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SCOPING REPORT: PROPOSED MODIFICATION TO MP06_0228 SHOALHAVEN STARCHES EXPANSION PROJECT PROPOSED ADDITIONAL STARCH DRYERS & ASSOCIATED WORKS AND ETHANOL DISTILLERY HEAT RECOVERY PROJECT

SHOALHAVEN STARCHES, BOLONG ROAD, BOMADERRY

1. Introduction

Shoalhaven Starches employs approximately 500 full-time employees and 400 contractors at its Nowra facility and thousands more indirectly across the supply chain. Shoalhaven Starches also represents 98% of the Manildra groups total direct Scope 1 carbon dioxide (CO₂-e) emissions (363,674 tCO₂e 2022-23 NGER) with most of the historical emissions coming from electricity usage and coal (representing 85% of its total CO₂e emissions in the Shoalhaven Starches operations annually).

Shoalhaven Starches is the only facility within the Manildra group that is captured under the Safeguard Mechanism with 363,674 tCO₂e Scope 1 emissions reported in 2022-23 NGER data which relates to seven production variables (six of which are trade-exposed).

Manufacturing wheat starch and its derivatives as well as ethanol from wheat starch, is an energy and resource-intensive manufacturing process which relies on steam as the key source of energy (heat). Shoalhaven Starches seek approval to modify their Project Approval for the Shoalhaven Starches Expansion Project to be able to deploy a suite of heat recovery upgrades and enabling infrastructure that will deliver a transformative, immediate, and ongoing reduction in its Scope 1 emissions of 95,266 tCO₂-e/pa (~25% based on 2023 emissions).

These upgrades will capture and transform waste heat into usable energy to drive the ethanol, starch, and gluten manufacturing processes. This will ultimately reduce the amount of virgin steam that is required by 75tph (637,500tpa) displacing the need to burn natural gas at the plant's onsite co-generation plant and other gas-fired boilers.

The Manildra Group has recently been awarded a \$44.5m grant by the Federal Government, under the Powering the Regions Fund, for this suite of heat recovery projects at the Shoalhaven Starches site at Nowra.

The Powering the Regions Fund is delivering \$330 million to nine projects to keep Australian industry not just surviving but thriving, as demand for low emissions products grows around the world.

These nine projects will create hundreds of new jobs during construction and secure existing regional roles that have supported Australian families and communities for generations.



Over the useful life of the assets, almost 2.4 million tonnes of CO₂ will be abated at the Shoalhaven Starches facility. These outcomes support Manildra's aims of lowering emissions from our operations, facilitating circular and zero-waste manufacturing, and protecting our natural resources. The investment will also assist our Nowra site to meet its obligations under the Safeguard Mechanism framework in the decade ahead.

The purpose of this submission is to provide a brief outline of the proposed modification to the approved project; outline issues that such a modified proposal will raise; and which should be addressed in any Modification Application. Such has been prepared assist the Department in framing any requirements that it may have for this modification proposal.

2. MP06_0228 – THE APPROVED DEVELOPMENT (AS MODIFIED)

Project Approval MP06_0228 was granted by the Minister for Planning on the 28th January 2009 for the Shoalhaven Starches Expansion Project. This approval also encapsulated previous approvals for the site into one overall approval for the site (at that time).

The Shoalhaven Starches Expansion Project sought to increase ethanol production at the Bomaderry plant in a staged manner from 126 million litres per year to 300 million litres per year. To accomplish the increase in ethanol production, this project required a series of plant upgrades and increase in throughput of raw materials, principally flour and grain.

The Shoalhaven Starches Expansion Project sought to increase ethanol production to meet the then expected increase in demand for ethanol arising from the NSW Government's mandate to increase the blending of ethanol in the total of volume of petrol sold in NSW towards an ethanol content of 10% by 2011. Unfortunately, the expected increase in demand for ethanol to meet the demand arising from this mandate has not occurred due largely from a failure of the mandate to be imposed on petroleum suppliers.

As a result, Shoalhaven Starches have been investigating alternative markets for the ethanol that is and will be produced at their Bomaderry plant including:

- Shoalhaven Starches obtained a Modification Approval (Mod 12) on the 12th September 2017, to undertake modifications to the ethanol distillation plant to enable an increase in production of up to 110 ML/year of "beverage" grade ethanol. "Beverage" grade ethanol is further treated and purified to enable it to meet stringent specifications to enable it to be utilised in the production of alcoholic drinks
- During the COVID pandemic and following a request by the Federal Government's Department of Industry, Sciences and Energy to produce more hand sanitizer alcohol Shoalhaven Starches obtained modification approval (Mod 18) to enable the production of 120 ML per annum of hand sanitizer grade alcohol.

In addition, Shoalhaven Starches subsequently obtained modification approval (Mod 19) to further increase the proportion of 'beverage' grade ethanol that is able to be produced on the site.

3. Subject Land

The following parcels of land are associated with the works associated with the Beverage Grade Ethanol Distillery Heat Recovery Project:

- Lot 1 DP 1305953
- Lot 241 DP 1130535 (northern side of Bolong Road)
- Lot 141 DP 1069759 (northern side of Bolong Road)
- Bolong Road reserve (Overhead gantry crossing)

Figure 1 is an aerial image identifying each of the above parcels of land associated with this Modification Application.



