Background Document

Preliminary Environmental Assessment - Proposed Ethanol Plant

Report Number 21480.13601

Prepared for

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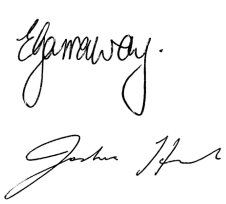
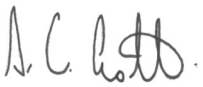
Signatures				

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This document provides information to address the intent of Project Number 21480 as agreed to by Babcock & Brown Australia Pty Limited.

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1. Introduction

1.1 Background

Babcock & Brown Australia Pty. Limited (BBAPL) is proposing to develop an ethanol production facility at Rockdale, Yanco, in southern New South Wales (NSW). E.A. Systems Pty. Limited has been engaged by BBAPL to prepare a preliminary environmental assessment for the proposed development as part of the approvals procurement process.

The ethanol production facility will be completed in two stages, with an ultimate production capacity of approximately 150 ML of under-natured ethanol per annum. BBAPL are seeking approval for the development of the facility under Part 3A of the *Environmental Planning and Assessment Act, 1979* (EP&A Act). The anticipated development cost of the project will exceed $30 million, and therefore meets the provision of State Environmental Planning Policy (SEPP) (Major Projects). Consequently, the development will be determined by the Minister for Planning.

1.2 Objectives of this Report

This document is intended to act as a preliminary environmental assessment and briefing paper for a Planning Focus Meeting to be held with the proponent, the Department of Planning, other state concurrence agencies and relevant stakeholders. The objectives of this report are to:

- Provide background information on the proponent and the proposed development;
- Describe the site and existing developments;
- Provide sufficient information to the proposal to allow the Department of Planning, and other agencies, to better identify and communicate to the proponent likely environmental issues requiring consideration during the Environmental Assessment; and,
- Identify relevant statutory obligations at Federal, State and Local government levels.

This report has also been prepared to gain the requirements of the Director-General under Clause 75(F) of the EP&A Act for the preparation of an environmental assessment (EA).

2. Proponent Details

BBAPL is a wholly owned subsidiary of Babcock & Brown Limited (BNB). BNB is a global investment firm with a number of operating divisions including real estate, infrastructure and project finance, operating leasing, structured finance and corporate finance. The company operates in Australia, North America, Europe, Asia, United Arab Emirates and Africa. BNB has a number of listed and unlisted focused investment vehicles in areas including real estate, renewable energy and infrastructure. The company was listed on the Australian Stock exchange in 2004.

3. Project Description

3.1 Introduction

There are a number of drivers for the production of ethanol in Australia and internationally. These include the high price of oil, growing unrest in the Middle East coupled with a desire to decrease dependence on current oil supplies, and an increasing environmental awareness by consumers.

Fossils fuels are widely recognised as the major contributor of carbon dioxide emissions, contributing significant amounts of this greenhouse gas into the atmosphere. Ethanol is a high-octane fuel that can be produced from carbohydrates and cellulose by fermentation. Unlike petroleum-based fossil fuels which have a finite limit, ethanol is viewed as a renewable fuel produced from plants. The ethanol production process is itself a carbon cycle. The carbon released during combustion of the fuel is recycled by the plants which absorb carbon dioxide during growth.

When blended with petrol, ethanol can help reduce the toxic toxins and carcinogens generated through the combustion of petrol. The blending of ethanol and petrol has also been identified as a means of reducing net greenhouse gas emissions. The Australian Federal Government has set a production target of 350ML of biofuels by 2010 as part of the Biofuels Action Plan. Current practice is to blend 10% ethanol with petroleum based fuels (E10). The use of ethanol blends in Australia, such as of E10, is generally expected to result in reduced emissions of:

- Greenhouse gases;
- Carbon monoxide;
- Exhaust hydrocarbons;
- Particulates; and,
- Known carcinogens such as benzene.

A recent life-cycle assessment conducted in Australia has suggested that E10 blends are considered greenhouse neutral (JAMA 2001).

Ethanol can be produced from a number of feedstocks, including sugarcane, corn, wheat, sorghum and barley. Ethanol production involves the milling of feedstock followed by cooking, fermentation and distillation. The current major world producers of ethanol are the United States and Brazil. However, as a major producer of grain, Australia is well positioned to undertake ethanol production, utilizing grain as a feedstock. Australia's wheat production in 2005 was approximately 21.91 million tonnes (down from 2000 average production levels of 24.76 million tonnes) (ABS 2006). The current production capacity of ethanol in Australia is around 75 ML.

The proposed ethanol production plant is to be located at the Rockdale Beef facility, an integrated feed-mill, beef cattle feedlot, abattoir and irrigation farm facility. It is anticipated that the proposed development will exploit synergies with these existing operations. The ethanol plant is to be constructed as a staged development, with an ultimate production capacity of around 150ML of under-natured ethanol per annum.

3.2 Ethanol Production

To achieve energy and cost efficiencies, it is important that the plant is located close to a dependable supply of feedstock. While ethanol can be produced from a number of grain feedstocks including corn, wheat, sorghum, maize and barley, wheat is to be the major feedstock for the plant, given its close proximity to the extensive Murrumbidgee wheat growing region.

In 2004-2005, the Murrumbidgee region produced 1.2 million tonnes of wheat for grain production, and 216 000 tonnes of barley (ABS 2006). During the harvest season, grain will be sourced within an

approximate 200 kilometre radius of the plant. Throughout the remainder of the year, it is proposed to access grain stores under long term supply agreements with producers.

Grain will brought to site via road and/or rail, and stored until use. A weighbridge will be located at the site entrance, and the gross weight of any trucks entering/exiting the site will be recorded. Grain will be stored in storage silos and bunkers. Bunkers will be protected with tarpaulins and any runoff will be within the controlled drainage area. It is estimated that around 400 kilo tonnes of grain will be used over a twelve month period.

The feedstock is milled to grind the grain to a specified target particle distribution. Water is then added to the milled feedstock and mixed in a slurry tank. The slurry is then heated to rupture the starch granules and cause gelatinisation of the starch. Once cooled, enzymes are added (alpha-amylase) to commence the liquefaction stage, during which the starch is hydrolysed. The insoluble starch then becomes soluble, and the resulting product is referred to as "mash".

Further enzymatic conversion takes place during saccharification, in which the hydrolysed starch molecules are converted to simple sugars (e.g. glucose), which are fermentable. Yeast is then added to the mash to ferment the sugars in fermentation tanks. Ammonia solution or sulphuric acid is generally added to adjust pH to maintain optimum conditions for fermentation by the yeast. The fermentation will be undertaken in a batch process. Carbon dioxide and alcohol are produced during the fermentation stage. The fermented mash (or beer) is around ten percent alcohol, and is pumped to the distillation column to separate off the alcohol.

Ethanol is boiled off from the fermented mash, and is around 95% ethanol (190 Proof). The ethanol will then pass through a molecular sieve to produce 200 Proof Ethanol. The ethanol must then be denatured to meet Australian excise tax regulations, and to deter human consumption of the alcohol. Ethanol is typically denatured by a five percent (by volume) mixture of petrol or gasoline. The final product from the plant is a 200 Proof denatured ethanol, and will be stored on site in storage tanks until transported to market via road and/or rail. Ethanol is flammable and moderately toxic. It is volatile and very soluble in water, as well as being soluble in most organic liquids.

