



Shoalhaven Starches Expansion Project Modification 21

Modification to Packing Plant
State Significant Development Modification Assessment
(MP06_0228Mod-21)

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Glossary

Abbreviation	Definition
BCA	Building Code of Australia
Council	Shoalhaven City Council
Department	Department of Planning and Environment
EESG	Environment, Energy and Science Group, DPE
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
FRNSW	Fire and Rescue NSW
IWCMS	Integrated Water Cycle Management System
Minister	Minister for Planning
NCC	National Construction Code
Planning Secretary	Secretary of the Department of Planning and Environment
SEPP	State Environmental Planning Policy
SSEP	Shoalhaven Starches Expansion Project
SSD	State Significant Development

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1 Introduction

This report provides the NSW Department of Planning and Environment's (the Department's) assessment of an application to modify the State significant development (SSD) consent for Shoalhaven Starches Expansion Project (06_0228). The modification application seeks consent for alterations and additions to the approved Packing Plant including an additional rail siding, installation of a waste water buffer tank, an Ethanol Nitrogen Generator, an Indirect Cooking plant and two additional fermentation tanks.

The application was lodged on 14 September 2021 by Shoalhaven Starches (the Applicant) pursuant to section 4.55(1A) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1 Background

The Applicant has operated a factory at Bomaderry in the Shoalhaven local government area (LGA) since 1979 (see Figure 1). The factory receives wheat grain from mills in western NSW which is processed to produce flour, gluten, glucose, starch and ethanol for food, beverage, hand sanitiser, paper and fuel products. The factory is a 24/7 operation and has approximately 300 employees.

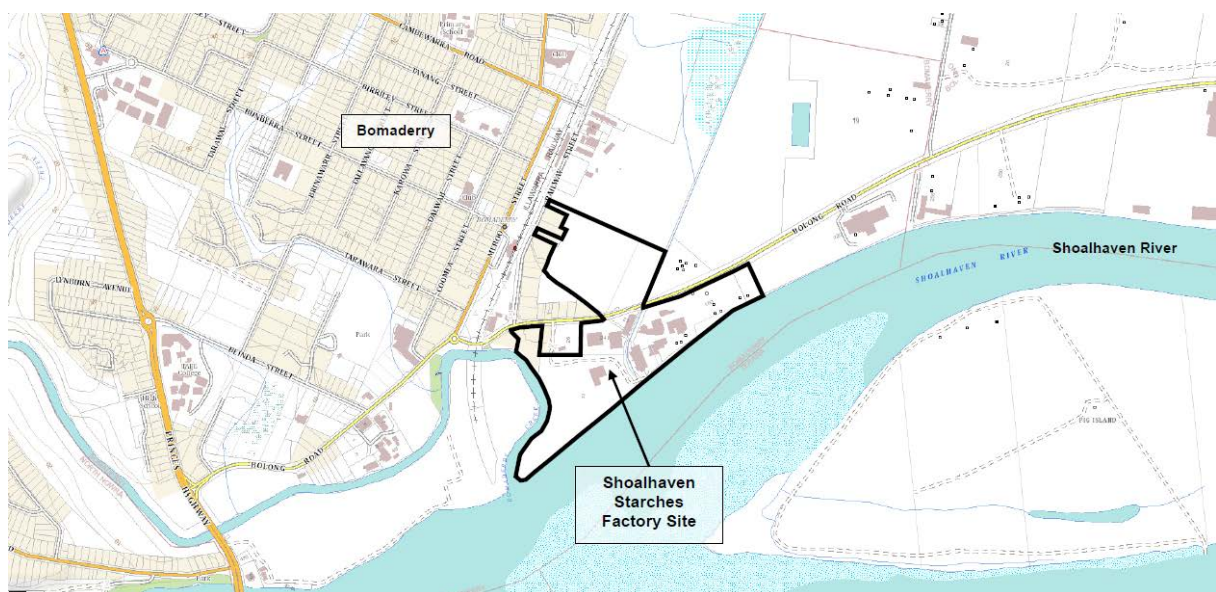


Figure 1 | Local Context Map

The factory is located on the eastern fringe of Bomaderry and 2 kilometres (km) to the north-east of Nowra (see Figure 2). The factory is surrounded by other industrial premises, including a metal fabrication factory, meat packaging works and industrial and agricultural suppliers. The nearest residences are in Bomaderry, 300 metres (m) to the west of the approved packing plant and 500 m north-west of the factory.

Shoalhaven City Council's sewage treatment works is located 180 m to the north of the factory and Bomaderry railway station is located 500 m north-west. Shoalhaven Starches has a private rail spur line, which extends from the railway station across Railway Street and Bolong Road into the factory site, extending for approximately 750 m along the northern bank of the Shoalhaven River.

The Shoalhaven Starches factory encompasses the former Dairy Farmers complex and the former Shoalhaven Paper Mill, located east of the main factory on Bolong Road.

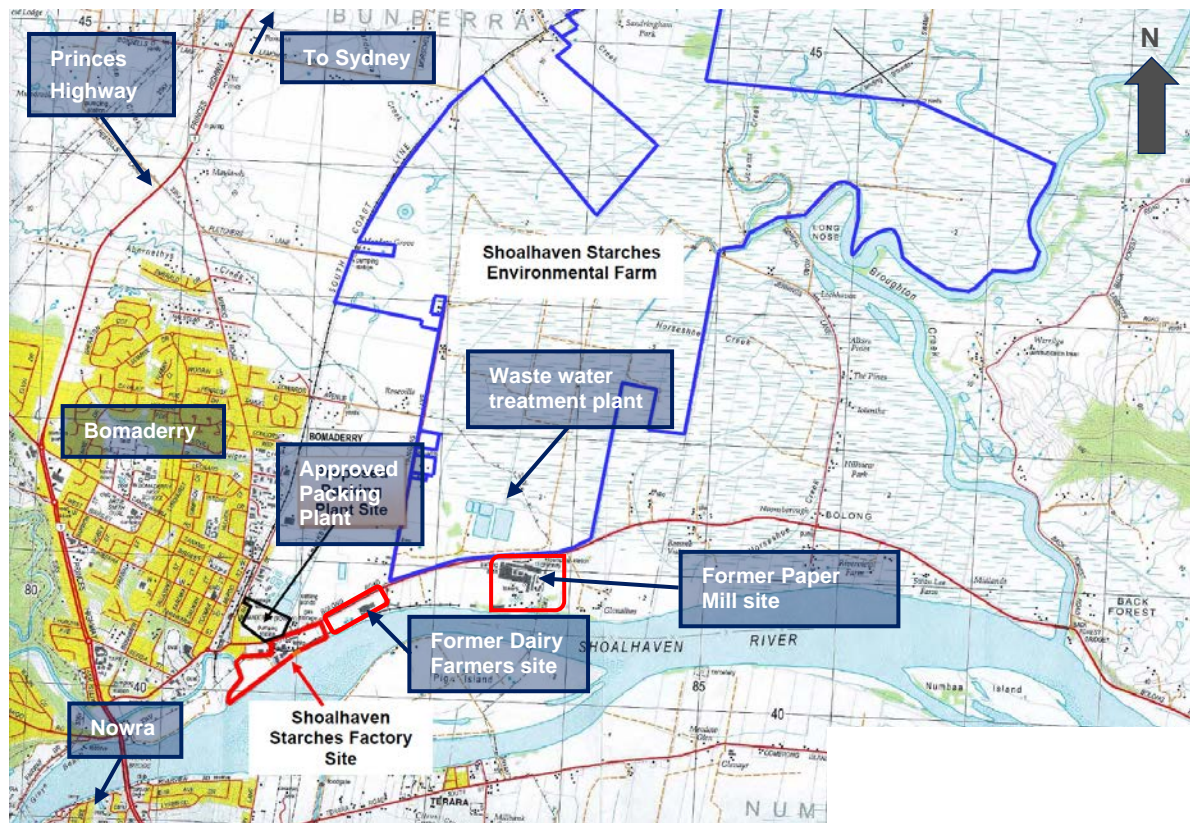


Figure 2 | Regional Context Map

1.2 Approval history

Prior to 2009, the Applicant operated its factory under multiple, separate planning approvals issued by Shoalhaven City Council (Council) and the Minister for Planning.

Shoalhaven Starches Ethanol Expansion Project (06_0228)

In January 2009, the then Minister for Planning approved the Shoalhaven Starches Ethanol Expansion Project (SSEEP) under the now repealed Part 3A of the EP&A Act. The SSEEP approval consolidated all previous planning approvals for the site with the aim of simplifying regulation and compliance.

The SSEEP involved:

- staged increases of ethanol production from 126 megalitres a year (ML/yr) to 200 ML/yr following successful implementation of mandatory odour controls
- implementation of mandatory odour controls including a waste water treatment plant and biofilter
- installation of additional infrastructure at the dried distillers grain (DDG) plant, ethanol and starch plants, a new packing plant, rail siding and product and waste water pipelines.

By June 2012, the Applicant had installed the mandatory odour controls and the Department approved the increase in ethanol production (as prescribed in the conditions) to the maximum volume permitted being 300 ML/yr, subject to conditions, including quarterly odour monitoring and annual odour audits.

