval from the Commonwealth Minister is in addition to any approvals under NSW legislation.

The EPBC Act lists nine MNES that must be addressed when assessing the environmental impacts of a proposal. These matters are:

- World heritage properties
- National heritage places
- Ramsar wetlands of international significance
- Threatened species and ecological communities
- Migratory species
- Nuclear actions (including uranium mining)
- Commonwealth marine areas
- Great Barrier Reef Marine Park
- A water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act also requires Commonwealth approval for any activity that would, or is likely to have, a significant impact on Commonwealth land. The land on which the Project would be constructed is not Commonwealth land, and there is no Commonwealth land in close proximity to the Project, which could be impacted by the construction or operation of the Project.

A search of the EPBC Act Protected Matters Search Tool was undertaken on the 1 June 2020 for a 10 km buffer around the Project site. The search identified no places of national heritage importance, seven wetlands of international importance, five threatened ecological communities, thirty threatened flora and fauna species and twelve listed migratory species with potential to occur within 10 km of the Project site.

The results of the Protected Matters search for MNES are provided in **Table 6**. The Protected Matters search can be viewed in **Appendix A**.

Table 6 MNES within 10 kms of the Project site

MNES Matter	Matters of NES within 10 km of the Project Site
World Heritage Properties	None
National Heritage Properties	None
Wetlands of International Importance	7
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	None
Listed Threatened Ecological Communities	5
Listed Threatened Species	30
Listed Migratory Species	12
A water resource, in relation to coal seam gas development and large coal mining development	N/A

It is considered unlikely the Project would significantly impact upon any of the identified MNES and the Project is not considered to represent a Controlled Action under the EPBC Act. The Project site is already disturbed and surrounded by other substantially disturbed land used for agricultural and assorted light industrial/ storage or other purposes. Therefore, it is considered highly unlikely that threatened species, communities or migratory species would frequent or depend on habitat within the Project site or would be impacted by the Project. As such it is considered that the Project would not warrant referral to the Commonwealth Department of Agriculture, Water and Environment. Due diligence assessments would be undertaken as part of the EIS to confirm this.

6.4.2 National Environment Protection Measures (Implementation) Act 1998

Under the *National Environment Protection Measures (Implementation) Act 1998*, the National Environmental Protection Council (NEPC) was established to set national environmental goals and standards for Australia through the development of National Environment Protection Measures (NEPMs).

The National Pollutant Inventory (NPI) NEPM (NEPC, 2008) is considered to be relevant to the Project. The NPI NEPM establishes goals to assist in reducing existing and potential impacts of certain substances being emitted to air, land and water. Where the use of an NPI substance triggers the established threshold for that substance, emissions of that substance must be reported to the NPI (an internet database providing publicly available information on the types and amounts of certain substances being emitted).

Emissions to land, air and water from the construction and operation phases of the Project which trigger the NPI reporting threshold would be reported in accordance with the NPI Guide (Department of the Environment, 2015). The NPI Guide provides direction and guidance on NPI substances, trigger thresholds and reporting of emissions and transfers of waste. Emission estimation would be carried out in accordance with the most current Emission Estimation Technique Manuals (published online). The emissions associated with the Project would be reported to the Commonwealth Department of Agriculture, Water and the Environment and would be publicly accessible via the NPI online database.

6.4.3 National Greenhouse and Energy Reporting Act 2007

The *National Greenhouse and Energy Reporting Act 2007* (NGER Act) established a national system for reporting greenhouse gas (GHG) emissions, energy consumption and energy production by corporations from 1 July 2008. The NGER Act requires corporations exceeding the corporation or facility thresholds to publicly report their GHG emissions, energy consumption and energy production each financial year.

7.0 Key and other environmental issues

7.1.1 Environmental risk analysis

An initial review of potential issues for consideration in the EIS has been undertaken, with the aim of determining the likely level of assessment required to adequately and appropriately address each issue. In undertaking the initial screening, consideration has been given to the significance of potential environmental impacts for each environmental aspect (through a preliminary environmental risk screening) and also to the likely level of stakeholder interest in each issue. The inclusion of stakeholder perceptions of potential environmental impacts is considered an important part of determining the level of assessment that should be applied, given that key stakeholder concerns may not necessarily align with a purely technical analysis of environmental risks.

By combining the likely significance of each identified environmental issue with the expected level of stakeholder interest, an assessment has been made as to whether each issue is integral to the assessment of the Project, and whether a detailed specialist investigation or desktop analysis would be appropriate. Where a high level of stakeholder interest is expected, potential environmental impacts have been determined to be key issues, requiring a more detailed assessment irrespective of the outcomes of environmental risk screening.

7.1.2 Environmental Risk Screening Methodology

The environmental risk screening has been prepared in reference to:

- A review of the site potential environmental constraints
- Key risks identified in a review of other like projects including the approved Deniliquin Ethanol Plant identifying areas of primary community interest.

The preliminary environmental risk screening for the Project has taken into consideration the likelihood of a potential environmental impact occurring and the consequence of that impact, should it not be mitigated. The likelihood and consequence of each impact have been combined through the risk screening matrix (**Table 7**) to establish the likely risk of the issue for the environmental assessment of the Project.

Table 7 Significance screening matrix

Likelihood of Effect	Consequence of Unmitigated Effect		
	Minor	Moderate	Major
Unlikely	Very Low	Low	Medium
Possible	Low	Medium	High
Likely	Medium	High	Very High

The allocation of risk is based upon the following considerations:

Likelihood of effect:

1. Unlikely – Unlikely to happen or occur;
2. Possible – Could happen and has occurred elsewhere
3. Likely – Could easily happen and would probably occur.

Consequences of unmitigated impact:

4. Minor: minor adverse environmental change; small impact area; non-reportable incident
5. Moderate: moderate adverse environmental change; moderate impact area; reportable incident
6. Major: major adverse environmental change; large impact area; reportable incident to external agency; may result in fines.

The screening process aims to prioritise the issues for assessment and does not consider the application of mitigation measures to manage potential environmental effects. Appropriate mitigation measures would be included in the Project to minimise potential impacts and would be detailed in the EIS.

7.1.3 Review of Expected Stakeholder Interest

The expected level of stakeholder interest in each potential environmental issue identified has been considered based on known key issues raised in submissions in relation to the Deniliquin Ethanol Plant, other projects of this nature and the early community and stakeholder consultation undertaken as part of the Scoping Report.

Potential environmental impacts have been assigned an expected level of stakeholder interest based on the definitions presented in **Table 8**.

Table 8 Screening levels – expected stakeholder interest

Level of Interest	Definition
High level of interest	Identified potential environmental impact is likely to affect or garner interest from large number stakeholders.
Medium level of interest	Identified potential environmental impact is likely to affect or garner interest from some stakeholders.
Low level of interest	Identified potential environmental impact is unlikely to affect or garner interest from stakeholders.

7.1.4 Screening of Environmental Assessment Significance Outcome

The outcomes of the preliminary screening process are presented in Appendix A and summarised in Table 9. Mitigation measures would be developed during the assessment process and presented in detail in the EIS.

7.2 Confirmation of environmental issues

Based on the risk screening presented in **Table B1** in **Appendix A**, key issues requiring assessment for this SSD application have been identified as those with a High and Medium ranking and are summarised in **Table 9**. Issues presenting a low risk level to be considered in the EIS (other issues) are also identified in **Table 9**. Key and other issues are discussed in further detail in **Section 8.0**.

These environmental assessment significance rankings would be reviewed and updated as more detailed environmental investigations are undertaken to inform the preparation of the EIS for the Project. In addition, where additional relevant issues or aspects are identified during the preparation of the EIS including through stakeholder consultation, these would be subject to risk screening and assessment in the EIS commensurate with the level of risk and sensitivity identified.

Table 9 Identification of key and other assessment issues

Environmental Aspect	Environmental Assessment Significance	Environmental Aspect	Environmental Assessment Significance
Air Quality and Odour	High	Hydrology and Water Quality	Medium
Traffic and Transport	High	Co-products and Waste Management	Medium
Hazard and Risk	High	Greenhouse Gas Emissions	Medium
Landscape and Visual Character	High	Soils and Contamination	Medium
Noise and Vibration	High	Biodiversity	Low
Social and Economic	High	Aboriginal Cultural Heritage	Low
		Non- Aboriginal Cultural Heritage	Low

8.0 Key and Other Environmental Issues

8.1 Environmental Aspect Identification

Following a review of the Project and the location and sensitivities of the Project site and surrounding area, a number of potential impacts relating to the following environmental aspects were identified. These issues would be further confirmed as part of EIS preparation including consideration of additional issues or aspects identified during detailed EIS investigations and stakeholder and community consultation. The environmental aspects (Key issues and Other issues) identified for further consideration include:

Key issues

- Air quality and odour
- Traffic and transport
- Hazard and risk
- Landscape and visual character
- Noise and vibration
- Social and economic
- Hydrology and water quality
- Co-products and waste management
- Greenhouse gas emissions
- Soils and contamination

Other issues

- Biodiversity
- Aboriginal Cultural heritage
- Non-Aboriginal Cultural Heritage

For each of the above environmental aspects, a review of the existing environment, the potential for impacts (issues for consideration) and proposed EIS assessment scope has been identified. The EIS assessment scope has been informed by:

- Identified sensitivities of the Project site and existing receptors and environment
- Level of community and stakeholder concern
- Likely scale and nature of potential Project impacts
- Regulatory discussions and expectations for projects of this nature
- Accepted regulatory standards and environmental impact assessment guidelines in NSW
- Applicable policy and legislation.

Each aspect is described in the sections below.

8.1.1 Air Quality and Odour

Existing environment

The Project site is located in an area which has been extensively cleared for agricultural purposes and is dotted with rural homesteads and agricultural infrastructure along Centre Road, with industrial and other enterprises close to the Cobb Highway.

The nearest residential receptor is located approximately 1,500 m to the north west of the Project site. The closest industrial/commercial receptor is located approximately 800 m to the east of the Project site on Centre Road. A list of sensitive receiver is provided in **Table 10**.

Issues for Consideration

Air and odour emissions from the ethanol plant could pose a health risk to surrounding sensitive receivers if the plant is not designed and operated appropriately.

Construction

Key potential air quality impacts associated with the Project's construction activities include:

- Nuisance dust and particulate matter emitted from the Project's activities, particularly during earthworks and site preparatory works
- The emission of products of combustion, including nitrogen oxides(NOx), carbon monoxide (CO), carbon dioxide (CO_2), sulphur dioxide (SO_2), volatile organic compounds (VOCs) and particulate matter from construction equipment (i.e. heavy vehicles, excavators, bulldozers, generators, etc.) and worker transport (i.e. light vehicles)
- Fugitive release of VOC emissions from the storage and transfer of diesel and other fuels
- Emissions of dust and fumes from workshops (e.g. from sanding, welding and the use of solvents for cleaning equipment parts).

Operation

Key potential air quality impacts associated with the operation of the Project include:

- Odour generation due to the operation of the wastewater management system and ethanol production process
- Particulate matter (PM_{10} and $PM_{2.5}$), from combustion sources
- NOX and CO, from combustion sources
- VOCs, including acetaldehyde, acrolein, formaldehyde, ethanol and methanol
- Traffic-related exhaust emissions due to increased vehicle movements (i.e. heavy vehicle transport of product).

Proposed EIS methodology

The assessment of air quality and odour would characterise the existing environment (including meteorological and air quality conditions and proximity of sensitive receivers) to establish the potential sensitivity of the environment to changes that may occur as a result of the Project.

Potential impacts of air emissions during the construction phase of the Project would be assessed qualitatively by means of the methodology set out in the UK Institute of Air Quality Management (IAQM) document *Guidance on the assessment of dust from demolition and construction* (IAQM, 2014).

The Air Quality Impact Assessment for the operational phase of the Project (AQIA) would address air quality and odour impacts and would be conducted in accordance with the NSW OEH *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA 2016)(Approved Methods) and guidelines for the *Assessment and Management of Odour from Stationary Sources in NSW* (EPA 2017). It would:

- Establish the existing meteorological and air quality conditions within the region
- Determine the air quality including odour criteria relevant to the Project
- Develop and Determine key pollutants of interest
- Establish an emissions inventory including fugitive emissions data and stack emissions data
- Develop a dispersion model (CALPUFF dispersion model)
- Develop modelling scenarios
- Predict emissions from the Project and cumulative impacts from other sources
- Provide an assessment of the predicted air quality impacts against relevant criteria

- Establish measures to manage and mitigate predicted impacts as required.

The quantitative air dispersion modelling assessment would include consideration of the Project site meteorological conditions and sensitive receptors while using the emissions inventory established for the Deniliquin Ethanol Plant. The following inputs are required for the dispersion modelling:

- *Meteorological data* – the generation of site-specific meteorology would be sought from the following locations:
  - Deniliquin bureau of meteorology (BOM) Station (56km north east of the Project site); and
  - Kyabram BOM Station (42km south east of the Project site).

Meteorology from these locations would be combined with upper air data obtained from the TAPM prognostic model within the CALMET model to generate a full 12 months of recent, representative meteorological data. The data would be verified against long term meteorological data collected from the closest long-term monitoring station (Deniliquin) to demonstrate the data's representativeness.

- *Terrain Data* – would be extracted from the SRTM1 30 m data set for the Moama region and incorporated into the assessment through the meteorological data generation. Given the low local relief, terrain is not expected to be a major factor in the assessment.
- *Receptor Data* –Receptors would be placed at the property cadastral boundary and also at the surrounding residential and commercial receptors. In addition, an arbitrary grid of receptors would be modelled out to an approximate distance of approximately 3 km from the facility.

Meteorological and air dispersion models would be those approved under the NSW EPA Approved Methods (NSW OEH 2005) as follows:

- The Air Dispersion Model (TAPM) (with CALTAPM) for meteorological processing of prognostic data;
- CALMET for processing the meteorological data into a format suitable for CALPUFF;
- CALPUFF for predicting the dispersion of emissions; and
- CALPOST for formatting results and creating dispersion pattern contours.

8.1.2 Traffic and Transport

Existing environment

The Project site is accessed via the Cobb Highway and Centre Road which are approved heavy vehicle access routes (25/26m B-double routes as a maximum) as shown on the RMS NSW Combined Higher Mass Limits and Restricted access vehicle Map (RMS 2016). All classified roads and local roads in Murray Shire can accommodate B doubles.

The Cobb Highway (B75) extends from the bridge over the Murray River at Moama, via Deniliquin, through Hay and Ivanhoe to meet with the Barrier Highway (A32) near Wilcannia. It is a two-lane, single carriageway formation with a posted speed limit of 100 km/hr in the vicinity of the Project site. It is a Transport for NSW (includes former Roads and Maritime Services (RMS)) approved route for road trains and 4.6 m high vehicles.