The gaseous stream produced during the fermentation stage includes carbon dioxide, ethanol vapour and trace gases. The gaseous stream will be vented to scrubbers to capture carbon dioxide and recover volatilised ethanol. Scrubber water can be recycled for use in making mash.

Stillage, the by-product from the distillation process, is removed from the base of the distillation columns to a by-products handling facility. Stillage essentially contains all un-fermentable residues and by-products from the fermentation stage. The stillage is separated via centrifuge into thin stillage/sweet water and wet distillers grain (WDG). Around 50% of the thin stillage will be returned to the slurry tank for re-processing. The remainder of the thin stillage undergoes evaporation to boil off condensate water and is concentrated to syrup. This syrup is pumped from the syrup silo and mixed with WDG.

The recovered solids (WDG) separated from the thin stillage will be either transported to the Rockdale Beef feedmill for processing as feedstuff for the feedlot, or temporarily stored prior to transportation off-site. The shelf life of the WDG is typically between four and five days, unless a wetcake protector is added or the product is ensiled. Application rates of the protecting agent typically vary with the moisture content of the treated material and the anticipated holding period for the WDG. For longer-term temporary storage, the WDG can be ensiled into silage bags (Lardy, 2003). Silage bags have been used in the USA to store both WDG and corn gluten meal (a similar fermentation by-product). The WDG will be transported to the feedmill either via pipeline, conveyor belt or trucks.

A simplified flow chart of the ethanol production process proposed at the site is shown below in Figure 1.

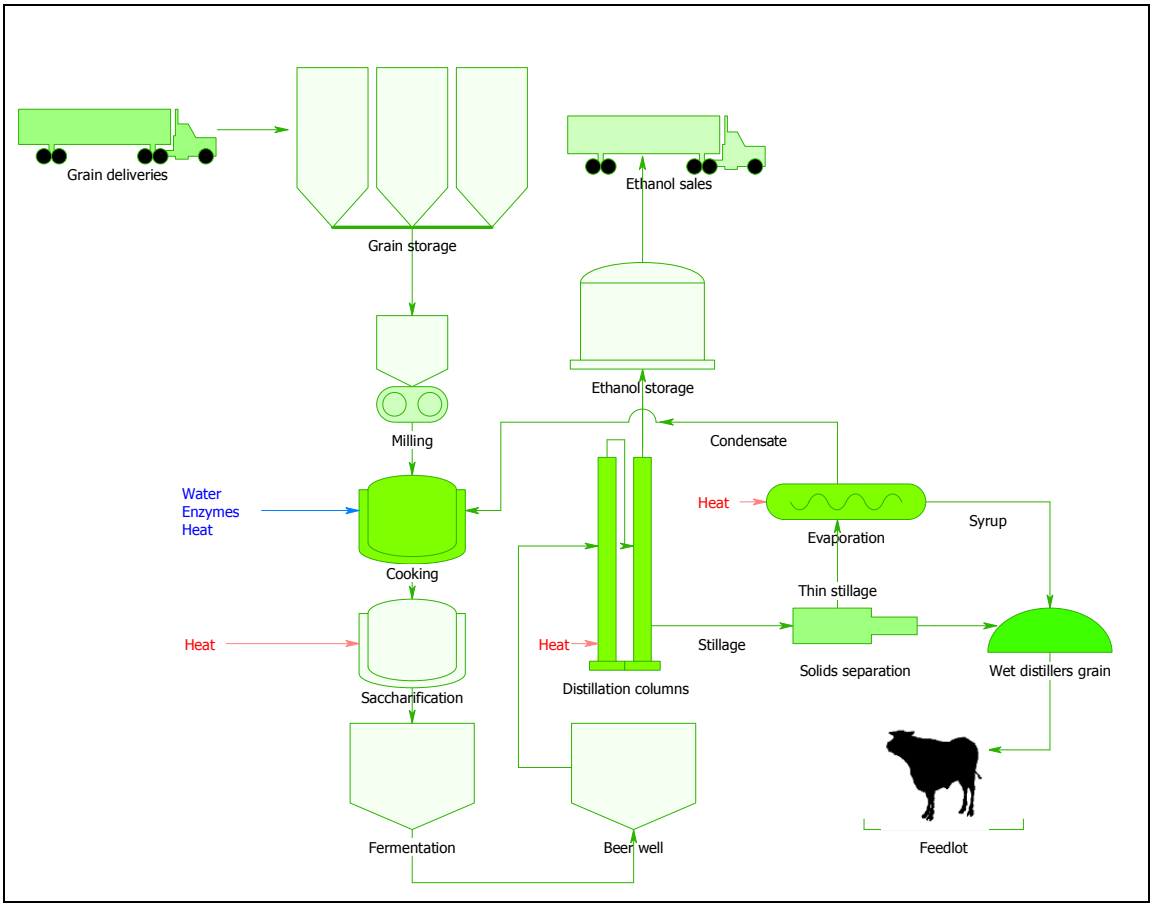

Figure 1. Ethanol Production - Process Flow Chart

3.3 Ethanol Facility Layout

The footprint of proposed ethanol plant proper is around 250 m x 420 m, fronting Regulator Road on the southern boundary of the Rockdale Beef property (Figure 2).

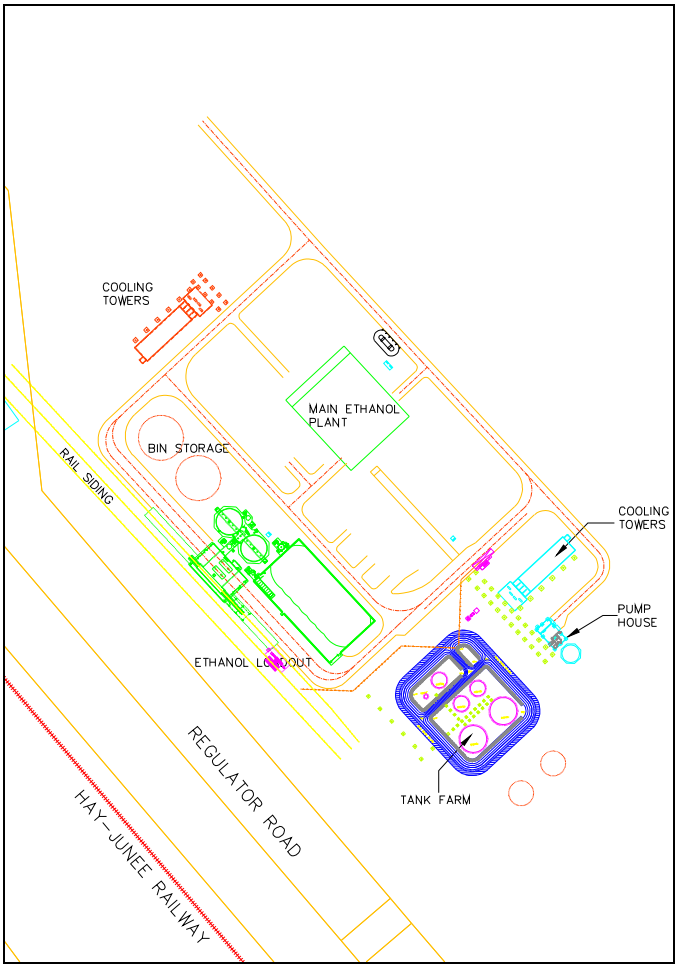

Figure 2. Proposed Plant Layout

An administration area and stormwater and effluents ponds are not included in the above footprint, but will be incorporated into the final site layout.