Figure 1: The Subject Land

4. The Modification Proposal

4.1 Beverage Grade Ethanol Distillery Heat Recovery

The manufacture of beverage-grade ethanol at the Shoalhaven Starches plant is extremely energy-intensive compared to other ethanol grades. This is primarily due to the purity requirements for beverage grade ethanol which requires additional energy-intensive steps and processes such as multiple stages of distillation and purification.

In addition, Shoalhaven Starches employs approximately 500 full-time employees and 400 contractors at its Nowra facility and thousands more indirectly across the supply chain. Shoalhaven Starches also represents 98% of the Manildra group's total direct CO₂e emissions (363,674 tCO₂e 2022-23 NGER) with most of the historical emissions coming from electricity usage and coal (representing 85% of its total CO₂e emissions in the Shoalhaven Starches operations annually).

Shoalhaven Starches is the only facility within the Manildra group that is captured under the Safeguard Mechanism with 363,674 tCO₂e Scope 1 emissions reported in 2022-23 NGER data which relates to seven production variables (six of which are trade-exposed).

Manufacturing wheat starch and its derivatives as well as ethanol from wheat starch, is an energy and resource-intensive manufacturing process which relies on steam as the key source of energy (heat).

Steam plays a crucial role in the ethanol manufacturing process as it provides the necessary energy (heat) to drive the various stages of production. At the Shoalhaven Starches plant,



approximately 4 kg of steam is required to manufacture 1 L of ethanol (all grades) and accounts for approximately 14% of manufacturing cost.

Amongst the stages of production, distillation is particularly energy intensive. Shoalhaven's beverage-grade distillation process requires 55tph of virgin steam (equivalent to approximately 90% of the total required for the process) which is produced by the recently commissioned gas-powered co-generation plant which manufactures steam at 2.9GJ per tonne of steam.

The steam is pumped into the distillation columns where its latent heat is transferred through heat exchangers (evaporator/reboiler). This heats a liquid-vapor mixture that consists of ethanol, water, and other impurities, which vaporises and ascends the column. This process is repeated through multiple columns until the required concentration has been reached and impurities extracted.

Through this process, the steam imparts energy (approximately 15% of its potential energy) which reduces its temperature and pressure. Some of the steam condenses into water, which is collected, and the remaining steam is vented to the atmosphere as it does not have sufficient energy (heat or pressure) required to drive the distillation process (which occurs at between 135-137 degrees Celsius).

Although the steam no longer possesses the energy required for the distillation, 85% of its potential energy remains which is extremely valuable and is not currently being captured or utilised. This is extremely inefficient and presents a significant opportunity to reduce the energy intensity of Shoalhaven's ethanol manufacturing process.

The most practical, economical, and technically viable application for this energy is to further support the distillation process and reduce the burden on the facility producing virgin steam. This would be achieved by only adding the energy lost (approximately 15% of its potential energy) to the steam rather than the energy required to manufacture virgin steam (100%).

This Modification Proposal will therefore also deploy a suite of heat recovery upgrades and enabling infrastructure that will deliver a transformative, immediate, and ongoing reduction in its Scope 1 emissions of 95,266 tCO₂-e/pta (~25% based on 2023 emissions).

These upgrades will capture and transform waste heat into usable energy to drive the ethanol, starch, and gluten manufacturing processes. This will ultimately reduce the amount of virgin steam that is required by 75tph (637,500tpa) displacing the need to burn natural gas at the plant's onsite co-generation plant and other gas-fired boilers.

Shoalhaven Starches therefore propose to introduce mechanical vapour recompression (MVR) technology stack and enabling infrastructure onto the beverage-grade ethanol distillery (**Figure 2**). MVR is both a cost and energy-efficient technology that will capture the low-temperature and pressure steam vapour that is currently being vented to the atmosphere and accelerate it through electrically driven turbo fans in series (up to 18 in total for BDG1/2) in a closed loop. This will increase the vapour's temperature and pressure back up to operating temperature, requiring significantly less energy (approximately 85% less) compared to producing virgin steam.

As this process involves a closed-loop system, very little energy is lost and once the process has started the only energy that is required is approximately 10 MW of electricity to drive the fans. Shoalhaven Starches propose that the electricity required for the fans will be sourced from 100% renewable energy from the grid (via a green Power Purchase Agreement) instead of the co-generation plant (which will be close to operating capacity). Shoalhaven is currently investigating sources for this renewable electricity via a PPA.

MVR is a well-established and studied technology that has been proven in ethanol distilleries and other industries around the world. To Shoalhaven's knowledge, this would be the first application of this technology in a distillery in Australia and would be the largest implementation of MVR within the Southern Hemisphere.

Shoalhaven Starches envisage that the introduction of MVR technology onto the beverage-grade ethanol distillery will directly reduce the requirement for virgin steam by 55tph which will equate to a transformative reduction in emissions of 69,862 tCO₂-e/pa.

