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1 December, 2022

Our ref: 20/40

Your ref: MP 06_0228

Shaun Williams
Industry Assessments
Department of Planning, Industry & Environment
Locked Bag 5022
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Dear Shaun

RE: PROPOSED MODIFICATION APPLICATION NO.22 (MOD 22) TO MP06_0228
SHOALHAVEN STARCHES EXPANSION PROJECT
PROPOSED ETHANOL PLANT STAGE 3 UPGRADE (AMENDED)
SHOALHAVEN STARCHES, BOLONG ROAD, BOMADERRY

1.0 INTRODUCTION

I refer to the original meeting between staff from the Department of Planning, Industry and Planning; Shoalhaven Starches; and myself on 11th February 2021 at which several matters were discussed including Shoalhaven Starches' proposal to undertake the construction of Stage 3 Beverage Grade Ethanol Plant at their factory at Bolong Road, Bomaderry. I also refer to the email from the Department's Chris Ritchie dated 26th February 2021 which in part related to this project.

A scoping submission dated 3rd March 2022 was previously submitted to the Department in connection with this Modification Project. The Department subsequently issued their Environmental Assessment Requirements for this Modification Project on the 30th April 2021.

As outlined in the original scoping submission, Shoalhaven Starches seek to expand their ethanol production on the site to increase overall ethanol production from the current approved production of 300 ML/year to 450 ML/year. In order to facilitate this increase in production of ethanol, it is proposed that there will be an increase in flour that will be transported to the site from the present 4,000 tonnes per week up to 8,600 tonnes per week. Including flour that is produced on the site in the three Flour Mills situated on the site, the use of flour on the site will increase from the present approved 25,400 tonnes per week up to 30,000 tonnes per week, or an increase of about 18% in flour processed on the site.

Shoalhaven Starches have now reviewed the scope of works for this Modification Project. The proposed additional Distillation Columns as originally proposed have now been removed from this Modification Application.

In addition to the above, the increase in ethanol production will result in an increase in waste waters that will need to be processed in the Waste Water Treatment Plan (WWTP) located on the Shoalhaven Starches Environmental Farm located on the northern side of Bolong Road.. Shoalhaven Starches will therefore also seek approval to modify their Project Approval for the Shoalhaven Starches Expansion Project as part of Mod 22 to undertake modifications to the Waste Water Treatment Plant (WWTP).

The purpose of this submission therefore is to provide a brief scoping submission that; outlines the proposed amendments to the Modification Project; outline issues that such an amended modified proposal will raise; and which should be addressed in any Modification Application. Such has been prepared to ascertain from the Department whether its Environmental Assessment Requirements dated 30th April 2021 are required to be modified to reflect these changes to the scope of works for this Modification Project.

2.0 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 in accordance with the Project Approval. One such market is the "beverage" market where ethanol is further treated and purified to enable it to meet stringent beverage grade specifications and pass organoleptic testing requirements (i.e. taste and odours) to enable it to be utilised in the production of alcoholic drinks.

Shoalhaven Starches subsequently obtained Modification Approval (Mod 12) on the 12th September 2017, which enabled them to undertake modifications to the ethanol distillation plant to enable an increase in production of up to 110 ML/year of beverage grade ethanol. Mod 12 did not involve an increase in overall ethanol production above the current approved 300 ML/year. Rather it enabled greater flexibility in the type of ethanol that is produced from the plant.

Shoalhaven Starches obtained a further Modification Approval (Mod 18) to produce additional hand sanitiser grade ethanol. Shoalhaven Starches were able to achieve this by rearranging the mix of grades they manufacture. Mod 18 followed a request by the Federal Government's Department of Industry, Sciences and Energy to produce more hand sanitiser alcohol in response to Coronavirus COVID 19 crisis. Mod 18 also did not involve production increasing above the 300 ML per annum limit imposed by MP 06_0228.

