



Modification Report

PROPOSED MODIFICATION APPLICATION (MOD 31) TO MP06_0228
SHOALHAVEN STARCHES EXPANSION PROJECT

ETHANOL DISTILLERY HEAT RECOVERY PROJECT

Shoalhaven Starches
Bolong Road, Bomaderry

Prepared for
Shoalhaven Starches Pty Ltd
September 2025

Allen Price



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Modification Report

Project	Application to Modify Project Approval MP06_0228, Shoalhaven Starches Expansion Project (Modification Application No. 31 (Mod 31) Proposed Additional Starch Dryers, Associated Works and Ethanol Distillery Heat Recovery)
Address	Bolong Road, Bomaderry
Our ref	131353
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Draft	11/9/2025
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1.0 EXECUTIVE SUMMARY

Shoalhaven Starches is a member of the Manildra Group of companies. The Manildra Group is a wholly Australian owned business and the largest processor of wheat in Australia. It manufactures a wide range of wheat-based products for food and industrial markets both locally and internationally.

The Shoalhaven Starches factory located on Bolong Road, Bomaderry produces a range of products for the food, beverage, confectionary, paper and motor transport industries including starch, gluten, glucose and ethanol.

Project Approval MPO6_0228 was granted by the Minister for Planning on the 28 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. Following the Minister's determination Shoalhaven Starches have been implementing and commissioning works in accordance with this Project Approval.

Shoalhaven Starches now seek approval to modify their Project Approval for the Shoalhaven Starches Expansion Project to deploy a suite of heat recovery updates and enable infrastructure to capture and transform waste heat into useable energy to drive the ethanol, starch and gluten manufacturing processes.

This Modification Report has been prepared to address the above Modification Proposal.

The Shoalhaven Starches Expansion Project was a 'transitional Part 3A Project' for the purposes of Schedule 6A of the Environmental Planning & Assessment Act 1979 (EP & A Act). As of the 1 March 2018 the transitional arrangements for former Part 3A projects were discontinued. The discontinuation of the transitional arrangements for Part 3A projects and concept plans meant that modifications are assessed through the State Significant Development (SSD) pathway. As such this Modification Application is made pursuant to Section 4.55(2) of the EP & A Act.

This Modification Report is supported by the following expert consideration:

- Noise Assessment prepared by GHD. The Noise Assessment concludes that the proposed modification will have no contribution to the overall noise levels from the site, as predicted noise levels are below the design noise goals. Additionally, the proposed modification would reduce noise emitted from the distillery cooling tower array because of a reduction in required cooling capacity.



- Air Quality Assessment prepared by GHD. GHD conclude that the risk identified for all construction activities was low risk for dust soiling, and negligible risk for human health and ecological impacts and recommendations for dust management during construction have been provided.
- Geotechnical, Acid Sulfate Soils (ASS) and Contamination Assessment prepared by GHD that concludes the following:
 - The additional loads associated with the proposed modifications are not expected to affect the current stability of the eastern creek bank or north riverbank.
 - Based on investigation results, potential for contamination was identified in eight Areas of Environmental Concern (AECs) potentially impacting soil, surface water and groundwater. The occurrence of contamination (if present) is expected to be localised. The likelihood for contamination to exist within the identified AECs was assessed as very low to moderate-high, which is further discussed in the report. It is recommended that a Construction Environmental Management Plan (CEMP) be prepared to manage the potential contaminant exposure risks during construction activities, and manage potential unexpected finds (e.g. buried waste, demolition waste, asbestos, etc.) that could be encountered. Therefore, the CEMP should also include an Unexpected Finds Protocol (UFP) and site-specific Work Health Safety and Environment (WHSE) plan.
 - ASS may be encountered at variable depths within the proposed development areas where deep footing systems such as bored or CFA piles or trenching/excavations deeper than 1 m are required. Soft dark grey to black clays and loose grey sands were encountered at test locations within or in the vicinity of the development areas, particularly in the main plant area and adjacent to Abernethys Creek and north of the existing northern carpark, which are indicative of coastal ASS. It is recommended that an acid sulfate soil management plan (ASSMP) be developed and actioned where excavations associated with the proposed development will disturb ASS and/or require dewatering which could result in the lowering of the water table.
- A Flood Assessment prepared by WMAwater that concludes the proposed development is not expected to worsen flood conditions and mitigation measures have been identified. This assessment includes an assessment of the Modification proposal having regard to the relevant provision of Chapter G9 :Development on Flood Prone Land of the Shoalhaven Development Control Plan.

A Flora and Fauna Assessment prepared by Lodge Environmental concludes that the proposed development is unlikely to have a significant effect on any listed communities or species or their habitat in accordance with the Biodiversity Conservation Act 2016 and other relevant legislation provided the recommendations contained in this report are adhered to. There will not be an impact on any active and mapped areas of Biodiversity Value, nor will there be an impact on native vegetation above the relevant impact threshold.



- A Traffic Assessment prepared by ARC Traffic & Transport (ARC) that concludes:
 - All access to the new MOD 31 infrastructure will be provided via existing intersections that provide geometry appropriate to the maximum sized vehicles entering/departing these sites, and have previously been approved by the NHVR.
 - All internal access infrastructure has been designed to accommodate the movements of the largest vehicles travelling within the Shoalhaven Starches site where MOD 31 infrastructure is located.
 - The operation of the MOD 31 infrastructure is not anticipated to generate any additional vehicle trips above the currently approved trip generation of Shoalhaven Starches.
 - The new Northern Car Park driveways will be designed in full accordance with the relevant Austroads guidelines, and continue to provide for left in, left out movements only.
 - The construction of the MOD 31 infrastructure will generate up to 30 additional vehicle trips in a peak hour. This level of additional trips would have no impact on the operation of the local road network, even when considered as being additional to super-peak Base 2020 conditions.
 - Significant parking is provided across Shoalhaven Starches such that even if the MOD 31 construction staff parking demand were considered separately to a super-peak staff demand, these parking areas would still provide significant spare capacity. As such, the MOD 31 construction, or indeed general Shoalhaven Starches operations, will generate no on-street parking demand.
 - A Draft Construction Transport Management Plan (CTMP) has been prepared which indicates that the construction of the MOD 31 infrastructure can be undertaken safely and efficiently without impacting the local road network. The Draft CTMP will be finalised further to consideration of any future Conditions of Consent in a MOD 31 approval, and implemented prior to any construction work commencing.