3.4 Associated Infrastructure

The proposed plant is ideally situated in close proximity to the Rockdale Beef facility. It is anticipated that efficiencies and synergies can be achieved for various inputs and infrastructure requirements including grain supply, water, transport (road and rail networks) and gas supply.

3.4.1 Gas Supply

There is an existing high-pressure gas main supplying the Rockdale Beef facility. The opportunity exists to use the existing gas main to source gas for the ethanol plant.

3.4.2 Electricity Supply

Rockdale Beef's electricity is supplied via a 33 kilo-Volt overhead power line. The ethanol plant could tap into the existing line and reticulate via a transformer to provide power to the plant.

3.4.3 Road

The proposed site has frontage to the bitumen sealed Regulator Road. Entrance to the site will be from Regulator Road, which is accessed from Mackellar Road off the Leeton-Narrandera Road (Irrigation Way).

3.4.4 Railway

The proposed site is located adjacent to the Hay-Junee Railway line (which runs parallel to Regulator Road on the southern side of the road). The creation of a railway siding at the site, parallel to the main line, has been discussed as an option. The railway could be utilised for both the importation of feedstock, as well as the dispatch of ethanol.

4. Site Location

4.1 Locality

The proposed ethanol production plant will be located at the Rockdale Beef facility near Yanco in south western New South Wales (Figure 3). The subject land is adjacent to Regulator Road and situated about 15 kilometres north-west of Narrandera.

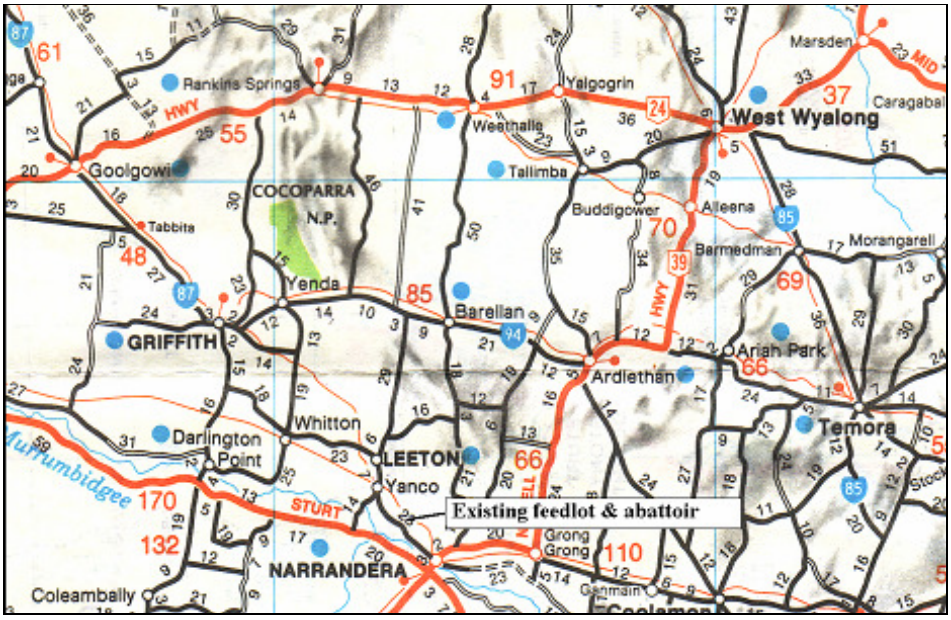

Figure 3. Location of existing Rockdale Beef facility and proposed ethanol plant (NRMA, 1998)

4.2 Real Property Description

The subject land of the proposed ethanol plant is freehold tenure. The site is in the Parish of Cudgel and located in Lot 359 DP 751694, within the Leeton Shire Local Government area. The subject land is all within the Leeton Shire and is zoned 1(a) Rural.

The footprint area for the proposed ethanol plant comprises a small area of the Rockdale Beef property. It is proposed that the property be sub-divided to form a lot on which the ethanol plant will be located. The proponent will lease the lot from Rockdale Beef on a long term basis. It is anticipated that the (new) lot boundary will form a licence boundary so that there is a clear separation of responsibilities between the ethanol plant and the Rockdale Beef feedlot.

5. Existing Site Use – Rockdale Beef Facility

The ethanol production plant is to be located at the Rockdale Beef facility, an integrated feed-mill, beef cattle feedlot, abattoir and irrigation farm facility. It is anticipated that the proposed development will exploit synergies with the existing operations at Rockdale Beef.

The Facility is licensed by the NSW Department of Environment and Conservation (DEC) (Environment Protection Licence (EPL) number 3547). Discharge of contaminants into the environment is regulated under the *Protection of the Environment Operations Act 1997* (POEO Act). The general site layout of the Rockdale Beef Facility and the proposed Ethanol Plant is detailed below in Figure 4.

Rockdale Beef's environmental management system is fully accredited under ISO 14004.

5.1 Feedlot

The Rockdale Beef feedlot has a capacity of 53 300 and covers an area of 120 ha. Australian Black Angus cattle are the major cattle breed used at Rockdale. Runoff from the feedlot is captured in a series of sediment basins and holding ponds prior to dilution with freshwater for irrigation. Manure is harvested from the feedlot pens and removed to the composting area. The composting process results in a reduction of the total manure mass.

5.2 Abattoir

The abattoir has the capacity to process up to 650 animals per day. Waste waters are captured in ponds and treated prior to irrigation. The abattoir has been innovative and pro-active in reducing salt loads in the waste water. It has applied 'cleaner production principals' to management of its operations, resulting in reduced salt loads in waste water and more sustainable effluent irrigation practices. It will continue to better its production and maintain its compliance with the EPL.

5.3 Feedmill

The feedmill consolidates the current feed operations, and consists of the feedmill and a steam flaking plant, together with silos and silage bunks for grain storage.

At full operational capacity, feed usage is in the order of 195 000 tonnes per annum. The feed is prepared at the feedmill on site allowing the production of tempered rolled grain. Feed ingredients are stored in silos (grain), tanks (liquid ingredients), concrete bunks (dry bulk ingredients) or earthen bunks (silage) prior to usage. Prepared feed is then distributed to the feedlot pens.