In the vicinity of Centre Road, the Highway has one lane in either direction with an auxiliary left turn providing access from the Highway to Centre Road from the south. When travelling from the north, an auxiliary right turn allows safe access for vehicles turning into Centre Road while enabling continued movement of through traffic on the highway.

The Deniliquin railway line to the east of the Project site is the nearest freight rail infrastructure (broad gauge) connecting Deniliquin to Bendigo (via Echuca) operated by QUBE Logistics. The Moulamein railway line which connects to the Deniliquin railway line to the south of the Project site has been decommissioned.

The Port of Melbourne (approximately 240 km to the south) is likely to be used by the Project during the operations phase for the export of products. The Port would be accessed by existing road and rail routes.

Issues for consideration

Access to the Project site would be via a disused road reserve to the south west from Centre Road which would be sealed by Murray River Council to accommodate heavy vehicles. The road would traverse the decommissioned Moulamein railway tracks and extend to a dedicated entrance to the Project site. The location of the site entrance and internal road layout and car parking arrangements are indicative only and are based on the approved Deniliquin Ethanol Plant layout (refer Figure 2-1). The design would be subject to specialist input and further assessment as part of the EIS.

During construction, vehicles transporting employees and construction materials would access the Project site from the local and wider road network. It is anticipated that the transportation of materials would be by heavy vehicles up to the B-Double category. The majority of components specifically required for the Project would be assembled on the Project site. Specialist equipment (such as the anaerobic digester and fuel facility components) would be prefabricated and installed onsite. It is not anticipated that oversized heavy vehicles would be required to deliver materials for construction.

The estimated number of overall daily vehicular trips would be around 300 per day during periods of peak construction activities (i.e. 150 vehicles per direction per day based on 50 percent inbound and 50 percent outbound).

On average, the estimated breakdown of the daily total vehicles would be approximately 80 percent workforce vehicles and around 20 percent construction related vehicles.

Heavy vehicle volumes (around 56 vehicles per direction per day during peak construction activities) and light vehicle volumes (some 122 vehicles per direction per day during construction activities) can be accommodated on the existing transport network without the requirement for local or far-field road works, except the sealing of the access road from Centre Road. The number of heavy vehicles accessing the Cobb Highway during construction is likely to be around four heavy vehicles per direction per hour and hence unlikely to cause adverse impacts on the highway. This would be confirmed as part of the EIS following design refinement.

Matters to be considered relating to traffic and transport during construction would include:

- Temporary increase in traffic volume due to trucks transporting construction machinery, and raw materials to site and construction waste for offsite disposal as well as light vehicles driven by construction workers
- Movement of heavy loads
- The increase of heavy vehicles on Centre Road may have safety impacts due to large construction vehicles turning across Centre Road to the new access road. Traffic management measures would be required to ensure vehicles could access and leave the site safely without disrupting road users.

The rail network would not be used during the site preparation and construction phase.

During the operations phase the key transport movements would be the movement of staff (mainly light vehicles) and the transportation of raw materials required for the processing, and the output products from the ethanol production process (by road and rail).

The rail network is expected to transport up to 60 percent of the ethanol to and from the Project site via the rail line. Heavy vehicle volumes during the operational phase would be mainly for the transport of raw materials such as grain to the Project site, co-products and waste materials off site (around 65 heavy vehicles per direction per day) and light vehicle volumes generated by workers (some 44 light vehicles per direction per day). Assuming the movement of materials by heavy vehicles occurs over a 10-hour period per day, the overall hourly movement is around 13 vehicles per hour with six to seven vehicles per hour per direction. This would be confirmed as part of the EIS following design refinement. As the supplier and market arrangements for the raw materials and distribution of the output products has yet to be finalised, it is assumed that the majority of heavy vehicle would travel on the Cobb Highway in a southerly direction. More detailed assessments addressing the movement of products would be carried out in detailed design, once the volume of heavy vehicles and destinations have been confirmed.

It is estimated that the average number of train wagons required per day (based on 330 days per year) would be around 12 wagons per day inbound and 10 wagons per day outbound. Again, this would be confirmed as part of the EIS following design refinement but is in alignment with the Deniliquin Ethanol Plant requirements.

The availability of the rail line to support the Project has been confirmed with the rail freight operator QUBE Logistics.

To provide safe access to the Project site, the site access intersections and driveways would be designed in accordance with Australian Standards AS 2890 for the vehicular access to the site car park as well as the heavy vehicle access points to and from the proposed ethanol plant, allowing access for heavy rigid and articulated vehicles. All heavy vehicle movements whilst on site would travel in a forward direction. The intersection with Centre Road would be well signposted to enable safe passage of heavy vehicles.

The site layout and the internal road network would be further refined during detailed design and before the site configuration is finalised for construction.

Matters to be considered during the operation phase would include:

- The capacity and reliability of the rail network
- Impact on the local and wider road network
- Delivery of raw materials to the plant
- Transport of co-products to market
- Additional chemical deliveries to the site.

Proposed EIS methodology

A Traffic and Transport Impact Assessment would be prepared for the EIS in accordance with the RMS Guide to Traffic Generating Developments (RTA, 2002). This assessment would include the following tasks:

- Identification of the existing transport infrastructure in the region (i.e. regional roads and rail infrastructure)
- Consultation with relevant stakeholders and departments including Murray River Council, Transport for NSW (formerly RMS), Public Transport Victoria and V/Line and QUBE Logistics to ascertain:
    - Road specific data including route status, speed limits and safety data.
    - Timetable information for train routes
    - Plans of any road upgrades, rail and other infrastructure works or new roads required for the Project
    - Current and future capacity of the existing routes.
- Review of relevant standards, policies and guidelines to inform the design and assessment, including
    - Guide to Traffic Generating Development (RTA), October 2002
    - Road Design Guide (RTA), various years
    - Australian Standards AS2890: Parking Facilities (AS2980)
    - Austroads Guide to Road Design (including Part 4A: Unsignalised and Signalised intersections and Part 3: Geometric Design).
- Review of Murray LEP 2011 and Murray Development Control Plan 2012.
- Development of plans of the proposed layout of the internal road network and parking on site in accordance with the relevant Australian standards.

- An assessment of the potential impacts from construction and operation of the Project on:
  - the existing road infrastructure and network, including road safety, road traffic generation, road condition and the capacity of the road network to accommodate the likely increase, and cumulative impacts
  - the existing rail network, including potential rail traffic generation and the capacity of the rail network to accommodate the likely increase, and cumulative impacts
  - other transportation modes that may be impacted including school buses
  - identification of potential mitigation and management strategies which may be implemented during the Project's phases (including a Road Use Management Plan during construction and an operational phase Transport Management Plan including traffic control plans, safe work method statements for delivery drivers, transport protocol for heavy vehicles and other protocols)
  - identification and assessment of the residual impacts (if any) resulting from the Project following the implementation of mitigation measures.
- Review of proposed and approved significant developments in the vicinity of the Project site (if any), and possible cumulative impacts on the performance of the surrounding road network arising from the operation of the Project site alongside these other developments.

8.1.3 Hazard and Risk

Existing environment

The Project site is situated in an area which has little undulation and is predominantly cropping land. The Moulamein railway line is on the south western boundary and the Deniliquin railway line is to the east.

Further afield there are grain storage facilities, industrial Land, the Moama Sewerage Treatment Plant and Moama Waste Management Facility. In closer proximity are scattered rural residences to the north west and south west of the Project site.

The Project site is not identified as bushfire prone land on NSW Rural Fire Services maps.

Issues for consideration

The production of ethanol involves the milling of wheat to flour followed by a cooking, fermentation and distillation process. This process converts starch, which comprises up to 75 per cent of the wheat to ethanol.

Fuel grade ethanol along with a number of other dangerous goods (liquids and gases) classed as flammable or corrosive would be handled, stored and produced including compressed natural gas (CNG), biogas, carbon dioxide, caustic soda, sodium hypochlorite and hydrochloric acid solution. Accidents involving these materials could potentially occur giving rise to fires, explosions (including dust explosion) and release of corrosive substances.

Any construction or industrial site requires minor quantities of hazardous chemicals such as paints and solvents. The correct storage and separation of such goods is governed by Australian Standards and the appropriate safety management systems of the Project. The minor storage of these goods is not considered to be a significant contributor to the overall risk profile of the Project from a land use safety planning perspective.

Bushfire

Bushfire can present a major threat to communities as well as environmental, economic and cultural values.

To determine the level of risk to land in the vicinity of the Project site, the RFS online bushfire prone tool was accessed on 20 May 2020. The Project site is not identified as bushfire prone, however it could still be impacted by a bushfire/grassfire.

Construction activities that pose a fire risk include welding works, grinding or heat generating machinery. Fire risk may be exacerbated in the presence of flammable substances such as fuels and oils that are likely to be used in small quantities during construction. Appropriate management measures for fire risk during construction include appropriate storage of flammable substances and worker training for 'hot works'. The likelihood of a bushfire occurring is considered to be highly unlikely due to the lack of bush land or vegetated areas in proximity to the site.

Mitigation measures would be built into the Project operations to address bushfire risk including standard management procedures such as adequate firefighting equipment and water supply, access to firefighting appliances and staff evacuation procedures as well as an emergency response plan.

Proposed EIS methodology

The Project would store, handle and produce hazardous materials. Given the plant at Moama would be like-for-like in terms of the actual plant, processes and equipment to the Deniliquin Ethanol Plant as approved with the same capacity, number and sizes of vessels, operating conditions flow rates, etc., the results of the previous Hazard and Risk Assessment are considered appropriate for the Project. The Project would also be located in a similar land use environment to the Deniliquin Ethanol Plant. The risk assessment would however be reviewed to take account of the terrain, meteorological conditions and proximity of sensitive receptors to validate this approach. AECOM has consulted with DPIE (Industry Assessments (Hazards)) to discuss this approach.

The methodology to prepare the Hazard and Risk Assessment for the Deniliquin Ethanol Plant is provided below.

A risk screening was carried out for the Deniliquin Ethanol Plant accordance with the *Applying SEPP 33 Guideline* (NSW DP&I, 2011) to determine if the Project was *potentially hazardous* and whether or not SEPP 33 applies. A PHA was also conducted to assess the hazards associated with the storage and handling of materials. Hazardous chemicals were identified and a preliminarily screening carried out in accordance with the requirements of *Applying SEPP 33 Guideline*. Although no hazardous chemicals definitively exceeded the screening assessment requirements when *Applying SEPP 33 Guideline* criteria at the Deniliquin Ethanol Plant, four hazardous chemicals were identified to have possible potentially offsite effects, namely ethanol, grain dust, corrosive Class 8 chemicals and CNG. The PHA also considered the *Multilevel Risk Assessment Approach* and the applicable Hazardous Industry Planning Advisory Papers. It determined the significance of hazards associated with the facility with respect to land use safety planning criteria and nominated appropriate safeguards to control, mitigate and manage initiating factors relevant to the identified credible hazard scenarios for the Project.

To determine if the Project is potentially offensive, a preliminary industry type screening was also carried out in accordance with the requirements of the *Applying SEPP 33 Guideline.* The guideline provides a list of categories of industries with the potential for offsite offensive impacts. These impacts may include air emissions, water quality, noise or other environmental impacts. For the assessment of potentially offensive industries, the quantity, nature and significance of the offences likely to be caused by the development should be provided as well as the need for any licences. The assessment also included a range of safeguards to be put in place to ensure that emissions from the Project can be controlled to a level such that they are not considered significant.

The following methodology would drive the hazard and risk assessment for the Project. The approach would be to:

- Review and confirm the Moama Project site context
- Update the Deniliquin Ethanol Plant PHA so that it is specific to the Moama Project site with respect to the following:
    - Site location details.
    - Surrounding land use details
    - Location of Sensitive Receptors
    - Meteorological data

- Changes to transport mode, consignment size and frequency (as a result of any change in consignment size) for raw materials, products and wastes as a result of availability of more economic transport modes e.g. change from road to rail
- Review of source natural gas
- Update references to any Standards or Codes, which have been updated since the original EIS (dated October 2015)
- Justification for continued use of the Deniliquin Ethanol Plant Consequence Modelling
- Replacement Consequence Contour figures demonstrating that the plant can be sited to ensure that the Hazard Consequence Contours of significance can be wholly contained within the site.

Mitigation measures which would be included as part of the Project to limit the consequences of major incidents include:

- layout of storage and process vessels
- design of vessels and ancillary equipment
- mitigating systems such as fire protection and adequate bunding.

Safeguards which would be proposed to limit the likelihood of hazardous events include:

- process control systems
- operating practices (including for the transport of dangerous goods)
- safety management procedures including fire, incident and emergency management.

Risk management is a continuous improvement process. Safeguards developed as part of the Project would continually be monitored and reviewed as the Project matures and through the entire Project lifecycle, including detailed design, construction, operation, maintenance and eventual decommissioning.

With the application of these proposed mitigation measures to achieve acceptable consequence outcomes, the assessment would demonstrate the Project could be undertaken in a manner that is protective of human health and safety onsite and offsite, and protective of the surrounding environment.

8.1.4 Landscape and Visual Character

Existing environment

The relatively flat topography of the landscape, in conjunction with historical land clearing and current day cropping and agricultural land uses, has resulted in a wide, open planar landscape. This landscape is characterised by a mosaic pattern of land cover defined primarily by land use, including broad, regularly shaped, cropping areas with isolated stands of remnant trees and perimeter tree planting grown as wind breaks.

The key sensitive residential receivers are located to the north west and south west of the Project site with the nearest dwellings located with distant views towards the Project site and proposed access road. The land on which the Project would be developed is visible from Mathoura Line Road and the Moulamein and Deniliquin railway lines (the Moulamein railway line is not operational). Views of the Project site from Centre Road are partially obscured by vegetation and the flat nature of the landscape with no significant views available from the Cobb Highway.

Industrial developments located on Centre Road, Hillside Road and the Cobb Highway including a sewage treatment plant; waste management facility and grain storage facilities present an industrial presence in the otherwise flat landscape. Within this context the Project can be seen to have visual precedents.

Issues for consideration

Construction

Construction of the Project has the potential to adversely affect the landscape character and visual amenity of the area. The Project would result in the addition of an industrial complex within the existing rural setting including some elements which would be visually prominent from many locations due to the generally flat landscape.

Project activities, such as clearing and construction of hardstands, have the potential to change the vegetation character of the local area. Excavation works and the presence of vehicles during construction may result in short-term temporary visual impacts for residential receivers to the north west and south west of the Project site as well as users of Centre Road.

Operation

The Project would result in the addition of an industrial complex within the existing rural setting. The verticality of the Project built components (specifically the silos and production/processing zones) would comprise visually contrasting built elements within the landscape, which is otherwise generally relatively flat and featureless. However, many of the land uses in the vicinity also have silos as a visual element.

Similarly, large horizontal buildings of considerable bulk may be visually prominent from nearby dwellings and Centre Road users and may also be visible from relatively distant locations such as the Cobb Highway, due to the generally flat landscape setting.