In summary, the traffic assessment has concluded that MOD 31 is entirely supportable further to access, traffic and parking considerations.

- A Site Hazards Assessment prepared by Pinnacle Risk Management, which concludes that all risks associated with the proposed modification are acceptable, including societal, area cumulative and environmental risks.
- An Integrated Water Cycle Management Strategy prepared by Allen Price Pty Ltd, which concludes that the operational activity of the heat recovery facilities and overhead gantry is unlikely to generate stormwater pollutant export from the site and that the proposal is considered adequate from a stormwater management perspective.



2.0 INTRODUCTION

Project Approval MP06_0228 was granted by the Minister for Planning on the 28 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.

Following the Minister's determination, Shoalhaven Starches have been implementing and commissioning works in accordance with this approval.

As the Department are aware the Manildra Group of Companies acquired the former Australian Paper Mill (APM) site located at 340 Bolong Road and which is located further to the east of the Shoalhaven Starches factory operations. Indeed, on the 27 April 2018 the Minister for Planning approved the use of the former Paper Mill site in conjunction with the Shoalhaven Starches site under Mod 14 for the purposes of providing storage for the approved factory operations and to accommodate the storage of plant and materials used in the construction of various construction projects that take place at the factory site.

Shoalhaven Starches now seek approval to modify their Project Approval for the Shoalhaven Starches Expansion Project to:

Beverage grade ethanol distillery heat recovery:

- Undertake a suite of heat recovery upgrades enabling infrastructure that will deliver a transformative, immediate and ongoing reduction in Scope 1 emissions of 95,226t CO₂-e/pa (~25% based on 2023 emissions).
- Introduce mechanical vapour recompression technology stack and enabling infrastructure on to beverage-grade ethanol distillery.

Fuel grade ethanol reconfiguration and heat recovery:

- Reconfiguring and consolidating the distillation column for increased efficiency, including replacing aging infrastructure (heat exchanger).

The modification proposal will not result in any increases in production rates from the site, nor will it involve any changes in level of impacts arising from the approved development.

The Modification Application is made pursuant to Section 4.55(2) of the EP & A Act. This Modification Report has been prepared in support of the Modification Application in accordance with the *State Significant Development Guidelines- Preparing a Modification Report* and Environmental Assessment Requirements issued on 14 March 2025.

The Modification Application is supported by plans supplied by Shoalhaven Starches and architectural renders prepared by Edmiston Jones.

This Modification Application is supported by the following expert assessments:



- An Air Quality Assessment prepared by GHD Pty Ltd (Appendix A).
- A Site Hazard Analysis prepared by Pinnacle Risk Management (Appendix B).
- A Noise Impact Assessment by GHD Pty Ltd (Appendix C).
- A Flora and Fauna Assessment prepared by Lodge Environmental (Appendix D).
- A Flood Compliance Report prepared by WMAwater (Appendix E).
- A Traffic Impact Study prepared by ARC Traffic & Transport (ARC) (Appendix F).
- A Geotechnical, Contamination and Acid Sulphate Soils Assessment prepared by GHD (Appendix G).
- An Integrated Water Cycle Management Strategy prepared by Allen Price Pty Ltd (Appendix H).
- Modification Plans (Appendix I).
- Consent Conditions to be Modified (Appendix J)

It is considered that the components associated with this Modification Application will not have any significant adverse environmental impacts; and as a result of this Modification Application, the development to which Project Approval MP06_0228 as modified relates, will be substantially the same development as the development for which this consent was originally granted and before that consent as originally granted was modified.

3.0 SITE AND SURROUNDS

The Shoalhaven Starches factory complex is situated upon various allotments of land along Bolong Road, Bomaderry, within the Shoalhaven local government area.

The Shoalhaven Starches factory site is located on the southern side of Bolong Road on the northern bank of the Shoalhaven River with some operations located on the northern side of Bolong Road. The Shoalhaven Starches factory site (excluding the former Dairy Farmers and former Australian Paper Mill (APM) sites) has an area of approximately 12.5 hectares. The components of this Modification Proposal will be located within the factory site.

Manildra also acquired the former Dairy Farmers factory located a 220 Bolong Road (Lot 143 DP 1069758); as well as the former Australian Paper Mill located at 340 Bolong Road (Lot A DP 384559 and Lot 102 DP 1283484). This Modification Proposal primarily involves works to be carried out on the Shoalhaven Starches Factory site.

All the lands associated with this Modification Application are included in the Project Approval MP 06_0228 (as amended) (Mod 16).

Figure 1 is a site locality plan depicting the location of the lands associated with this Modification Application.