Based on 2023 figures, this would represent a 62% reduction in the energy intensity (from 1.48 to 0.81) to manufacture beverage-grade ethanol.

Not only will this component of this Modification Proposal reduce emissions and energy intensity associated with the production of ethanol, but it will also directly reduce manufacturing costs by up to 14% and unlock approximately 26% of the facility's total steam capacity (~280tpa).

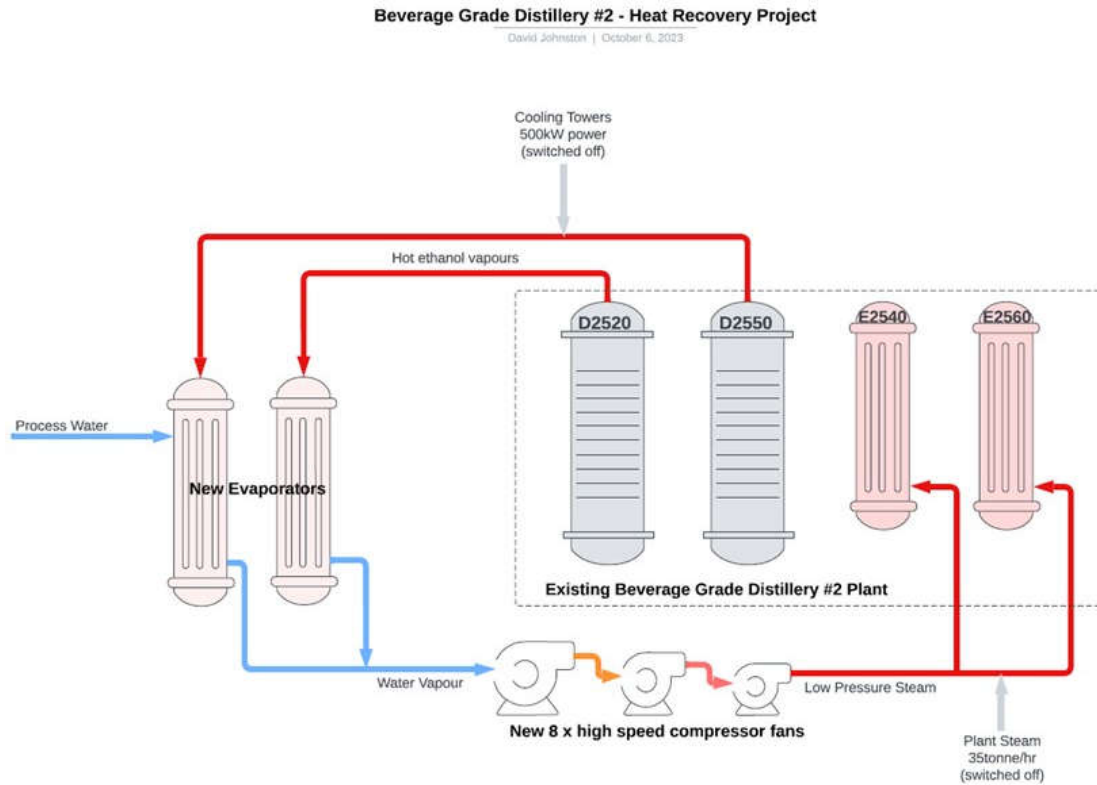


Figure 2: High-level overview of the MVR technology applied to one of Shoalhaven's two beverage-grade distilleries

4.2 Fuel Grade Ethanol Reconfiguration and Heat Recovery

Manufacturing fuel-grade ethanol has a significantly lower emissions intensity compared to beverage-grade which has stricter purity requirements and a lower tolerance for water content, requiring additional energy-intensive steps and processes such as distillation and filtration.

The fundamental process for making fuel-grade ethanol is the same as beverage-grade ethanol with steam providing the thermal energy required to drive the process. However, the fuel-grade ethanol is manufactured in its distillation stack which is configured and operates differently than the beverage distillery.

Consequently, any efficiency improvements made to the beverage-grade distillery do not directly impact the performance or efficiency of the fuel-grade distillery. Similarly, the proposed beverage-grade project cannot be directly replicated in the fuel-grade distillery due to high costs and technology and complexity constraints.

As a result, decarbonising the fuel-grade manufacturing process involves smaller more manageable upgrades and improvements.

This element of the Project will reduce emissions by 12,702 tCO₂-e/pa when it is completed by reducing the amount of virgin steam required in the manufacturing process by 10tph. Based on 2022 production figures, this will represent a 23% reduction in emission intensity (0.28 to 0.21).

This will be achieved through reconfiguring and consolidating the distillation column for increased efficiency. This will include replacing aging infrastructure including a new heat exchanger. This configuration will enable the capturing of hot ethanol vapours to heat process water which will feedback and drive the production process. This will reduce the amount of energy required to heat this process water.