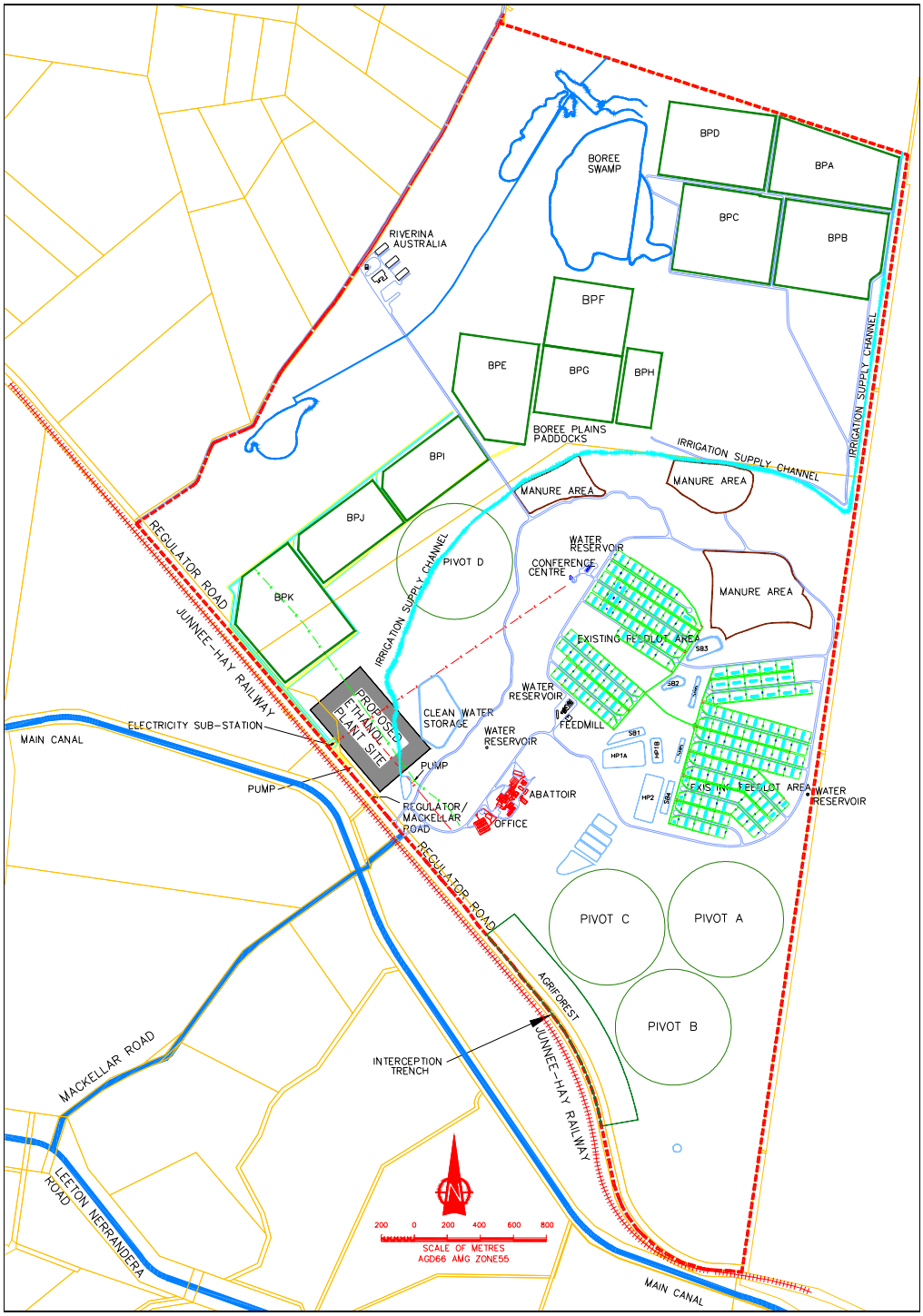

Figure 4. Rockdale Beef property plan and proposed ethanol plant site

Plate 1. Rockdale Beef feedlot and feedmill

5.4 Irrigation (effluent reuse areas)

Waste waters from the feedlot and abattoir are applied to 400 ha of irrigable land in properties known as 'Rockdale' and 'Boree Plains'. Rockdale has applied sophisticated management programs to these areas and has steadily improved their health.

Water used for irrigation at the Rockdale facility is obtained from four sources, including the feedlot, abattoir, freshwater and recycled water. By the adoption of water use efficiencies, the general trend is a declining water use for irrigation purposes at the Rockdale Beef Facility.

6. Site Description

6.1 Climate

The climate at the site can be considered as warm temperate and subhumid to semiarid. There are three Bureau of Meteorology (BoM) stations in close proximity to the Rockdale site, including Deniliquin (BOM station 74128), Leeton (BOM station 74062) and Yanco (BOM station 74037).

The closest meteorological station with hourly meteorological data is the Yanco BoM station. This station lies within approximately 10 kilometres of the facility; however it does not record any evaporation data. The Leeton data represent the longest period of data collection, including 89 years of rainfall data.

6.1.1 Precipitation and Evaporation

Rainfall is the dominant form of precipitation and shows no marked seasonality, being distributed uniformly throughout the year. Nevertheless, rainfall is marginally more reliable in the winter months than in the summer months. The average annual rainfall at Leeton is 431.3 mm with an average of 77 rain days. Leeton rainfall data shows that October is the wettest month, with an average rainfall of 44.5mm over 7.4 days.

Evaporation in the Yanco region is typically high and usually in excess of the mean annual rainfall. However, a moisture deficit for most of the year is typical of the Yanco region.

6.1.2 Temperature

The average maximum and minimum temperatures experienced at Leeton are 23°C and 10.3°C respectively. On average January is the hottest month with an average maximum temperature of 31.9°C. July is the coldest month with average minimum temperature of 3.7°C.

Table 1. Average minimum and maximum monthly temperatures (Leeton BoM Weather Station 74062)

	Temperature	
Month	**Max (°C)**	**Min (°C)**
January	31.9	17.3
February	31.2	17.2
March	28.2	14.6
April	22.9	10.4
May	18.1	7.00
June	14.7	4.60
July	13.9	3.70
August	15.8	4.60
September	19.3	6.60
October	23.0	9.70
November	27.0	12.7
December	30.2	15.6
Average	**23.0**	**10.3**

The annual average humidity reading collected at 9am from the Leeton site is 62 percent, and at 3 pm the annual average is 44 percent. The highest humidity on average is in June and July with a 9 am average of 82 percent, and the lowest is January with a 3pm average of 29 percent.

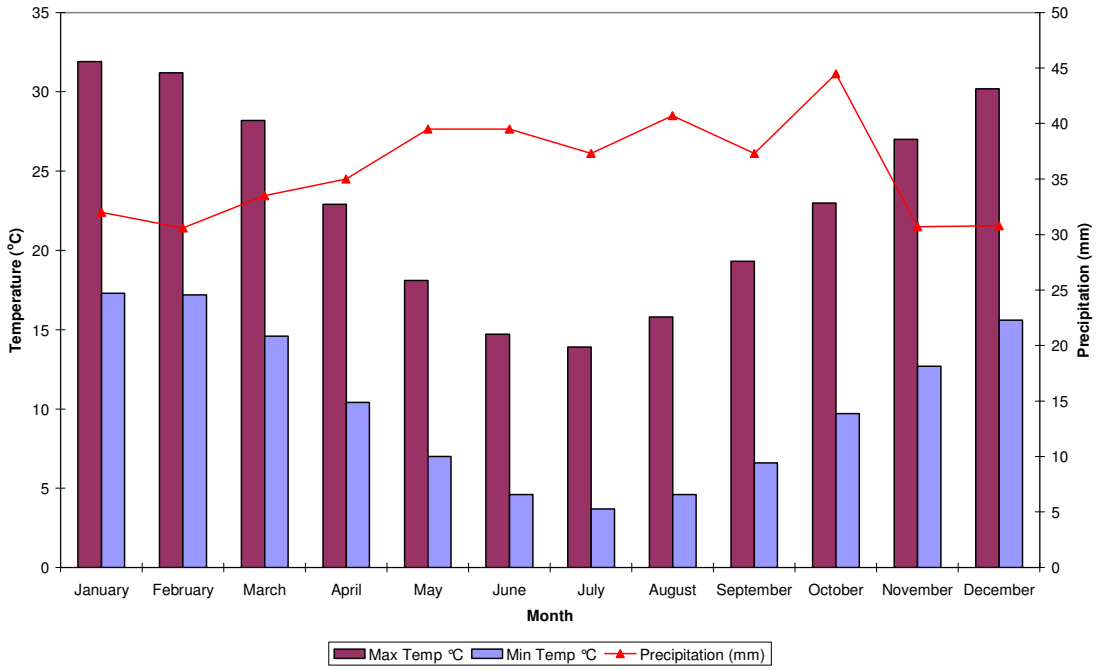

Figure 5. Annual Climatic Data (Leeton BoM Weather Station 74062)

6.1.3 Wind

Wind data are derived from recordings at the Leeton BoM Station. Wind speeds are generally light throughout the year, with the maximum monthly means occurring in September (10.6 km/hr at 9am and 11.8 km/hr at 3 pm). However, calm conditions are generally only recorded on a significant number of mornings in late autumn and early winter. Calm conditions at 3 pm are common. The monthly wind run is highest during summer and lowest in late autumn and early winter. Taken over the entire year the mean wind speed is a relatively low 9.05 km/hr.