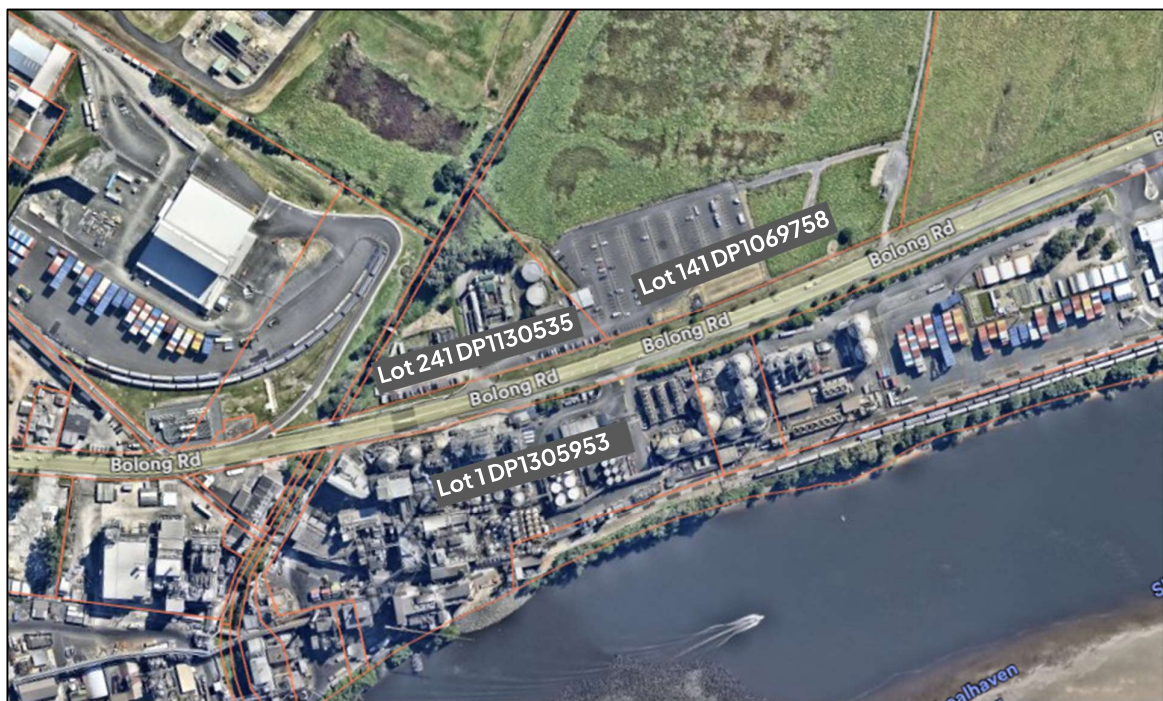


Figure 1 – Site Locality Plan (Source: Near Maps)

The lands associated with this Modification Proposal are primarily zoned E4 (General Industrial) zone under the provisions of Shoalhaven Local Environmental Plan 2014 (SLEP



2014). The land in which the relocation of 78 car parking spaces is zones RU2 (Rural Landscape).

The town of Bomaderry is located just over 1.5 km (approx.) to the west of the former Dairy farmers factory site, and the Nowra urban area is situated 3.0 km to the south-west of the site. The “Riverview Road” area of the Nowra Township is situated approximately 2.0 km to the south-east of the former APM site across the Shoalhaven River.

The village of Terara is situated approximately 1.2 kilometres to the south of the former Dairy Farmers site, across the Shoalhaven River. Burruga (Pig) Island is situated between the factory site and the village of Terara and is currently used for dairy cattle grazing.

There are a number of industrial land uses which have developed on the strip of land between Bolong Road and the Shoalhaven River. Industrial activities have included a metal fabrication factory, the Shoalhaven Starches site and the former Dairy Farmers factory and APM (now owned by the Manildra Group of Companies). The industrial area is serviced by a privately owned spur railway line that runs from just north of the Nowra-Bomaderry station to the Starches Site.

The state railway terminates at Bomaderry with a separate, privately owned spur line to the factory site and which extends up to the western boundary of the former APM site. The proposed conveyor and services gantry will be partly located within the land associated with this rail spur line.

Shoalhaven Starches also carry out irrigation of treated waste waters activities on its Environmental Farm located over 1000 hectares on the northern side of Bolong Road. This area is cleared grazing land and also contains a wastewater treatment plant, wet weather storage ponds and spray irrigation lines. The wet weather storage ponds on the farm form part of the irrigation management system for the factory. The Environmental Farm stretches over a broad area of the northern floodplain of the Shoalhaven River stretching from Bolong Road in the south towards Jaspers Brush in the north. Apart from the Environmental Farm this broad area is mainly used for grazing (dairy cattle). Both the Shoalhaven Starches factory and former Dairy Farmers sites have direct road frontage to Bolong Road to the north. The Shoalhaven River flows along the southern boundary of both sites.



4.0 BACKGROUND

4.1 PRODUCTION PROCESSES

The production process at the Shoalhaven Starches plant have evolved over a number of decades. Originally, the plant was primarily concerned with the production of starch and gluten from flour. However, the Company has pursued a number of technological innovations particularly with respect to reducing the environmental impacts of the Company's operations. As a result, Shoalhaven Starches has been moving towards a "closed" system of production. Essentially this entails the efficient use of end products to ensure wastage is reduced to a minimum.

The first step in the production process is the delivery of flour and grain, by rail, from the Company's flour mills at Manildra, Gunnedah and Narrandera. The trainloads are brought into the plant via the switching yard at Bomaderry.

The Company has previously received approval from the Minister for Planning for the erection of flour mills on site to enable the milling of part of the Company's flour requirements to be processed directly on the site. The remainder of the Company's flour requirements continue to be sourced from the Company's off-site flour mills.

Flour is transferred via storage to the "wet end" of the plant where fresh water is added. The subsequent mixing and separation process produces starch and gluten. The gluten is dried to enable it to be packaged and distributed as a high protein food additive for human consumption. This product is then taken from the site after packaging for both local and export markets.

The starch that is separated from the flour is either dried or remains in liquid form. The dried and liquid starch is sold to the paper and food industries. The starch is used for food, cardboard, paper and other industrial purposes. Liquid starch is used in the ethanol production process.

Starch is also used in the production of syrups on the site. The syrups plant products include glucose and brewer's syrup. These are used for foods, chocolates, confectionery, beer, soft drinks and fruit juice. The syrups plant products can also be used in the ethanol process.