However, demand for ethanol in fuels has not increased as predicted and ethanol production levels at the factory in 2017 were around 237 ML/yr.

Given the reduced market demand for ethanol, the Applicant has progressively installed infrastructure over the last few years, to allow optimisation of flour products and increased production of beverage grade ethanol for alcohol products. This has required several modifications to the SSEEPP approval, including a new starch dryer, flour mill and a beverage grade ethanol distillery at the factory.

Modifications to 06_0228

The Minister for Planning has approved 22 modifications to the SSEEPP since 2009. Most of the modifications were approved by the former Planning Assessment Commission or Independent Planning Commission (the Commission) under the Minister's delegation. Table 1 summarises the modifications.

Table 1 | Summary of Modifications

Mod No.	Summary of Modifications	Approval Authority	Type	Approval Date
MOD 1	<ul style="list-style-type: none"> removed the requirement for dried distillers grain (DDG) pelletising plant from the list of mandatory odour controls implement alternate odour controls including a new loading chute with dust extractor and extension of the load-out shed to fully enclose truck loading. 	PAC	s75W	30 Sept 2011
MOD 2	<ul style="list-style-type: none"> install additional infrastructure to improve operational and energy efficiency, including two additional fermenter tanks, an evaporator, beer column, heat exchangers, substation and compressors. 	PAC	s75W	14 Sept 2012
MOD 3	<ul style="list-style-type: none"> relocate approved 60 space staff car park to the former Dairy Farmers site and include the site in the project approval, following acquisition by the Applicant. 	PAC	s75W	9 Oct 2012
MOD 4	<ul style="list-style-type: none"> relocate the approved DDG pelletising plant within the factory site, increases its footprint and approved height, from 21 m to 28 m. 	PAC	s75W	24 Mar 2014
MOD 5	<ul style="list-style-type: none"> modify the design, footprint and odour controls on the DDG pelletising plant including a 49 m air discharge stack and eight storage silos. 	PAC	s75W	16 Sept 2015
MOD 6	<ul style="list-style-type: none"> demolish a disused industrial building "Moorehouse" purchased by the Applicant 	PAC	s75W	25 Nov 2015

	<ul style="list-style-type: none"> construct a temporary car park on the northern side of Bolong Road. 			
MOD 7	<ul style="list-style-type: none"> relocate the approved Starch Dryer No. 5 to the former “Moorehouse” site, increase the footprint and construct a substation, pipework and pipe gantry. 	PAC	s75W	18 Jan 2016
MOD 8	<ul style="list-style-type: none"> extend the existing flour mill to increase flour production from 265,000 to 400,000 tonnes per annum (tpa) and offset imports of flour to the factory from mills in western NSW. 	PAC	s75W	1 Mar 2016
MOD 9	<ul style="list-style-type: none"> increase the size of the approved packing plant to increase the type and volume of packaged dried products construct a container storage and truck loading area with noise barriers extend and duplicate the approved rail spur line install product pipes under Bolong Road, a small bag packer at the DDG pellet plant and a new stormwater detention tank. 	PAC	s75W	8 Mar 2017
MOD 10	<ul style="list-style-type: none"> construct a new flour mill B and increase flour production on site from 400,000 tpa to 842,400 tpa. Relocate storage silos and construct a mill feed structure. 	PAC	s75W	18 April 2017
MOD 11	<ul style="list-style-type: none"> reduce the number of approved dryers and relocate approved footprint, relocate cooling towers, construct a forklift maintenance building, install two biofilters, construct hardstand for container storage, store coal and woodchips on the factory site and environmental farm. 	PAC	s75W	1 Sept 2017
MOD 12	<ul style="list-style-type: none"> increase production of beverage grade ethanol and reduce production of fuel grade ethanol install ethanol distillery infrastructure including rectification columns, cooling towers, a substation, storage tanks and pipes extend two rail siding and provide additional car parking. 	PAC	s75W	1 Sept 2017

MOD 13	<ul style="list-style-type: none"> increase steam production from three existing boilers by converting to coal fired boilers and installing baghouses. 	PAC	s75W	18 Jan 2018
MOD 14	<ul style="list-style-type: none"> incorporate the former Shoalhaven Paper mill into the project approval and use the site for buffer storage for products, plant, construction materials and shipping containers. 	PAC	s75W	27 April 2018
MOD 15	<ul style="list-style-type: none"> construct a carbon dioxide plant at the former Dairy Farmers complex to capture and treat waste gas to a food grade standard for sale to food and hospitality markets. 	IPC	s75W	7 Aug 2018
MOD 16	<ul style="list-style-type: none"> construction of new flour mill and gluten dryer, specialty products building, boiler and coal-fired cogeneration plant conversion of two gluten dryers to starch dryers. 	IPC	s4.55(2)	18 June 2019
MOD 17	<ul style="list-style-type: none"> extension of product dryer building and service conduit relocation of Starch Dryer no.5 baghouse and car parking use of alternative woodchip fuel source for boilers. 	IPC	s4.55(1A)	23 October 2020
MOD 18	<ul style="list-style-type: none"> production of hand sanitiser grade ethanol and hand sanitiser including the relocation of gas fired boiler and repurposing of de-fatting plant. 	IPC	s4.55(1A)	4 September 2020
MOD 19	<ul style="list-style-type: none"> production of an additional 100 ML of beverage grade ethanol per annum within existing 300 ML ethanol limit. installation of three new distillery columns in the Ethanol Distillery Plant and associated infrastructure, 12 new cooling tanks. relocation of site infrastructure. 	Department	s4.55(1A)	8 March 2021
MOD 20	<ul style="list-style-type: none"> installation of additional CO₂ storage vessels and associated plant to improve storage capacity of CO₂. 	Department	s4.55(1A)	26 October 2021

MOD 22	<ul style="list-style-type: none"> Stage 3 expansion to the Beverage Grade Ethanol Plant. Increased production capacity to 450 ML of Ethanol. New distillery columns and associated plant infrastructure. 	Department	s4.55(2)	SEARs Issued
MOD 23	<ul style="list-style-type: none"> Construction and operation of a gas-fired co-generation plant including two natural gas turbines with a total power output of 60 MW. 	Department	s4.55(2)	28 April 2022
MOD 24	<ul style="list-style-type: none"> Increase in building footprint of Gluten Dryer 8 (GD8). Increase in building height of GD8. Relocation of site infrastructure to accommodate changes to the GD8. 	Department	S4.55(1A)	15 February 2022

Shoalhaven Starches Gas Pipeline Project (10_0108 & 10_0144)

On 30 October 2021, the then Minister for Planning and Infrastructure approved the Shoalhaven Starches Gas Pipeline Project (10_0108) under the now repealed Section 75J of the EP&A Act and a concept approval (10_0144) under the now repealed Section 75O and 75P of the EP&A Act. The approval involved the construction of a 5.5 km long private gas pipeline to connect the Shoalhaven Starches facility directly to the Eastern Gas Pipeline (EGP).

On 26 April 2021 an order made by the Minister's delegate was published in the Gazette declaring 10_0108 to be a State significant infrastructure (SSI) approval and 10_0144 to be an approval for staged infrastructure application (SIA) under clause 5 of Schedule 2 of the EP&A (Savings, Transitional and Other Provisions) Regulation 2017 (EP&A (ST&OP) Regulation).

A request to modify these approvals to relocate the approved location of the associated Gas Pressure Reduction Station (GPRS) and to increase the diameter of the pipeline was approved by the Minister's delegate on 21 January 2022. A second modification application to 10_0108 is currently being assessed by the Department for the relocation of the low-pressure gas pipeline from the new location of the GPRS to the site.

Council Issued Consents

Separate to the SSEEP approval, the Applicant sought and has obtained development consents from Council for works associated with the factory. This has included:

- construction and operation of an interim packing plant at the factory (RA 11/1002)
- demolition of the dimethyl ether plant (DA 13/1713)
- construction of two additional grain silos for buffer storage (DA 14/2161).

Council also granted consent to the Applicant for road and site access upgrades, consistent with the SSEEP approval. These included:

- upgrades to site access points on Bolong Road, including the Dairy Farmers site access (DA 10/1843)
- widening the access point to the interim packing plant (DA 11/1855).

Two other Council-issued consents apply to land adjacent to the factory and owned by the Applicant. These include the Algae Demonstration Facility and the Meat Processing Plant, both located at the former Dairy Farmers site.