6.2 Topography

The subject land for the proposed ethanol plant is within a system of gently undulating slopes and plains. The gradient is relatively constant across the proposed site, with an average slope of between 1.5 and 2%. The site is located approximately 150 metres above the Australian Height Datum (AHD).

Contours overlain on the proposed subject land within the Rockdale Beef facility are shown in Figure 6 (0.2m contour intervals).

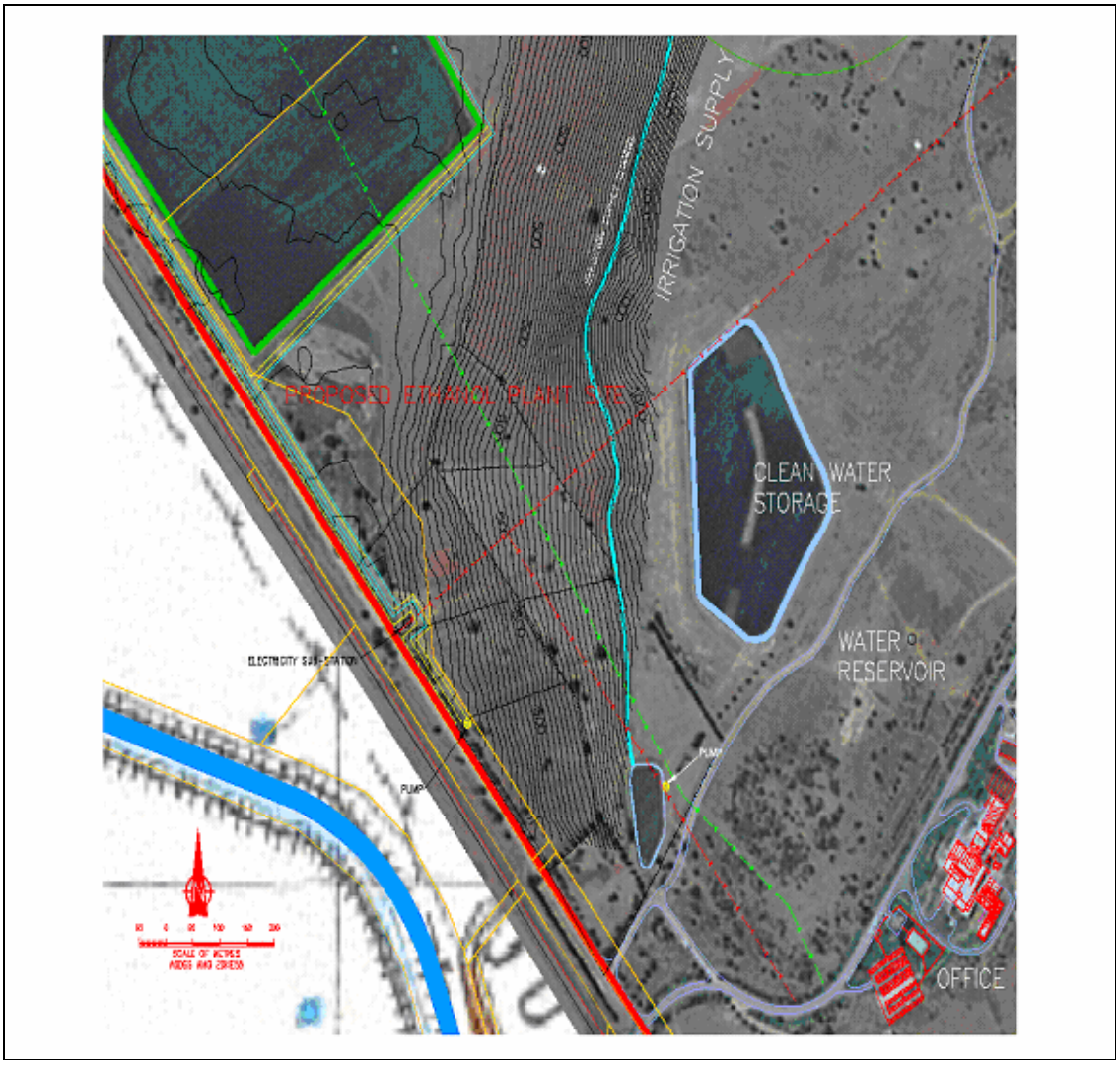

Figure 6. Topographic map of the proposed ethanol plant site and its environs (0.2m contour interval)

6.3 Geology and Soils

6.3.1 Geology

The project area is part of the Riverine Plain of the Murray Darling Basin, which is a flat depositional plain existing north and west from the highlands to the east. A series of prior streams are found throughout the region, and sediments in this district range from 150 to 250 metres above bedrock. The upper most sediment consists of the Shepparton formation, which is approximately 80m thick.

The Rockdale site consists mainly of alluvial floodplain material with sandstone and siltstone intrusions, generally lacking any continuous faults and fractures. The north-western quadrant of the proposed ethanol plant site is underlain by conglomerate, pebbly sandstone, lithic sandstone, sandstone and siltstone geological formations. The remainder of the proposed site consists mainly of flood plain materials, comprising of black and red clayey silt, sand and gravel (Figure 7).