The by-products from the starch, gluten and syrup production processes are combined to feed the fermentation and distillation stage of ethanol production. The outputs are fuel, industrial, beverage and hand sanitising grade alcohol. Industrial grade ethanol is used in producing pharmaceuticals, printer's ink and methylated spirits.

Ethanol production results in some liquid and solid by-products, which are processed through the stillage recovery process plant (which was approved as part of PRP No. 7 in 2005). The solids in the stillage are recovered as Dried Distillers Grains and Syrup (DDGS), dried and sold as a high protein cattle feed with the remaining water used for irrigation.



The wastewater resulting from the ethanol production is treated in the wastewater treatment plant located on the northern side of Bolong Road and is re-used in the Starch Plant and the surplus is irrigated onto Shoalhaven Starches Environmental Farm to the north of Bolong Road. This farmland is used for fodder crops, pasture and cattle grazing. Boilers are used to produce steam which is used for a multitude of purposes throughout the factory site wherever product is dried, evaporated or heated.

4.2 RECENT DEVELOPMENT AND APPROVAL HISTORY

4.2.1 PROJECT APPROVAL MP 06_0228

On the 28 of January 2009 the then Minister for Planning, issued Project Approval MP 06_0228 for the Shoalhaven Starches Expansion Project.

The primary objective of the Shoalhaven Starches Expansion Project was to increase the Company's ethanol production capacity to meet the expected increase in demand for ethanol primarily, arising from the then NSW Government's mandate to increase ethanol content by volume in petrol in NSW from 2% to 6% from October 2011, by upgrading the existing ethanol plant.

The approval, subject to certain conditions, enabled Shoalhaven Starches to increase ethanol production in a staged manner at its Bomaderry Plant from 126 million litres per year to 300 million litres per year.

To accomplish the increase in ethanol production, the Project Approval enabled Shoalhaven Starches to upgrade the plant and increase the proportion of raw materials, principally comprising flour and grain.

Following the Minister's determination, Shoalhaven Starches has been implementing and commissioning works in accordance with this approval.

As outlined in previous modifications, the expected increase in demand for ethanol to meet the demand arising from the NSW Government's mandate to increase the blending of ethanol in the total volume of petrol sold in NSW has, however, not occurred. This is due largely to a failure of the mandate to be imposed on petroleum suppliers. As a result, Shoalhaven Starches has been investigating alternative markets for products used in the manufacture of ethanol, and Shoalhaven Starches now proposes to undertake further modifications to the Shoalhaven Starches Expansion Project Approval (MP06_0228) as listed below. Allen Price Pty Ltd has prepared this Modification Report on behalf of Shoalhaven Starches Pty Ltd for the following modifications.

Under Mod 16 Shoalhaven Starches obtained approval to utilise grain, that was approved to directly feed the fermentation process in the ethanol production process, to instead increase the amount of flour that was produced on site (with the installation of an additional Flour Mill) to in effect increase starch and gluten production.

In addition, under Mod 16 Shoalhaven Starches obtained approval for the construction of a new industrial building adjoining the recently constructed Starch Dryer No. 5 building to the west of Abernethy's Creek. This new industrial building will contain:



- The construction of a Specialty Product Building within which a range of modified gluten products for the food industry; and modified starches for both paper manufacturing as well as food production.
- The resultant increase in starch and gluten production would require the conversion of two existing Gluten Dryers (Nos. 1 and 2) into starch production. Mod 16 therefore included the construction of a new Gluten Dryer (D8), to replace the capacity lost by the conversion of Dryers Nos. 1 and 2 to starch.

The footprint of the GD8 building was subsequently increased under Mod 17. The increase in the footprint of the GD8 building under Mod 17 provided for the reorientation of the dryer to provide operational efficiencies and to enable the installation of a Wet End Processing Plant within the building.

Shoalhaven Starches obtained modification approval for Mod 18 to enable the production of 120 ML per annum of hand sanitizer grade alcohol, out of the overall 300 ML per annum approved production limit imposed by Project Approval MP 06_0228. Mod 18 follows a request by the Federal Government's Department of Industry, Sciences and Energy to produce more hand sanitizer alcohol in response to the Coronavirus COVID 19 crisis. Mod 18 will not involve production increasing above the 300 ML per annum limit imposed by MP 06_0228.

In addition, Shoalhaven Starches obtained modification approval for Mod 19 that enabled a further increase in the proportion of 'beverage' grade ethanol that is able to be produced on the site. Mod 19 will enable increased flexibility in terms of the range of types of ethanol produced at the site (i.e.. between fuel, industrial, pharmaceutical and beverage grade ethanol) to meet market demands. Mod 19 will enable an increase in capacity of the plant to produce an additional 100 ML per year of beverage grade ethanol. Mod 19 will **not** however involve an increase in the overall ethanol production at the site above the current approved 300 ML per year.

In addition to the above, Shoalhaven Starch have also been investigating alternative starch and gluten products and most notably with the introduction of the Specialised Product Building under Mods 16 and 21.

In addition, a further critical component of the Small Scale Ethanol Production (SSEP) was the introduction of a Waste Water Treatment Plan (WWTP). that would treat the increased volume of wastewater 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 envisaged the treatment of in the order of 9.6 ML/d of wastewaters; with 7.1 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 wastewater as a source of food and energy. As a result, 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.

The SSEP approval also included approval to establish a new Packing Plant, container loading area and a rail spur line on the northern side of Bolong Road. These works are presently under construction. In 2019 the Independent Planning Commission approved Mod 16 which included the construction of a Specialty Product Facility and additional Gluten Dryer. The Specialty Products Building would enable the production of an increased range of specialised products as an extension to Shoalhaven Starches existing product line. The specialty products comprise a range of modified gluten products for the food industry; and modified starches for both paper manufacturing as well as food production. Shoalhaven Starches identified under the subsequent Mod 21 that as a result of the increase in the range of products that will be able to be produced arising from the works associated with Mod 16, amendments were required to the approved Packing Plant on the northern side of Bolong Road to accommodate these different products. This involved the provision of twenty (20) silos to accommodate the storage of an increased variety of finished products.