Large industrial complexes serving the agricultural industry including silos are not uncommon visual elements close to many regional towns in New South Wales. An industrial complex such as the Project is not necessarily either out of place, or visually unsightly, if it is well presented and maintained e.g. with architectural input into an overall colour scheme and use of materials appropriate to a modern industrial plant. This can be seen as a point of visual interest, particularly in conjunction with appropriately designed signage that identifies the function of the development, i.e. the production of ethanol (biofuels) using low grade local grain crops to provide an environmentally improved method of powering cars and other machinery.

Proposed EIS methodology

An assessment of the landscape and visual impacts would be important to the local community. Impacts to visual amenity and landscape character would be unavoidable due to the local topography of the area, and the verticality of the Project infrastructure.

The assessment of landscape and visual impacts would be undertaken with reference to *Guidelines for Landscape and Visual Impact Assessment* (Landscape Institute and Institute of Environmental Management and Assessment (3rd ed.), 2013) and include identification of Landscape Character Zones (LCZs) and other environmental characteristics.

The landscape and visual assessment would consider the impact of the Project on landscape character and views, using a method based on the combination of the sensitivity of the existing area or view to change and the magnitude (scale, contrast, quality, distance) of the Project on that area or view. The combination of sensitivity and magnitude would provide a rating to evaluate the impact on landscape character and visual impact for individual viewpoints.

Visual impacts would be considered at representative locations. It is proposed that several photomontages would be prepared for key views of the Project site.

A qualitative assessment of the impacts of lighting on visual amenity would also be undertaken taking into consideration the current level of lighting within the area and potential changes to lighting levels that may be associated with the Project.

Mitigation measures and strategies would be developed where possible to prevent, reduce and if possible, offset any significant adverse effects. Mitigation measures would also be incorporated into a Landscape Concept Plan providing an appropriate landscape response given the local environment and the results of the landscape and visual assessment.

8.1.5 Noise and Vibration

Existing environment

The area in the near and wider vicinity to the Project site incorporates at mix of land uses including agricultural properties, industrial properties, scattered rural residential properties and at a distance the Cobb Highway. The location of sensitive residential receivers relative to the Project site is provided in **Table 10** and shown on **Figure 5**.

Table 10 Location of sensitive receivers

Receiver	Approx. Distance (m)	Bearing
R1[1]	800	East
R2	1,500	North west
R3	2,500	South west
R4[1]	2,300	West
R5	2,000	North west
R6	2,700	North west
R7	2,300	North
R8	3,100	South east

1 – Grain storage

Noise levels in this rural area are expected to be relatively low, except where located close to the Cobb Highway. Other noise sources include the Heartland Raceway, agricultural machinery and some fauna noise.

Issues for consideration

Construction

Construction activities would be scheduled during standard construction hours as specified in the Interim Construction Noise Guideline (DECC, 2009) (ICNG) as follows:

- Monday to Friday 7am to 6pm
- Saturday 8am to 1pm
- No work on Sundays or public holidays.

Potential construction noise impacts may occur during the estimated 14 to 16-month construction timeframe as a result of construction activities. During the construction phase there would be regular deliveries of concrete materials (cement, aggregate, sand) and reinforcing steel. The majority of components specifically required for the Project would be assembled on the Project site. Some specialist equipment would be prefabricated and installed onsite including the anaerobic digester and fuel facility components. It is anticipated that all materials would be delivered by standard B-Double vehicles along the Cobb Highway, Centre Road and via the dedicated site access. It is not expected that oversized heavy vehicles would be required to deliver materials for construction.

Potential construction noise sources include construction vehicles, excavators, hydraulic crane, drills, concrete agitator, concrete mixer truck, bobcat and hand tools. Vibration emissions would be from mobile plant with vibration levels similar to those shown for heavy vehicle traffic (over maintained road surfaces) and compactors. The plant and equipment used would be similar to that commonly used for civil construction projects.

Operation

During the design phase, noise assessment findings would inform design refinements of the Project including facility layout and orientation. The Project would operate 24 hours per day, seven days per week (11 months a year production and one month shut down for maintenance).

Noise sources during operation would include plant, motors, conveyors, cooling tower fans, pumps and other equipment as well as truck movements within the Project site and road traffic noise generated when transporting product to/ from the Project site.

The operation of the Project would also generate road and rail traffic which would require an assessment of potential road/rail noise traffic.

Vibration

As residential receivers are located at a minimum 800 m from the Project site, construction impacts are unlikely to cause temporary vibration impacts. Selection of suitable construction methods and implementing standard control procedures would mitigate against potential vibration impacts. Operational activities are also unlikely to result in vibration impact to receivers.

Proposed EIS methodology

A detailed Construction and Operational Noise and Vibration Impact Assessment would be carried out for the Project. The detailed assessment would consider the Project layout design, plant and equipment, proposed construction methodology and road and rail traffic volumes.

Construction Noise and Vibration

The NSW EPA's *Interim Construction Noise Guideline* (ICNG) (DECC, 2009) is a NSW Government document that identifies ways to manage impacts of construction noise on residences and other noise sensitive land uses. It is the principal guideline for the assessment and management of construction noise in NSW and is used to establish construction noise management levels (NMLs).

As the proposed works are expected to continue for a period of more than three weeks, a quantitative assessment, based on 'reasonable' worst case construction scenarios, would be carried out for these works. Noise levels resulting from construction activities would be predicted at nearby noise sensitive receivers using environmental noise modelling software and compared to the NMLs, derived in accordance with the ICNG. All reasonable and feasible noise mitigation measures would be applied to the construction works.

To assess noise impacts from construction traffic in accordance with the NSW EPA's *NSW Road Noise Policy* (RNP) (DECCW, 2011), an initial screening test would be undertaken to evaluate whether existing road traffic noise levels would increase by more than 2 dB(A). Where the predicted noise increase is more than 2 dB(A), then a further assessment would be completed to determine the impacts of the increased traffic flows due to construction.

Minimum working distances would be recommended for any required vibration intensive construction activities. These minimum working distances would consider both structural damage and human comfort. The Construction vibration assessment would be completed in accordance with NSW EPA's *Assessing Vibration: A Technical Guideline* (AVATG) (DEC 2006).

Operational Noise and Vibration

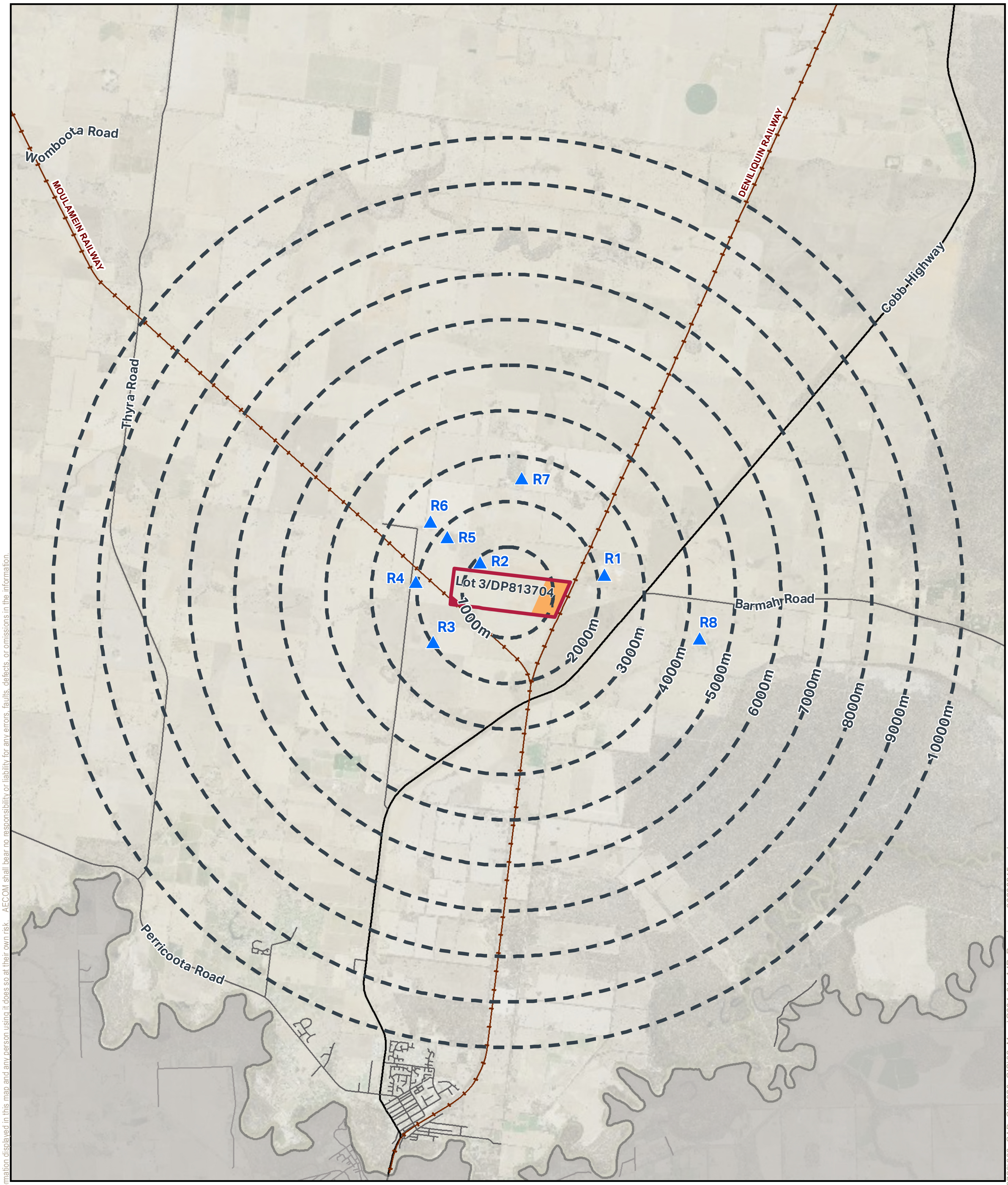
Operational noise impacts from the Project would be assessed in accordance with the NSW EPA's *Noise Policy for Industry* (NPfI) (EPA, 2017) which considers short-term intrusiveness due to changes in the noise environment and maintaining the noise amenity of the area. The operational noise assessment would include a SoundPLAN model to undertake an assessment of the key operational noise sources (plant and equipment) from the Proposal and the impact on nearby sensitive receivers. Based upon the outcomes of the operational noise assessment, noise mitigation measures would be recommended where required.

Any increase in rail traffic noise arising from additional traffic generation as a result of the development would be assessed in accordance with the NSW EPA's *Rail Infrastructure Noise Guideline* (RING) (EPA, 2013). Likewise, any increase in road traffic noise arising from additional traffic generation as a result of the Project would be assessed in accordance with the RNP.

Given the significant distance from the proposed site to any vibration sensitive receivers, vibration is expected to fall well below limits outlines in the AVATG, therefore a detailed assessment of operational vibration impacts is not required and would not be undertaken.

Moama Ethanol Plant Environmental Impact Statement

Sensitive Receiver Locations



OVERVIEW

LEGEND

- Site boundary
- Project site (26ha)
- Sensitive receiver

Sensitive Receivers

R1: Vic Grain Ltd
R2: PD & HE Quinn
R3: WL & AM Christy
R4: UCM Properties
R5: Guy Anderson
R6: Trevor Bergman
R7: John Bergman
R8: CW McNabb & CS Muir

Data Sources:
1.Imagery: © Department of Customer Service 2020.
2. Roads, Railway, Drainage, Suburbs, Parks, Localities: @ Street Pro, 2011
3. Key Map Base Layer: ESRI Online
4. Site Layout: based on CAD Drawingd prepared by DONGMUN I.R.S. Co. Ltd.

Disclaimer:
Site Layout is indicative only. To be used for information only. For detailed design reffer to CAD Drawings

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FIGURE 5

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Document Path: \\ausyd1fp001\Projects\606X\60620729\900_CAD_GIS\920_GIS\02_Maps\G004_01_A4P_Receivers_20200615.mxd

8.1.6 Social and Economic

Existing environment

The Project would be located within Murray River LGA which covers 11,865 square kilometres, with a population of 11,456 according to the 2016 census. This represents a growth of two per cent above the year 2011 census and was higher than the regional NSW average annual growth rate of 0.9% in the same period. The growth has mostly occurred in Moama, which accounts for more than half (56%) of the population residing in Murray River LGA (Murray River Council, 2018).

The project site would be located approximately 10 km north of Moama where agriculture, tourism and manufacturing are the key economic drivers.

The key economic activities in the vicinity of the Project site include large lot agriculture, grain storage and a range of industrial/commercial activities on Centre Road and Hillside Road.

There is no social infrastructure in the near vicinity of the Project site with the nearest schools and health services clustered in Moama.

Issues for consideration

Some local residents may experience uncertainty about the Project. Matters to concern raised during the early consultation discussed in **Section 9.4** related to:

- Need to upgrade roads
- Changed traffic conditions on Centre Road and Cobb Highway including at intersections
- Availability of water and impact on water supply
- Amenity impacts including noise, changes to views, changes to air quality and odour impacts
- Viability of Project.

These matters would all be addressed in the EIS and to manage these concerns, a Community and Stakeholder Engagement Plan would be implemented.

The Project would provide significant positive economic benefits within the local, area, which is currently considered a low socio-economic area at a State and national level. These include increased employment, increased profitability for local business including the creation of an end user market for local grain growers, upskilling of the local labour force and an increase in gross regional product.

There are also potential indirect benefits for other aspects of the local economy. These include:

- Increased profitability for local business, particularly food and beverage retailers, accommodation providers and retail outlets
- Contribution to the local skills base through development and training programs as part of the Project.

Potential negative impacts for the community and the economy and business include:

- Draw of labour for the Project may create competition with other local and regional business. This could result in upward pressure on labour prices
- If labour costs increase, this could put pressure on pre-existing businesses to remain viable
- Local supply chains may not have developed the capacity to provide appropriate supplies for the construction and operation of the Project. This would lead to non-local suppliers being utilised and reducing potential economic benefits to local business
- Water availability for the process and wastewater generated – '*must not take water away from the community'*
- Workforce accommodation during peak periods and impact on availability of tourist accommodation.

Although these impacts could be considered negative by some groups, they can also be seen as opportunities for increased salary for local residents and opportunities to create greater wealth for local business.

These matters would be considered in the EIS.

Proposed EIS methodology

The EIS would include a social impact assessment (SIA) prepared consistent with the approach presented in Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment (Roads and Maritime Services, 2013). This approach utilises social indicators to assess impacts and monitor changes to the socio-economic environment. This approach is consistent with guidance provided in Techniques for Effective Social Impact Assessment: A Practical Guide (Office of Social Policy, NSW Government Social Policy Directorate, 1995).

DPIE has recently released guidelines for the assessment of social impacts in relation to State Significant resource projects - Social impact assessment guideline for State significant mining, petroleum production and extractive industry development (Department of Planning and Environment, 2017). Whilst not directly applicable to the Project (as the Project does not comprise a resource project), this guideline would be considered with respect to the classification of social impacts (s1.1 of the guideline).