Shoalhaven Starches have also recently sought a further Modification Approval (Mod 19) to undertake a further upgrade of their Ethanol Distillery to facilitate an increase in the proportion of beverage grade ethanol. Mod 19, when approved, will enable an increase in production of up to 100 ML of beverage grade ethanol per annum. With current capacity of 110 ML of beverage grade ethanol, the proposal would enable production of up to 210 ML of 'beverage' grade ethanol per annum to meet increased market demand for these higher quality ethanol products. Again there will be no increase in the overall ethanol production above the current approved 300 ML per annum under the most recent Mod.

As is evident from the above, Shoalhaven Starches have been undertaking a range of measures to convert their ethanol production from industrial grade to enable greater flexibility in the production of alternative grades of ethanol to better meet anticipated market demand. In doing so however, Shoalhaven Starches have not sort to increase the overall amount of ethanol that is able to be produced at their site.

In addition, a further critical component of the SSEP was the introduction of a WWTP that would treat the increased volume of waste water arising from the expansion of site operations proposed under the SSEP. The wastewater treatment process was a mandatory odour control as part of the SSEP which has significantly reduced odours from the premises. Under the SSEP it was proposed that waste waters would be treated sequentially through anaerobic and aerobic digestion systems located and incorporated within one of the existing waste water storage ponds to fully treat all organic material.

The waste water treatment process enabled the treatment of in the order of 9.6 ML/d of wastewaters; with 6.5 ML/d treated to a standard that it was able to be recovered for re-use in the factory processes.

The waste water treatment process under the SSEP introduced Anaerobic digestion, a biological process conducted in the absence of oxygen. Anaerobic digestion (or fermentation) of organic matter is carried out by a special, mixed group of anaerobic microorganisms (bacteria). During anaerobic treatment, these microorganisms utilize the organic matter contained in the wastewaters as a source of food and energy. As a result, the microorganisms essentially convert organic matter to biogas containing methane (65%). Under the SSEP, this biogas was able to be used as an energy source for the Shoalhaven Starches operations. Under the existing SSEP, the existing waste water treatment plant produces in the order of 1,700 GJ/d of biogas which is supplied to power (in part) the existing gas fired boilers at the factory site.

3.0 THE MODIFICATION PROPOSAL

Shoalhaven Starches now, however, seek to expand their ethanol production on the site to increase overall ethanol production from the current approved production of 300 ML/year to 450 ML/year. As outlined in our original scoping submission, in order to facilitate this increase in production of ethanol, it is proposed that there will be an increase in flour that will be transported to the site from the present 4,000 tonnes per week up to 8,600 tonnes per week. Including flour that is produced on the site in the three Flour Mills situated on the site, the use of flour on the site will increase from the present approved 25,400 tonnes per week up to 30,000 tonnes per week, or an increase of about 18% in flour processed on the site.

Due to significant increases in energy and fuel prices, there has been an increase demand for fuel grade ethanol. To meet this increase in demand the company proposes to install additional plant and equipment to achieve an increase in ethanol production to 450 ML/year. This will require an additional 3 new fermenters, substation, CO2 scrubbers, additional Water Balance Recovery Evaporator, Stillage Evaporators and Cooling towers.

In order to facilitate the increase in production of ethanol to 450 ML/year, it is proposed that there will be an increase in flour that will be transported to the site from the present 4,000 tonnes per week up to 8,600 tonnes per week Including flour that is produced on the site in the three Flour Mills situated on the site, the use of flour on the site will increase from the present approved 25,400 tonnes per week up to 30,000 tonnes per week, or an increase of about 18% in flour processed on the site.

The increase in production will also result in an increase in production of Dried Distillers Grain (DDG) from the current approved 7,500 tonnes per week to 10,000 tonnes per week. It is proposed to install two new stillage evaporators, a finisher, associated process tanks, two cooling towers and an electrical substation to enable the DDG throughput increase.

As part of efficiency and reliability improvement initiatives, the company proposes to install new higher efficiency cooling towers to replace the existing units currently servicing the DDGS dryers. Benefiting from latest designs and technology, the replacement towers are expected to generate less noise compared to the existing units which would be decommissioned and removed once the new system is functional.