Under the recent Mod 25 , approval has been obtained to modify the SSEP approval to enable the extension of the rail line from its present terminus at the south-western boundary of the former Paper Mill site to a point to the north-eastern boundary of this site; as well as carrying out additions to product dryers 3 and 4 building involving installation of starch grinding bag houses. .

4.2.2 APPROVAL HISTORY FOLLOWING MP 06_0228 DA 10/1843 – UPGRADE VEHICLE ENTRANCE (FORMER DAIRY FARMERS FACTORY SITE)

Project Approval MP 06_0228 required vehicle access points to the Bomaderry site to be upgraded to the satisfaction of Council and the RMS. The subsequent upgrading works included the construction of a concrete median along the centre of Bolong Road to the east of Abernethy’s drain in such a manner that prevented vehicles travelling east along Bolong Road turning right into the central vehicle access point to the Shoalhaven Starches site and prevented vehicles turning right out from this access point and travelling east along Bolong Road.

These works also prevented vehicles turning right out from the BOC Carbon Dioxide Plant located opposite the Shoalhaven Starches site. Shoalhaven Starches therefore sought approval from Shoalhaven City Council to upgrade the former Dairy Farmers site vehicular access and relocate the access to enable vehicles to enter Access Point 2 from the east. These works would also allow vehicles wishing to travel west from BOC Carbon Dioxide



Plant to leave this site to first travel east; by allowing vehicles to travel to the former Dairy Farmers Factory Complex and using the upgraded access to turn around before travelling west along Bolong Road.

RA 11/1002 Interim Packing Plant

Following Project Approval MP 06_0228 Shoalhaven Starches also obtained a separate development approval to use an existing factory building located at 22 Bolong Road (Lot 21 DP 100265) as an Interim Packing Plant from Shoalhaven City Council (RA 11/1002 dated 26 October 2011). This Interim Packing Plant operates in conjunction with the Company's existing Packing Plant which is located within the existing factory site.

DA 11/1855 – Widening of Driveway

A further development application (DA 11/1855) was submitted to Shoalhaven City Council on the 4 August 2011 seeking approval to widen the driveways serving 22 Bolong Road Bomaderry (i.e. the site of the Interim Packing Plant) to accommodate semi-trailers. This development application was approved by Shoalhaven City Council on the 24 August 2011.

DA 13/1713 – Demolition of Dimethyl Ether Plant

On the 5 July 2013 Shoalhaven Starches submitted a development application to Shoalhaven City Council seeking the demolition of a Dimethyl Ether Plant on the site. This development application was approved by Shoalhaven City Council on the 15 July 2013.

DA 14/2161 – Additional Two (2) Grain Silos

On the 19 September 2014 Shoalhaven Starches submitted a development application to Shoalhaven City Council seeking development consent to erect two additional grain silos on the factory site within the vicinity of the existing Flour Mill, to provide security of raw material storage and supply when there are closures of the Illawarra rail line serving the Shoalhaven Starches site. Shoalhaven City Council approved this development application on the 27 April 2017.

DA 16/1827 – Demolition of Existing Air Compressor Shed

On the 7 July 2016 Shoalhaven Starches submitted a development application to Shoalhaven City Council seeking the demolition of an existing air compressor shed on the site. This development application was approved by Shoalhaven City Council on the 29 July 2016.

Other Approvals

There have been other approvals that have been issued by Shoalhaven City Council that are associated with the Shoalhaven Starches operations, but which do not directly relate to the operations of Shoalhaven Starches including:



- DA 11/1936 – Algae Demonstration Plant for evaluation of algae production and processing for alternative fuel and CO₂ sequestration. Proponent – Algae Tec Pty Ltd at 220 Bolong Road (former Dairy Farmers factory site).
- DA 14/1327 – Alterations to existing building (former Dairy Farmers Factory Building) and re-use as a meat processing plant. Proponent – Candal Investments Pty Ltd at 220 Bolong Road (former Dairy Farmers factory site).
- DA 15/1892 – Installation of Liquid Oxygen Vessel (6,000 L). Proponent – Argyle Prestige Meats Ltd at 220 Bolong Road (former Dairy Farmers factory site).

Modification Applications

Project Approval MP 06_0228 has also been the subject of the following modifications applications (Table 1).

Table 1 - Summary of Modification Applications for MP 06_0228

Modification	Summary of Modifications	Approval Date
Modification 1	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.	30/9/2011
Modification 2	Install additional infrastructure to improve operational and energy efficiency, including two additional fermenter tanks, an evaporator, beer column, heat exchangers, substation and compressors.	14/9/2012
Modification 3	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.	9/10/21012
Modification 4	Relocate the approved DDG pelletising plant within the factory site, increases its footprint and approved height, from 21m to 28m.	24/3/2014
Modification 5	Modify the design, footprint and odour controls on the DDG pelletising plant including a 49m air discharge stack and 8 storage silos.	16/9/2015
Modification 6	Demolish a disused industrial building "Moorehouse" purchased by the Applicant Construct a temporary car park on the northern side of Bolong Road.	25/11/2015



Modification 7	Relocate the approved Starch Dryer No. 5 to the former “Moorehouse” site, increase the footprint and construct a substation, pipework and pipe gantry.	18/12/2016
Modification 8	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.	1/3/2016
Modification 9	<p>Increase the size of the approved packing plant to increase the type and volume of packaged dried products.</p> <p>Construct a container storage and truck loading area with noise barriers.</p> <p>Extend and duplicate the approved rail spur line.</p> <p>Install product pipes under Bolong Road, a small bag packer at the DDG pellet plant and a new stormwater detention tank.</p>	8/3/2017
Modification 10	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.	18/4/2017
Modification 11	<p>Reducing the number of approved DDGS Dryers from six to four.</p> <p>A minor modification to the footprint of the four DDG dryers.</p> <p>Relocation of the cooling towers in the DDG Plant.</p> <p>A Mill Feed Silo and structure to feed DDG dryers.</p> <p>Expanded use of the existing coal and woodchip storage area within the SS Environmental farm.</p> <p>The addition of two biofilters to cope with the increased number of DDG Dryers.</p> <p>A forklift maintenance building adjacent to the relocated DDG dryers, along with a container preparation area adjacent to the relocated DDG Dryers.</p>	1/9/2017



