NSW GOVERNMENT
Department of Planning

MAJOR PROJECT ASSESSMENT: Riverina Oils and Bio Energy Integrated Oilseed Processing and Biodiesel Facility Wagga Wagga

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

October 2008

Cover Photo: Aerial view of the Minnesota Soybean Processors biodiesel the Biodiesel Facility under construction (sourced from http://www.agventuresalliance.com/projects/msp.html)

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EXECUTIVE SUMMARY

Riverina Oils and Bio Energy Pty Ltd (Riverina Oils) proposes to establish a new oil and biodiesel plant off Trahairs Road, about 10 kilometres north of Wagga Wagga.

This plant would be located on about 39.5 hectares of rural land to the north of the Bomen industrial estate. In the past this site was used by the nearby Wool Combing Facility for wastewater storage and irrigation.

The area surrounding the site is dominated by rural and rural-residential development, and is sparsely populated. There are only 6 residences within a 2.5 kilometre radius of the site, with the closest residence being located about 1.1 kilometres from the site.

The plant would be built in 2 stages, with stage 1 being the development of the oil plant, and stage 2 being the development of the biodiesel plant. It would produce around 75 mega litres (ML) of biodiesel per year and associated oil seed related products such as vegetable protein meal, edible vegetable oil and refined glycerine.

The proposal has a capital investment value of $75 million and would employ about 300 workers during construction and 80 during operations.

During the exhibition period, the Department received eight submissions on the project including six from public authorities and two from members of the public, none of which objected to the project. Both DECC and DWE raised concerns about potential impacts on soil and groundwater from the irrigated wastewater. The submissions from the general public raised concerns about the adequacy of the EA, which had failed to consider the impacts of the project on one of the nearby residences, and the raw materials that would be processed in the plant. These concerns were carefully considered in the assessment and where necessary conditions of approval were recommended to address any residual concerns.

The Department has assessed the merits of the project in accordance with the relevant requirements in the *Environmental Planning and Assessment Act, 1979*, and is satisfied that the impacts of the project can be mitigated and/or managed to ensure an acceptable level of environmental performance.

The Department is also satisfied that the project would assist with the delivery of the State Plan by:

- attracting about $75 million worth of investment to the Wagga Wagga region;
- adding value to some of the raw materials produced in the region by ensuring they are processed in the region; and
- creating at least 80 jobs close to Wagga Wagga where most of the population in the region is concentrated.

Consequently, the Department believes the project is in the public interest and should be approved subject to conditions.

1. PROPOSED DEVELOPMENT

1.1 Project Description

Riverina Oils and Bio Energy Pty Ltd (Riverina Oils) proposes to establish a new oil and biodiesel plant (the Biodiesel Facility) off Trahairs Road, about 10 kilometres north of Wagga Wagga.

This plant would be located on about 39.5 hectares of rural land to the north of the Bomen industrial estate. It can be accessed from the Olympic Highway via Bomen Road, and via Bomen Road and Byrnes Road (refer to Figure 1).

Figure 1: Location of proposed Biodiesel Facility

The major components of the project are summarised in Table 1, illustrated in Figures 2, 3 and 4, and detailed in the Environmental Assessment (EA) for the project (see Appendix F). Essentially, the project would be built in 2 stages, with stage 1 being the development of the oil plant, and stage 2 being the development of the biodiesel plant.