One of the differences between what was originally proposed as outlined in the original scoping submission, and the current amended Modification Proposal, is the proposal will no longer require the installation of the previously proposed additional distillation columns and associated processing equipment. Shoalhaven Starches have identified that the increase in ethanol production associated with this Modification Application can be achieved with the refurbishment and repairs to the existing ethanol distillation plant (such a re-traying the older distillation columns which has increased their capacity).

The refurbishment works to the existing ethanol distillery in conjunction with the following aspects will enable the increase in ethanol production as envisaged by this Modification Proposal.

- The proposed additional fermenters associated with this Modification Proposal will alleviate existing production bottlenecks by providing buffer storage; during plant breakdowns; when fermenters are cleaned; or when fermenters are required to undertake maintenance or repairs.

- The additional Water Recovery Evaporator will reduce the amount of water that is required to be processed through the ethanol plant increasing the capacity of the ethanol plant.

- An additional two (2) Cooling Towers are required to be provided as a buffer to enable cooling towers to be taken off-line to allow for cleaning, repairs and maintenance of other Cooling Towers.

The increase in ethanol production will result in an increase in waste waters that will need to be processed in the Waste Water Treatment Plan (WWTP) located on the Shoalhaven Starches Environmental Farm located on the northern side of Bolong Road. Shoalhaven Starches will therefore also seek approval to modify their Project Approval for the Shoalhaven Starches Expansion Project as part of Mod 22 to undertake modifications to the Waste Water Treatment Plant (WWTP) as will be described in greater detail below.

In addition, it is also now no longer proposed to construct the two-storey workshop and offices to the east of the ethanol expansion proposal as previously proposed as this will conflict with works proposed under the proposed grain storage and handling upgrade proposed under Mod 26.

Table 1 below provides a summary of the proposed works associated with this revised Modification Project:

Table 1

Summary of Amended Proposed Works

Factory Component	*Proposed Works associated with Modification Application No. 19 (Mod 19)*
Ethanol Plant Upgrade (Stage 3)	
Ethanol Plant Upgrade	• Installation of an additional Water Balance Recovery Evaporator (MVR No.4) and associated relocation of cooling towers approved under Mod 19. • Erection of three new Fermentation Tanks and two CO2 scrubbers. • New substation. • Associated pipe bridges. • Installation of 2 new cooling towers adjacent to the relocated Mod 19 cooling towers referred to above.
DDGS Plant	• Installation of two new evaporators and finisher unit. • Associated process tanks. • Two new cooling towers and electrical substation. • Two new biofilter units for odour management. • Installation of a new set of 6 cooling towers and electrical substation.
WWTP Upgrade	• Construction of one in-ground treated effluent storage pond with a capacity of 150 ML. • Convert the existing Wet Weather Storage Ponds No. 1, 2 and 3 into another Anaerobic Digestor with a volume of 80 ML. • It is proposed to install an above ground enclosed steel 400 KL Equalisation Tank to the south-west of the converted Pond 3 anaerobic digester. • Construction of a building for biogas collection fans from the new Pond 3 digester immediately adjacent and to the south-west of the Equalisation Tank. • Installation of Biogas scrubber units. • Interconnecting pipework, pumps and blowers. • A new wastewater collection tank (70 Kl) at the factory and new pipe to the WWTP. • Substation and maintenance shed. • Additional MBR and RO plant and associated building.
Other Works	
Northern Car Park Extension	• The proposed additional Fermenters will require the relocation of parking spaces to the northern car park located on the northern side of Bolong Road. It is proposed to expand this car park by an additional 147 parking spaces to accommodate the relocation of spaces associated with the new fermenters, and to provide additional parking for construction contractors.
Ethanol Control Room	• First floor extension to Ethanol Control Room with additional office floor space

In terms of Ethanol Plant Stage 3 Project, the proposal will specifically involve the following main aspects:

Ethanol Production – Evaporators and Fermenters

- The proposal will include the erection of three Fermentation Tanks (and associated scrubber). One scrubber will be installed to service the Fermenters 18 & 19 (approved under Mod 21) and the Fermenters 20, 21 & 23 (proposed under this Mod 22), and another scrubber installed next to the existing scrubber unit, which will allow for the existing scrubber to be taken off-line for required maintenance. These tanks will be of similar dimensions to the existing Fermentation Tanks located further to the west. These tanks will have a height above ground level of 32.5 metres and a diameter of 17.5 metres. These additional Fermentation Tanks would be sited immediately to the east of the existing Fermenters.