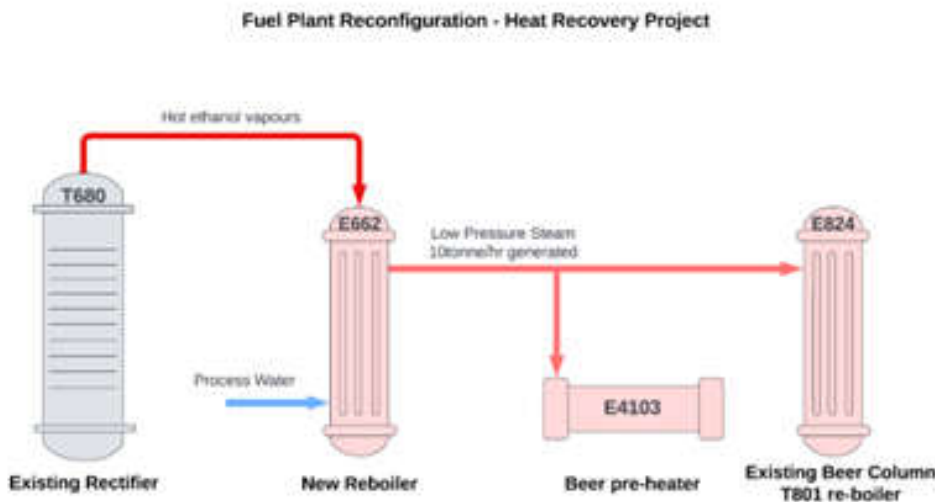


Figure 3: High-level overview of fuel plant reconfiguration

4.3 Dried Distillers Grain Heat Recovery

DDG is manufactured through processing and drying the grain residue by-product of the ethanol fermentation process which consists mostly of protein, fibre, and residual yeast. DDG is a prime example of Shoalhaven’s commitment to circularity and using the whole wheat grain.

The by-product is dried using a mechanical and thermal process to evaporate any moisture and utilises steam as the source of energy to heat air through a heat exchange. The resulting product is turned into Manildra and MSM Stockfeed and sold as a range of dry and pellet supplementary feeds to farmers across the NSW region.

This element of the Project will reduce emissions by 12,702 tCO₂e when it is completed in February 2026 by reducing the amount of virgin steam required by 10tph.

However, these savings won’t be applied to DDG but rather to gluten and starch. This element of the project will install a heat recovery system onto the DDG dryers which will capture hot process gasses and transfer it through a heat exchanger to the process water that heats the air. This will reduce the amount of energy required to heat the process water.

This water process water will bypass the DDG dryers and rather impart their emissions savings on the gluten and starch dryers further down the processing line.

Based on 2022 production figures, this would reduce starch and gluten manufacturing emissions intensity by 12.5% (0.36 to 0.31) and 28.7% (0.10 to .07) for gluten.

Figure 4 below identifies the location of the proposed works associated with this Modification Proposal within the Shoalhaven Starches site.

Plans of the Modification Proposal are attached to this submission.

The overall Modification Proposal is expected to involve an estimated development cost of \$100 million.

The overall Modification Proposal is envisaged to involve the employment of 50 construction workers and post construction 1 additional operational staff.

