

Shoalhaven Starches

Fact Sheet

Ethanol Plant Upgrade

Background

The NSW Government recently mandated the blending of 2% of ethanol into the total volume of petrol sold in NSW as a first step towards a 10% ethanol content by 2011.

The use of ethanol as a fuel or fuel additive has many benefits: it is a renewable fuel and lessens reliance on fossil fuels; it reduces greenhouse gas emissions and other air pollutants such as carbon monoxide and particulates; it reduces imports of oil and stimulates regional and local economies if produced locally.

The proposal

In response to the NSW Government mandate the Manildra Group is planning to meet the expected increase in demand for ethanol by upgrading the existing ethanol plant at its Bomaderry factory. The plant upgrade will increase ethanol production from 126 million to 300 million litres of ethanol per year.

There are a number of components to the plant upgrade proposal. These components fall into three broad categories, being:

1. New plant at the factory site
2. A new packing facility to be constructed across Bolong Road from the factory
3. Associated improvements to odour control and wastewater management.



Wet weather storage pond currently under construction

Prior to commissioning the ethanol production upgrade the Company intends to undertake comprehensive odour reduction measures for both the factory site and the Company's Environmental Farm. This work emanates from an Environmental Audit of the Factory and Environmental Farm completed on behalf of Shoalhaven Starches by GHD Pty Ltd. The recommendations of this Environmental Audit will be implemented prior in conjunction with to the implementation of the Ethanol Upgrade Project.

For details of the odour management and wastewater management upgrades, see the odour and wastewater factsheets.

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The production of ethanol

Unlike other ethanol producers that utilize food crops directly to produce ethanol, at Shoalhaven starches the production of ethanol uses the waste streams from the production of starch, gluten, glucose syrup and brewers' syrup. The solid and liquid wastage from these production processes are combined to feed a fermentation process, where yeast converts the waste stream to a "beer". The ethanol is separated from the "beer" in the distillery. Molecular sieves remove the remaining water, and the output is ethanol. The solid and liquid waste stream of the ethanol production process is processed through the stillage recovery process plant, where solids are recovered for dried distiller's grains syrup (DDGS). This product is dried to create a high-protein cattle feed. The production of ethanol is an important element of the factory's overall waste management plan.

Upgrading the plant

Increasing the production of ethanol requires increasing the capacity of the factory to:

- receive and process an increase in raw materials, principally grain and flour;
- process these to produce gluten, starch and syrups,
- ferment and distill the waste products into ethanol, and;
- produce DDGS for the cattle feed market.

Providing the raw material

Additional Flour & Grain

At present the production processes at Shoalhaven Starches essentially mix flour with water to produce two products - gluten and starch.

The proposal will require an increase in the amount of flour transferred to the site for processing from the current approved 10,000 tonnes per week to 15,000 tonnes per week, in addition to the. This includes 5000 tonnes of flour per week to be produced on site by the Company's recently approved flour mill.

It is anticipated that existing plant within the starch and gluten production plants, and the approved flour mill, will generally be able to accommodate the increase in flour processing required by this proposal.

An additional dryer will need to be installed adjacent to the proposed Dryer No. 5 (approved by the Minister in 2003 and yet to be installed).

Waste product from the production of starch, gluten and syrups are combined to feed the fermentation and distillery stages in the ethanol production process. The outputs are fuel and industrial grade ethanol. The residue from the ethanol process is directed to the stillage recovery process where solids are removed to produce high protein stock feed.

The distillery process is supplied from 2 sources:

- Starch from the starch plant; and
- Crushed grain from the grain processing plant.

In order to enable sufficient grain for the increase in ethanol production, it is proposed to increase the intake of grain to the site from the currently approved 552 tonnes per day to 960 tonnes per day. Existing plant and equipment will have sufficient spare capacity to accommodate this increased in grain intake.