The assessment would focus on potential amenity impacts to receptors informed by the technical impact assessments carried out for relevant issues (i.e. air quality, traffic, noise and visual). The potential impacts to the social and economic environment in Moama and the Riverina area would address:

- The extent or scale of the potential impacts of the Project, including both direct and indirect impacts
- Potential impacts of the Project with regard to property impacts, business impacts, community infrastructure, tourist infrastructure, traffic and transport, as well as access and connectivity
- Cumulative socio-economic impacts of all phases of the Project, combined with the impacts of other planned and anticipated Projects
- Measures to mitigate or manage potential socio-economic impacts as a result of the Project.

The SIA would be informed by publicly available information (e.g. census data), as well as feedback received from community and stakeholder consultation and engagement activities undertaken for the Project. It would also address the wider economic benefits of the Project.

8.1.7 Hydrology and Water Quality

Existing environment

No significant waterways or waterbodies are located within the Project site. A small dam is located in the south west corner and another in its epicentre.

The closest waterway is a perennial, man – made dam located about 1700m to the north west. The nearest named waterways include Green Gully Creek which lies some 2200m to the north and the Murray River approximately 11 km to the east. WaterNSW advised that the Project site is not located near any WaterNSW land, assets or infrastructure.

Issues for consideration

Potential impacts to surface water as a result of construction and operation would be associated with stormwater runoff/flooding, stormwater quality and possible changes to the drainage regime.

Erosion and sedimentation

During construction, earthworks and excavation works could cause erosion and sedimentation that result in silt laden runoff discharging into receiving waterbodies via stormwater infrastructure.

Initial construction activities, including topsoil stripping and earthworks, would disturb soils at the Project site and increase potential erosion and sediment risks. The Project site has a very shallow grade, and flow velocities are expected to be low, which significantly reduces the erosion potential for the Project. As part of the construction management, the contractor would be required to establish a detailed Erosion and Sediment Control Plan to ensure runoff from the Project site, does not mobilise and transport sediment, or cause scour. This would form part of the CEMP.

Erosion and sedimentation is not expected to occur during operation of the Project, as the active operational areas would be paved, effectively stabilising the surface. Areas surrounding the plant would be landscaped or turfed to prevent erosion of the topsoil. Consequently, the potential impacts of erosion and sedimentation from the Project are negligible.

Flooding and stormwater

As additional roof and hardstand areas would be constructed as part of the Project, stormwater runoff and discharge characteristics of the Project would be identified, and appropriate stormwater management system requirements identified.

Flood characteristics on site as a result of the Project and any offsite changes to flooding would be confirmed as part of the EIS with consideration of Project design layout, local topography and location of nearby watercourses. The Echuca Moama Torrumbary Flood Study prepared by Water Technology modelled January 2016 flood depth and found flood waters did not extend across or within the vicinity if the Project site. Discussions with Murray River Council identified no known flood issue on Centre Road or the surrounding area.

Wastewater

Wastewater generated during construction would typically include discharges generated from dust suppression, washdown areas and stormwater runoff from construction ancillary facilities. Construction water would be reused on site wherever feasible.

Spillage and leakage of hydraulic oils, fuel or chemicals have the potential to contaminate surface runoff, if not subject to appropriate control measures.

During operation should stormwater runoff come into contact with some of the process materials, such as grain, DDG or other stored materials, then stormwater may be contaminated with organic matter or other pollutants (e.g. oil residue).

To mitigate the potential for stormwater runoff to come into contact with some of the process materials, such as grain, or other stored materials, it is proposed to store all feed material and co-products in covered areas to prevent stormwater contact. A conceptual Stormwater Management Plan developed for the Project would outline the proposed stormwater quality treatment design. Similar to the Deniliquin Ethanol Plant, water would be treated through a proprietary treatment device before stormwater enters a shallow concrete – lined underground holding tank, vegetated swales and a bioretention and flood detention basin.

The entire Project site would be engineered in such a way that a variety of containment techniques would capture run-off, and direct it to the appropriate water storages and/or discharge points. Final discharge points would replicate existing and no surface water would be diverted across local watersheds. The Model for Urban Stormwater Improvement Conceptualisation (MUSIC) model would be used to size stormwater treatment devices proposed in the Conceptual Stormwater Management Plan to demonstrate compliance with pollutant reduction targets.

Based on the proposed design, standard operating measures and management measures to be implemented, the runoff from the Project site is highly unlikely to have a measurable impact on water quality in the Murray-Darling Basin.

Potential impacts related to the on-site wastewater treatment system may include spillage and leakage from water and wastewater storage and treatment. The potential for leakage from tanks that store treated water is considered negligible owing to mitigation measures to be employed. The main risk would be related to the collection tank that stores wastewater generated in the process area and DDGS and storage of liquid fertiliser. Mitigation measures would be provided in the EIS for this matter and to address the risk of leakage and spillage of the stored co-products that are produced in the wastewater treatment process.

Proposed EIS methodology

Water balance

A consolidated water balance model bringing together all water sources would be developed.

The water balance model would include:

- Review of available information on water usage, storage data (i.e. water levels, spillway level, height-area-depth, etc.), production and operation schedule, water sources and required licences
- Establishment of water demand for operation
- Information on losses from different parts of the plant, water runoff and all outputs from the plant and total input needed to meet these requirements
- Assessment of the volume of water that can be supplied with high security from each of the identified water sources required during construction and operation
- Development of a water balance model including water requirements for construction, ethanol plant operation and general usage considering variation for the life cycle of the Project
- Assessment of the ability of the existing site water management system to accommodate the additional volume of contaminated water generated by the process plant
- Review of on-site wastewater treatment system in relation to the water quality input to the water balance model.

Surface water

The surface water assessment would comprise:

- Review of details on the construction of the proposed ethanol plant, particularly in relation to flood risk and stormwater management
- Review of information from Murray River Council regarding historic flood risk and drainage, topographical data, and existing services
- Desktop review of existing flooding conditions on the Murray River
- Desktop assessment to establish an environmental baseline of surface water environment. This would include a qualitative assessment of potential impact of the Project on flooding conditions during construction and operation. Where necessary, measures to mitigate potential impacts would be identified and recommended.
- Review of relevant water policy and legislation
- Review of publicly available relevant and applicable information
- Description of the local hydrology
- Preparation of a stormwater assessment and development of a conceptual Stormwater Management Plan based on the Project layout and local hydrology. The conceptual Stormwater Management Plan would outline the proposed stormwater quality treatment design which would be similar in nature to that proposed for the approved Deniliquin Ethanol Plant. The objective of the conceptual Stormwater Management Plan is to mitigate the potential quantity and quality impacts elsewhere as a result of stormwater discharge from the Project site, and to mimic the existing drainage regime.
- Preparation of a concept Erosion and Sediment Control Plan for the Project.
- Review and assessment of the potential impacts to surface water during the construction and operation phases
- Development of mitigation and management measures to address potential surface water impacts during construction and operation phases
- Development of a MUSIC, version 6.1 model to assess the effectiveness of the proposed treatment devices to meet pollutant reduction targets. The MUSIC model would be used to size stormwater treatment devices proposed in the Conceptual Stormwater Management Plan to demonstrate compliance with pollutant reduction targets.

8.1.8 Groundwater

Existing environment

The Project site is located on the Riverine Plain within the Murray Basin.

Reference to Schedule 4 of the Water Sharing Plan for the Murray Unregulated and Alluvial Water Sources indicates there are no high priority groundwater dependent ecosystems within the vicinity of the Project site.

A review of the Commonwealth Department of Environment's Protected Matters Search Tool indicates RAMSAR wetlands are about 6.5 km to the east. These wetlands are classified as nationally important.

There are no major springs, wetlands or swamps within the Project site and there are no extensive alluvium deposits mapped on the Project site that could support groundwater dependent ecosystems.

The Project site is located in Groundwater Management Area 016 of the Lower Murray Alluvium (GWMA 016) which is administered by DPIE Water. GWMA 016 is used for irrigation, industrial, farming, domestic and recreational uses as well as town water supply.

Issues for consideration

Reduced groundwater recharge

The planned construction activities pose a low potential to cause changes to groundwater flow patterns that could impact groundwater levels and recharge characteristics.

During the construction phase the development of access roads, buildings, water storages, plant and areas for stockpiling could give rise to groundwater recharge. This is considered extremely unlikely and would be minimal and temporary in the event any impact did result.

The Project would result in an increase of impermeable surface consisting of roof, pavement and hardstand areas accounting for around a fifth of the overall Project site area. This increase in hardstand area could potentially impact groundwater levels as a result of changes to groundwater flow patterns, recharge and discharge characteristics of the Project. Runoff from most roofs would be collected into rainwater tanks for drinking water, whilst runoff from a large area of hardstand would be collected in a shallow concrete-lined underground holding tank for reuse. Most of the hardstand is proposed to drain into an on-site bioretention and flood detention basin. The net reduction in available recharge area is not considered significant given the Project site is in a rural area.

Construction drawdown

Groundwater drawdown due to construction and operation is very unlikely. Excavations to enable construction of foundations are unlikely to extend to depths beyond 5 m deep and consequently the requirement to dewater is extremely unlikely.

Groundwater quality

There is a potential for construction and operational activities to adversely impact groundwater quality from fuel and chemical spills; petrol, diesel, hydraulic fluids and lubricants contaminating groundwater; or if a leak or spill occurs. Additionally, stockpiling of construction materials may also introduce pollutants to the Project site. Currently there is no site-specific groundwater quality or groundwater level data, however, through the application of adequate mitigation and management measures, it is considered unlikely that the Project would result in the contamination of groundwater.

Impacts to groundwater levels or groundwater dependent ecosystems are not expected. Water storages would be engineered to minimise seepage and therefore potential contamination of groundwater. This would need to be confirmed and reported as part of the EIS.

An assessment of whether the Project would encounter and potentially impact groundwater would be provided in the EIS.

Proposed EIS methodology

A desktop assessment of local groundwater characteristics would be undertaken. The assessment would establish the groundwater and hydrogeological regime, characterise aquifers, determine the location of groundwater dependant ecosystems in the vicinity of the Project site, clarify regional groundwater use and consider interactions between groundwater and surface water hydrology. For the groundwater assessment, the study area comprises the groundwater systems and resources within a 500-metre radius of the Project site.

8.1.9 Co-products and Waste Management

Existing environment

Moama Waste Management Facility is located over five kilometres to the south west of the Project site on Centre Road. The waste depot is owned and operated by Murray River Council and is licensed to receive:

- 40,000 tonnes of General Solid Waste (putrescible) per annum
- 40,000 tonnes of General Solid Waste (non-putrescible) per annum.

Closter's Liquid Waste at Hillside Road to the south west is a small depot that handles mainly stormwater drain sludge, waste comprising oil/hydrocarbon mixtures/emulsions and organic waste in drums. Nearby, a concrete repurposing centre on Hillside Road is around 5.5 kilometres from the site.

Issues for consideration

Waste has the potential to impact ecological function and services, biodiversity, water quality, social value and human health. However, if suitable resource recovery options are available and utilised, waste can be considered a valuable resource.

The core principle applied to waste management is that waste materials are to be managed to minimise environmental impacts.

A variety of waste types would be generated during the construction and operation phases of the Project. Principle wastes generated during construction would be associated with the clearing of vegetation and earthwork. During operation of the Project, waste would be generated from the ethanol production process, the use of machinery and worker domestic activities.

Waste expected from the Project can be categorised into the following general streams:

- Solid waste (e.g. vegetation, building waste, general waste).
- Liquid waste (e.g. sewage effluent, wastewater).
- Hazardous waste (e.g. hydrocarbon wastes, solvents, batteries).
- Air emissions (e.g. dust, CO_2).

The proposed wastewater treatment system is expected to generate a low volume of effluent as the majority (98 per cent) of wastewater generated would be recycled as process water. The remaining two per cent is in the form of organic waste (sludge) that ends up as a liquid fertiliser.

During operations there is an opportunity for sale of waste and co-products including:

- Liquid fertiliser from the Project would be suitable for use in agriculture as a soil amendment (fertiliser), applied to the land.
- Co-products that would be produced and sold including DDGS produced from the solids separated out during the distillation process and distiller's syrup produced from the evaporation of the thin stillage process. DDGS is used in the feedlot and dairy industries for livestock feed, as it is high in protein and also contains minerals, beneficial fats and acids. The syrup is a high protein substitute for molasses, which is widely used in feedlots for livestock nutrition.

Proposed EIS methodology

The EIS would include a stand-alone waste chapter which assesses the construction and operational waste streams generated by the Project and how they would be appropriately minimised, managed, classified and disposed of in accordance with NSW waste classification guidelines and waste hierarchy principles.

An operational water balance would be included as part of the EIS (water chapter) which identifies water inputs and wastewater streams and how these would be managed and disposed.

The waste assessment would involve:

- Reviewing Project information and analysis of the proposed construction and operation activities to identify the types, quantities and quality of waste (solid, liquid and gaseous) arising from the Project. Waste and co-product generation quantities would be estimated based on the proposed process to produce ethanol, DDGS and the wastewater treatment
- Classifying of all major waste streams in accordance with the *Waste Classification Guidelines* (EPA 2012)
- Describing potential impacts to the environment from the waste streams generated during construction and operation
- Identifying how waste would be reduced, reused, recycled or disposed of in accordance with the waste hierarchy and NSW WARR Strategy. If waste is to be landfilled, the acceptance criteria of the existing Moama Waste Management Facility and other licensed landfills within 150 km of the Project site would be determined to assess the appropriateness of landfills in the vicinity of the Project site for receipt of various categories of waste. Existing waste management facilities would be identified based on a desktop review of available information.
- Recommending management measures for identified waste streams.

8.1.10 Greenhouse Gas

Existing Environment

GHGs are gases found in the atmosphere that absorb outgoing heat reflected from the Earth. Different GHGs have different heat absorbing capacities. The primary GHG is CO_2. In order to achieve a basic unit of measurement, each GHG is compared to the absorptive capacity of CO_2, and measurements and estimates of GHG levels are reported in terms of CO_2 equivalent emissions (CO_2-e).

Australia's National Greenhouse Gas Inventories are designed to provide estimates of Australia's net GHG emissions and track Australia's progress towards its internationally agreed GHG reduction targets. Australia has published annual national GHG inventories for each year from 1990 to 2017 inclusive. In 2017 (the latest available data at the time of writing the report), Australia's total GHG emissions were estimated to be 530.84 Mt CO_2-e. Of these emissions, approximately 24.2 percent (128.8 Mt CO_2-e) were attributed to emissions from NSW (Department of industry, Science, Energy and Resources).