Modification 12	Modifications to the existing Ethanol Distillery Plant to increase the proportion of “beverage” grade ethanol that is able to be produced on the site. This modification will enable increased flexibility in terms of the range of types of ethanol produced at the site (ie. between fuel, industrial and beverage grade ethanol) to meet market demands; and modify the type and location of the Water Balance Recovery Evaporator that has been previously approved under Mod 2 adjacent to the Ethanol Plant.	1/9/2017
Modification 13	Modification of boilers 2 and 4, with the conversion of boiler 4 from gas fired to coal fired. Installation of an additional baghouse on boiler 6.	18/1/2018
Modification 14	Modifications to the former Australian Paper Mill site, i.e. The site associated in part with this Modification Application. This Modification sought approval to use this site for: The use of existing buildings on the site for the storage of finished products, as well as engineering plant. The use of existing storage tanks for the storage of syrups. The use of external areas on the site to lay down plant and materials that are to be used in the construction of approved plant on the Shoalhaven Starches factory site as well as temporary and overflow shipping container storage. The use of existing administration buildings for office staff; and The use of existing workshops for maintenance purposes.	27/4/2018
Modification 15	Construction of the Supagas CO2 plant at the former Dairy Farmers factory site.	7/8/2018
Modification 16	Installation of a third flour mill C within the existing flour mill B building. Undertaking modifications to flour mills A and B. The construction of a new industrial building	18/6/2019



	<p>adjoining the Starch Dryer No. 5 building containing:</p> <p>The new product dryer;</p> <p>Plant and equipment associated with the processing of specialised speciality products.</p> <p>Addition to Starch Dryer No. 5 building to house a baghouse for this dryer</p> <p>Conversion of two existing gluten dryers (1 and 2) to starch dryers.</p> <p>Additional sifter for the interim packing plant.</p> <p>Construction of a coal-fired co-generation plant to the south of the existing boiler house complex. The co-generation plant will house a new boiler (no. 8).</p> <p>Construction of lime silos: The lime injection system will consist of two storage silos and associated equipment for injecting powdered lime into each of the coal fired boilers.</p> <p>Relocation of the existing boiler no. 7 to the northern side of the overall boiler house complex.</p> <p>Construction of an indoor electrical substation on the northern side of Bolong Road.</p> <p>Construction of an additional rail intake pit for the unloading of rail wagons.</p> <p>Extension of the existing electrical substation located within the main factory area.</p> <p>An additional coal fired co-generation plant was also approved under Mod 16. This coal fired co-generation plant was to be sited immediately to the south of the existing boiler house complex situated to the east of Abernethy's Creek. This coal fired co-generation plant would generate a total of 15 MW of power for the site. It is proposed that this coal fired co-generation plant will be in part replaced by the proposed gas fired co-generation plant as part of this Modification Application.</p>	
Modification 17	<p>Relocation of Baghouse for Starch Dryer No. 5.</p> <p>Installation of Service Lift adjacent to Starch Dryer No. 5.</p>	23/10/2020



	<p>Elevating Service Conduit extending from factory site on southern side of Bolong Road to approved packing plant on northern side of Bolong Road above ground.</p> <p>Use of woodchips as fuel source in Boilers 2 and 4.</p> <p>Modification to condition 14J(e) – Amendment to design specification for silencers to exhaust fans for Flour Mill B.</p> <p>The increase in the building footprint of Product Dryer Building (PDB).</p> <p>The increase in the building footprint of the Specialty Products Building (SPB) which adjoins the PDB building.</p> <p>The provision of additional bulk chemical storage to the south of the PDB and SPB buildings.</p> <p>Demolition of part of the existing Maintenance Office and Stores to facilitate the extension of the PDB and SPB buildings to the west.</p> <p>Repurposing the remaining part of the Maintenance building to provide staff amenities and Plant Operation Control Rooms.</p> <p>To facilitate internal truck movements associated with the amendments to the SPB, existing car parking (48 spaces) currently located to the north and west of the Maintenance Building will be relocated to an existing approved car parking located on the north side of Bolong Road.</p> <p>Extend the sifter room situated on top of the interim packing plant.</p> <p>Install a Product Dryer (No. 9) within the footprint of the SPB as approved under Mod 16.</p>	
Modification 18	Relocation of Approved Gas Fired Boiler and other Associated Works to Facilitate Production of 'Hand Sanitiser' Alcohol in response to COVID19 Crisis.	4/9/2020
Modification 19	Expansion of the ethanol distillery plant including new distillery columns, three ethanol storage tanks and cooling towers to facilitate the production of 100 mega litres (ML) of	8/320/21



	beverage grade ethanol within the approved limits and additional site infrastructure.	
Modification 20	Alterations to Existing CO2 Plant (Supagas)	26/10/2021
Modification 21	Modification to Packing Plant including the reconfiguration of existing silo storage into 16 small storage silos, additional rail spur and associated train tunnel, and ancillary additions; installation of a raw wastewater tank; nitrogen generator and storage tanks; an Indirect Cooking Facility; and relocation of car parking.	16/5/2022
Modification 23	Modification to construct and operate a 60 megawatt gas fired co-generation plant to replace two approved, but not constructed, co-generation plants.	28/4/2022
Modification 24	Modification to the approved Gluten Dryer No. 8 (GD8) Building including the increase in building footprint, increase in building height, re-siting of the GD8 building and the relocation of site infrastructure to accommodate changes to the GD8 building.	15/2/2022
Modification 25	Rail line extension and additions to product dryers 3 & 4 building involving installation of starch grinding bag houses.	5/6/2025
Modification 27	Modification to approved RWW Buffer Tank	5/10/2022
Modification 28	Proposed Temporary Emergency Grain Storage	20/6/2023
Modification 29	Additional MVR evaporator and relocation of approved cooling towers; additional stillage evaporators and associated equipment; re-configuration of the approved biofilter's; substations and switchroom.	19/12/2024