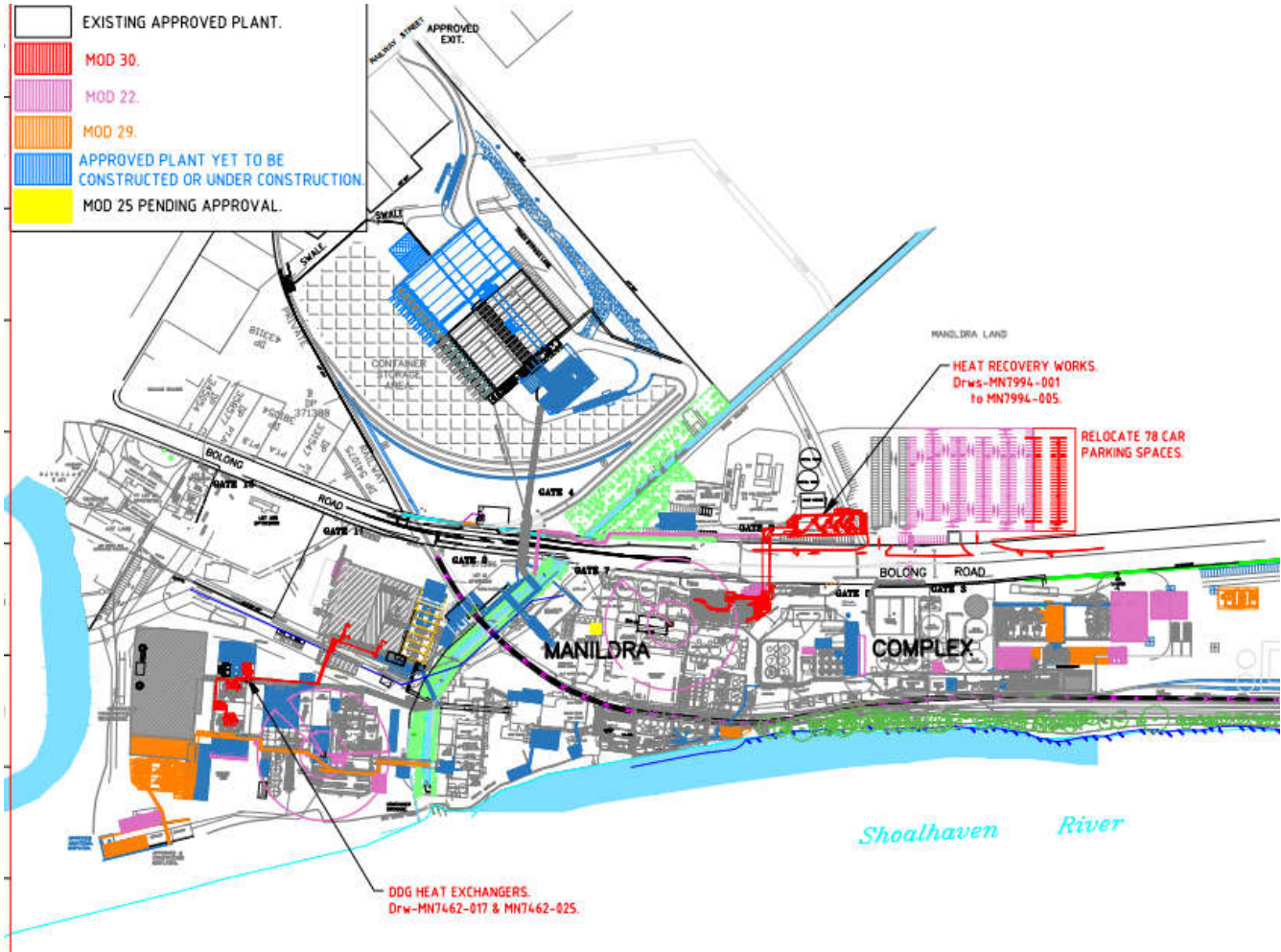


Figure 4: Modification Proposal Site Layout

5. KEY ISSUES ARISING FROM THE MODIFICATION PROPOSAL

The following is a brief summary of the main issues arising in relation to this specific proposal.

5.1 Air Quality (and Odours)

Air quality, and in particular odours, have long been an issue of contention with respect to the Shoalhaven Starches operation.

The Land and Environment Court in 2006 required Shoalhaven Starches to engage a suitably qualified person to conduct a comprehensive environmental audit of the factory and environmental farm in order to identify and quantify all odours generated by the operations, and to provide recommendations for the improved management of odours. Shoalhaven Starches engaged GHD to conduct the environmental audit.

The environmental audit of odour sources at Shoalhaven Starches was conducted between December 2006 and June 2007. The findings of the "Shoalhaven Starches Environmental Audit – Odour Sources" (GHD, 2007), formed the basis for the Air Quality Impact Assessment prepared



by GHD and which supported the application for the Shoalhaven Starches Expansion Project which was subsequently approved by the Minister for Planning (MP 06_0228).

It is proposed that the Modification Application would be supported by an Air Quality and Odour Impact Assessment the objective of which would be to address air quality and odour emissions from the proposed factory site following the implementation of the modification proposal to ensure compliance with Air Quality Standards. This assessment will need to provide a comparative analysis against the approved impacts of the overall approved project, as modified, and including the cumulative impacts from the approved development in addition to the proposed modification.

The modification proposal may require the sites EPL to also be modified which will require an assessment of the associated off-site odour and air quality impacts.

An Air Quality & Odour Impact Assessment will need to support the Modification, and which includes:

- A reviewed of the proposed construction methodology and any changes to site operations due to implementation of the proposed modification
- A qualitative risk-based assessment to assess dust emissions to air during construction of the Modification Proposal in accordance with Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management (2024).
- An updated odour emissions inventory for the site including new sources in the Modification Proposal and sources identified in the Odour Pollution Reduction Study (PRS).
- An updated particulate and gaseous pollutant emissions inventory for the site including new sources arising from the Modification Proposal.
- An updated site-specific meteorological model incorporating observational data from Manildra's weather station.
- Air quality including odour dispersion modelling to predict odour impacts at nearby sensitive receptors due arising from the Modification Application. Results of the dispersion modelling will be processed, interpreted and summarised.
- An air quality assessment report that outlines the methodology of the assessment, the outcomes of the dispersion model and interprets the findings of the predicted odour concentrations.

5.2 Noise & Vibration

Existing Project Approval

Project Approval for Application No. 06_0228, states: -

“Condition 2

The applicant shall carry out the development generally in accordance with the:

- a) EA and associated site plans (see Appendix 2).

Condition 2A



The applicant shall carry out the development generally in accordance with the:

- b) Statement of commitments,
- c) Conditions of this consent, and
- d) Revised statement of commitments for Appendix 6.”

The original Project Approval incorporates noise mitigation measures recommended in the ‘Acoustical Assessment, Proposed Ethanol Upgrade, Shoalhaven Starches’ – prepared by The Acoustic Group Pty Ltd dated 26 June 2008. This document forms part of the EA and statement of commitments and it is implicit that the noise control recommendations within this document are required to be implemented as part of the Project Approval.