Issues for Consideration

Construction

The construction of the Project would contribute to GHG emissions, either directly or indirectly, as a result of:

- Fuel combustion from the operation of construction plant, generator sets and site vehicles
- Electricity used to power construction plant and site offices
- Indirect GHG emissions such as through embedded energy of construction materials and the transport of materials.

Operation

The Project has an ethanol production capacity of 115 ML per annum from locally grown wheat, with the ethanol to be used as an additive to produce E10 fuel. Electricity would be supplied by the grid, and natural gas would be supplied by a third-party supplier.

The operation of the Project would contribute to GHG emissions, either directly or indirectly, from:

- Natural gas consumption (Scope 1)
- Process emissions (fermentation) (Scope 1)
- Electricity use (Scopes 2 and 3)
- Delivery and distribution of feed stock and products via road and rail (Scope 3)
- Passenger vehicles transporting staff to and from site (Scope 3)
- Combustion of fuel distributed from the Project (Scope 3).

Proposed EIS methodology

A GHG Assessment for the Project would:

- Review background information
- Confirm the organisational and operational boundaries and emission sources included within those boundaries for the Project
- Quantify each emission source associated with the Project within the defined boundaries
- Quantify the GHG emissions (in carbon dioxide equivalent units) using the methodologies defined in the current best practice guidelines and identify potential impacts
- Identify mitigation measures to be implemented to address energy efficiency and minimise GHG generation during operations.

The GHG assessment would be undertaken in accordance with current guidelines, including:

- Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (World Council for Sustainable Business Development and World Resources Institute 2005)
- National Greenhouse and Energy Reporting Act 2007 (Commonwealth)
- AS ISO 14064.1:2018 Greenhouse Gas Part 1: Specification with guidance at the organisational level for quantification and reporting of greenhouse gas emissions and removals
- The current Australian National Greenhouse Accounts: National Greenhouse Accounts Factors (NGA Factors) (Department of Agriculture, Water and the Environment) and the current National Greenhouse and Energy Reporting (Measurement) Technical Guidelines (NGER Technical Guidelines) (Department of Agriculture, Water and the Environment).

The assessment would consider scope 1, scope 2 and scope 3 GHG emissions. Activities relevant to the proposed ethanol production plant for consideration in the GHG assessment would include (but not be limited to):

Direct Emissions (Scope 1)

- Stationary (non-transport) combustion from natural gas consumption on-site
- Production of ethanol (pre-fermentation and fermentation)

Indirect Emissions (Scope 2)

- Consumption of purchased grid electricity

Other Emissions (Scope 3)

- Road and rail transport of feed stock (import) and ethanol product (export)
- Transport of passengers to and from site
- Combustion of distributed ethanol product.

8.1.11 Soils and Contamination

Existing environment

To determine the suitability and quality of the land from an agricultural perspective, a review of mapping data provided on the DPIE website was conducted to determine whether any biophysical strategic agricultural land (BSAL) was present. BSAL is land with high quality soil and water resources capable of sustaining high levels of productivity. The Project site is not located on BSAL.

The Project site is suitable for agricultural and related agricultural industrial uses, with the surrounding land use being predominantly used for cropping and grain storage. The potential environmental impact on adjacent land is limited as land disturbance and vegetation clearing would occur only within the Project footprint boundaries.

Issues for consideration

Erosion and sedimentation

The disturbance of land due to construction would result in the removal of topsoil and an increased potential for wind and water erosion, causing the propagation of sediment into receiving downstream environments. Construction can also lead to loss/alteration of soil structure, where compaction leads to increased erosion potential and loss of topsoil depth.

A significant portion of the Project footprint would be hardstand building or plant laydown areas. These areas are proposed to be gravelled or concreted, dependent on the area and intended use. As such, these areas would introduce altered run-off coefficients, hold-up times, courses and diversions for overland flows across the Project site. The pre-control risks to areas downstream and upstream of infrastructure hardstand areas have the potential to be high, particularly during heavy rainfall events. Erosion and sedimentation is further discussed with reference to transport of sediment in surface water in **Section 8.1.5**.

Land contamination

Project elements with an increased potential to cause land contamination include storage tanks and process equipment; bunds containing flammable liquids tanks; chemical storage area; grain storage and processing areas and general plant area.

Potential contamination impacts during Project operations may include the following activities:

- Spills of fuels, greases and lubricating oils which may cause localised contamination
- Spills of grain
- Spills of ethanol from production and storage
- Ineffective waste disposal (hazardous and non-hazardous liquid and solid) leading to soil and groundwater contamination
- Cargo spills during product transportation (rail and road), and during loading/unloading (from grain source material, ethanol, and produced fertiliser).

Proposed EIS methodology

The EIS would include a qualitative assessment of the potential soil and contamination impacts from the Project.

Soil data for both the region and the Project site would be obtained through interrogation of available mapping resources from the Australian Soil Resource Information System (CSIRO, 2015) and through desk-based literature reviews.

To provide an understanding of the potential contamination status of the Project footprint, a Preliminary (Phase I) Environmental Site Assessment (P1ESA) would be undertaken to assess potential contamination impacts across the proposed study area in accordance with the 7-step Data Quality Objective (DQO) process. The following methodology would apply:

- Desktop review of available databases for the area associated with the Project.

- Identification of the current and historical land uses on properties within or adjacent to the Project footprint
- Identification of historical land uses undertaken on the properties within the Project footprint that are considered to have the potential to cause contamination
- Identification of potential receptors and impacts related to the mobilisation of soils and contamination
- Reviews of available NSW EPA records to assess whether properties within the Project footprint are recorded on the public access registers containing land use planning information or have been issued with contaminated land notices
- A review of land potentially impacted by land contamination and the likelihood of impacts to the Project footprint, based on proximity and contaminants of concern
- Identification of areas of environmental concern (AEC) that require further investigation to assess risks to current and future site users (and sensitive environmental areas/receptors) (if any);
- Preliminary inputs to a conceptual site model (CSM)
- Development of mitigation measures.

Although construction and operational activities may have the potential to impact on land based environmental values, the application of mitigation and control measures where appropriate, as well as adherence to proposed plans and procedures, reduces the residual risks to a relatively low level.

The EIS would also identify construction management measures and operational controls that would be implemented to minimise the potential for soil contamination via spills and leakages.

8.1.12 Biodiversity

Existing environment

A narrow strip of trees lies along the southern and south eastern boundary of the Project site and an isolated copse of trees to the north. All of the remaining land is cleared and subject to intensive cropping. Vegetation on the southern boundary consists of a range of native and exotic species.

Vegetation in the area surrounding the Project site consists of isolated stands of remnant and planted vegetation with some riparian vegetation but generally the landscape is cleared and has been extensively farmed over an extended timeframe.

The proposed access road lies on predominately cleared land.

A search of the EPBC Act Protected Matters (**Appendix B)** database indicated thirty threatened species, which may or are likely to occur in the 10 km search area around the centre point of the Project site. The vegetation present is unlikely to provide suitable habitat for foraging or nesting.

A search of the NSW 'BioNet' for records of threatened and migratory species and endangered populations (OEH, 2015) in the same search area found thirteen records for threatened flora and fauna. Given the disturbed nature of the Project site and access road, the species have a low likelihood of occurrence in this area.

No permanent wetlands or waterways occur within the Project site. The closest waterway Green Gully Creek lies some 2200m to the north. The Moira Lake RAMSAR wetland is approximately 6 km to the east, with the Murray River approximately 11 km east. The Project site is not listed as an area of outstanding biodiversity value in mapping prepared under the BC Act.

Issues for consideration

Site preparation and construction activities may give rise to impacts to flora including:

- Removal of native vegetation
- Potential removal of threatened flora species
- Dispersal or introduction of weeds from vehicle and human movement, soil disturbance, soil movement and the transportation of materials

- Wind-blown dust on vegetation smothering leaves and causing a reduction in photosynthesis
- Erosion and sedimentation resulting in loss of soil and sedimentation smothering vegetation/habitats where eroded material is deposited.

These impacts would be managed through mitigation measures developed as part of the EIS and implemented through a CEMP.

Impacts to fauna may include:

- Habitat loss
- Habitat fragmentation
- Fauna mortality
- Fauna disturbance.

During the operational phase of the Project predominant impacts to flora and fauna may include direct and indirect effects such as:

- Fauna mortality
- Fauna disturbance
- Spread of weeds.

Proposed EIS methodology

Section 7.9 of the BC Act requires that an application for SSD must be accompanied by a biodiversity assessment report (BDAR) unless it is determined by the Chief Executive of the OEH and the Secretary of the DPIE (or their delegates), that the proposed development is not likely to have any significant impact on biodiversity values. That determination is referred to as a BDAR waiver.

As described above, the Project is located within a highly modified site subject to extensive cropping for an extended period of time, with limited areas of vegetation on the Project boundary and in one isolated stand, which are unlikely to hold biodiversity values, it is unlikely that that Project would have a significant impact on any biodiversity values as prescribed in the Biodiversity Conservation Regulation 2017.

An initial assessment of biodiversity issues required by DPIE to inform a determination has been carried out, which indicates the Project would not take place in an area of significant biodiversity value, nor would it have a significant direct or indirect effect on biodiversity values such as threatened species or ecological communities, or other values prescribed in the Biodiversity Conservation Regulation 2017.

Given the highly disturbed nature of the site, including ongoing agricultural operations, it is proposed to obtain a BDAR waiver for the Project. An application for a BDAR waiver is based upon there being little to no biodiversity impact associated with the proposal. In this case, the nature of the proposed development area indicates that biodiversity impacts would be very low.

A BDAR Waiver has been prepared to support this Scoping Report and is provided as **Appendix C**. Nevertheless, a biodiversity impact assessment would be prepared for any minor or residual impacts. This would be contained within the body of the EIS as a chapter and would not include a specialist report.

8.1.13 Cultural heritage

Existing environment

The Project site has been extensively disturbed in the past and is currently subject to cropping. The road reserve to be used as the Project site access road from Centre Road is also predominately cleared.

Aboriginal heritage

A search of the AHIMS database on 21 April 2020 (AHIMS ID #498518) 2020 identified nine (9) Aboriginal sites in a 10 x 10 km area surrounding the Project site. All nine Aboriginal sites comprised cultural modified trees. There are no previously recorded Aboriginal sites within the Project site with the closest known Aboriginal site being recorded 1.1 km from the eastern boundary (MUNGABARINA-MM2, AHIMS ID #59-2-0050).

Historical heritage

A search of Commonwealth, State (NSW heritage Register) and local heritage registers (Murray River LEP 2011) was conducted on 2 June 2020 and found no recorded historical heritage places in or adjacent to the Project site

Aboriginal consultation

Notification of the Project and identification of RAPs was undertaken by AECOM in accordance with the requirements of the OEH Aboriginal Cultural Heritage Consultation Requirements for Proponents (the Consultation Requirements). Eight (8) Aboriginal stakeholder groups were identified during this process including:

- Moama Local Aboriginal Land Council (LALC);
- Yorta Yorta Nation Aboriginal Corporation;
- Yarkuwa Indigenous Knowledge Centre;
- Bangerang Aboriginal Corporation;
- Pappin Family Aboriginal Corporation;
- Mr Gary Pappin;
- Wakool Indigenous Corporation; and
- Mr John Jackson.

Each of these groups/individuals was subsequently provided with information regarding the scope of the Project.

Further opportunity for RAP involvement would occur during preparation and finalisation of an Aboriginal heritage assessment report as part of the EIS. Should an archaeological survey be required, all RAPs who registered an interest in the assessment would be provided an opportunity to participate in an archaeological survey of the Project site.

Matters raised would be discussed with the Project team in the event they have implications for Project design, layout, access requirements and so on.

Issues for consideration

Clearing, grubbing and grading would occur over the Project site during the pre-construction phase causing extensive ground surface disturbance to a depth of at least 20 cm. Excavations for roads, drainage, water management structures, footings/foundations could extend to five metres. As a result of ground disturbance, the Project has the potential to impact cultural heritage items, places and values that may be present on the Project site.

There is also the potential to disturb or destroy any currently unknown heritage places within the Project site.

Proposed EIS methodology

The methodology to address cultural heritage as part of the Cultural Heritage Technical Report would be as follows:

Aboriginal heritage

- Search of AHIMS database for previously recorded Aboriginal sites within the Project site and surrounds;
- Review relevant archaeological and ethnohistoric information for the Project site and environs
- Aboriginal community consultation carried out following the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010)
- Prepare significance assessments and impact assessments for any identified sites
- Develop appropriate mitigation or management measures for Aboriginal cultural heritage

The Aboriginal heritage assessment report would be prepared in accordance with the NSW Department of Premier and Cabinet's (formally the NSW Office of Environment and Heritage, OEH) *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW 2010* (DECCW, 2010c).

Historical heritage

- Complete a historical heritage desktop assessment to identify the known and potential historical heritage values of the Project site
- Review the relevant State and Federal heritage registers and Murray River LEP 2011 listings to identify registered heritage sites
- Conduct historical research using primary and secondary documents as required, relating to the known heritage listings within and immediately adjacent to the Project site
- Carry out a site inspection to develop an understanding of all known and potential heritage items that may be present within and near the Project site
- Complete heritage assessment and Statement of Heritage Impact report in accordance with the Heritage, Department of Premier and Cabinet guidelines
- Provide management recommendations.

8.1.14 Cumulative Impact

Existing environment

A search of the DPIE Major Projects Register on 10 May 2020 did not identify any new major development proposals within one kilometre of the Project site. Similarly, Murray River Council has advised there are no development applications currently being processed in Council for works or activities within a one-kilometre radius of the Project site or further afield.

Issues for consideration

The potential cumulative impacts were identified based on an initial review, preliminary assessments and stakeholder consultation conducted at the time of preparation of this Scoping Report. Any new or potential cumulative effects that are identified as the Project and environmental assessments are progressed (including any new development applications or approved projects in the vicinity of the Project) would be assessed in the EIS (as relevant).

Proposed EIS methodology

The potential for the Project to contribute to cumulative effects in the area would be assessed and documented within the EIS. The technical impact assessments for air quality, hazard and risk, noise and traffic would include consideration of cumulative contributions from existing land uses to appropriately account for existing background conditions in the impact assessment and identify Project contributions. The assessments would recommend measures to minimise and control Project contributions to impacts as necessary.

Qualitative assessments of cumulative impacts would be undertaken for other issues with consideration to background conditions (based on publicly available information) and the consideration of any new or approved development in the vicinity of the Project site.

Local projects would be considered as far as they are practical in terms of their scale and potential for generating cumulative effects.

Measures to manage and mitigate potential cumulative impacts would be identified where relevant.

9.0 Consultation

9.1 Community and Stakeholder Engagement Strategy

The Draft Environmental Impact Assessment Guidelines prepared by DPIE require proponents to engage in early and effective community and stakeholder consultation prior to lodgement of the Scoping Report. The draft guidelines *Community and Stakeholder Engagement* (NSW DPE, 2017) provide direction to applicants on how to engage with the community and other stakeholders during the preparation of scoping reports and EISs for State significant projects.