5.0 CONSULTATION AND STAKEHOLDER ENGAGEMENT

Consultation with relevant government agencies and community stakeholder engagement has been undertaken in relation to this proposed modification. To ensure clarity this section of the Modification Report addresses the outcome of the most recent consultation with government agencies as they relate to this current Modification Proposal.

5.1 CONSULTATION WITH RELEVANT AUTHORITIES

Prior to the preparation of this Modification Report for this Modification Proposal consultation was undertaken with the following Federal, state and local government agencies:

- Australian Department of Defence
- Department of Planning, Housing and Infrastructure (DPHI)
- NSW EPA
- NSW Fire & Rescue
- Transport for NSW (TfNSW)
- Shoalhaven City Council (SCC)

At the time of preparing this Modification Report responses have been received from:

- Australian Department of Defence
- DPHI
- NSW EPA
- Shoalhaven City Council.

Copies of the above government agency responses are included with this Modification Application documentation.

Table 2 is a summary of the issues raised by government agencies to this proposal at the time of preparing this report, and our responses as to how the issues have been addressed in this Modification Report.



Table 2 – Summary of Issues Raised by Government Agencies

GOVERNMENT AGENCY	COMMENTS
<p>Australian Department of Defence Requested that HMAS Albatross be notified at commencement of construction and completion of construction, not ensure that it is a known hazard from the outset.</p>	<p>Noted. HMAS Albatross will be notified at the commencement of construction and completion of construction through the nominated email address provided by the Australian Department of Defence.</p>
<p>DPHI</p> <p>Key Areas:</p> <p><u>Detailed Description of the Modification:</u></p> <ul style="list-style-type: none"> • Any staging of the modification; • A description of how the modification integrates with existing, approved and proposed construction works and operations of the site; • Detailed plans of all proposed building works; • Identification of conditions proposed to be modified; <p><u>Statutory and Site Suitability:</u></p> <ul style="list-style-type: none"> • Demonstration the application constitutes a modification under section 4.55 of the EP&A Act; • Detailed justification the site can accommodate the proposed modification having regard to its potential environmental impacts, existing site constraints/ operations, cumulative impacts from existing and as-yet built on-site operations and relevant mitigation measures; 	<p>No staging is proposed as part of this modification.</p> <p>Refer to Section 6.1.</p> <p>Refer to Appendix I for proposed building plans.</p> <p>Refer to Appendix J for conditions to be modified.</p> <p>Refer to Section 7 of this report.</p> <p>Refer to Section 8.1.</p>



GOVERNMENT AGENCY	COMMENTS
<ul style="list-style-type: none">• Details on the processes and procedures to be implemented prior, during and post-construction to effectively manage change at the site, in consultation with SafeWorkNSW and to manage ongoing environmental performance on site; <p><u>Community and Stakeholder Engagement:</u></p> <ul style="list-style-type: none">• A community and stakeholder participation strategy consistent with the Department's Undertaking Engagement Guidelines for State Significant Projects for all stages of the development, including:<ul style="list-style-type: none">- Details of how issues raised, and feedback provided during engagement activities have been considered and responded to in the development;- Details of the proposed approach to future community and stakeholder engagement based on the results of consultation;- Clear evidence of how each stakeholder identified in the community and stakeholder participation strategy has been consulted;	<p>These matters will be addressed through the post-approval phase, consistent with existing obligations under Development Consent 06_0228 (as modified). Specifically:</p> <p>Schedule 2, Condition 8 (Structural Adequacy), and</p> <p>Schedule 3, Condition 36 (a)-(c) (Pre-construction Hazard Studies)</p> <p>These existing conditions ensure that site design and incident management measures are comprehensively considered during the construction certification phase, which is the appropriate point for such detailed technical assessments.</p> <p>Refer to Sections 5.1 and 5.2</p>



GOVERNMENT AGENCY	COMMENTS
<p><u>Air Quality and Odour:</u></p> <ul style="list-style-type: none">• A detailed emissions inventory that characterises the emissions from existing and proposed operations, including approved but not yet constructed components of the development used to inform the quantitative assessment; • A quantitative assessment of the potential air quality, dust and odour impacts of the development in accordance with relevant Environment Protection Authority guidelines, with an assessment that models various emission scenarios, including but not limited to:<ul style="list-style-type: none">- The cumulative impacts of the development and all current operations of the site;- The cumulative impacts of the development including all current operations and all approved but not yet constructed components of the site;• The details of buildings and air handling systems and strong justification for any material handling, processing or stockpiling external to buildings;• Details of proposed mitigation, management and monitoring measures; <p><u>Noise and Vibration:</u></p> <ul style="list-style-type: none">• A quantitative noise and vibration impact assessment undertaken by a suitably qualified acoustic consultant in accordance with the relevant Environment Protection Authority guidelines and Australian Standards which includes:<ul style="list-style-type: none">- Identification of all noise sources or potential sources from the development;- Identification of impacts associated with site emission and traffic	<p>Refer to Section 8.2 and Sections 6.2 and 7.2 of the accompanying Air Quality Impact Assessment (Appendix A). Identification of potential individual odour sources was informed by previous air quality assessments (including the 2007 odour audit) and a site inspection undertaken as part of Odour PRS stage 1 works. The MOD31 emissions inventory included the key odour sources only. Refer to Sections 6.1 and 7.1 of the accompanying Air Quality Impact Assessment (Appendix A).</p> <p>Refer to Sections 6.2 and 7.2 of the accompanying Air Quality Impact Assessment (Appendix A).</p> <p>Refer to Section 7.1 of the accompanying Air Quality Impact Assessment (Appendix A).</p> <p>Refer to Section 6.3 of the accompanying Air Quality Impact Assessment (Appendix A).</p> <p>Refer to Section 8.2 and Section 6.1 of the accompanying Noise Impact Assessment (Appendix C), which provides a description off noise sources associated with the components of the proposed modification.</p> <p>Refer to Section 5 of the accompanying Noise Impact Assessment (Appendix C), which describes the impacts during construction of the proposed modification. Section 5.4 provides a qualitative assessment</p>