- The proposal will also include the construction of an additional Water Balance Recovery Evaporator to be sited adjacent to the existing evaporators which are located immediately to the east of the existing Fermenters. The Water Balance Recovery Evaporator will be identical to the existing evaporators with a height above ground level of 29.7 metres. The role of the Water Balance Recovery Evaporators is to increase solids in the feed to the Ethanol Plant thus reducing the amount of liquid that is required to be heated to evaporate the ethanol in the distillery. This not only has the advantage of improving energy efficiency for the Ethanol Plant operations; but also reduces the amount of waste water that is produced and which needs to be treated in the Waste Water Treatment Plant located on the Shoalhaven Starches Environmental Farm located on the north side of Bolong Road.

  The construction of the Water Balance Recovery Evaporator will require the relocation of Cooling Towers approved under Mod 19 to the south of the exiting Fermenter Tanks.

- An additional two Cooling Towers are also proposed to be installed adjacent to the Mod 19 Cooling Towers relocated as a result of the construction of the Water Balance Recovery Evaporator. These additional Cooling Towers are required to provide a buffer capacity to enable existing Cooling Towers to be taken of-line to enable cleaning, repairs and maintenance to be carried out without interruption to overall production processes.

- The construction of the proposed new Fermenter Tanks will result in the loss of approved car parking spaces situated along the Bolong frontage of the site. It is therefore proposed to expand the car park located on the northern side of Bolong Road by providing an additional 147 parking spaces to accommodate the spaces loss as a result of the construction of the Fermentation Tanks as well as to provide additional parking for construction contractors. It is proposed to provide a new pedestrian pathway to connect the car park across Bolong Road.

This proposal will not involve the provision of any new additional Ethanol Storage Tanks. It is envisaged that ethanol produced as part of this proposal will be transported directly to Manildra's Ethanol Storage Depot located at Port Kembla for storage.

It is anticipated that this project, in conjunction with the existing process improvements, will enable the Shoalhaven Starches' operations to increase ethanol production by 150 ML per annum. As a result, overall ethanol production is anticipated to increase by up to 150 ML above the current limit set by the existing Project Approval of 300 ML per annum.

Waste Water Treatment Plant

Shoalhaven Starches propose to also undertake modifications to their WWTP that will enable an increase in the WWTP capacity and additional biogas production that will be able to be used

as an energy source within the factory operations. It is envisaged that under the proposed modifications to the WWTP biogas production will increase from the current 3500 m^3/h to 5000 m^3/h, an increase of 1,500 m^3/h. This increase in biogas production would be equivalent to a reduction in 10% of the sites natural gas usage.

The Modification Proposal will involve the following components:

- It is proposed to construct one in-ground treated effluent storage pond with a capacity of 150 ML adjacent and to the east of the existing SO Basin and BVF Reactor approved under the SSEP. This additional treated waste water storage is required to compensate for the loss of storage as a result of the conversion of Ponds 1, 2 and 3 as will be described below.

- It is also proposed to convert the existing Wet Weather Storage Ponds No. 1, 2 and 3, situated to the north of the approved SO Basin, into another Anaerobic Digestor with a volume of approximately 80 ML. This pond will also be covered with a gas tight floating cover and utilise the same anaerobic digestor format that is presently used on the site, a Bulk Volume Fermenter (BVF). Infrastructure within the pond and under the pond cover will facilitate the action of anaerobic micro-organisms responsible for the digestion of the soluble and suspended organic matter. Metabolism of the organic matter will generate the biogas

- It is proposed to install an above ground enclosed steel 400 KL Equalisation Tank to the south-west of the converted Pond 3 anaerobic digester. The role of the Equalisation Tank will be to equalize the raw waste water flow to Pond 3.

- It is proposed to construct a building for biogas collection fans from the new Pond 3 digester immediately adjacent and to the south-west of the Equalisation Tank.