Table 1: Major Components of the Project

Component	Description
Project Summary	***Construction and operation of an integrated oilseed processing and biodiesel plant, utilising 165,000 tonnes of oilseed per year to produce 75 megalitres of biodiesel per year and vegetable protein meal, refined edible vegetable oil and refined glycerine.***
Major Components of the Plant	Stage 1 • Oilseed crushing plant: a steel building, 42 m x 20 m, used to process 500 t per day (tpd) of oilseed to produce 100 tpd of expelled oil and 400 tpd of oil cake. • Solvent extraction plant: a covered, open, steel structure, 12 m high, 30 m x 12 m, used to process 400 tpd of oil cake, producing 100 tpd of solvent extracted oil and 300 tpd of de-oiled meal. • Meal blending shed: an enclosed steel building, 12 m x 8 m, used to mix de-oiled meal from the solvent extraction building with produced gum, a by-product from the vegetable oil refinery, to produce 300 tpd of vegetable protein meal for sale in the local market. • Vegetable oil refinery: an enclosed building, 24 m x 20 m, used to process 200 tpd of expelled oil or solvent extracted oil to produce 82 tpd of refined oil to be fed to the biodiesel plant for the biodiesel production. • Storage Facilities: silos for oilseed, day bins for de-oiled meal, tanks for vegetable oil, biodiesel and other process chemicals including hexane and methanol. Stage 2 • Biodiesel plant: an open building, 28 m x 18 m, used to produce 6.25 ML of biodiesel per month and crude glycerine as a by-product, which is pumped to the glycerine plant for the production of glycerine. • Glycerine refining unit: an open building, 12 m x 10 m, comprising the processing equipment, a glycerol storage tank, glycerine tank farm and a yellow glycerine tank, used to process glycerol from the biodiesel plant for production of crude glycerine.
Production Inputs	Stage 1 • 165,000 t of oilseed / year; and • 192 t of hexane / year. Stage 2 • 165,000 t of oilseed / year; • 30,000 t of palm oil / year (if required); and • 7,200 t of methanol / year.
Production Outputs	Stage 1 • 109,500 t of vegetable protein meal/ year. Stage 2 • 75 ML of biodiesel / year; • 35,000 t of refined vegetable oil / year; • 8,640 t of crude glycerine / year; and • 109,500 t of vegetable protein meal/ year.
Water Management	Stormwater detention tank, effluent treatment plant, a refurbished effluent storage pond to store wastewater prior to irrigation on adjacent land for cultivation of mixed grasses, and connection to the existing municipal water supply.
Associated Infrastructure	Office and amenities buildings, electricity connection, sealed internal access road, steam boilers, cooling water system and weighbridge.
Site Access	From the Olympic Highway via Bomen and Byrnes Roads.
Construction	60 weeks involving site establishment, delivery of raw construction materials, plant and equipment, earthworks and grading, installation of amenities, utilities and services, and construction of IOPBP main processing plants and ancillary structures.
Hours of Operation	24 hours per day, 7 days per week
Capital Cost	$75 million
Employment	Up to 300 during construction and up to 79 during operation

1.2 Project Setting

The site, currently owned by Rivco Group Pty Ltd who operates the Wool Combing Facility located around 800 metres to the south of the site, was used in the past by Rivco for wastewater storage and irrigation. However, the wastewater pond has been disused since 2004 due to the downgrading of operations at the Wool Combing Facility.

The area surrounding the site is dominated by rural and rural-residential development, and is sparsely populated. There are only 6 residences within a 2.5 kilometre radius of the site, with the closest residence being located about 1.1 kilometres from the site (referred to as R6 in Figure 1). The residential suburb of Brucedale, which has approximately fifteen small rural residential lots is located approximately 4 to 5 km to the north-west of the site. The Bomen Industrial Estate, located approximately 3 km south of the site, has numerous industrial activities including cattle sales yards, an oil recycling facility and a recently approved lead battery recycling plant.

The site is within the Wagga Wagga catchment area, located approximately 7 km north of the Murrumbidgee River. The catchment area is situated on a large drainage basin comprising heavy clay soils. Two aquifers beneath the site have been identified, namely a shallow, or perched aquifer approximately two metres deep and a deeper aquifer between four and 13 metres below the surface.

1.3 Alternatives to the Project

Site Locations

Riverina Oils considered four alternative site locations, namely a site in Geelong and Albury, and two sites in Wagga Wagga. Site selection criteria included:

- proximity to a major regional centre and major transport routes including designated B-Double routes;
- proximity to raw material suppliers and biofuel and vegetable protein meal markets;
- compatible rural industrial land uses and adequate buffer distances to residential receivers;
- provision of land for wastewater irrigation and existing and/or planned future supply of utilities such as electricity, gas and potable water; and
- a supportive business development environment.

The subject site in Wagga Wagga was selected due to its proximity to markets for raw materials and products and major transport routes including designated B-Double routes, compatible industrial land uses and adequate buffer distances to potential residential receivers.

Processing Materials

A range of oilseeds were considered for processing materials including canola, safflower, palm oil, cotton seed, sunflower and soyabean. Canola and safflower were selected as the primary oilseed products for processing as they are cultivated locally, minimising transport costs. Additionally, canola seed has a relatively high oil yield in comparison to other oilseed crops, and safflower uses less water than other oilseeds and cereal crops and can access water and nutrients at a deeper level than other crops.

Riverina Oils may use up to 2,500 t of palm oil / month to supplement the use of safflower and canola oil if it is economically viable. To ensure that the palm oil is sourced from environmentally and socially responsible sources, Riverina Oils has committed to joining the Roundtable of Sustainable Palm Oil (RSPO) prior to procuring any palm oil and has committed to abide by the RSPO Principles and Criteria for Sustainable Palm Oil Production.