Schedule 3, Conditions 11 to 14 inclusive of the Project Approval, also refer to noise emission and are summarised as follows:

- Condition 11 relates to restricted hours of construction activities.
- Condition 12 reiterates the noise limits contained with Environment Protection Licence 883.
- Condition 13 requires that all feasible and reasonable noise mitigation measures must be implemented during the construction phase of the project.
- Condition 14 required the preparation of a noise management plan (see Section 3.3 below).

NSW EPA’s Environment Protection Licence

Shoalhaven Starches operates under Environment Protection Licence 883 issued by the NSW Environment Protection Authority.

“L5.1 the LAeq (15min) * sound pressure level contribution generated from the premises must not exceed the following levels when measured at or near the boundary of any residential premises:

- a) 38 dBA at locations in Terara on the south side of the Shoalhaven River.
- b) 38 dBA at locations in Nowra on the south side of the Shoalhaven River.
- c) 42 dBA at locations in Meroo Street, Bomaderry.
- d) 40 dBA at other locations in Bomaderry.”

These noise limits apply to the overall operation of the Shoalhaven Starches complex.

Shoalhaven Starches Noise Management Plan

Previous approval for the Shoalhaven Starches Expansion Project, required the preparation of a Noise Management Plan for addressing and managing noise emission from the expansion project.

The Shoalhaven Starches Noise Management Plan originally prepared 31 October 2009 and revised 7 September 2010 addresses, among other things, acoustic criteria relating to the



Shoalhaven Starches complex and any new developments. Section 3 of the plan lists noise limits from the Environmental Protection Licence as shown in Section 4.1 above and states:

“Compliance testing conducted on a regular basis on behalf of the Mill [Shoalhaven Starches complex] has found noise emission from the premises satisfies the EPA criteria as a result of works on the Shoalhaven Starches site. In order to ensure that there is no increase in noise emission from the subject premises, with respect to the noise criteria nominated by the EPA in License Condition 6.3 [now 5.1], the design goal for such additional plant should be at least 10 dB below the criteria nominated by the EPA.”

Construction Noise Criteria

The NSW EPA published the Interim Construction Noise Guideline in July 2009. While some noise from construction sites is inevitable, the aim of the Guideline is to protect the majority of residences and other sensitive land uses from noise pollution most of the time.

The Guideline presents two ways of assessing construction noise impacts; the quantitative method and the qualitative method:

- The quantitative method is generally suited to longer term construction projects and involves predicting noise levels from the construction phase and comparing them with noise management levels given in the guideline.
- The qualitative method for assessing construction noise is a simplified way to identify the cause of potential noise impacts and may be used for short-term works, such as repair and maintenance projects of short duration.

The construction phase may take several months although significant noise producing aspects, such as piling, if required, will last a shorter period of time. Consideration will need to be given to the potential for noise impact from construction activities on residential receptors.

Project Specific Noise Goals

The most relevant criteria are as follows:

Operational Phase (Environment Protection Licence noise limits less 10 dB):

- 28 dBA (Leq, 15 minute) at locations in Terara on the south side of the Shoalhaven River;
- 28 dBA (Leq, 15 minute) at locations in Nowra on the south side of the Shoalhaven River;
- 32 dBA (Leq, 15 minute) at locations in Meroo Street, Bomaderry;
- 30 dBA (Leq, 15 minute) at other locations in Bomaderry.

Construction Phase Noise Management Levels:

- 43 dBA (Leq, 15 minute) at locations in Terara;



- 48 dBA (Leq, 15 minute) at locations in Bomaderry; and
- 50 BA (Leq, 15 minute) at locations in Nowra.

It is proposed that the Modification Application be supported by a Noise and Vibration Impact Assessment which will need to demonstrate how the proposed modified development will be able to satisfy relevant Project noise goals as well as:

- Construction noise and vibration impacts on sensitive receptors.
- Determining and assessing operational noise and vibration impacts (NSW Industrial Noise Policy) and utilising the site wide noise model for entire site noise predictions, in terms of the Modification Proposal and existing site conditions to demonstrate whether the noise from the proposed modification combined with existing premises noise can still achieve the noise limits.
- Examine noise mitigation strategies and handling of complaints.
- Consideration of cumulative noise impacts on sensitive receptors from the factory operations.

5.3 Preliminary Hazard Analysis

In general, risk assessment of industrial developments follows 5 basic steps:

- identification of potential hazards;
- an evaluation of safeguards to minimise the chance of occurrence of the identified hazards and their impact;
- an assessment of the magnitude of the consequences of the identified hazards;
- an assessment of the likelihood of occurrence; and
- an assessment of the risk by a combination of the consequences and likelihoods and comparison with tolerability criteria.

The Department of Planning has prepared a set of guidelines to help determine the level required according to the nature of the development:

- Multi-level Risk Assessment (MRA) describes the level and extent of the analysis reflecting the nature, scale, location of the proposed development;
- Hazardous Industry Planning Advisory Paper (HIPAP) No. 6 provides guidelines on requirements of the analysis;
- Hazardous Industry Planning Advisory Paper (HIPAP) No. 4 provides the adopted risk criteria for land use planning decisions;
- SEPP No. 33 provides a screening tool to determine whether a proposed development is hazardous and offensive, whether it requires a PHA, whether the PHA needs to be qualitative or quantitative and whether a detailed transportation study is required.