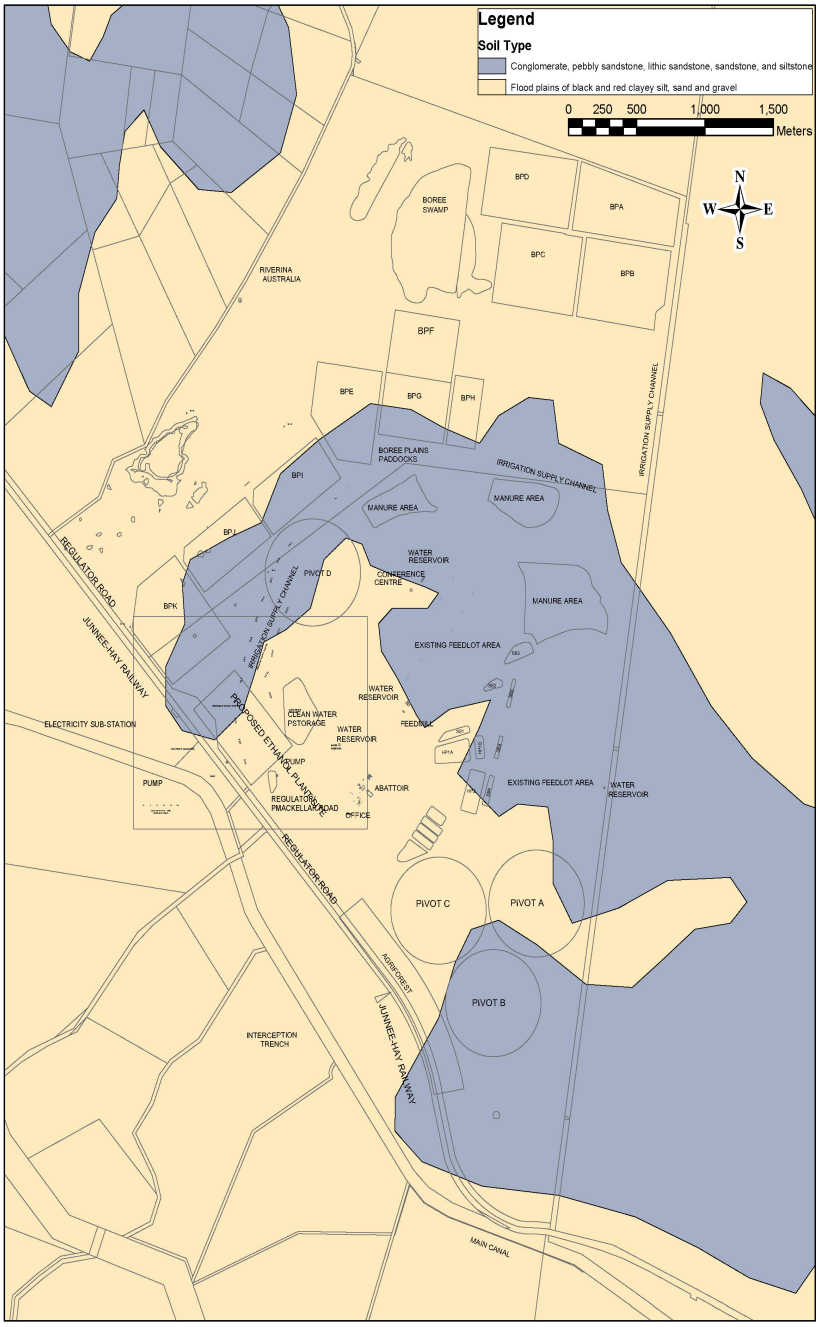

Figure 7. A geological map of the development site and its environs (DMR, 2006)

6.3.2 Soils

The Rockdale soils are generally described as loams overlying light-textured clay at depth. The soils for the project area on the south western portion at the proposed ethanol plant site are generally deep, red-brown to brown loams, sandy clay loams or sandy clays that lacked any abrupt or contrasting changes in texture with profile depth. Solum depth varied from around 1.4 metres on the more elevated areas to greater than four metres on the lower slopes. The soils were generally either weakly structured or massive, although pedological organisation and clay content did tend to increase with profile depth and the position down the catenary sequence. The soils on the lower slopes, towards the west of the site, often contained fragments of transported fragments indicative of likely colluvial or

alluvial deposition. These soils would be described as kandosols using the Australian Soil Classification of Isbell (1996).

6.4 Surface Water

The site is located in the Murrumbidgee Catchment Area, which covers an area of 73,400 square kilometres. The Murrumbidgee catchment is a major sub-catchment of the Murray Darling Basin, with the Lachlan catchment to the north and the Murray catchment to the south. The site is located within the Murrumbidgee CMA's Lower Slopes sub-region.

The site is within the Murrumbidgee Irrigation Area (MIA), and the main channel runs to the south west of the proposed site.

6.5 Ground Water

The proposed site is within a regional aquifer known as the Lower Murrumbidgee Groundwater Management Area (LMGMA). The area covers 33,000 square kilometres and is also known as the Murrumbidgee Alluvial Fan. The recharge zone is to the east of the catchment and in particular near the commencement of the alluvial fan situated near the township of Narrandera. There is a number of pre-existing groundwater monitoring points on the Rockdale Site. The property lies in an area having a broad scale classification of Zone 2 in groundwater susceptibility maps provided by the Department of Land and Water Conservation (ICIAI, 1997).

The Lower Murrumbidgee aquifer is subject to water sharing plans pursuant to the *Water Management Act 2000* (NSW). The Lower Murrumbidgee inland groundwater system is also included in the Achieving Sustainable Groundwater Entitlement (ASGE) Program.

6.6 Ecology

The main woody perennial vegetation known to commonly exist at the Rockdale site include Yellow Box (Eucalyptus melliodora), White Cypress Pine (Callitris glaucophylla), Bulloak (Allocasuarina leuhmanii), and Needlewood (Hakea leucoptera).

Preliminary desktop investigations were undertaken to identify flora and fauna species and ecological communities within the Leeton Local Government Area. Searches of the Department of Environment and Conservation Wildlife Atlas Database and the Department of Environment and Heritage online search for Matters of National Environmental Significance (NES) identities species listed under the *Threatened Species Conservation Act 1995* and the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). A number of matters of national environmental significance were identified via the DEH online search (Table 2) within the Leeton LGA.

Table 2. Matters of National Environmental Significance for Leeton LGA

Matters	Number
World Heritage Properties	None
National Heritage Places	None
Wetlands of International Significance (Ramsar Sites)	1
Commonwealth Marine Areas	None
Threatened Ecological Communities	2
Threatened Species	14
Migratory Species	7

Source: DEH online search for Matters of NES

Within the Lowers Slopes sub-region of the Murrumbidgee CMA, 56 threatened species were identified. These include threatened animals (45 species), threatened communities (3) and threatened plants (8). These species are either known or predicted to occur in the sub-region, with the level of threat varying from vulnerable to endangered. However, historical and current intensive agricultural land use, including the feedlotting activities, is likely to preclude the existence of these species on the site.

6.7 Cultural, Heritage and Archaeological matters

A preliminary desktop investigation of relevant heritage registers was undertaken, including the Australian Heritage Database, the Australian Heritage Places Inventory and the NSW Heritage Office State Heritage Inventory. The listings provided by these searches include items listed by the Heritage Council and the Local Councils and Shires and State Government Agencies. Seven statutory listed items were identified under the NSW Heritage Act, together with 57 items listed by Local Government and Stage agencies. These items are generally located in the townships of Leeton, Yanco and Whitton. None were identified as being located on or adjacent to the proposed ethanol plant site.

Despite the site having been subject to prior disturbance and clearing, there are a number of known Aboriginal sites on the Rockdale property. A search of the Department of Environment and Conservation Aboriginal Heritage Information Systems (AHIMS) will be conducted during the environmental assessment, together with a site survey site survey (in consultation with the Leeton Local Aboriginal Lands Council) if necessary.

6.8 Traffic

Traffic currently entering and leaving the Rockdale Beef facility use Regulator Road on the southern boundary of the site. There is an average of some 350 traffic movements over a weekly period at Rockdale Beef, with an equal split between heavy and light vehicles. Regulator Road can be accessed from the Narrandera-Leeton Road (Irrigation Way) and from Mackellar Road.

6.9 Surrounding Land Uses

The majority of the land surrounding the proposed development site is used primarily for traditional, broad acre agriculture and pastoral activities. This is predominantly in the form of winter cereal (wheat) and fodder crop (oats) production, and the grazing of sheep and cattle. Some nearby areas, particularly to the north of the feedlot, have been developed for intensive broad acre irrigated crop production.