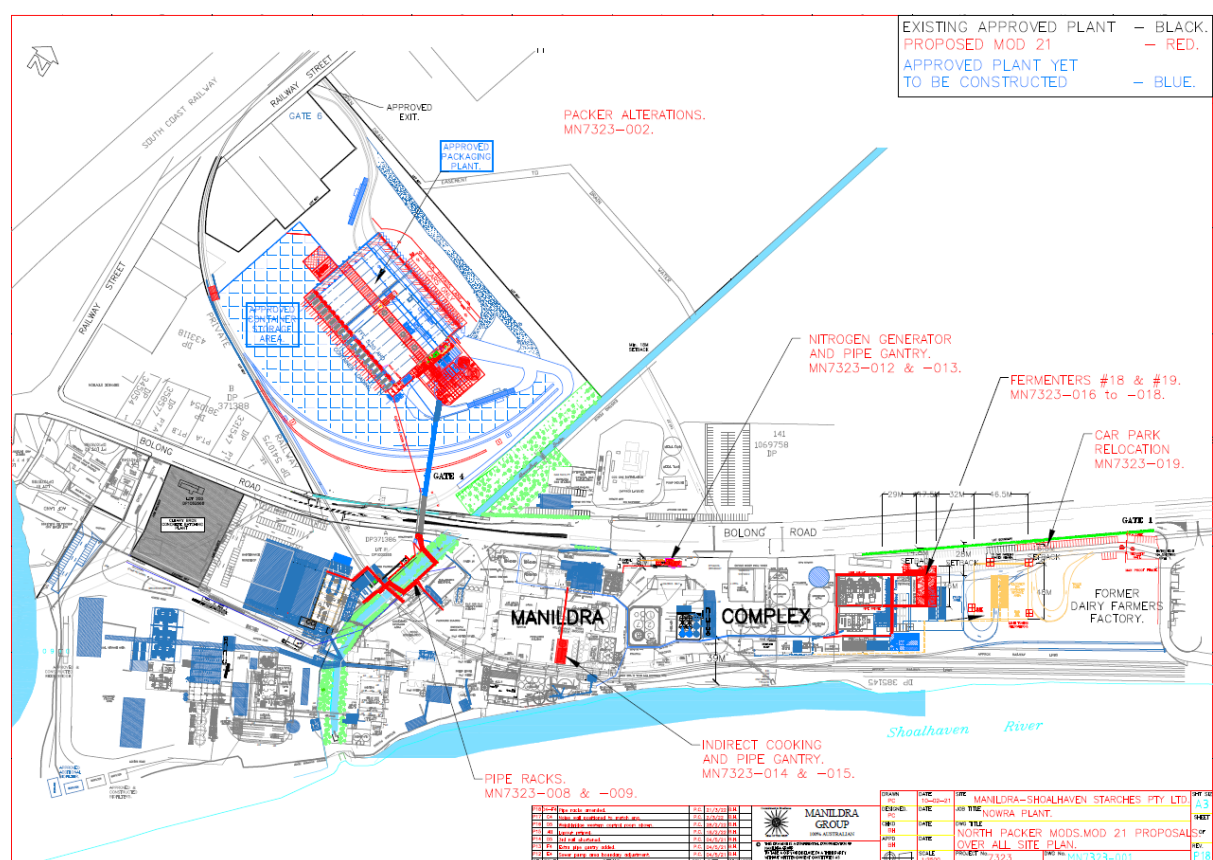
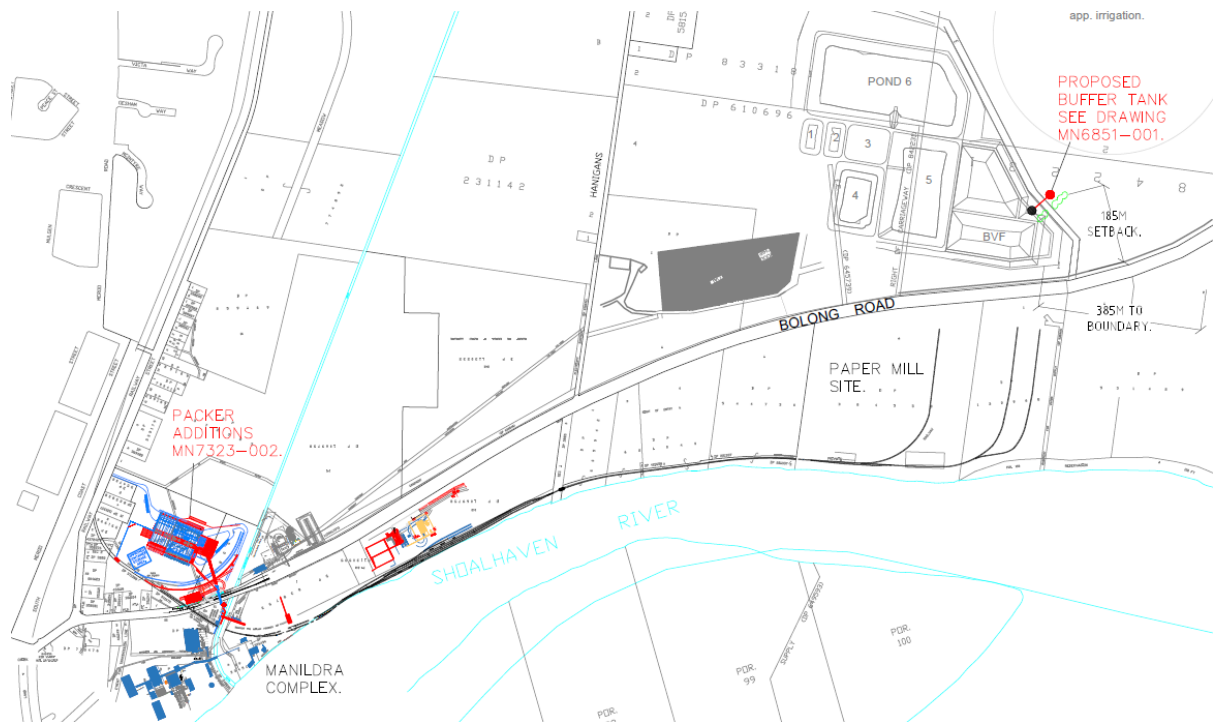
2 Proposed modification

2.1 Proposed Modification

The Applicant lodged a modification application under section 4.55(1A) of the EP&A Act to modify 06_0228. The modification is described in full in the Statement of Environmental Effects (SEE) included in **Appendix A**, is summarised in **Table 2** and illustrated in **Figures 3** to **Figure 11**.

Table 2 | Component of Modification

Modification Aspect	Description
Packing Plant Building	<ul style="list-style-type: none">• Install an additional sixteen (16) product storage silos to the seven (7) approved (but not yet constructed) product silos including relocation of the approved 7 silos• Install an additional eight (8) packer feed bins in conjunction with the original 12 approved (but not yet constructed) packer feed bins• Reconfigure Packing Plant footprint to accommodate the installation of the additional equipment and re-siting of equipment• Amend layout of Packing Plant building car park
Packing Plant Site	<ul style="list-style-type: none">• A third rail side to enable storage of additional rail wagons• Increase the height of the gantry containing the product transfer lines to provide additional clearance for the container reach stacker• Train tunnel where noise mitigation walls surround container storage area• Provide a loader maintenance and cleaning area within the container storage area
Environmental Farm	<ul style="list-style-type: none">• Install additional raw waste water tank within proximity of existing raw waste water tank
Factory Site	<ul style="list-style-type: none">• Install a Nitrogen Generator and Storage Tanks• Establish an additional Indirect Cooking Facility• Installation of an additional two (2) Fermentation Tanks• Relocation of the ISO container storage area and 50 approved car parking spaces



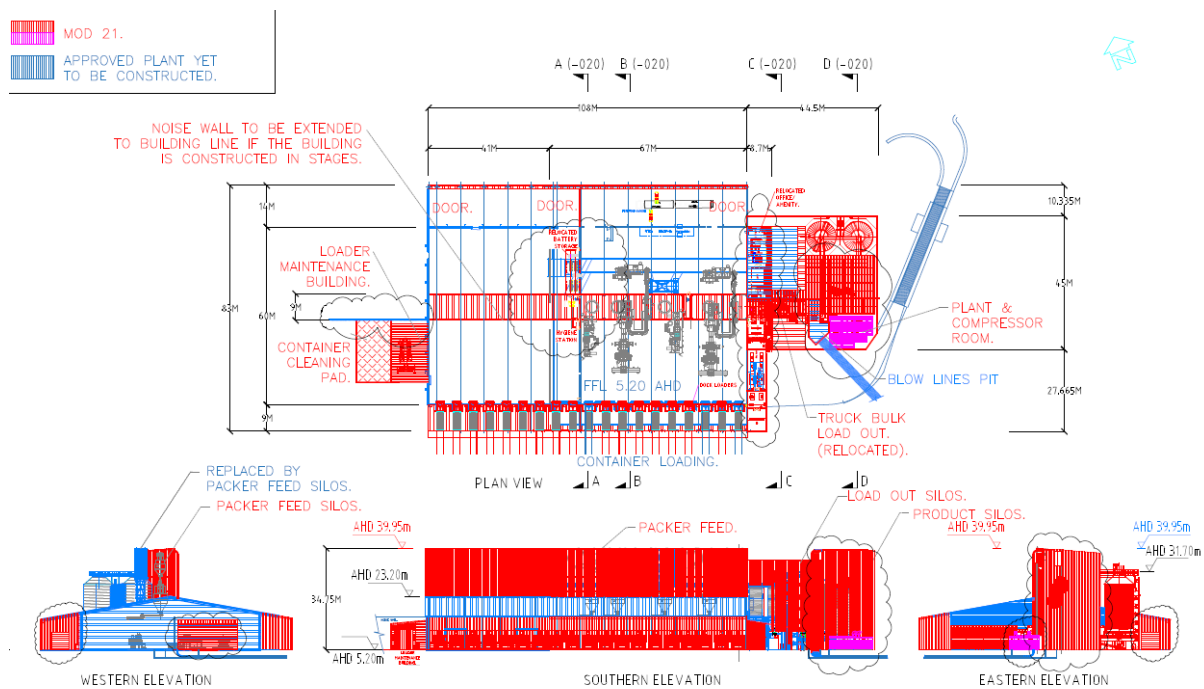


Figure 5 | Proposed Modifications to Packing Plant (shown in red)