Murray River Energy is committed to engaging in a transparent and meaningful way with stakeholders at all stages of the environmental impact assessment process. This includes surrounding landowners and businesses, members of the broader community, regulatory agencies and Government (including elected representatives), Murray River Council and other interest groups (e.g. utilities and service providers, peak bodies, industry associations) and the media.

To this end, AECOM has prepared a Community and Stakeholder Engagement Strategy in consultation with Murray River Energy outlining the approach to participation in community and stakeholder engagement activities and the preparation of the necessary collateral material to support these activities where required.

It is noted that at the time of preparing our approach to consultation, the NSW and Federal governments announced COVID – 19 related travel restrictions and the preferred approach of face to face contact with the community and stakeholders to provide a Project briefing early in the planning process was no longer possible.

To ensure consultation continued on schedule, information on the Project and contact details were provided to the surrounding landowners, stakeholders and the Aboriginal community by letter and email from the earliest possible moment (March/ April 2010), with a follow up call or a request to call back achieved with the majority of those contacted (some landowners on multiple occasions).

9.2 Objectives of Community and Stakeholder Consultation

The key objectives of consultation and stakeholder engagement for the Project are to:

- Initiate and maintain open and transparent communication from the earliest possible opportunity
- Provide an understanding of the regulatory approval process to stakeholders
- Provide information about the Project to create awareness and help the local community understand the key features of the Project, including plant, process and the technology employed
- Actively engage with stakeholders and seek local information and input into the Project by providing a range of opportunities for stakeholders to identify key issues for consideration and provide feedback on the Project and its mitigation measures
- Work with stakeholders to identify strategies to realise the benefits and minimise potential impacts of the Project.

9.3 Consultation Approach

9.3.1 Stakeholder engagement tools

A range of stakeholder engagement tools and techniques would be employed including but not necessarily limited to:

- Email/ letter/ phone calls/ door knocks
- Meetings/ workshops
- Media statements/advertisements
- Community hotline
- Fact sheets.

9.4 Consultation Activities during Preparation of Scoping Report

9.4.1 DPIE scoping meeting

DPIE was contacted early in the process on 13 September 2018 to discuss the Project and to establish the planning pathway. Further discussions have been held by phone advising of the approach to consultation and preparation of the Scoping Report.

9.4.2 Council briefing

AECOM presented the Project to the Mayor, the Murray River Council (MRC) executive and senior council staff by teleconference on Wednesday 25 March 2020. The list of attendees is provided below:

- MRC Mayor, Councillor Chris Bilkey
- MRC General Manager, Des Bilske
- MRE Director, Greg Finn
- MRC Director of Corporate Services, Ross Mallott
- MRC Manager Economic Development, John Harvie

Issues raised included:

- Water security –volume of water required and where would it be secured from?
- Water reuse – would the plant be a closed system. Requirement to reuse water where possible
- Wastewater – direct water to the anaerobic digestor
- Assessment process – how long would the assessment process be and what approvals would be required
- Biodiversity – sheoaks are located in the south eastern corner
- Access – where would the Project site be accessed from – Centre Road preferred to Mathoura Line Road
- Air quality – prevailing winds are south west to north west away from residents
- Gas supply – how would gas be transported.

Murray River Energy and the senior executive of Murray River Council have also held briefings with elected officials including councillors and MPs and members of the local community. A summary of the briefings is provided below:

- MRC Mayor, MRC General Manager and MRC Manager of Economic Development held a teleconference with The Hon Sussan Ley MP, Member for Farrer and Federal Minister for the Environment on 8 May 2020.
- The same group held a teleconference with Helen Dalton MP, Member for Murray in NSW State Parliament on 14 April 2020.
- Murray River Energy, two councillors and members of the senior executive of Murray River Council also met with surrounding landowners for a Project briefing and questions and answers session on 12 June 2010.

9.4.3 Letter to surrounding landowners

Letters were sent to neighbouring landowners advising of the Project and seeking one on one phone meetings to discuss matters which may be of interest to them on 30 March 2020. Issues raised by the surrounding landowners are in **Table 11**.

Table 11 Issues raised by landowners

Issue	Comment
Location	• Why locate here rather than Hillside Road?
Land ownership	• Community has not been informed of change in ownership of the land. Murray River Council owns the land.
Water supply	• Not sufficient capacity on existing lines used for stock and households • Cost of water supply prohibitive • If pull water out of the Murray River, irrigators would object.
Air quality	• Wind direction would impact properties • Would there be odour from the plant? • Dust during construction.
Visual	• Request a landscape buffer • The Plant would be seen from neighbouring properties • Does not fit with rural landscape • Lighting impacts 24/7.
Noise	• Noise from plant 24/7 • Pumping sound from nearby silos a nuisance • Noise from truck engines and brakes traveling along access road.
Hydrology	• In heavy rain, water may pool on land near Centre road and railway line • Manage water flow on site.
Transport - Rail	• Rail – Moulamein railway not used • How would trains turn around? • Deniliquin railway used on occasion to transport rice.
Transport - Road	• Access to Cobb Highway from Mathoura Line Road at intersection with the Highway at railway crossing is dangerous • Difficult turn for trucks from Centre Road to the site • Centre Road and Mathoura Line Road not suitable for trucks • Need to upgrade roads to transport materials.
Economic	• Viability of selling ethanol product • Not viable because of cost of grain • Not sufficient grain to supply plant • Cost of water and gas supply prohibitive.
	• Facility would be good for area • Grain farmers supply plant • Support for clean energy.
Project	• Volumes of ethanol and input product • How would product be transported? • Would the anaerobic digestor process household waste? • Use of the remainder of the land outside the project footprint.

9.4.4 Government agencies, local government and non-government stakeholders

Early consultation with relevant government agencies and non-government stakeholders was carried out during preparation of the Scoping Report and would continue for the duration of the Project

An email letter was sent to the following stakeholders on 8 April 2020 with information about the Project and a phone number provided for further contact:

- DPIE Planning, Industry Assessments
- DPIE Environment, Energy and Science Group (EES (formerly OEH))
- DPIE Water and Natural Resources Regulator (DPIE Water)
- DPIE Regional (Western Region) NSW

- DPIE Lands Division (formerly Department of Industry – Lands and Water)
- Environment Protection Authority (EPA)
- Fire and Rescue NSW
- Department of Primary Industries (Crown Lands)
- Department of Primary Industries (Fisheries)
- Department of Primary Industries (Agriculture)
- Safework NSW
- WaterNSW
- Transport for NSW (including the former NSW Roads and Maritime Service)
- Vic Rail/Vline
- Qube Logistics
- Essential Energy
- Registered Aboriginal Parties.

The majority of the stakeholders above responded to the email letter and issues raised are included in **Table 12** below.

Table 12 Issues raised by stakeholders

Agency	Issues Raised
Environment, Energy and Science Group, DPIE	• Biodiversity – SEARs would be standard • Archaeology – allow time for Stage 2 consultation – would have to consider how to approach field work re COVID19 • Address flooding in area.
EPA	• Noise guidelines have changed since Deniliquin EIS • Develop noise model with similar variables to Deniliquin EIS • Would refer air and noise to Sydney EPA.
Essential Energy	• Address network capacity.
Fire and Rescue NSW	• Address State Environmental Planning Policy No.33 -Hazardous and Offensive Development (SEPP33) • Fire Safety Study would be a condition of consent • Address risk of staff dealing with an incident • Have fire and safety mitigation systems on site • RFS would address asset protection zones • If designed to the relevant standards, the Plant should be fine. If performance based may be more challenges.
DPIE Lands Division (Formerly Department of Industry - Lands and Water)	No response.
DPIE Water and Natural Resources Access Regulator	No response.

Agency	Issues Raised
Department of Primary Industries- Crown Lands	• Crown land to south west– can use it but would not have exclusive rights – Crown Lands Act 1989(s.6) – Licence to occupy areas of Crown Land • Crown land to south east is a Travelling Stock Route (TSR) – managed by Local land services. The TSR extends along the Cobb Highway to Moama.
Department of Primary Industries- Fisheries	Works are unlikely to have a significant adverse impact upon threatened fish species, populations or the aquatic ecological community which reside in the river in this area, provided the works are carried out as stated and all conditions are faithfully implemented.
Department of Primary Industries-- Agriculture	• Potential impact on limited agricultural resources • Ability to rehabilitate the land to enable continued agricultural investment in the future • NSW DPI Agriculture provides a range of publications to assist consent authorities, community and proponents in addressing the recommended SEARs • These can be accessed at https://www.dpi.nsw.gov.au/agriculture/lup , with specific reference to: - https://www.dpi.nsw.gov.au/agriculture/lup/development-assessment2/infrastructure-proposals - https://www.dpi.nsw.gov.au/agriculture/lup/development-assessment2/lucra.
DPIE Regional	• DPIE Regional will coordinate with government agencies re approach to the assessment and will liaise with government agencies and the proponent on issues arising.
Safework NSW	• Requirements for MHF/potential MHF • Establish based on ethanol inventory and the nature of operation whether you need to notify or not?
Transport for NSW/ RMS	• The right and left turn from the Cobb Highway at Centre Road are to AUR standard – auxiliary left and auxiliary right turn • Interested in total road volumes • The intersection of Mathoura Line Road and the Cobb Highway is dangerous as rail crosses the highway • Majority of workers would be from south (Moama/Echuca) as Deniliquin is 45 mins away • Look at cumulative channellised left turn from Cobb Highway • Construction and operational traffic impacts.
WaterNSW	• Site is not located near any WaterNSW land, assets or infrastructure • Water quality and quantity leaving the site to be suitably managed and impacts mitigated • WaterNSW not responsible for approvals under the Water Management Act 2000.

The Project description, consultation and statutory matters would be further detailed in the EIS. The key issues that would be assessed as part of the EIS reflect the issues identified by the community and government agencies and are further detailed in **Section 8.0**.

9.4.5 Aboriginal consultation

Aboriginal agencies and organisations have been contacted by letter requesting information on any relevant Aboriginal persons or organisations who may hold cultural knowledge about the Project site.

Consultation with the relevant Aboriginal groups would be undertaken in accordance with Aboriginal Cultural heritage Consultation requirements for proponents (DECCW, 2010) (the Consultation Requirements). Consultation is over four stages with Stage 1 notification and registration carried out early in the approval process. The aim of Stage 1 is to identify, notify and register Aboriginal people who hold cultural knowledge relevant to determining the cultural significance of Aboriginal objects and/or places on the Project site.

Stage 1 and Stage 2 have been carried out in parallel with preparation of the Scoping report and include:

- Contacting agencies and organisations by letter requesting information on any relevant Aboriginal persons or organisations who may hold cultural knowledge about the Project site (Stage 1).
- Placing a public notice in the Riverina Herald and allowing a *minimum* 14 days period for expressions of interest (Stage 1).
- Compiling a list of Registered Aboriginal Parties identified during the notification and registration process (Stage 1).
- Provision of information on the scope of the Project and the proposed cultural heritage assessment process (Stage 2).

Stage 3 would be carried out as part of the EIS mobilisation with the proposed cultural heritage assessment survey methodology distributed to the RAPs, with a request for initial comments or thoughts regarding cultural values in a covering letter. Responses would be recorded. Should an archaeological survey be required, all RAPs who registered an interest in the assessment would be provided an opportunity to participate in an archaeological survey of the Project site.

Stage 4 would involve preparation and finalisation of an Aboriginal cultural heritage assessment report with input from the RAPs. A copy of the draft report would be sent to all RAPs for comment and input. Comments and input received would then be given due consideration in the final Aboriginal cultural heritage assessment report. Matters raised would be discussed with the Project team in the event they have implications for Project design, layout etc.

9.5 Consultation Activities Proposed During the EIS phase

Consultation activities would continue during the preparation of the EIS and would focus on addressing issues raised by stakeholders as new issues emerge following the communication of design and assessment information. Consultation would be undertaken as environmental impact information comes to hand (as technical assessments progress), so that there can be a meaningful exchange of information with stakeholders, and feedback received would inform the assessment and development of mitigation measures. Consultation with agencies would focus on keeping agencies up to date with methodologies to be used in technical impact assessments as well as key findings, to ensure these are in line with regulatory standards and expectations.

Feedback received from the community and stakeholders would be summarised and addressed in the EIS. The outcomes and recommendations of the EIS would be informed by community and stakeholder views.

9.5.1 Murray River Council consultation activities

Murray River Council has prepared a draft Strategic Plan for the LGA which is expected to be launched to the wider Murray River community in 2021. While discussing future development initiatives, Council has offered to include information on the Project in future consultation activities associated with the draft and final plan and to outline its expectations of how the Project would fit with Council's strategic vision.

In addition, Council has advised it would include information on the Project on its new website.

9.6 Consultation during Exhibition

During the public exhibition period for the EIS, further consultation would be undertaken with the community and other stakeholders.

The DPIE would make the EIS publicly available for inspection and comment at a number of public locations including DPIE offices, Murray River Council offices and other locations such as public libraries in the Murray River LGA.

The environmental impact statement document would also be available to view and download from the DPIE Major Projects website.

During the comment period, which is a minimum of 30 business days, government agencies and the public would be invited to make submissions on the EIS.

DPIE would issue a copy of all accepted submissions to Murray River Energy at the end of the public comment period. Murray River Energy would be required to summarise and respond to submissions, providing DPIE with any amendments to the EIS.

10.0 Conclusion

Murray River Energy intends to seek development consent for the Project as a SSD under Part 4 of the EP&A Act. The purpose of this report is to provide information for the preparation of the SEARs, which would inform the content of an EIS for the Project.

As part of this report, key issues to be considered in the EIS have been identified based on previous projects of a similar nature, previous environmental studies undertaken for the Deniliquin Ethanol Plant, consultation with local landowners, statutory agencies, Murray River Energy and Murray River Council and site-specific influences. These issues would be assessed as part of the EIS process. Where necessary, mitigation measures would be identified and impacts would be either avoided, mitigated or offset, as relevant. Where residual impacts remain, these would be taken forward into a cumulative impact assessment.

Key stakeholders including several government and non-government organisations, Murray River Council and the local and wider community would continue to be consulted as part of the EIS process.

Upon receipt of the SEARs, Murray River Energy would prepare and lodge an EIS with DPIE for assessment.

11.0 References

Australian Heritage Commission (2002) *Ask First: A guide to respecting Indigenous heritage places and values*

Department of Environment and Climate Change, 2009*, Interim Construction Noise Guideline*

Department of Environment and Conservation, 2006, *Assessing Vibration: A Technical Guideline*

Department of Environment, Climate Change and Water, 2011, *NSW Road Noise Policy*

Department of Planning and Environment, 2017, *Guideline 3: Scoping and Environmental Impact Statement – Draft Environmental Impact Assessment Guidance Series*

Department of Planning and Environment, 2017, *Guideline 6: Community and Stakeholder Engagement – Draft Environmental Impact Assessment Guidance Series*

NSW Department of Environment Climate Change & Water (2010a) Aboriginal Cultural Heritage Consultation Requirements for Proponents

Murray River Council. (2018). *Social Health and Wellbeing Profile and Plan*. Final Report. Issued May 2018.