7. Regulatory Context

7.1 Federal Environmental Planning Instruments

Controlled actions or matters of Environmental significance will be assessed under the *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). Matters of national environmental significance include World Heritage areas, RAMSAR wetlands, Threatened Species or Ecological Communities and Migratory Species.

If an action has been determined to be a controlled action, and it is not otherwise exempted from the environmental assessment processes, then the Minister must choose one of the following methods of assessing the relevant impacts under section 87(1):

- An accredited assessment process;
- An assessment on preliminary documentation;
- A public environment report;
- An environmental impact statement; or,
- A public enquiry.

7.2 State Environmental Planning Instruments

7.2.1 Protection of the Environment Operations Act 1997 (POEO Act)

The *Protection of the Environment Operations Act 1997* (POEO Act) enables the Government to set out explicit protection of the environment policies and adopt more innovative approaches to reducing pollution. Under the POEO Act, the Government can provide protection of the environment policies and programs for reducing pollution from industry. The Act provides an integrated licensing arrangement for polluting industries, and incorporates air pollution, water pollution, noise pollution and waste management. An Environmental Protection Licence is generally issued with conditions. Under Schedule 1 of the Act, it is anticipated that the plant will require an Environmental Protection Licence (EPL).

Rockdale Beef currently operates according to an existing EPL (EPA licence No.3547). A licence variation may be required to accommodate the integrated processing activities of the proposed ethanol plant with Rockdale Beef.

7.2.2 Environmental Planning and Assessment Act 1979

The proposed plant will be assessed under the *Environmental Planning and Assessment Act 1979* (EP&A Act), and the *Environmental Planning and Assessment Regulation 2000.*

Part 3A of the EP&A Act applies development declared as a project under a State environmental planning policy (SEPP) or by order of the Minister. Under Section 75B, the proposed ethanol plant is subject to Part 3A by a State Environmental Planning Policy (SEPP). Under Schedule 1 of SEPP 2005 (Major Projects), the proposed facility is defined as a Major Project.

Other than State environmental planning policies, environmental planning instruments do not apply to a Major Project (clause 75R). Relevant SEPPs are discussed below. Under section 75U, authorisations are not required for the following:

- *Heritage Act 1977*;
- *National Parks and Wildlife Act 1974*;
- *Native Vegetation Act 2003*;
- *Rivers and Foreshore Improvement Act 1948*; and,
- *Rural Fires Act 1997*.

7.2.3 State Environmental Planning Policies (SEPP's)

The following State Environmental Planning Policies have been identified as applying to the proposed development:

1. SEPP No. 11 – Traffic Generating Developments:
   SEPP No.11 aims to ensure that the traffic management authority is provided with the opportunity to make representations on certain traffic generating developments, prior to the consent authority determining the application. SEPP 11 establishes the Roads and Traffic Authority (RTA) as the traffic management authority to be consulted.

2. SEPP No.33 – Hazardous and Offensive Development:
   The policy provides new definitions for 'hazardous industry', 'hazardous storage establishment', 'offensive industry', and 'offensive storage establishment'. The policy also requires specified matters to be considered for proposals that are 'potentially hazardous' or 'potentially offensive' as defined in the policy. The local council is the consent authority.

   As the proposed development may be considered a 'potentially offensive industry', a preliminary hazard analysis will be prepared.

3. SEPP (Major Projects) 2005:
   The primary aim of this policy is to identify development of economic, social or environmental significance to the State or regions of the State so as to provide a consistent and comprehensive assessment and decision making process for that development.

   Schedule 1 of SEPP 2005 identifies classes of development which are major projects and consequently developments which are subject to assessment and approval under Part 3A of the *EP&A Act*. Under clause 6, Part 3A applies to projects listed in Schedule 1 of SEPP Major Projects.

   Under Schedule 1, the proposed facility is defined in *Group 1 Agriculture, timber, food and beverage processing*, as an ethanol plant with a capital investment value of more than $30 million. Consequently, the scope of the project is such that it satisfies the criteria of a Major Project under SEPP Major Projects.

7.2.4 Roads Act 1993

The *Roads Act 1993* ('the Act') regulates the carrying out of certain activities on public roads, provides a classification of roads, and establishes procedures for opening and closing public roads. Section 138 of the 'the Act' requires the consent of the appropriate roads authority for the works on or over a public road such as:

- Erecting structures;
- Disturbing the surface of the road;
- Removing or interfering with a structure, work or tree;
- Pumping water into a public road from any land adjoining the road; and,
- Connecting a road.

The proposed project may involve any of the above mentioned works. The project would be referred to the RTA in conjunction with the assessment of the EA by the Department of Planning in accordance with section 75V of the EP&A Act.

The Roads Authority must not interfere with or obstruct the light rail system declared under the *Transport Administration Act 1998* pursuant to section 144B of 'the Act'. The rail infrastructure is integral to the general operations of the proposed ethanol plant.

7.2.5 Water Management Act 2000

The Water Management Act 2000 (WMA) will eventually repeal the Water Act 1912. Currently, it applies only to areas affected by Water Sharing Plans. The subject site is included within the Lower Murrumbidgee Groundwater Sharing Plan and is therefore governed by the provisions of the Water Management Act 2000. The WMA sets out procedures for issuing water use approvals and water access licences and governs dealings with regard to these approvals and licences whereby they can be bought and sold in part or in full.

7.3 Leeton Local Environmental Plan (LEP's)

The proposed development site is within the Leeton Local Government area and as such the Leeton LEP No.3 applies. The site and its surrounds are zoned 1(a) Rural. Pursuant to the LEP, the objectives of the zone are:

a. To enable a diverse range of development within the zone comprised of commercial, industrial and rural land uses;
b. To encourage development that does not adversely affect the amenity of other development in the zone;
c. To encourage development which will contribute to economic growth, employment opportunities and value-adding to agricultural products; and,
d. To ensure development in the zone is generally consistent with the provisions of any development control plan adopted by the Council for localities within the zone.

These objectives will be considered during environmental assessment of the proposed development.

The conservation provision of the Leeton LEP is designed to control development in order to:

a. Protect environmentally sensitive areas from inappropriate development, and,
b. Provide for an appropriate balance and distribution of land for residential, commercial, business, employment and tourist-related development, for recreation and community facilities and for protection of the environment.

8. Preliminary Environmental Assessment

8.1 Surface Water

As part of the project development, run-off from production buildings and hard-stand areas (including feedstock storage) will be contained within a controlled drainage area and captured and stored. Further, run-on water will be prevented from entering the site to reduce the quantity of stormwater generated. Where possible, treated effluent will be recycled back into the production process for re-use, or used for on-site irrigation.

It is anticipated that the ethanol plant will use some 400ML of process water each year. The freshwater will be sourced from the Murrumbidgee Irrigation Area (MIA) water scheme, utilising, where possible, existing water storage infrastructure at Rockdale Beef. The Rockdale Beef water supply is sourced from the main irrigation channel, located to the south west of the facility. Rockdale Beef pumps water from this channel to a number of on-site storages. Condensate will be recycled from the stillage evaporation process.