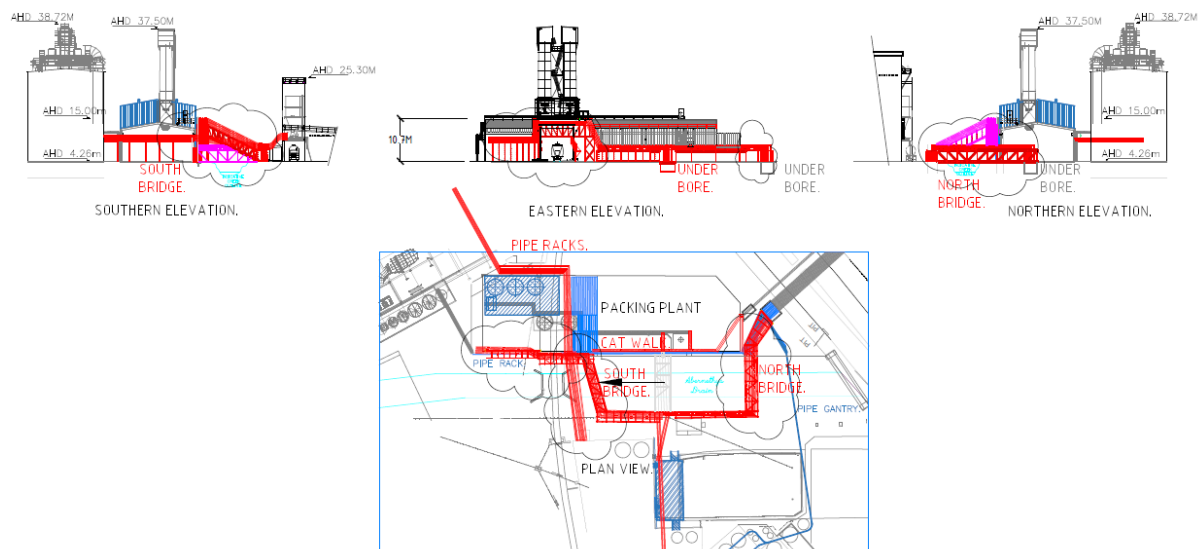


Figure 6 | Proposed Modifications to Pipe Racks (shown in red)

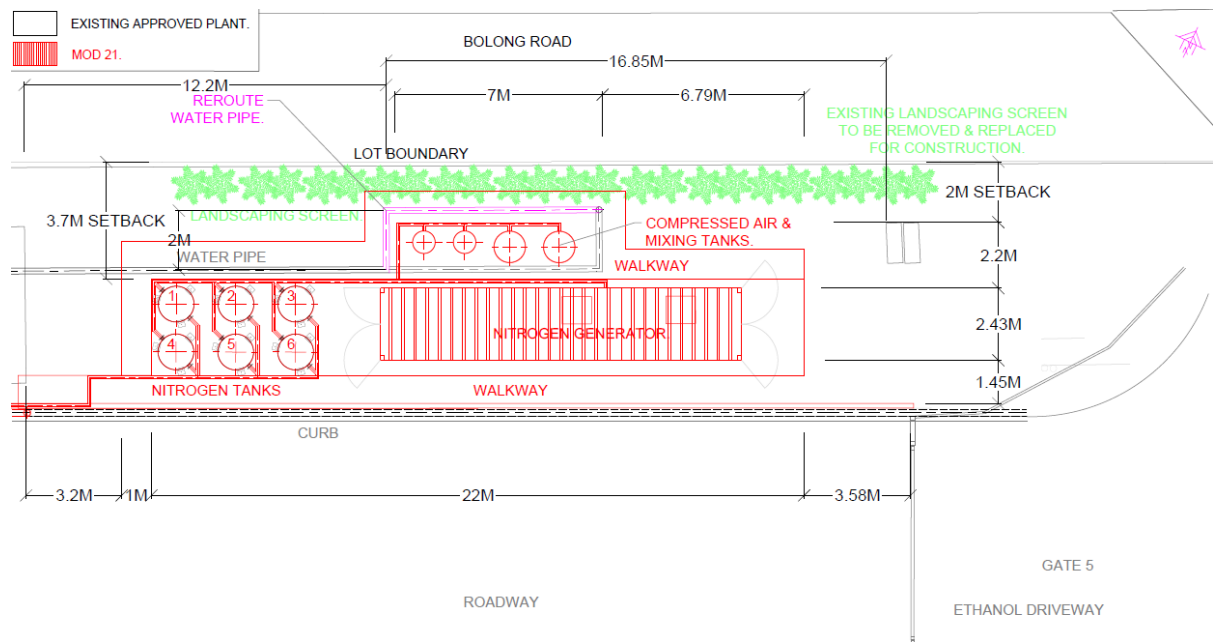


Figure 7 | Proposed Ethanol Nitrogen Generator (shown in red)