- Biogas scrubber units including flare will be installed. The scrubber will remove Hydrogen Sulfide (H2S) from the biogas which will reduce acid corrosion in the boilers and improve air quality (reduction in SO2 emissions). The chillers cool the biogas and remove moisture from the biogas.

- Interconnecting pipework, pumps and blowers.

- A new waste water collection tank (70 KL) at the factory site and a new pipe to the Wastewater Treatment Plant to service the western area of the factory site.

- Substation and maintenance shed to service the new plant and equipment at the Farm.

- Additional MBR and RO plant and associated building.

The WWTP upgrades will result in an increase in WWTP capacity from 10 ML/day to approximately 14 ML/ day and increase the amount of treated water returned to the factory for re-use from 6.5 ML/day to approximately 12 ML/day. The amount of water that will be sent to irrigation is estimated to be approximately 2 ML/day. At present approximately 3 ML/day of treated water is spray irrigated. The proposed works will therefore result in a reduction in the volume of treated water that will be required to be spray irrigated.

<u>DDGS Plant – Stillage Evaporators</u>

- The increase in ethanol production will result in an increase in stillage (a by-product of the ethanol production process). It is proposed to install two new evaporators, a finisher, associated process tanks, two cooling towers and an electrical substation to enable the throughput increase. The stillage evaporators concentrate the stillage from the ethanol plant

to produce a DDG syrup which is dried within the DDG Dryers to produce Dried Distillers Grain (DDG).

- Two Mill Feed silos are proposed to be provided to store mill feed produced from the existing Flour Mills on site. The mill feed is combined with the DDG Syrup from the stillage evaporators into the DDG Dryers to produce DDG.

Plan details of the Modification Proposal are attached to this submission.

4.0 KEY ISSUES ARISING FROM THE MODIFICATION PROPOSAL

The following is a brief summary of the main issues arising in relation to this specific proposal as previously raised in the original scoping submission.

- **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).

  GHD are currently working on Stage 1 of the Odour Pollution Reduction Study (PRS) (as outlined in U2 Odour Pollution Reduction Study (Stage 1) of EPL883) which includes the following tasks to be submitted prior to 30 September, 2022:

  - Odour source identification;
  - Field odour surveys;
  - Community engagement and investigations.

  In additional to the Stage 1 scope, GHD is also incorporating some works pertaining to subsequent stages of the PRS including a preliminary review of key operation parameters that determine pollutant emissions and providing odour monitoring recommendations into the first deliverable in order to provide information up front where possible to address EPA issues.

  Stage 2 of the draft PRS includes updating the site wide odour emissions inventory and incorporating other findings of the study which may include additional odour sampling. Stage 2 is in draft form at this stage and may be subject to change.

  It is proposed that the Modification Application would be supported by an Air Quality 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. It is expected that any further air/odour assessment undertaken must be informed by the site wide studies currently being undertaken by GHD and which have been referenced above.

The modification proposal will require the sites EPL to also be modified which will require an assessment of the associated off-site odour and air quality impacts. In order to meet EPA NSW requirements, an Air Quality Impact Assessment will need to support the Modification, and which includes:

- A revised emissions inventory for odorous and non-odorous sources on site. A comparative analysis of the emissions inventory has been undertaken with the last major air quality assessments for the site (Mod 13, Mod 16, Mod 17 and Mod 19).
- A level 2 air quality assessment of odour and air quality in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA 2016).
- A comparison of predicted odour and air quality results against the EPA criteria and against the previous modification results.

- **Noise**

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:*
>
> *a) Statement of commitments,*
>
> *b) Conditions of this consent, and*
>
> *c) 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.*

Site Wide Noise Model

A site wide noise model for general factory noise emissions from the existing site has been conducted by Day Design(report № 7425-3.1R dated 30 September 2022) and presents a baseline for calculation of noise impacts from future Modifications. It is expected that any further noise assessment will be informed by the site wide noise model undertaken by Day Design.

It is proposed that the Modification Application be supported by an Environmental Noise Impact Assessment which will need to demonstrate how the proposed modified development will be able to satisfy relevant Project noise goals.