Appendix A

Risk Screening Assessment

Appendix A Risk Screening Assessment

The outcomes of the preliminary screening process are presented in **Table**.

Table B1 Outcomes of screening of environmental assessment significance (unmitigated)

Issue	Unmitigated Environmental Risk Screening			Stakeholder Level of Interest	Environmental Assessment Significance
	Likelihood	Consequence	Risk		
Air Quality and Odour					
Construction air quality impacts	Possible	Minor	Low	Low	Low
Odour from operations impacting nearby properties	Possible	Moderate	Medium	Medium	Medium
Stack emissions during plant operation	Likely	Moderate	High	High	High
Odour from wastewater treatment plant impacting nearby properties	Likely	Minor	Medium	Medium	Medium
Biodiversity					
Loss or disturbance to native vegetation	Unlikely	Minor	Very Low	Low	Low
Potential impacts to threatened flora and fauna that the Project site might support	Unlikely	Minor	Very Low	Low	Low
Loss of fauna habitat values from impacts to and direct removal of vegetation	Unlikely	Minor	Very Low	Low	Low
Construction activities resulting in the potential spread of weeds and/or sedimentation and erosion	Possible	Minor	Low	Low	Low
Noise and vibration impact on fauna(construction)	Possible	Minor	Low	Low	Low
Co-products and Waste Management					
Construction Waste generation	Likely	Minor	Medium	Low	Low
Impacts associated with the incorrect disposal of waste material	Possible	Moderate	Medium	Low	Medium
Inadequate reuse or recycling	Possible	Moderate	Medium	Low	Medium
Lack of markets for co-products	Possible	Minor	Low	Low	Low
Traffic and Transport					
Project related traffic impact on surrounding road network (construction)	Likely	Moderate	High	High	High

Project related traffic impact on surrounding road network (operation)	Likely	Moderate	High	High	High
Project related impacts on rail network (operation only)	Likely	Minor	Medium	Low	Low
Deterioration of road surface condition	Likely	Moderate	High	High	High
Landscape and Visual Character					
Impacts to landscape character and views as a result of construction	Likely	Moderate	High	Medium	High
Changes in visual appearance during operation including lighting	Likely	Moderate	High	Medium	High
Hazards and Risk					
Potential hazards and risk associated with handling, storage and transport of dangerous goods and hazardous substances	Possible	Moderate	Medium	Medium	Medium
Potential fire hazard and risk	Possible	Major	High	Medium	High
Bushfire/ grassfire risk	Possible	Moderate	Medium	Medium	Medium
Chemical storage hazards associated with the operation of the Project	Possible	Moderate	Medium	Medium	Medium
Social and Economic					
Amenity impacts during construction and operation	Likely	Moderate	High	High	High
Impact on local water use during operation	Possible	Minor	Low	High	Medium
Creation of employment opportunities	Likely	Minor	Medium	High	High
Creation of supply chain opportunities	Likely	Minor	Medium	High	High
Potential impact on limited agricultural resource	Possible	Minor	Low	Medium	Medium
Noise and Vibration					
Airborne noise impacts during construction	Likely	Moderate	High	Medium	High
Airborne noise impact from site activities during operations	Likely	Moderate	High	Medium	High
Vibration impacts	Unlikely	Minor	Very Low	Low	Low
Hydrology, Water Quality and Groundwater					
Impacts on groundwater quality and quantity including drawdown	Unlikely	Moderate	Low	Medium	Medium

Mismanagement of wastewater and discharge to the environment	Possible	Moderate	Medium	Medium	Medium
Stormwater and wastewater management during operation	Possible	Minor	Low	Low	Low
Greenhouse Gas Emissions					
GHG emissions during construction	Likely	Minor	Medium	Low	Low
Excessive energy requirements	Unlikely	Minor	Very Low	Low	Low
GHG emissions during operation	Likely	Minor	Medium	Medium	Medium
Soils and contamination					
Spills or leaks of ethanol, fuels or other hazardous substances and dangerous goods from plant and equipment	Possible	Moderate	Medium	Medium	Medium
Increased sedimentation and erosion during construction	Possible	Moderate	Medium	Medium	Medium
Aboriginal Heritage					
Construction or operational impacts on culturally sensitive Aboriginal heritage sites	Unlikely	Moderate	Low	Low	Low
Non- Aboriginal Heritage					
Impacts on non- Aboriginal heritage sites, including damage or alteration to items of heritage or archaeological significance	Unlikely	Moderate	Low	Low	Low

Appendix B

EPBC MNES

Appendix B EPBC MNES

Australian Government
Department of the Environment and Energy

EPBC Act Protected Matters Report

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

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

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

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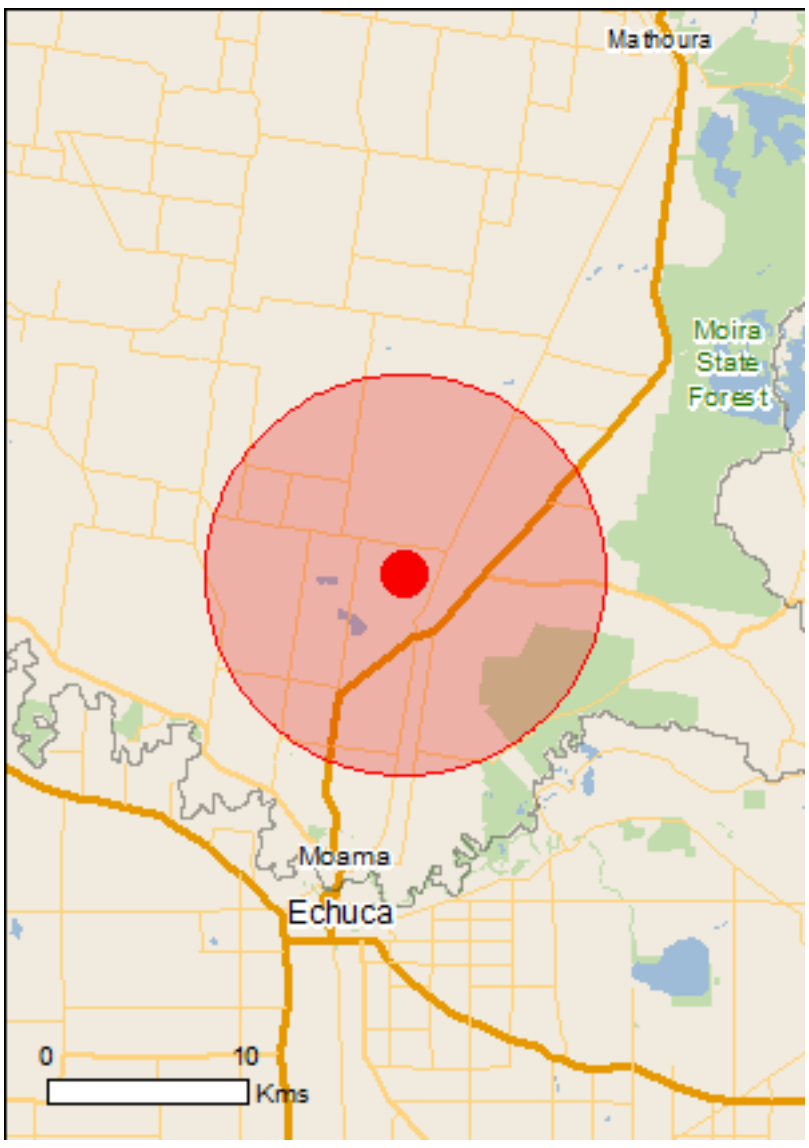

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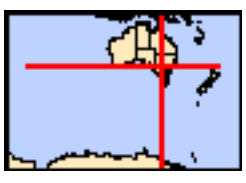

Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	7
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	30
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	28
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	400 - 500km upstream
Barmah forest	Within 10km of Ramsar
Gunbower forest	10 - 20km upstream
Hattah-kulkyne lakes	200 - 300km upstream
Nsw central murray state forests	Within 10km of Ramsar
Riverland	400 - 500km upstream
The coorong, and lakes alexandrina and albert wetland	400 - 500km upstream

Listed Threatened Ecological Communities		[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.		
Name	Status	Type of Presence
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Natural Grasslands of the Murray Valley Plains	Critically Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
[Pedionomus torquatus](#) Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area
[Pezoporus occidentalis](#) Night Parrot [59350]	Endangered	Extinct within area
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
[Bidyanus bidyanus](#) Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat known to occur within area
[Craterocephalus fluviatilis](#) Murray Hardyhead [56791]	Endangered	Species or species habitat may occur within area
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
[Crinia sloanei](#) Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area
[Litoria raniformis](#) Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
Insects		
[Synemon plana](#) Golden Sun Moth [25234]	Critically Endangered	Species or species habitat may occur within area
Mammals		
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
[Amphibromus fluitans](#) River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat known to occur within area
[Brachyscome muelleroides](#) Mueller Daisy [15572]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Caladenia tensa		
Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat may occur within area
Pimelea spinescens subsp. spinescens		
Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat likely to occur within area
Pterostylis despectans		
Lowly Greenhood [6272]	Endangered	Species or species habitat may occur within area
Sclerolaena napiformis		
Turnip Copperburr [11742]	Endangered	Species or species habitat known to occur within area
Swainsona murrayana		
Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area
Swainsona plagiotropis		
Red Darling-pea, Red Swainson-pea [10804]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Delma impar		
Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

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

Name	Threatened	Type of Presence
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba		
Great Egret, White Egret [59541]		Breeding known to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans		
Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Murray Valley	NSW

Invasive Species	[Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-36.00796 144.78449

Acknowledgements

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

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

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

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

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Appendix C

BDAR Waiver

Appendix C BDAR Waiver

DRAFT

BDAR Waiver Request

Moama Ethanol Plant

D R A F T

BDAR Waiver Request

Moama Ethanol Plant

Client: Murray River Energy Pty Ltd

ABN: 77 628 094 879

Prepared by

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19-Jun-2020

Job No.: 60620729

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

D R A F T

Quality Information

Document	BDAR Waiver Request
Ref	60620729
Date	19-Jun-2020
Proponent name	Murray River Energy Pty Ltd
Postal address	
ABN	77 628 094 879
Nominated contact	Greg Finn
Prepared by	Jamie McMahon (B Env Sc, CEnvP IA specialist)

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BDAR Waiver request

Table 1 BDAR Waiver request information requirements

	BDAR Waiver request information requirements
Proponent name	Murray River Energy Pty Ltd
Project Name	Moama Ethanol Plant
Name and Ecological qualifications of person completing	Jamie McMahon - 19 years' experience in ecological impact assessment and ecological assessment - Bachelor of Environmental Science (Hons) Biological Sciences - Certified Environmental Practitioner – Impact Assessment Specialist No. 1003
Site street address, Lot and DP, local government area	Lot 3 DP823704, Murray River Council
Description of existing development site	Existing cropland located between Centre Road, Moama and the Balranald-Moama Rail line
Location map showing the development site in the context of surrounding areas and landscape features	Refer to Figure 1.
Site Map	Refer to Figure 2
Project Description	The Project involves the construction and operation of an ethanol plant at Centre Road, Moama. The Project would have a capacity of producing 115 ML of ethanol per annum and would include several grain storage silos, a wastewater treatment facility and a workshop area. The Project would operate 24 hours per day, seven days a week for 330 days per year. The Project would process approximately 300,000 tonnes of locally grown wheat grain per annum. Utilising the carbohydrate (starch) in the wheat, the primary output from the production is fuel grade ethanol, which would be sold to the major petroleum companies as an additive to regular unleaded petrol (ULP) to produce E10, or would be exported. The co-products of the ethanol production process would be dried distiller's grain (DDG), Dried Distiller Grain with Solubles (DDGS), distiller's syrup and liquid fertiliser. DDG, DDGS and distiller's syrup would be sold as high nutrient agricultural protein meal supplements. The liquid fertiliser would be sold as a land-based fertiliser to the agricultural sector.
Proposed Site Plan	Refer to Figure 2
Site photos	See Figure 4 to Figure 6 below.

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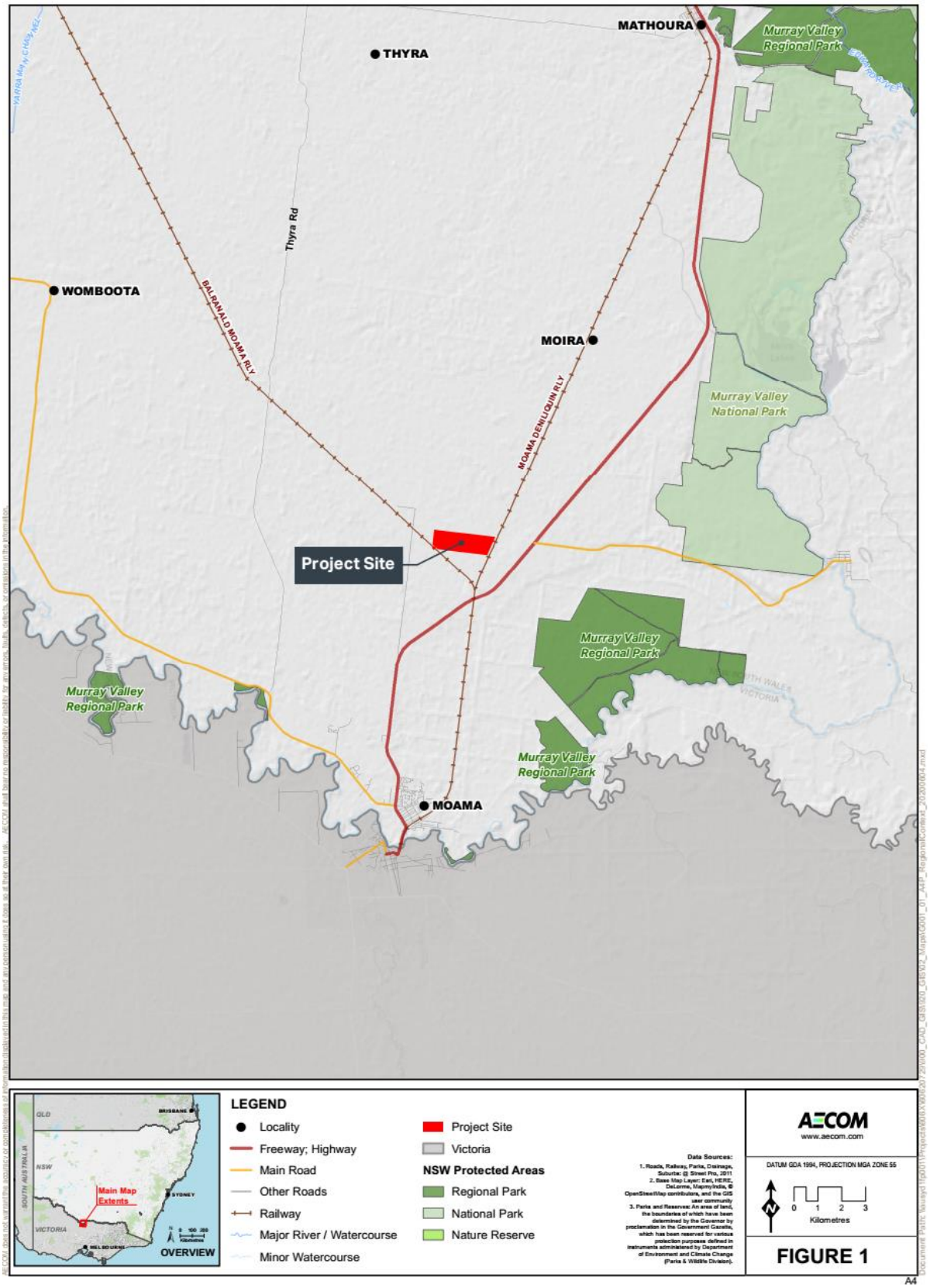