Production Methods

The three methods of biodiesel production were considered:

- base-catalysed trans-esterification, whereby the glycerides in vegetable oil or animal fat are replaced by methanol using potassium or sodium hydroxide as a catalyst;
- direct acid-catalysed trans-esterification, whereby the glycerides in vegetable oil or animal fat are replaced by methanol using potassium or sodium hydroxide as a catalyst; without soap forming; and
- conversion of oil to fatty acids, followed by conversion to biodiesel, through a reduction of the free fatty acid by esterification using an acid catalysis and then use of base catalysed trans-esterification to complete the process.

Base-catalysed trans-esterification was selected as it was considered more efficient than other processes as it:

- has lower temperature and pressure requirements;
- results in a higher conversion yield of approximately 98%, depending on quality of oil; and
- has a minimal reaction time and side reactions during the process.

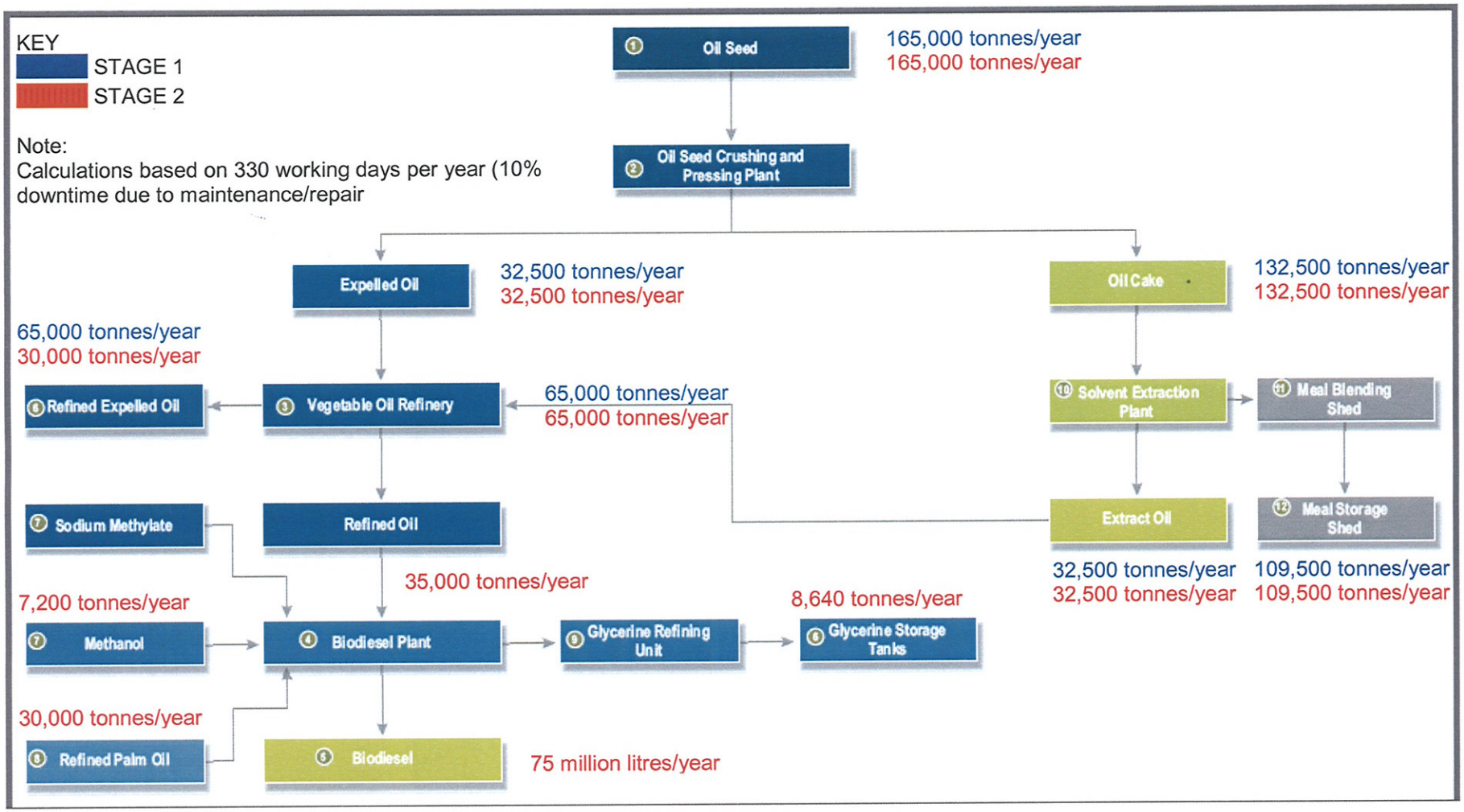

Figure 2: Process flow diagram for the proposed integrated oilseed processing and biodiesel plant