- **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 modifications to the existing ethanol distillery and ethanol storage and given the nature of the existing processes on the existing factory site, the proposal is subject to the provisions of SEPP No. 33 - Offensive & Hazardous Industry. 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.

- **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 km^2, 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 (ie. 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 river bank. 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.

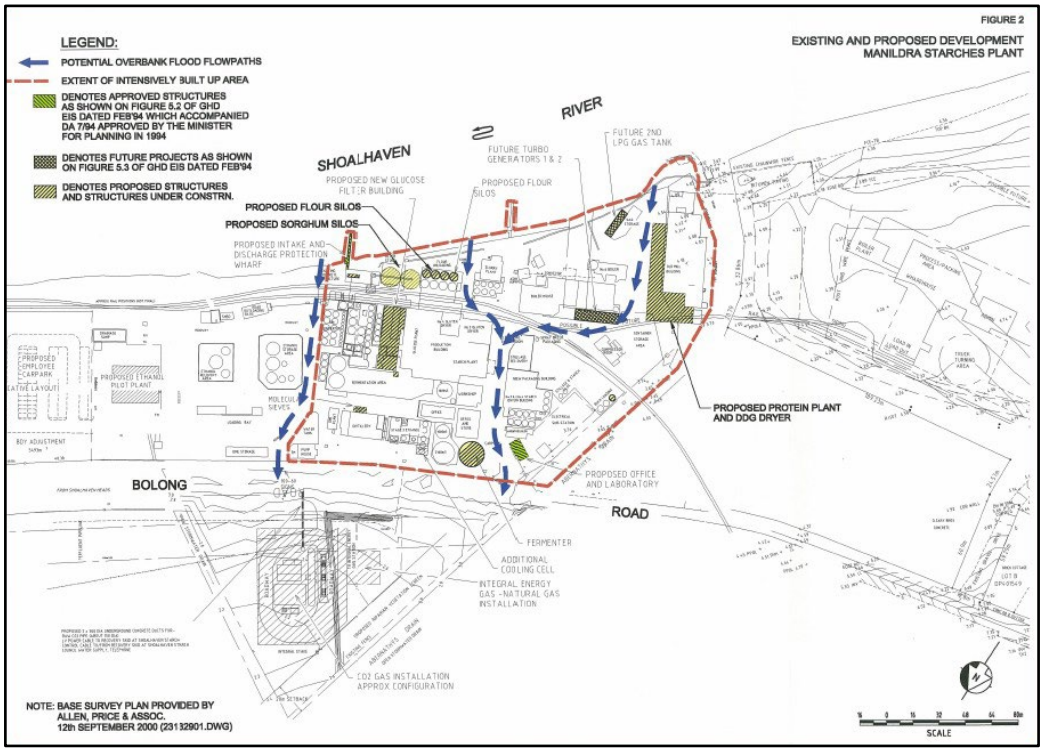

Figure 1: Extract from Flood Compliance Report for Proposed Modification Application to MP06-0228, Shoalhaven Starches Expansion Project, Bolong Road, Proposed new Specialty Processing Facility, WMA Water April 2018

The proposed works associated with this Modification Application will however be situated outside the built-up area shown in **Figure 1** above.

It will be necessary that this 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. A hydraulic impact assessment will be required for the proposed works associated with this Modification Application. In addition, the Flood Assessment will need to provide an assessment of the proposed works associated 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.

- **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 proposal will involve the construction of structures with heights that will be similar to existing and approved structures. The proposal will also include the construction of A Water Balance Recovery Evaporators ethanol storage tank that will match the existing evaporators located in this part of the site at 29.7 m; and Fermenter Storage Tanks with heights of around 32.5 m above ground level.

  The visual impact of the proposed works will need to be taken into consideration in context of existing development on this site, 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.

- **Traffic Issues**

  This proposed modification will involve an increase in flour transported into the site and an increase in ethanol produced that will be transported from the site. Such will involve an increase in train movements bringing flour into the site; and heavy vehicle movements transporting the finished ethanol product from the site. The proposal will therefore result in changes in both rail movements to and from the site as well as heavy vehicle movements.