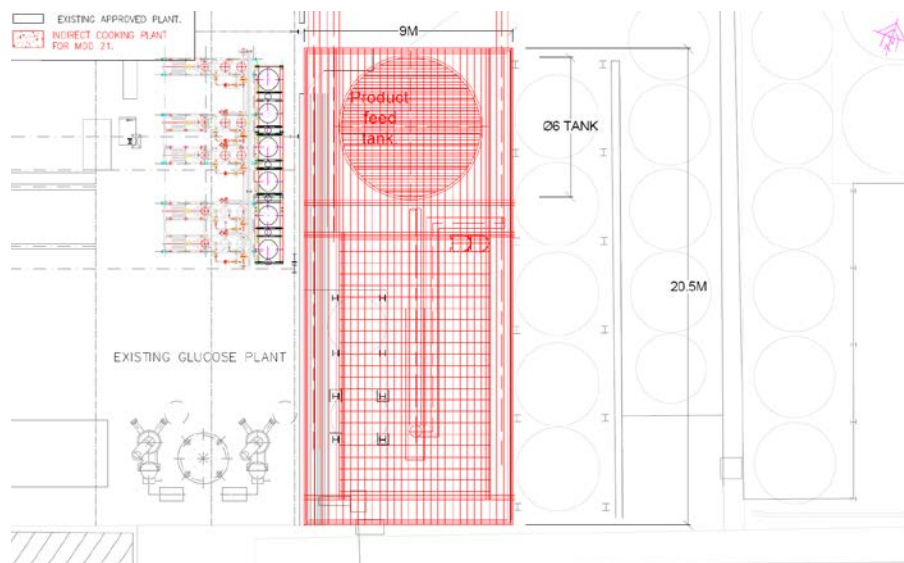


Figure 8 | Proposed Indirect Cooking Modifications

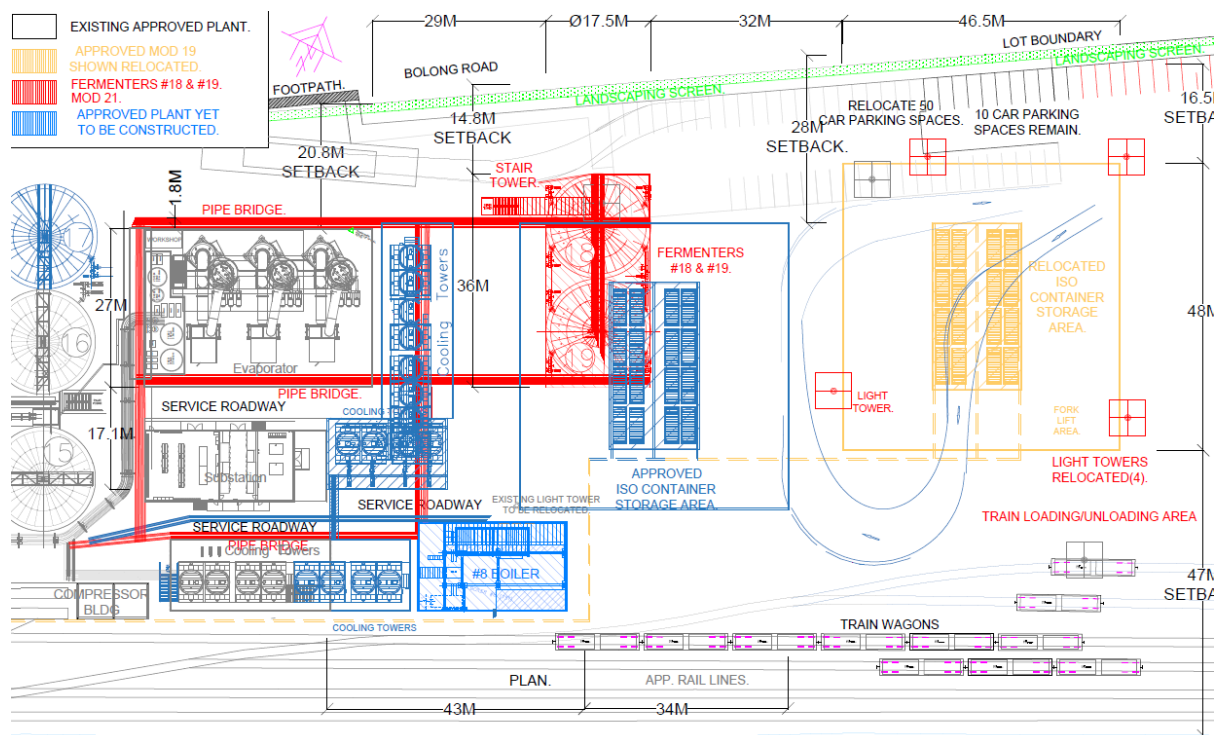


Figure 9 | Proposed Fermenters 18 & 19

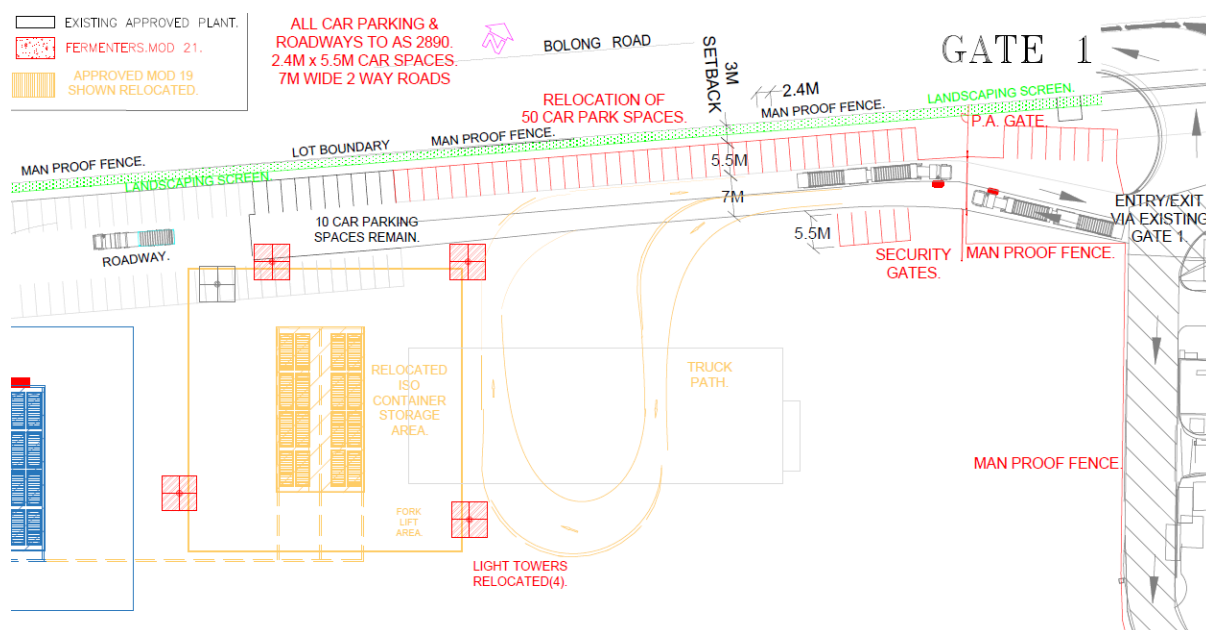


Figure 10 | Proposed Car Park Site Plan

2.2 Applicant's Justification for the Proposed Modification

The primary purpose of the modification application relates to proposed modifications to the approved Packing Plant associated with Mod 9. The Packing Plant was required by the Applicant to allow for a greater range of packaging options to accommodate the site's increase in dried product outputs. The Packing Plant allows for the storage of finished dried product such as DDG pellets in silos and subsequent packing via product feed bins for customer distribution. The Applicant has identified that

due to the increased range of production associated with Mod 16, the Packing Plant is required to be amended to provide additional storage and packing capacity to accommodate additional and different products. These amendments include an additional 16 storage silos for storage of a greater range of gluten and starch products, additional packer feed bins for improved flexibility and range of products to be packed and additional product transfer lines. The additions of the plant and equipment has required the expansion of the Packing Plant footprint and reconfiguration of the site layout.

The Applicant has also proposed a number of amendments to the Packing Plant site for improvements including additional rail wagon storage, additional maintenance and cleaning areas, and noise attenuation measures.

In addition to modifications to the Packing Plant, the Applicant has provided justification for other modifications to the site including an additional raw waste water tank, additional nitrogen generator and storage tanks, additional Indirect Cooking Facility, additional fermenters and the relocation of car parking and ISO container area.

An additional raw waste water tank has been proposed within the Environmental Farm adjacent the existing raw waste water tank and oxidisation pond to provide additional storage and will be used as a buffer tank in the event the existing tank is required to be serviced.

A Nitrogen Generator and Storage Tanks are proposed to be installed to supply existing and approved ethanol storage tanks with nitrogen to prevent in-tank fire risk.

The Applicant has identified an additional Indirect Cooking Facility is required for the conversion of starch into sugars for ethanol production to meet the production demand of different grades of ethanol approved under Mods 18 and 19.

Two additional Fermenters are proposed as a result of foaming in existing Fermenters which has consequently reduced the operational capacity of the Fermenters by half. 50 carparking spaces and the ISO container storage area will subsequently be required to be relocated to accommodate the addition of two Fermenters to the site.

The Applicant has affirmed the modification application does not include the increase or any changes to the existing production capacity and limits of the development. Additional plant, equipment and site infrastructure have been proposed to allow greater flexibility and efficiency of the operation of the broader site.

3 Statutory context

3.1 Scope of modifications

The Department has reviewed the scope of the modification application and considers the application can be characterised as a modification involving minimal environmental impacts as the proposal:

- would not significantly increase the environmental impacts of the development as approved
- the modification would not involve any works outside already approved development areas
- is substantially the same development as last modified under the former section 75W of the EP&A Act, and
- would not involve any further disturbance outside the already approved disturbance areas for the development.

Therefore, the Department is satisfied the proposed modification is within the scope of section 4.55(1A) of the EP&A Act and does not constitute a new development application. Accordingly, the Department considers that the application should be assessed and determined under section 4.55(1A) of the EP&A Act rather than requiring a new development application to be lodged.

3.2 Consent authority

The Minister for Planning (Minister) is the consent authority for the application under section 4.5(a) of the EP&A Act. Under the Minister's delegation of 9 March 2022, the Team Leader, Industry Assessments, may determine the application under delegation as:

- the application has not been made by a person who has disclosed a reportable political donation under section 10.4 of the EP&A Act
- there are no public submissions (other than a council) in the nature of objections, and
- Council has not made a submission by way of objection under the mandatory requirements for community participation listed under Schedule 1 of the EP&A Act.

3.3 Part 3A transition to State significant development

The SSEEP was originally approved under the now repealed Part 3A of the EP&A Act. The project was a transitional Part 3A project under Schedule 2 to the EP&A (Savings, Transitional and Other Provisions) Regulation 2017. On 7 September 2018 an order made by the Minister's delegate was published in the Gazette declaring the development that was a Part 3A project to be State significant development under clause 6 to Schedule 2 of the EP&A (Savings, Transitional and Other Provisions) Regulation 2017. As a result, the project approval is taken to be a State significant development consent under Part 4 of the EP&A Act and may be modified under section 4.55 of the EP&A Act.

3.4 Biodiversity Conservation Act 2016

The SSD application was lodged prior to the introduction of the BC Act (introduced 25 August 2017). The Biodiversity Conservation (Savings and Transitional) Regulation 2017 specifies that if the

determining authority is satisfied a modification will not increase the impact on biodiversity values, a biodiversity development assessment report (BDAR) is not required. The Department notes the proposed amendments are of a minor nature and do not impact areas previously not assessed. For this reason, the Department's assessment concludes a BDAR is not necessary for the proposed modification.

4 Engagement

4.1 Department's engagement

Clause 117(3B) of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) specifies that the notification requirements of the EP&A Regulation do not apply to section 4.55(1A) modifications for a State significant development. Accordingly, the application was not notified or advertised. However, it was made publicly available on the Department's website on 2 September 2021 and was referred to Shoalhaven City Council (Council), NSW Environment Protection Authority (EPA) and Fire and Rescue NSW (FRNSW) for comment.

4.2 Summary of submissions

The Department received advice from Council, EPA and FRNSW during the notification period. There were no submissions received from the general public or special interest groups. There were no objections to the modification.

Council reviewed the modification application and requested additional information be provided to confirm no additional stormwater works are required for the modification works. In addition, Council requested confirmation construction works would not encroach public roads.

EPA reviewed the modification application and raised concerns regarding the cumulative increase in odour concentrations and noise impacts as a result of modification applications to the original approval from 2009. The EPA requested the Applicant submit a revised Air Quality Impact Assessment (AQIA) to provide detailed analysis of odour monitoring results collected for the past 10 years of monitoring for all identified odour sources. In addition, predicted odour impacts were to be representative of the facility's operating hours and be evaluated against existing odour controls and complaints history.