The volume of water available for use will be determined by the number of water transfer licences held (either permanent or temporary). Permanent water transfer allows the holder to use a volume of water each year. Temporary water transfers allow the holder to use a specified volume of water within a specified water year. The security on water licences is either general security or high security. A reduction in water allocation can mean that only a certain percentage of General Security and High Security water transfers are available for use. These allocation reductions are determined by Murrumbidgee Irrigation and can vary depending on the prevailing conditions. It is recommended that permanent high security water transfers are procured by the proponent to cover total water usage. High security water would greatly reduce the risk of allocation reductions and increase the reliability of supply. (Note that in years where a surplus water supply is obtained then water can be resold for an immediate return).

8.2 Groundwater

The property lies in an area having a broad scale classification of Zone 2 in groundwater susceptibility maps provided by the Department of Land and Water Conservation (ICIAI, 1997). The Rockdale site lies within a broad scale groundwater susceptibility zone identified as being generally suitable for feedlot developments, and therefore could be expected to also be suitable for an ethanol plant, although other local hydro-geological factors of the site should also be considered.

Locally, the depth to groundwater is typically five to eight metres below the surface. These aquifers are semi-confined and confined. The use of the groundwater in the shallower aquifers include stock and domestic purposes and some irrigation, depending upon the quality of water at certain locations. Both water quality and depth to water varies.

There is a potential risk of groundwater pollution from spills or leaks to the ground surface, as well as leaks from any underground infrastructure. Assessment of the risks to groundwater will form part of the environmental assessment.

8.3 Ecology

A number of flora and fauna species and ecological communities were identified in the Leeton Local Government Area, some of which are threatened species or matters of national environmental significance. Although the historical and current intensive agricultural land of the site and its surrounds is likely to preclude the existence of these species on the site, assessment of the potential impacts will be completed as part of the environmental assessment.

8.4 Odour and Air Quality

Consistent with any fermentation and/or distillation process, the proposed plant is likely to generate atmospheric emissions of carbon dioxide, certain volatile organic carbons and very minor quantities of hydrogen sulphide. The handling of grain and the fuel combustion of the site might be expected to result in some minor particulate emissions, as might the vehicular movements across the trafficable surfaces on the site. The Australian National Pollutant Inventory (NPI) emission factor for total volatile organic carbon (VOC) emissions from grain fermentation in distilleries is 6.48 kg VOC/1000 bushels of grain (around 27.2 kg/bushel of wheat). Note that the NPI emission factors are typically conservative (that is, above average).

Carbon dioxide is emitted during the fermentation process. It is proposed that these gaseous emissions are vented to carbon dioxide 'scrubbers' prior to emission from the plant. Alternatively, capture and re-use of the carbon dioxide could also be considered for further industrial uses.

An assessment of air emissions and impacts will be completed as part of the environmental assessment.

8.5 Noise

While the ethanol production process proper is relatively quiet, various associated activities are likely to generate noise, these being:

- Augers etc associated for grain conveyance;
- Grain milling;
- Centrifuges;
- Compressors;
- Pumps with electric motors; and,
- Loading and unloading infrastructure and truck movements.

The site is also adjacent to an existing developed area, and as such there are already existing industrial noise levels from the feedlot, abattoir, and feedmill operations. Provision of appropriate controls for noise will be assessed in light of potential impacts from noise as part of the environmental assessment.

In the assessment of noise as a potential impact of the proposed development, it is suggested that a noise impact statement (NIS) be carried out. The NIS is for the proposed construction of and operation of an ethanol manufacturing plant with production capacity of approximately 150ML of ethanol per year. Existing industrial noise levels from the feedlot, abattoir, and feedmill operations will also need to be determined as well as background ambient noise levels. This acoustic assessment will consider both construction and operational noise (and relevant criteria) from the various activities.

8.6 Traffic and Transport

As currently discussed, there are significant traffic volumes already entering and leaving the existing Rockdale Beef facility from Regulator Road. Other traffic in the area, aside from local traffic, is attributed to transportation of goods and commodities throughout the region. It is anticipated that the volume of traffic will increase with the proposed development due to:

- As increase in the importation of grain onto the site;
- Dispatch of ethanol from the site;
- Conveyance of WDG to the Rockdale Beef feedmill;
- Miscellaneous deliveries including chemicals etc; and,
- Staff movements.

Aside from Narrandera-Leeton Road (Irrigation Way), the other major transport route in the region is the Sturt Highway.

8.7 Energy usage

Ethanol production requires significant energy inputs for heating the mash, the distillation of the beer and the evaporation of the thin stillage. Heating for this process will be by way of a gas-fired boiler. Heat exchangers will be used during the transfer of the mash to the fermentation tank, the transfer to storage of the ethanol leaving the distillation columns, and the condensation of steam generated when the thin stillage passes through the evaporator. This capture of waste energy improves the energy efficiency of the process.

Aside from heating requirements, electrical energy will be required to drive the grain mills and for materials handling (e.g. pumps, conveyors and augers) on site.

8.8 Aesthetics and Visual Impacts

The remainder of the Rockdale site, adjacent to the development site, is already heavily developed by the feedlot, abattoir and associated wastewater reuse areas. The areas surrounding the Rockdale site are generally developed for intensive agricultural purposes, including crop production or grazing. The silos, sheds, stacks and distillation columns required at the ethanol plant are atypical rural structures.

Although the site will front Regulator Road, this road is not a main thoroughfare. Furthermore, the site will not be visible from the Leeton-Narrandera Road (Irrigation Way), or the Sturt Highway.

The visual impacts of the proposed development will be considered during the environmental assessment, together with measures to limited visual disturbance.

8.9 Socio-Economic Impacts

It is anticipated that the proposed development will have an overall beneficial socio-economic impact for the local region. It is estimated that around 75 fulltime equivalent jobs will be created during the construction of the development, and 30 equivalent full time jobs during operation of the plant. Other direct benefits include a constant (and increased) demand for locally grown grain. Indirect benefits will extend to local and regional businesses over the long term.

While there are potentially negative impacts associated with the development on various elements including air quality, the visual landscapes and water (both surface and ground), mitigation measures should be able to effectively manage these impacts. These will be addressed in more detail during the environmental assessment.

8.10 Risks and Hazards

The proposed plant will involve the production, handling, storage and transport of hazardous and flammable materials. The potential risks associated with these activities, together with appropriate mitigation and management measures, will be provided in the environmental assessment. Emergency response procedures will also be considered. These measures will also comply with the relevant Australian Standards for the handling and storage of hazardous, flammable and dangerous goods.

Under SEPP 33 (see Section 7.2.3), screening and Preliminary Hazard Analysis (PHA) may be required as the development may be considered a ‘potentially offensive industry’. This analysis will be completed as part of the environmental assessment.

8.11 Cumulative Impacts

The potential cumulative impacts of the proposed plant include those mentioned above, including water quality, ecology, air quality, noise and risks and hazards. Furthermore, given the existing licensed feedlot facility adjacent to the proposed ethanol plant site, the cumulative (combined) impacts of the two developments combined at the site will also need to be considered during the environmental assessment.

9. Conclusion

Babcock & Brown Australia Pty Limited proposed to develop an ethanol production facility adjacent to the Rockdale Beef facility near Yanco in southern NSW. The plant will be developed over two stages, with an ultimate production capacity of approximately 150 ML/year of under-natured ethanol. Given the proximity of the proposed site to the existing Rockdale Beef integrated feedlot facility, it is expected that various synergies can be achieved between the two facilities.

The proposed development has been set out in this report, as well as the existing infrastructure and operations at Rockdale Beef. Potential key environmental factors have been raised. These factors will be considered in further detail during the environmental assessment.

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