  Given these circumstances it is considered the proposal will raise traffic issues that will require further consideration in a Traffic Impact Assessment as part of any Modification Application.

- **Acid Sulphate Soils (ASS)**

  All of the subject site is identified as potentially containing acid sulphate soils. The areas of the subject site associated with this Modification Application, and in particular the Fermenters and relocated ISO Container Storage area, are to be located within areas of the site which have not been previously the subject of any preliminary ASS assessment. Under these circumstances it is considered prudent that a preliminary ASS assessment be undertaken for the areas associated with this Modification Proposal.

- **Site Contamination**

  The areas of the subject site associated with this Modification Application, and in particular the proposed new Fermenters, which are to be sited further to the east of existing works associated with the Shoalhaven Starches operations are to be located within areas of the site which have only partly been the subject of any preliminary site contamination assessment previously under Mod 19. Under these circumstances it is considered prudent that a preliminary site contamination assessment be undertaken for the areas associated with this Modification Proposal.

- **Riverbank Stability**

  Whilst the majority of works associated with this modification proposal will involve works which are setback from the banks of the Shoalhaven River, one of the Fermenters and the Scrubber will be sited approximately 35 metres from the banks of the Shoalhaven River. Given these circumstances it is considered prudent that an assessment be undertaken of the potential impacts that such works could have on the stability of the banks of Shoalhaven River and any recommendations to mitigate such impacts.

- **Treated Wastewater and Soils**

  As outlined in Section 3.0 above, the WWTP upgrades will result in an increase in WWTP capacity from 10 ML/day to approximately 14 ML/ day and increase the amount of treated water returned to the factory for re-use from 6.5 ML/day to approximately 12 ML/day. The amount of water that will be sent to irrigation is estimated to be approximately 2 ML/day. At present approximately 3 ML/day of treated water is spray irrigated. The proposed works will therefore result in a reduction in the volume of treated water that will be required to be spray irrigated.

  The WWTP upgrades will result in an overall reduction in treated water that will need to be spray irrigated on the Environmental farm. It is anticipated however that the concentration of retentate within the treated waste waters will increase as a result of the proposed treatment processes. As a result, an assessment of the treated waste water and the capacity of the soils within the Environmental Farm will need to be undertaken to confirm that they will be able to accommodate the higher retentate concentration within the treated irrigation water.

5.0 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; 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 Australian Department of Defence
- NSW Department of Primary Industry – Water;
- The NSW EPA;
- Shoalhaven City Council;
- Fire & Rescue NSW.

Due to significant increases in energy and fuel prices, there has been an increase demand for fuel grade ethanol. To meet this increase in demand the company proposes to install additional plant and equipment to achieve an increase in ethanol production to 450 ML/year from their Bomaderry factory site.

In order to facilitate this increase in production of ethanol, it is proposed that there will be an increase in flour that will be transported to the site from the present 4,000 tonnes per week up to 8,600 tonnes per week. Including flour that is produced on the site in the three Flour Mills situated on the site, the use of flour on the site will increase from the present approved 25,400 tonnes per week up to 30,000 tonnes per week, or an increase of about 18% in flour processed on the site.

A scoping submission was previously submitted to the Department in connection with this Modification Project. The Department has previously issued their Environmental Assessment Requirements for this project on the 30th April 2021.

Shoalhaven Starches have now reviewed the scope of works for this Modification Project. The proposed additional Distillation Columns as originally proposed have now been removed from this Modification Application. The purpose of this submission is therefore to provide a brief scoping submission that; outlines the proposed amendment to the Modification Proposal; outline issues that such a modified proposal will raise; and which should be addressed in any Modification Application. Such has been prepared ascertain from the Department whether its Environmental Assessment Requirements dated 30th April 2021 are required to be modified to reflect these changes to the scope of works for this Modification Project.

I trust that the above and attached documents will be sufficient to enable the Department to advise whether its Environmental Assessment Requirements dated 30th April 2021 are required to be modified to reflect these changes to the scope of works for this Modification Project.. If you require any clarification in connection with this matter please do not hesitate to contact me.

Yours faithfully

Stephen Richardson.

Stephen Richardson
COWMAN STODDART PTY LTD