EPA also requested the Noise Impact Assessment (NIA) be amended to expand on recommended noise controls, and provide additional information to justify the modification would not contain tonal characteristics at any receptor location.

FRNSW reviewed the modification application and advised the site's Fire Safety Study (FSS) must be updated to incorporate the modification works.

4.3 Response to submissions

Prior to the Applicant providing a Response to Submissions (RtS) report, the Applicant met with the Department and EPA on 4 November 2021 to discuss concerns with the site's air quality and noise performance. The outcome of the meeting was for the Applicant to provide a response to EPA outlining its commitments to undertaking a sitewide study of odour sources and odour emissions profiles prior to the lodgement of any future modification applications that may generate air quality or odour impacts. The Applicant also committed to undertaking a comprehensive noise model of the site including existing and not yet constructed noise sources.

On 8 November 2021 the Applicant provided a response to EPA's comments on air quality, outlining its commitment to undertaking a comprehensive air quality and odour impact study as a part of a separate

application. In addition, the Applicant provided a response to EPA's comments on 10 January 2022 on noise impacts including the submission of an amended Noise Impact Assessment (NIA).

The EPA reviewed the Applicant's response to its comments on air quality and advised it supported the proposed approach subject to the Applicant undertaking the approach on a date agreed upon by the EPA and prior to a further modification application that would result in any changes to the odour sources and/or emission profile. EPA also reviewed the Applicant's revised NIA and advised EPA's comments were not adequately addressed. The EPA requested the Applicant provide an assessment of low frequency noise in accordance with the EPA's Noise Policy for Industry.

The Applicant provided additional information on 22 February 2022 to address Council's comments regarding stormwater and construction works encroaching public roads. Council reviewed the additional information and advised that a revised Integrated Water Cycle Management Strategy (IWCMS) is required for the modification. In addition, Council requested further details on the design of the on-site detention (OSD) system.

On 15 March 2022, the Applicant provided additional details on the OSD system and a revised IWCMS to satisfy Council's comments. Council reviewed the additional information provided by the Applicant and provided recommended conditions of consent for final design of the IWCMS and OSD system.

5 Assessment

The Department has assessed the merits of the proposed modification. During this assessment, the Department has considered the:

- SEE and RtS (see **Appendix A**)
- application, supporting documents and assessment report for the original project and subsequent modifications
- advice from State government agencies and Council (**Appendix A**)
- relevant environmental planning instruments, policies and guidelines
- requirements of the EP&A Act, including the objects of the EP&A Act.

The Department considers the key issues for the modification are air quality and hazards and risk. **Table 3** provides the Department's assessment of other issues.

5.1 Air Quality and Odour

The modification application has the potential to elevate air quality and odour emissions above acceptable levels at nearby receivers as a result of additional air and odour emissions sources being incorporated into the site since the original approval for the SSEP. The Applicant has prepared an Air Quality Impact Assessment (AQIA) to address modifications to the site's pollutant inventory for emission sources and the predicted impacts on sensitive receivers.

The AQIA was amended on one occasion in response to advice and consultation with the EPA. The amended AQIA provided the following to address EPA's requirements:

- provided a revised emissions inventory for odour and combustion sources of the site. The AQIA undertook a comparative analysis of the emissions inventory against previous modifications to the site
- undertook 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 NSW* (EPA Approved Methods)
- CALPUFF dispersion modelling
- a comparison of predicted odour and air quality results against the EPA's assessment criteria.

The AQIA has identified the increase of the indirect cooking capacity to be the only change to the SSEP's odour emission inventory. The AQIA notes a floating roof is proposed to be fitted to the additional raw wastewater tank within the environmental farm to prevent odour emissions. The modification proposed to increase the indirect cooking capacity by 50% which is anticipated to increase odour emissions by 50% for glucose plant operations.

Four sensitive receivers (R1 – R4) of the SSEP have been identified for assessment and are located between 150 m to 1,300 m from the SSEP site (see **Figure 12**). In addition, seven industrial/commercial receivers (C1 – C7) were assessed by the Applicant.

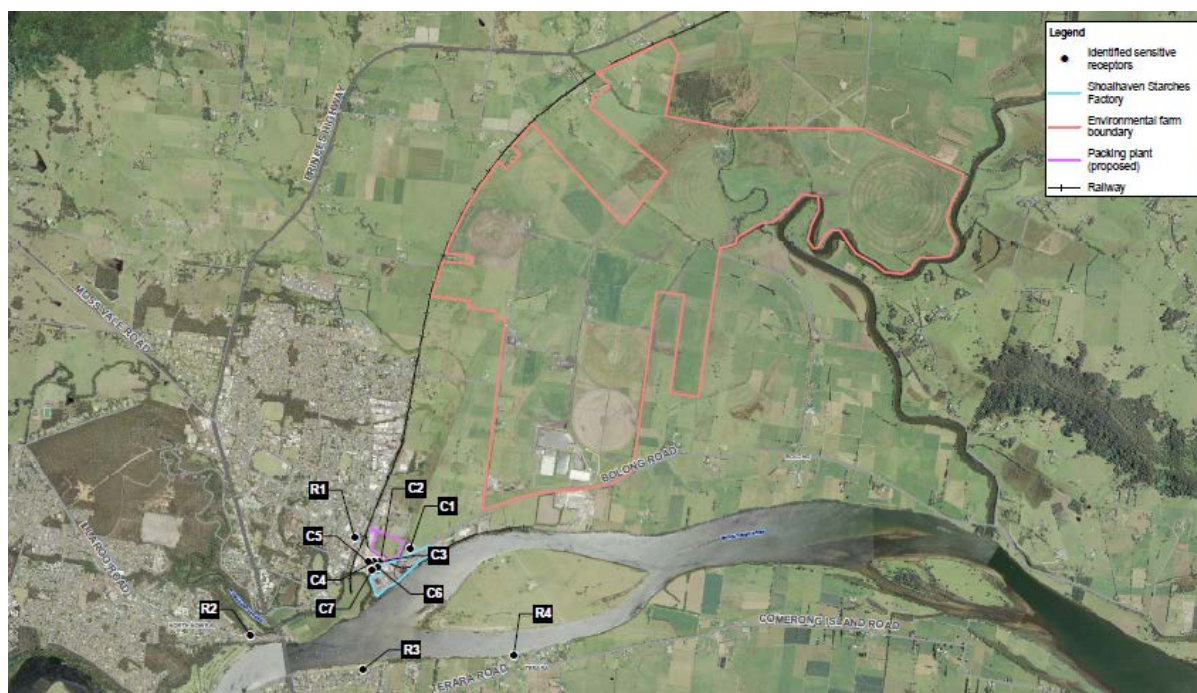


Figure 11 | Receiver Locations

Odour

The AQIA modelled the odour emissions based on odour emissions sampling conducted quarterly by the Applicant. The methodology modelled the highest recorded odour emissions sampling to demonstrate a worst-case scenario of odour impacts and the most recent odour emissions sampling to demonstrate there has been no increase since the previous assessment at the time (MOD 21). The AQIA noted the high emissions sampling quarter was attributed to natural variance in sampling methodology as there have been no significant changes to operations or trending increase over time. Particularly, the AQIA identified odour emissions from biofilters A and B had increased significantly compared to the Mod 19 assessment.

The modelling of the highest recorded quarter predicted the modification would represent a slight increase in odour at receivers R1 – R4 and C1, C4, C5 and C7. However, modelling of the most recent quarter predicted the modification would result in a slight decrease in odour at receivers C2, C3 and C6. The AQIA advised the Applicant will install additional approved biofilter capacity to reduce the odour concentrations of existing biofilters and improve the overall odour performance of the site.

Air Pollutants

Although no new pollutant or air quality emission sources are proposed as part of the modification application, the Applicant has undertaken an assessment to include the most recent sampling data to demonstrate updated predicted air quality impacts of the development. The AQIA assessed the cumulative impacts of particulate matter and products of combustion from gas fired boilers as coal fired boilers will be discontinued as a result of the Gas Fired Co-Generation Plant approved under MOD 23.

The results of the assessment showed full compliance with particulate matter against the 24 hour criteria at all sensitive receivers. However, the assessment predicted exceedances of PM₁₀ 24 hour criteria for three days and PM_{2.5} 24 hour criteria for four days over the period of a year at receiver C6. The AQIA

noted the exceedances are a result of high background concentrations of particulate matter provided in the sampling data.

The products of combustion assessed included nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), hydrogen fluoride (HF) and hydrogen chloride (HCL). The AQIA assessed the pollutants against a mitigation scenario in which gas is used as a fuel source for boilers. The AQIA demonstrated the development as a result of the modification would be compliant at all receiver locations for all pollutants assessed.

Department's Assessment

The EPA reviewed the AQIA and noted the modification does not propose changes to major emissions sources of the site that would contribute to elevated ground level concentrations offsite. In addition, the EPA acknowledged the capacity of biofilters have been increased to reduce odour emissions from the development.