Figure 1 Site context

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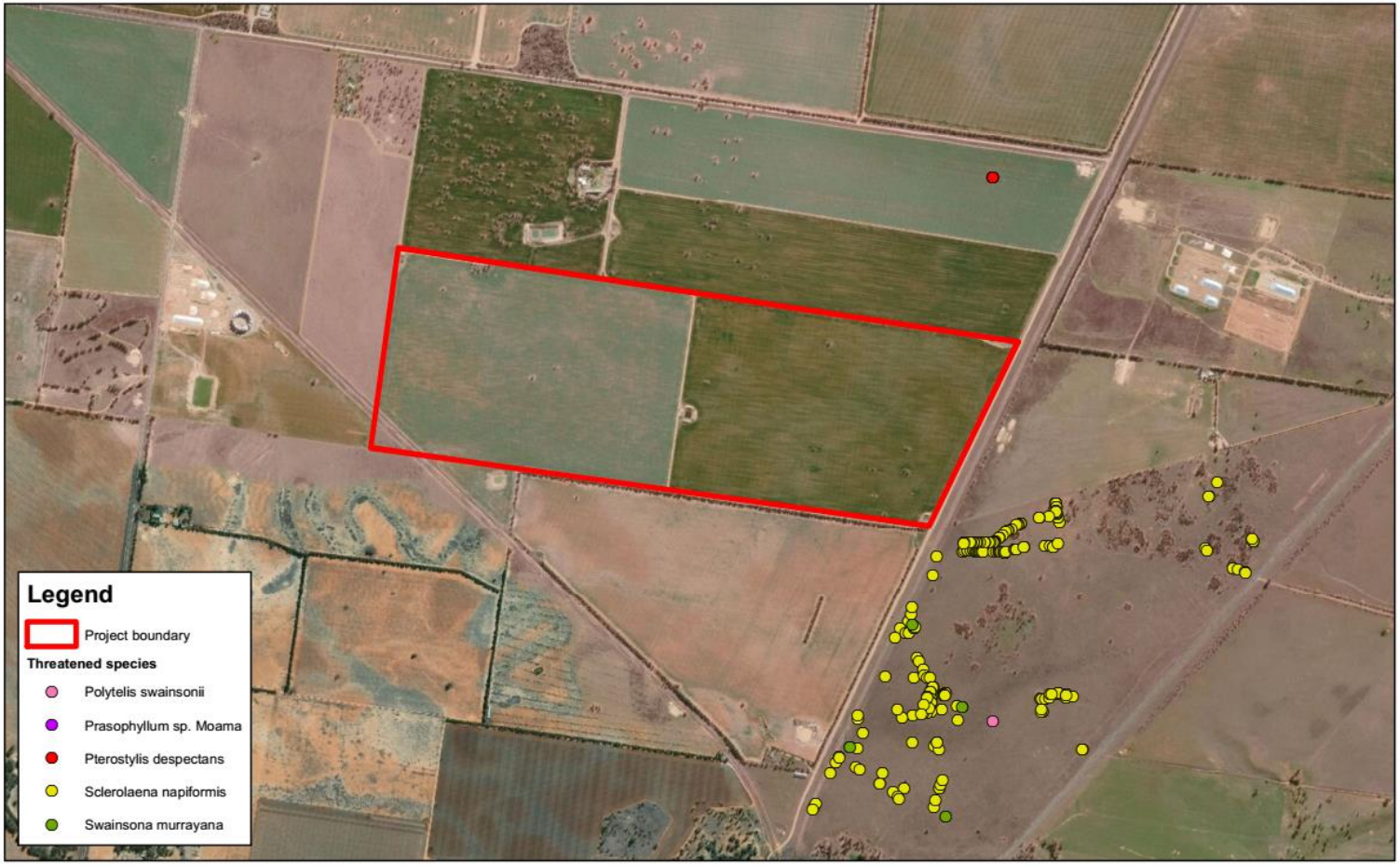

Figure 2 Site plan and threatened species records

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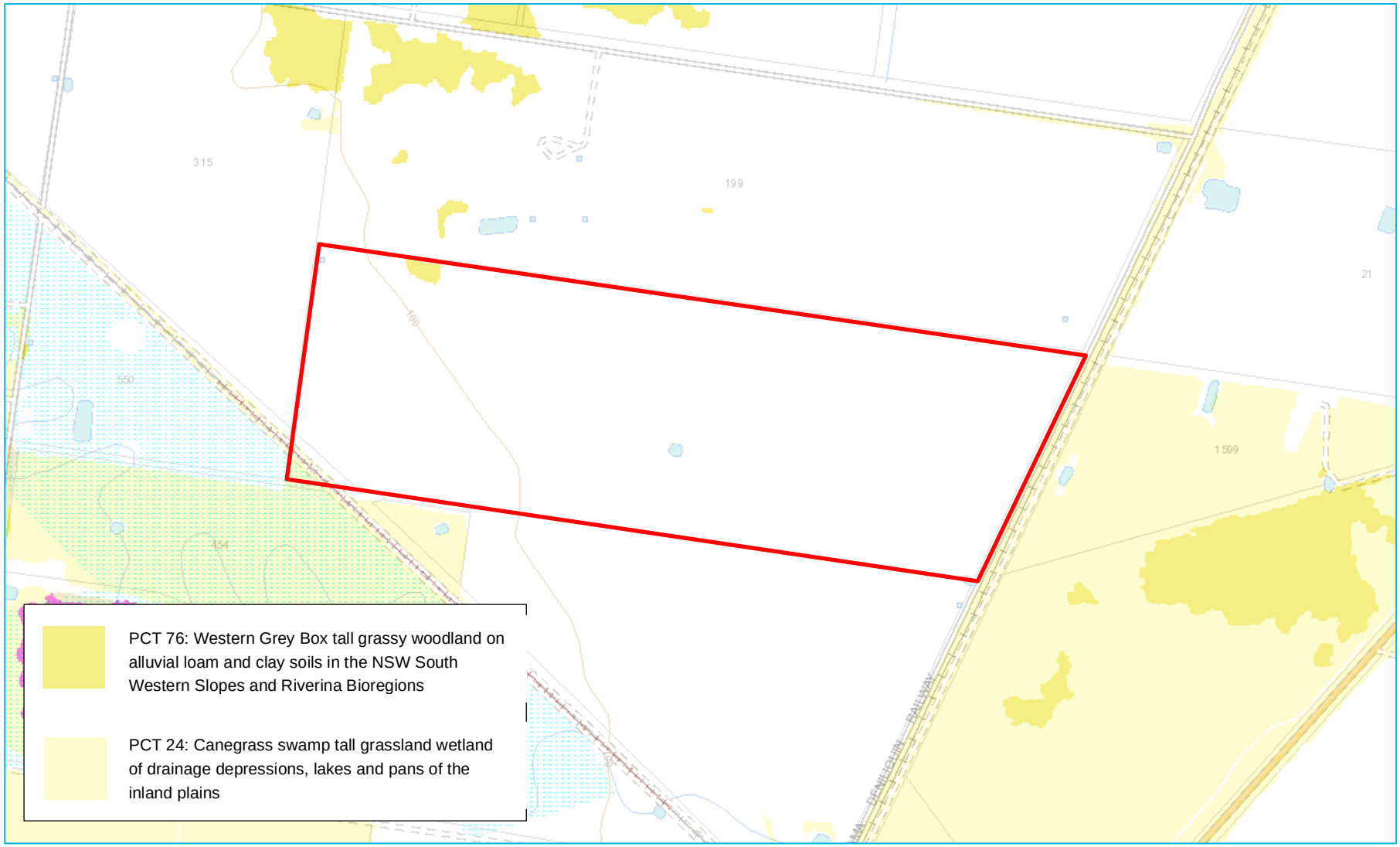

Figure 3 Vegetation mapping

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Figure 4 View from the northeastern corner of the Site looking southwest. The fence line pictured in the centre of the frame is the northern Site boundary

Figure 5 View from the northeastern corner of the Site looking south along line Road. The Site is the land to the right of the fence line.

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Figure 6 Detail of roadside vegetation showing primarily exotic and pasture grasses

Table 2 Impacts of the proposed development on biodiversity values

Biodiversity value	Meaning	Relevant (Yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
Vegetation abundance 1.4(b) BC Regulation	Occurrence and abundance of vegetation at a particular site	N/A	The Project would be undertaken in an area with virtually no remnant or regenerated native vegetation. The Site has been extensively modified by agricultural activities for well over a century, with the majority of the area having been tilled and ploughed and maintained as a monoculture of planted agricultural species (mainly wheat). There is no remnant native vegetation present within the proposed development footprint, though two areas are mapped within the land parcel as identified PCTs. Of these, only one is near the proposed development, being PCT 76: *Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions*. This community is considered to be part of the TEC *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions*.

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Biodiversity value	Meaning	Relevant (Yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
			Impacts upon this remnant patch would be avoided by the siting of project infrastructure outside this patch and an appropriate buffer. The only other recognisable form of the pre-agricultural plant community in this area is the remnant paddock trees. These individuals (approximately 14 across the entire 197 ha land parcel) would not constitute a recognisable PCT given the extensive historic vegetation clearing around them. Wherever possible, these individuals would be retained.
Vegetation integrity 1.5(2)(a) *Biodiversity Conservation Act 2016* (BC Act)	Degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	N/A	As outlined above, the Site has been extensively modified from its original state such that it is not recognised as a native PCT. The Site is almost exclusively cleared for cropping, with any native regeneration being actively suppressed. The Project would not involve the removal of any remnant native vegetation, with the one patch of PCT within the main site being avoided by the proposed development.
Habitat suitability 1.5(2)(b) BC Act	Degree to which the habitat needs of threatened species are present at a particular site	N/A	Threatened species records present in the vicinity of the Site include: • *Swainsona murrayana* (Slender Darling-pea) – BC Act: Vulnerable, EPBC Act: Vulnerable • *Prasophyllum* sp. Moama – BC Act: Critically endangered, EPBC Act: not listed • *Pterostylis despectans* – BC Act: Critically endangered, EPBC Act: Endangered • *Sclerolaena napiformis* (Turnip Copperburr) – BC Act: Endangered, EPBC Act: Endangered • *Polytelis swainsonii* (Superb parrot) – BC Act: Vulnerable, EPBC Act: Vulnerable The nearest threatened species record, for *Sclerolaena napiformis* (collected in 2017), is located approximately 200 m from the Site boundary. The next nearest, being a *Swainsona murrayana* record from 2009, is approximately 520 metres from the Site boundary. The nearest threatened fauna record, for Superb Parrot, is over 1 km to the southeast of the Site boundary.

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Biodiversity value	Meaning	Relevant (Yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
			The Site has been under intensive agriculture for several decades (at least). As a result the site lacks any substantial area of non-crop vegetation, native or otherwise. As such the potential for it to comprise habitat for any threatened species likely to be present is very low. The Project footprint would not affect the remnant patch of potential TEC in the northwest of the land parcel.
Threatened species abundance 1.4(a) BC Regulation	Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site	N/A	As outlined above there are no records of threatened species within the site. Vegetation mapping indicates that an isolated patch of vegetation in the northwest of the site, approximately 0.73 ha in size, is considered part of the TEC *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions*. This patch would not be affected by the proposed development, which would be positioned to avoid this remnant plus an appropriate buffer. The site does not include and buildings or other habitat features that would be demolished as part of the Project. A number of small isolated paddock trees are present within the eastern paddock, though these do not contain hollows or other significant habitat value. On the basis of their habitat requirement and the nature of the vegetation within the body of the existing Site, the project is considered highly unlikely to result in any substantial impact upon threatened fauna. Off-site impacts associated with the proposal would be limited. This is based upon the very flat nature of the site and the low energy (and hence dispersal) of any rainfall runoff. Despite this the Project would include appropriate erosion and sediment controls to reduce runoff and sedimentation potential as far as practicable. All vehicle traffic within the site would be managed by a 10 km/h speed limit which would effectively negate the potential for vehicle strike impacts.
Habitat connectivity	Degree to which a particular site connects	N/A	The Project area is located in a heavily agricultural landscape. This includes extensive cropping and other agricultural activity over

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Biodiversity value	Meaning	Relevant (Yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
1.4(c) BC Regulation	different areas of habitat of threatened species to facilitate the movement of those species across their range		adjacent land all directions. The nearest area of contiguous vegetation, Bama State Forest, is approximately 3.5 km to the southeast, with Barmah National Park approximately 7.5 km to the northeast. There are no substantive corridors for the movement of wildlife through the Site, with only small perimeter plantings around paddocks to the south. Land to the southeast is a travelling stock reserve and contains scattered remnant vegetation. The potential for this area to accommodate the movement of wildlife would not be affected by the Project.
Threatened species movement 1.4(d) BC Regulation	Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle	N/A	As outlined above the Site is not considered to contribute to any substantial movement of fauna, including threatened species. The development of the Project would therefore not place any threatened flora or fauna populations at risk by further disrupting any breeding or other connectivity between populations.
Flight path integrity 1.4(e) BC Regulation	Degree to which the flight paths of protected animals over a particular site are free from interference	N/A	The Project would be developed at existing ground level. Whilst the development is likely to include several silos, these are not expected to be of such a height that they would disrupt or obstruct the overflight patterns of threatened or other protected species.
Water sustainability 1.4(f) BC Regulation	Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	N/A	The Project would not alter any naturally occurring waterbodies, noting the nearest main river, the Murray, is approximately 7.8 km to the southeast at its nearest point. Construction impacts would be managed in such a way as to minimise sediment escape and hence reduce the potential for impacts upon any nearby waterbodies, natural or otherwise. The Project would not alter hydrological regimes in the area such that any habitat for threatened species or ecological communities would be placed at risk.

* Attach additional supporting documentation where appropriate