As the proposal involves works associated with the existing ethanol distillery and given the nature of the existing processes on the existing factory site, the proposal will be subject to the provisions



of Chapter 3 “Hazardous and Offensive Development” of State Environmental Planning Policy (Resilience and Hazards) 2021. A Preliminary Hazard Analysis (PHA) will therefore need to accompany the Modification Application.

In accordance with the approach recommended by HIPAP 6 the underlying methodology that will need to be adopted by the PHA is risk-based, that is, the risk of a particular potentially hazardous event is assessed as the outcome of its consequences and likelihood.

The PHA will need to undertake the following:

- Initially, the proposed modifications and their location will need to be reviewed to identify credible, potential hazardous events, their causes and consequences. Proposed safeguards will also need to be considered
- The consequences of potential hazardous events will need to be estimated to determine if unacceptable off-site impacts are likely to arise.
- An analysis of the risk of propagation between the proposed equipment and the adjacent processes; and
- If adverse off-site impacts could occur, assess the risk levels to check if they are within the criteria detailed in HIPAP 4.

5.4 Flooding

The Shoalhaven Starches factory site is identified by Shoalhaven City Council’s Lower Shoalhaven Floodplain Management Plan to be a High Hazard Floodway. It should be noted that the high hazard and floodway classifications (and all other flood related data) were taken from the hydraulic model established in the 1990 Shoalhaven River Flood Study. These are the maximum classifications for the site and the hazard decreases towards Bolong Road as floodwaters dissipate into the northern floodplain. The property is actually a mix of both high hazard floodway in the southern portions and high hazard flood storage in the northern portions.

The construction of any works on the floodplain will cause a loss of temporary floodplain storage and a loss of hydraulic conveyance. The resulting increase in flood levels will depend upon the magnitude of these losses. Given that parts of the proposed plant are on piers and / or raised above the 1% AEP flood level and the floodplain storage area of the Shoalhaven River floodplain is of the order of 100 km², the loss of temporary floodplain storage due to the works is generally too small to be accurately evaluated. The main issue from a flooding perspective is whether the construction of plant will impede flow from the Shoalhaven River crossing the site to enter the northern floodplain (i.e. reduce the hydraulic conveyance through the site and potentially raise flood levels elsewhere).

Prior to construction of the Shoalhaven Starches plant at Bomaderry there would have been significant flow through the site during a flood, as there is across any riverbank. However, since approximately 1960 the ongoing construction of the plant has effectively blocked the flow path through the site. This issue has been investigated by WMA Water in October 2000 in a report titled “Further Development within the Manildra starches Plant off Bolong Road, Bomaderry - Hydraulic Assessment”. In summary, this report outlined that an agreement was reached that any future development within the intensively built-up area, as indicated in the Figure 1 below would not require hydraulic modelling to quantify the hydraulic impacts and cumulative effects.