The EPA therefore advised the modification is not likely to result in a significant increase in odour emissions subject to the Applicant ensuring the ongoing implementation of existing controls and mitigation measures and increase in the capacity of biofilters A and B to minimise odour emissions. The EPA provided no recommended conditions but noted additional requirements will be placed on the EPL for an on-site biofilter performance review to ensure the biofilters have the intended outcome of odour emissions reduction.

The Department reviewed the AQIA and the EPA's advice on the modification application. The Department noted the Applicant has committed to undertaking a site wide assessment including a review of historic sampling data and updated CALMET modelling on a date agreed upon with the EPA and prior to any further modifications to the site that may entail any changes to the site's odour sources and pollutant emissions profile.

The Department considers the additional odour impacts as a result of modifications to indirect cooking capacity to be minor and acknowledges there are no changes to any other odour sources of the site. Furthermore, the indirect cooker is not identified to be a major pollutant source contributing to offsite ground level concentrations. In addition, the Department notes the capacity of biofilters A and B will be increased to reduce the site's odour emissions.

The Department's assessment concludes the modification application will have a minor impact on air and odour quality of the locality and that appropriate measures have been imposed to further reduce site odour emissions where possible. Site wide issues relating to odour and offsite ground level concentrations of pollutants can be appropriately addressed by the Applicant as a separate matter, prior to any future modifications to odour and emissions sources.

The Department notes a requirement for on-site biofilter review will be imposed in the EPL for the site by the EPA. The Department is satisfied the existing conditions of consent are sufficient for managing the proposed modification and consequently does not recommend any further conditions of consent to be imposed.

5.2 Noise Impacts

The modification application presents potential noise impacts above the originally approved noise limits of the site specified in the EPL due to the extent of additions to the development over time. The Applicant has provided a Noise Impact Assessment (NIA) prepared by Hardwood Acoustics to assess the impacts of the modification on acoustic amenity. The NIA was revised on two occasions in response to advice provided by the EPA on the modification application.

As a result of the varying noise sources on the site, the final NIA has assessed individual noise sources against a noise goal of 15 dB below the noise limits specified in the EPL at four receiver locations. The NIA identified the noise sources of the modification application include the motors, fans, transfer pumps and compressors associated with additional plant and equipment. Noise modelling was undertaken as part of the NIA on measured noise levels of existing plant and equipment within the facility that is comparable to the proposed modification.

The noise modelling of the NIA demonstrated the identified noise sources of the modification would comply with the noise goals at all receiver locations. The NIA recommended noise controls for the modification works including building material specifications for the packing plant, enclosure mitigation of packing plant blowers and the noise attenuation of fermenter transfer pumps. In addition, the NIA recommended a third octave assessment be undertaken in accordance with the assessment methodology of the EPA's *Noise Policy for Industry 2017*.

The EPA reviewed the final NIA and advised the EPA's comments regarding the tonality assessment of low frequency noise had still not been adequately addressed by the Applicant. However, the EPA noted existing conditions of consent requiring noise design verification and the Applicant's commitment to develop a comprehensive noise model of the overall site. The EPA recommended the assessment of potential for annoying characteristics to be further assessed prior to construction, as committed to in the final NIA.

The Department reviewed the NIA and the EPA's advice on the modification application. The Department acknowledges the broader site is encountering issues regarding the accumulation of new noise sources for the facility and the potential for cumulative noise generation to impact on local acoustic amenity. However, the Department accepts the noise impacts of the proposed new noise sources from the modification works to be minor as the Applicant has sufficiently demonstrated compliance with the established noise goals at each identified sensitive receiver.

The Department supports the Applicant's commitment to undertake a comprehensive noise model of the entire facility in consultation with the EPA prior to any future modification application being lodged. The noise modelling is to include both existing noise sources and approved but not yet constructed noise sources.

The Department's assessment therefore concludes the modification works to ultimately have a minimal contribution to overall cumulative noise impacts of the broader facility. Furthermore, the Applicant's commitment to future comprehensive noise modelling will assist in identifying opportunities to improve the sites noise mitigation and management measures in the instance of any future modification works to the site.

The Department accepts the advice of the EPA that the existing conditions of consent pertaining to noise design verification are adequate for the managing noise impacts of the modification. In addition, the Department considers annoying characteristics can be appropriately managed through the design

verification stage required by existing conditions of consent. Therefore, the Department recommends updating existing conditions of consent to capture the proposed modification works with no further conditions of consent required to address noise.

5.3 Other issues

The Department's assessment of other issues is provided in **Table 3**.

Table 3 | Assessment of other issues

Findings	Recommendations
Visual Impacts	
<ul style="list-style-type: none"> The modification includes an increase in building height to part of the Packing Plant from 18 m to 34.75 m due to the installation of an additional packer feed silo housing and an additional two fermentation tanks with a height of 30 m each. The increase in building height has potential visual impacts on the Bolong Road street frontage and the surrounding locality. The SEE provided an assessment of visual impacts of the modification, considering the visibility of the modified structures from seven identified key vantage points. The assessment noted the proposed structures are consistent with the scale and height of the facility's existing structures. In addition, the assessment notes the additional height of the Packing Plant is attributed to the new packing feed silo housing on the roof of the facility with the bulk of the facility remaining relatively similar to the originally approved plant. Furthermore, the assessment identified the proposed additional feed bins would not exceed the tallest existing structure, being the boiler stack, in height. The assessment noted modified plant would be visible to passing motorists on Bolong Road and would be visible from the urban area of Bomaderry but is viewed as part of the prevailing scale of the facility. Views from North Nowra and Terara are more distant and partially screened by vegetation. The assessment concluded the modification would not have significant adverse visual impacts given the scale and character is consistent with existing structures. No concerns were raised by Council regarding the modifications impacts on visual amenity. The Department has considered the assessment provided by the Applicant and agrees the proposed modifications would blend with the existing industrial character of the site and as such, concludes the modification would have minimal visual impact. 	<ul style="list-style-type: none"> N/A

Flooding

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| <ul style="list-style-type: none">• The Applicant provided a flood compliance report prepared by WMA Water to assess potential impacts on flood levels, flows and velocities, given the site's location in an area of high hazard and floodway.• The report provided hydraulic modelling of the development which identified the modification works would present an increase in the 1% AEP flood level offsite of 0.05 m at the Bolong Road rail crossing.• Council reviewed the report and advised it had no objections to the modification as there will be no increase in flood level outside of the Shoalhaven Starches site.• Council provided recommended conditions of consent requiring a structural engineer's report to certify the structures are designed with flood compatible materials and certain components are above the 1% AEP flood level.• The Department notes existing conditions of consent require the Applicant to update the Flood Mitigation Management Plan subsequent to a modification application, which generally achieves the intent of the conditions recommended by Council.• The Department also recommends, however, modifying existing conditions to be updated to reflect recommendations of Council.• Subject to the recommended conditions, the Department's assessment concludes the modifications to the Shoalhaven Starches facility will not result in an increase in the 1% AEP flood level offsite. | <p>Require the Applicant to</p> <ul style="list-style-type: none">• update Flood Mitigation Management Plan in accordance with existing conditions.• provide a structural engineer's report for buildings and structures to certify relevant components are built above the 1% AEP, they are built from flood compatible materials and can withstand the forces of flood waters. |
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Riverbank Stability

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| <ul style="list-style-type: none">• The Applicant provided a geotechnical assessment prepared by GHD Pty Ltd to assess the impacts of the proposed modifications on the stability of the adjoining Abernethys Creek.• The assessment identified two areas of the Packing Plant site, Area 1 being the location of the proposed additional rail siding and Area 2 being the location of proposed modifications to pipe gantries each side of Bolong Road for stability analysis.• The assessment notes an 18 m wide riparian zone is located adjacent to the western bank of Abernethys Creek, requiring structures and earthworks associated with modifications to the packing plant to be 18 m from the western bank of Abernethys Creek.• The stability analysis considered both short term and long term loads on the site including trains, heavy vehicles, shipping containers and construction loads in conjunction with groundwater conditions. | <p>Require Applicant to implement recommended measures of the geotechnical assessment.</p> |
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- The assessment concluded development in Area 1 and Area 2 will not adversely affect the stability of the western bank of Abernethys Creek.
- The modification was referred to Council for comment. Council raised no concerns in its advice relating to riverbank stability.
- The Department has reviewed the geotechnical assessment and notes the modification works are considered to have an acceptable impact on safety in respect to the stability of Abernethys Creek for the construction and operation of a third rail siding.
- The Department acknowledges the geotechnical assessment has included recommendations for the construction including for the depth of fill batter; and for on-going operation such as loading control and ground surface management of the rail siding, Packing Plant and associated infrastructure.
- The Department recommends a condition of consent requiring the Applicant to engage with a suitably qualified geotechnical engineer to implement measures to protect riverbank stability.
- Therefore, the Department considers the modification to have a negligible impact on riverbank stability subject to the implementation of the recommendations of the geotechnical assessment.