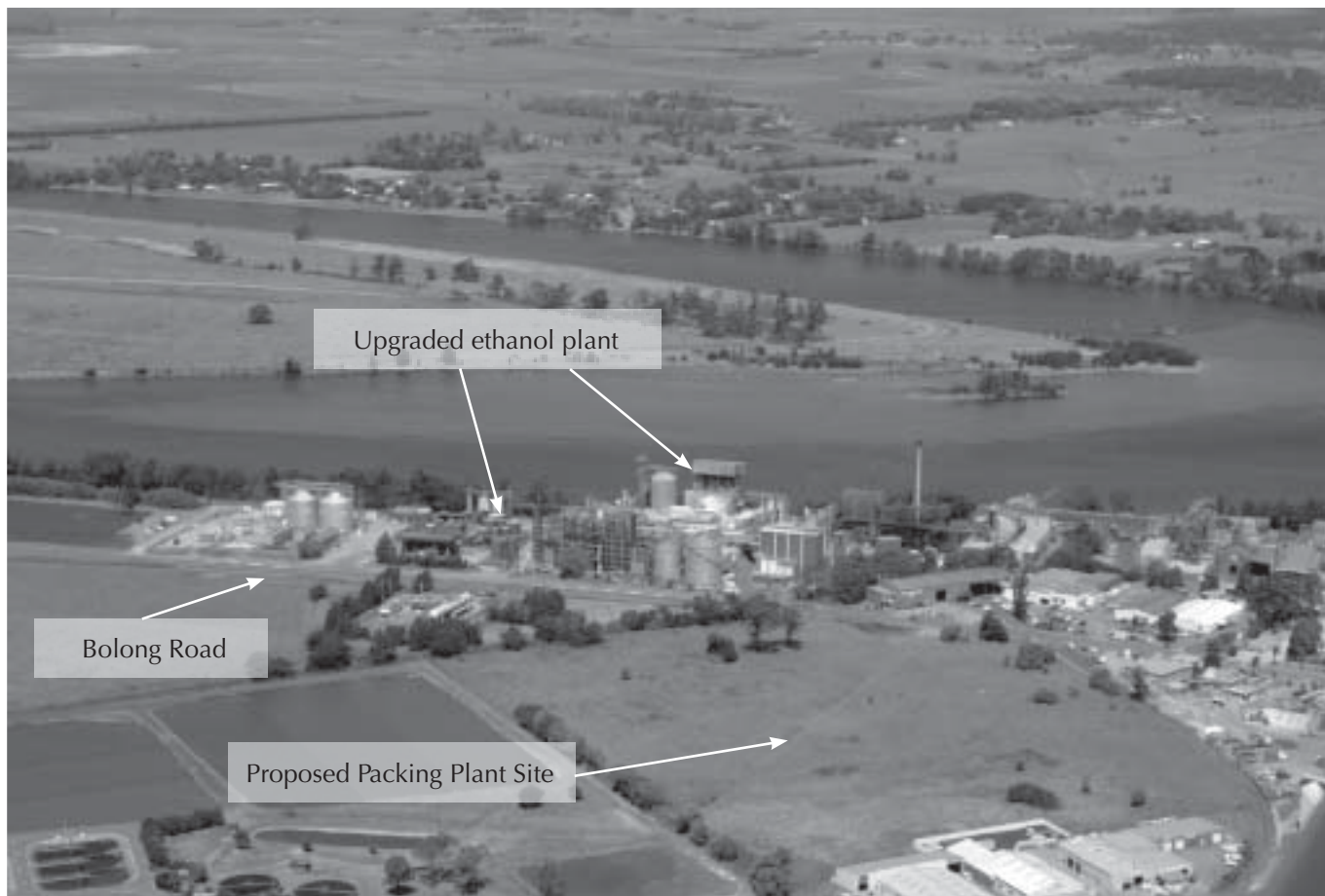
Ethanol plant

Waste from the starch, gluten and syrups production processes are fermented and distilled within the ethanol plant to produce ethanol. The ethanol production process comprises an integral component of the Shoalhaven Starches waste treatment process.

To increase the capacity of the ethanol production from the current approved 126 megalitres per annum to 300 megalitres per annum Shoalhaven Starches envisages that much of the existing and approved plant associated with the distillery will have sufficient spare capacity to accommodate the increase in production. In order to increase production however it will be necessary to install:

- an additional three fermentation tanks;
- Additional cooling towers
- Additional molecular sieves to purify the ethanol.

These will be constructed on the existing factory site.



Aerial view of the site of proposed ethanol plant upgrade and new packing plant

Stillage Recovery Plant

In 2003 the Minister for Planning issued development approval for a pollution reduction program which included the installation of a stillage recovery process. The Stillage recovery process removes suspended and soluble solids with the waste water stream from the ethanol production process. This process includes the use of decanters, evaporators and dryers. The solids removed from this process are dried and sold as a high protein cattle feed. The proposed ethanol production upgrade project will involve the following upgrades to the Stillage Recovery Process.

The solids removed from the stillage recovery process are dried and sold as high protein cattle feed.

Ten new decanters. Decanters are mechanical separation devices that remove the unfermented solids from the “stillage” – the liquid left over from the distillation process. The decanters will be housed in a new building to be located on land the Company owns sited to the west of Abernethy’s Creek.



Existing structures at the Shoalhaven starches factory

One new evaporator. Evaporators reduce the water content of the thin stillage that emerges from the decanters. The new evaporator will support those already in use on site.



Existing factory to be the site of additional ethanol production plant

Six new DDGS driers. The driers take the syrup that emerges from the evaporators, mix it with the solids that are removed by the decanters, and dry the mixture to produce a high-protein stock feed.

Pelletiser plant

Shoalhaven Starches also propose to install a pelletiser plant to process the loose DDGS material into pellets suitable for export to the international stock-feed market. This component of the project is in accordance with the recommendations of the Environmental Audit carried out by GHD Pty Ltd. This proposal incorporates pelletiser machinery housed in a new structure on site; a conveyor for transport; an extended storage facility; and a pellet out-load facility.

A new packing facility

The Shoalhaven Starches factory site currently incorporates a packing plant and container loading facility. This facility over recent years has become somewhat redundant and does not meet the needs of the Company's customers. As part of the proposed ethanol production upgrade the company is proposing to develop a new packing plant facility on a company-owned site on the northern side of Bolong Road. The proposal will create a purpose-built packing and container loading facility serviced by a new rail spur. The proposal incorporates:

- A new factory building with dimensions of 40m by 75m, and a maximum height of 9m above ground level.
- Two storage silos with a height of 30m.

The proposal will create a purpose built packing and container-loading facility serviced by a new rail spur.

- A container loading facility with new rail spur. The new railway spur to be sited on this site will result in a reduction in the number of rail movements that are required to cross Bolong Road each day.
- An overhead pedestrian and service overhead gantrybridge connecting the packing plant to the factory site across Bolong Road. This gantrybridge will enable safe pedestrian movements between the factory site and packing plant across Bolong Road; and will enable process materials to be pneumatically blownpipd across the road to be stored in the proposed silos. This product will then be mechanically packed in bags for transport by rail and road in a manner that better meets with the requirements of Shoalhaven Starches' customers.