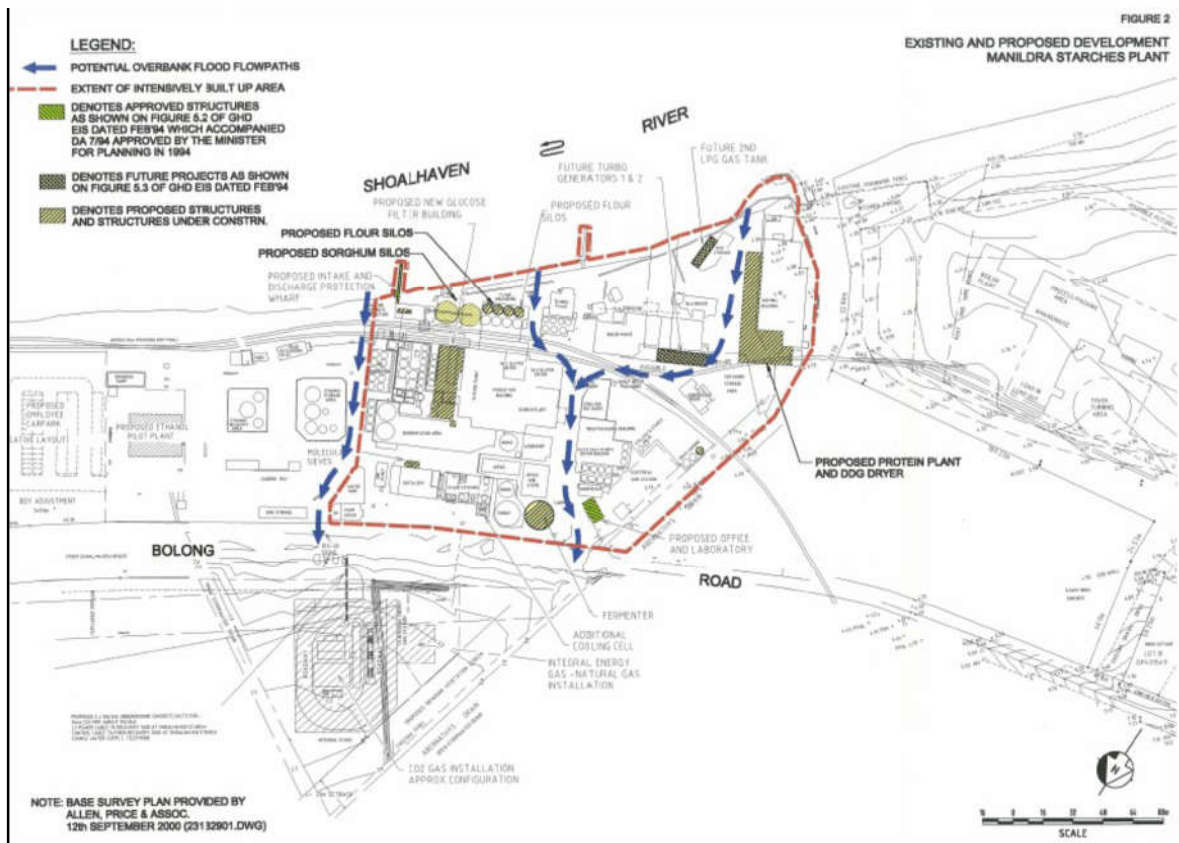


Figure 5: Extract from Flood Compliance Report for Proposed Modification Application to MP06-0228, Shoalhaven Starches Expansion Project, Bolong Road, Proposed new Specialty Processing Facility, WMA Water April 2018

The works associated with this Modification Proposal will be generally situated outside the built-up area shown in Figure 5.

It will be necessary that any Modification Application is supported by a Flood Assessment detailing the potential impacts that the proposed works will have on flood waters within the locality, and to examine measures that are proposed to mitigate such impacts. In addition, the Flood Assessment will need to provide an assessment of the proposed works associate with this Modification Application against the relevant matters for consideration as outlined within Chapter G9: Development on Flood Prone Land of the Shoalhaven Development Control Plan 2014.

5.5 Visual Impact

The Shoalhaven Starches factory site is situated on Bolong Road, the gateway to Bomaderry, within an area currently containing predominantly industrial land uses, although lands to the north have a rural character. These different land uses contrast with each other and result in a mixed visual character.

The rural areas, much of which comprises the Shoalhaven Starches Environmental Farm, are generally flat to gently undulating and planted with pasture grasses. These areas have a typical rural/agricultural character, common throughout the region. To the north and forming a background to the rural landscape are the timbered slopes of the Cambewarra escarpment.

The Shoalhaven Starches factory complex is characterised by typical industrial structures with an overall bulk and scale that dominates the surrounding locality. The factory complex, despite being partially screened by vegetation along Bolong Road, the Shoalhaven River and Abernathy's Creek visually dominates the locality. The overall complex is particularly exposed to view along Bolong Road. The proposal development will be visible from Bolong Road although situated between



industrial buildings of similar scale namely the recently complete Starches Dryer building and the existing packing plant adjacent to Bolong Road. Overall, the appearance of the site is typical of an industrial facility of this nature.

The visual impact of the proposed works will need to be taken into consideration in context of existing development on this site, surrounding landowners and the setting of the site within the broader landscape both to the north across rural lands, as well as to the south across the Shoalhaven River. Details of any proposed measures to minimise any impacts will also need to be considered.

5.6 Traffic Issues

As the proposal will involve works on the northern side of Bolong Road within the existing northern car park area, this will necessitate alterations to the existing vehicle ingress and egress to this car parking area. The traffic impacts along Bolong Road associated with these alterations will therefore be required to be assessed.

Consideration will also need to be provided of the construction and operation impacts to traffic in the area arising from the proposal.

5.7 Soil & Water

Detailed measures will need to be provided demonstrating how water quality impacts during construction and operation, including erosion and sediment controls and stormwater management will need to be addressed.

An assessment will also need to be provided for the potential presence of acid sulphate soils and whether and how such soils will be managed during any construction program.

5.8 Site Contamination

Works associated with this Modification Proposal involve areas not subject to previous site contamination assessments. Measures to manage construction works to avoid disturbance of contaminated soils and / or procedures

6. Consultation

In addition to consulting with the Department to seek its requirements for the preparation of the Statement of Environmental Effects that will support this Modification Application for this project, it is also proposed that consultation will be undertaken with the following government agencies to ascertain any issues that they may also wish to be addressed as part of this Modification Application:

- The NSW EPA;
- Shoalhaven City Council;
- Fire & Rescue NSW.
- Australian Department of Defence

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These upgrades will capture and transform waste heat into usable energy to drive the ethanol, starch, and gluten manufacturing processes. This will ultimately reduce the amount of virgin steam that is required by 75tph (637,500tpa) displacing the need to burn natural gas at the plant's onsite co-generation plant and other gas-fired boilers.

The purpose of this submission is to seek any requirements or issues that the Department consider will need to be addressed as part of any Modification Application submission.

We trust that the above and attached documents will be sufficient to enable the Department to supply any requirements it may have in relation to this matter. If you require any clarification in connection with this matter, please do not hesitate to contact us.

Yours faithfully

Allen Price Pty Ltd