Stormwater

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| <ul style="list-style-type: none"> • The modification application includes additional hardstand area not captured in the approved stormwater plan associated with MOD 16. The Applicant has subsequently prepared an integrated water cycle management strategy (IWCMS) including details on on-site detention (OSD) and water quality for this additional area. • The IWCMS was referred to Council for comment. Council reviewed the modification application and advised the IWCMS was required to be updated as the Applicant did not demonstrate the modification post development average annual load of pollutants would be reduced, which is required as a minimum under Council's DCP. Council also sought further details on the OSD system in relation to the location and management measures of swale devices. • The Applicant provided a response to Council including further OSD detail. The Applicant demonstrated the modification would not have a net increase in stormwater pollutant relative to the pre-developed conditions as the modification is anticipated to reduce total suspended solids (TSS) by 80%, nitrogen by 29.8% and phosphorus by 29.6% of the site's pollutant load. • Council raised no further issues and provided recommended conditions regarding final detailed design requirements of the IWCMS and OSD system. | <p>Require the Applicant to update existing Stormwater Management Plan to incorporate the proposed IWCMS and Council's final design requirements.</p> |
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- The Department reviewed the IWCMS and is satisfied the modification will not result in additional stormwater pollutants or water quality impacts.
- The Department considers the IWCMS appropriately accommodates stormwater flows of the proposed modifications.
- The Department notes existing conditions of consent require the Applicant to update the Stormwater Management Plan in consultation with Council and to the satisfaction of the Planning Secretary following any modification.
- The Department recommends inserting a new condition of consent requiring the Applicant to update the Stormwater Management Plan to incorporate the proposed IWCMS and the final design requirements recommended by Council.
- The Department's assessment concludes stormwater issues arising from the proposed modification can be suitably managed by the implementation of the IWCMS and OSD system and updated stormwater management plan.

Hazards

- The Applicant provided a Preliminary Hazard Analysis (PHA) prepared by Pinnacle Risk Pty Ltd to assess the associated risks of the proposed modifications on offsite land users. N/A
 - The PHA identified the potential hazards associated with the modification include the storage of starch and gluten as part of the modifications to the Packing Plant due to the potential for dust explosions.
 - In addition, the proposed installation of nitrogen generators and storage tanks have been identified to eliminate the explosion risk of the existing and approved but not yet constructed ethanol storage tanks.
 - The PHA assessed the extent of dust explosions based on storage overpressures. The PHA provided risk contours of silo overpressures of 7 kPa and 14 kPa for the Packing Plant, representative of 10% injury probability and structural damage to buildings respectively.
 - The PHA demonstrated the risk contours for 7 kPa and 14 kPa would be wholly contained within the site and subsequently representing no risk of off-site injury.
 - Therefore, the PHA stipulated the modifications would have a negligible impact on cumulative risk as potential hazardous events are considered local to the equipment. Furthermore, the risk of fatality is not considered to extend off-site.
 - The Department has reviewed the PHA and notes the PHA had been prepared in accordance with the Department's *Hazardous*
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Industry Planning Advisory Paper No. 6 'Hazard Analysis' (HIPAP 6).

- The PHA adequately demonstrated that overpressures from dust explosions and radiant heat levels will not extend offsite to residential areas.
- The Department notes that all modification works have been stated to be designed to include comprehensive safeguards and design requirements to ensure the minimisation of dust explosion impacts.
- Moreover, the Department also notes the additional nitrogen generators and tank storage will reduce fire risks associated with the existing and approved but not yet constructed ethanol storage tanks.
- The Department's assessment concludes the modification has satisfied the relevant risk criteria and would not present offsite risks subject to the implementation of safeguards and design measures.
- Furthermore, the Department considers the existing conditions of consent to be suitable for the modification and therefore, no further conditions are required to be imposed.

Car Parking

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| <ul style="list-style-type: none">• The Applicant has proposed to relocate 50 approved car parking spaces to accommodate the proposed additional fermenters.• The 50 car parking spaces are proposed to be relocated to adjoin the existing car parking area adjacent to Bolong Road in the south east of the site (see Figure 10).• Council did not raise issues regarding the proposed car parking relocation in its advice. Council provided recommended conditions requiring certified engineering design plans and specifications to be prepared by a suitably qualified engineer prior to the issue of a Construction Certificate (CC).• The Department has reviewed the proposed relocation of car parking and considers it will be appropriately sited as it will present as a continuation of existing car parking along the Bolong Road frontage and enables the retention of 50 car parking spaces.• The Department considers the relocation of approved car parking spaces to be acceptable subject to construction in accordance with the relevant design and construction standards.• The Department has adopted Council's recommended conditions requiring the preparation of certified engineering design plans and specifications compliant with the National Construction Code (NCC) and Council's requirements. | Update approved plans of the development to include revised car parking layout plan. |
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Operational Capacity

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| <ul style="list-style-type: none">• The modification application includes additions and amendments to site infrastructure utilised for ethanol production such as additional fermenters and Indirect Cooking Facility. | N/A |
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- The Applicant has stated in the SEE the proposed modifications do not involve or facilitate the increase in the site's existing production capacity and limits of consent including the production industrial grade flour, ethanol or hand sanitiser.
 - The SEE stipulated additional fermenters have been proposed to address existing operational issues regarding over-foaming which has prevented the Applicant from operating to the approved limits.
 - In addition, the proposed Indirect Cooking Facility capacity has been proposed to accommodate higher grade ethanol production approved as part of MOD 18 and MOD 19 as the Applicant has identified the site currently has insufficient capacity to meet their approved production limits.
 - The Department has reviewed the modification application in full and is satisfied the modification application does not pose any changes or increase to the approved operational production and capacity limits of the development.
 - The Department considers the modifications to the site have been proposed to improve the operational efficiency of the facility and allow the Applicant to ultimately operate the facility up to its approved capacity.
 - Therefore no modifications to the existing conditions pertaining to the limits of consent are required.
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6 Evaluation

The Department has reviewed the SEE and advice provided by EPA, Council and FRNSW, taking into consideration the relevant matters under section 4.15 of the EP&A Act and the objects of the EP&A Act.

The Applicant is proposing to modify the consent to permit alterations and additions to the approved Packing Plant to accommodate additional and greater variety of products. The Applicant also proposes the installation of a new rail siding, waste water buffer tank, an Ethanol Nitrogen Generator, an Indirect Cooking plant and two additional fermentation tanks.

The Department did not exhibit the modification, however sought advice from the EPA, Council and FRNSW. FRNSW raised no concerns with the proposed modification. Council raised concern regarding sufficient stormwater infrastructure and water quality however, the Applicant provided additional information to satisfy Council's concerns. The EPA, raised concern regarding the air quality and acoustic performance of the site. After consultation with the EPA during the assessment of the modification, the Applicant agreed to undertake sitewide studies to identify opportunities for performance improvement. The EPA subsequently confirmed the modification would have minimal impacts and was satisfied appropriate measure will be undertaken by the Applicant.

The Department's assessment considered air quality and noise impacts to be the key matters for consideration.

The Department's assessment concludes the modification is appropriate on the basis that it would:

- improve the operational efficiency and flexibility of the approved packing plant through accommodating a greater variety of product
- reduce fire risk of the ethanol storage tanks through the installation of a Nitrogen Generator
- improve capacity of the Indirect Cooking Facility to accommodate ethanol production
- improve operational efficiency and capacity of fermenters
- result in no significant increase in the environmental impacts of the development beyond those assessed under the original application

Consequently, the Department is satisfied that the modification application should be approved, subject to the recommended modifying instrument of consent.

7 Recommendation

It is recommended that the Team Leader, Industry Assessments, as delegate of the Minister for Planning:

- **considers** the findings and recommendations of this report
- **determines** that the application 06_0228-Mod-21 falls within the scope of section 4.55(1A) of the EP&A Act
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to approve the modification
- **modify** the consent 06_0228
- **signs** the attached approval of the modification (**Appendix B**).

Recommended by:



13 May 2022

Shaun Williams

Senior Environmental Assessment Officer
Industry Assessments

8 Determination

The recommendation is **Adopted** by:



16 May 2022

Joanna Bakopanos

Team Leader

Industry Assessments

as delegate of the Minister for Planning

Appendices

Appendix A – List of referenced documents

The Department has relied upon the following key documents during its assessment of the proposed development:

Modification Application

- Statement of Environmental Effects prepared by Cowman Stoddart Pty Ltd dated 11 August 2021 – <https://www.planningportal.nsw.gov.au/major-projects/projects/mod-21-modifications-packing-plant>
- Air Quality Assessment prepared by GHD Pty Ltd dated 22 November 2021
- Environmental Noise Impact Assessment prepared by Hardwood Acoustics Pty Ltd dated 15 February 2022
- Preliminary Hazard Analysis prepared by Pinnacle Risk Management Pty Ltd dated 30 May 2021
- Flood Compliance Report prepared by WMAwater Pty Ltd dated 1 June 2021
- Stormwater Concept Plans prepared by Allen Price & Scarratts Pty Ltd dated 8 March 2022

Submissions and Advice

- <https://www.planningportal.nsw.gov.au/major-projects/projects/mod-21-modifications-packing-plant>

Appendix B – Modification Instrument

The recommended modification instrument for MP06_0228-Mod-21 can be found on the Department's website at: <https://www.planningportal.nsw.gov.au/major-projects/projects/mod-21-modifications-packing-plant>