GOVERNMENT AGENCY	COMMENTS
<p>generation at noise affected sensitive receivers;</p> <ul style="list-style-type: none">- Details of noise monitoring survey, background noise levels and noise emission levels of proposed activities;- Consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area;- The cumulative impacts of the development and all current operations of the site;- The cumulative impacts of the development including all current operations and all approved but not yet constructed components of the site;- Details and analysis of the effectiveness of proposed management and mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration following application of mitigation these measures and details of any proposed compliance monitoring programs; <p>Soils and Water:</p> <ul style="list-style-type: none">• An assessment of potential surface and groundwater impacts associated with the modification, including potential impacts on watercourses, riparian areas, groundwater, and groundwater-dependent communities nearby;• A detailed site water balance including a description of the water demands and breakdown of water supplies, and any water licensing requirements;• Details of stormwater and wastewater management systems and how they integrate with existing operations including measures to treat, reuse or dispose of water;• A description of the measures to minimise water use;• A detailed flooding assessment the demonstrates the development's impact on flood behaviour and neighbouring development or properties• A description of the proposed erosion and sediment controls during construction;	<p>of road traffic noise because of traffic generation during the construction of the proposed modification and Section 6 describes the impacts during operation of the proposed modification.</p> <p>Refer to Section 8.2 and Appendix E which contains the Flood Impact Assessment and Appendix G which contains the Geotechnical, Contamination and Acid Sulfate Soil Assessment.</p>



GOVERNMENT AGENCY	COMMENTS
<ul style="list-style-type: none">• Characterisation of the nature and extent of any contamination on the site and surrounding area;• An acid sulfate soil assessment to assess the potential for acid sulfate soils to be present in areas of proposed works and the anticipated depth of disturbance of modification works; <p>Traffic and Transport:</p> <ul style="list-style-type: none">• Details of all traffic types and volumes likely to be generated during construction and operation, including a description of key access / haul routes;• An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model and that considers the following scenarios:<ul style="list-style-type: none">- The cumulative impacts of the development and all current operations of the site;- The cumulative impacts of the development including all current operations and all approved but not yet constructed components of the site;• Plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network;• Details and plans of any proposed internal road networks and on-site parking provisions, in accordance with the relevant Australian Standards;• Details of the largest vehicle anticipated to access and move within the site, including swept path analysis depicting vehicles entering, exiting and manoeuvring throughout the site;• Details of road upgrades, infrastructure works or new roads or access points required for the modification, if necessary;	<p>Refer to Section 8.2 and the Traffic Impact Assessment (Appendix F) which has been prepared in accordance with the Transport for NSW Guide to Transport Impact Assessment and Austroads Guidelines.</p> <p>An assessment of existing and future base traffic conditions – which considers other Shoalhaven Starches approvals and Modification proposals – has been completed, so that any cumulative impacts arising from the additional trip generation of MOD 31 can be determined. It is noted that once operational, the trip generation of the MOD 31 infrastructure will be limited to occasional maintenance and service vehicle trips, and as such the traffic analysis in the assessment focuses on the potential traffic impacts during the construction of the MOD 31 infrastructure.</p> <p>Significant space is available within each of the MOD 31 infrastructure sites such that all loading/unloading, materials handling and stockpiling can be entirely contained within these sites at all times, and all vehicles would enter from and depart to Bolong Road in a forward direction.</p> <p>Significant upgrades have been completed in Bolong Road further to past SSEP Approval Modifications. In addition, the capacity of the Princes Highway & Bolong Road intersection, as well as adjacent intersections and the Nowra Bridge, have been increased further to the</p>



GOVERNMENT AGENCY	COMMENTS
<p>Fire and Incident Management:</p> <ul style="list-style-type: none">• Technical information on the environmental protection equipment to be installed on the site such as air, water and noise controls, spill clean-up equipment and fire (including location of fire hydrants and water flow rates at the hydrant) management and containment measures• Detailed information relating to the proposed structures addressing relevant levels of compliance with Volume One of the National Construction Code (NCC);	<p>completion of the recent Nowra Bridge Upgrade by TfNSW. It is again noted that once operational, the trip generation of the MOD 31 infrastructure will be limited to occasional maintenance and service vehicle trips, and as such the traffic analysis in the TA focuses on the potential traffic impacts during the construction of the MOD 31 infrastructure. These construction trips will be temporary, and have no impact on the operation of key intersections such would warrant/require any broader road network upgrades.</p> <p>The applicant sought confirmation that these matters be excluded from the scope of the Modification Report and instead be addressed through the post-approval phase, consistent with existing obligations under Development Consent 06_0228 (as modified). Specifically:</p> <p>Schedule 2, Condition 8 (Structural Adequacy), and</p> <p>Schedule 3, Condition 36 (a)–(c) (Pre-construction Hazard Studies)</p> <p>These existing conditions ensure that fire safety design and incident management measures are comprehensively considered during the construction certification phase, which is the appropriate point for such detailed technical assessments. We also note that air, water, spill control, and related response measures are addressed through our Pollution Incident Response Management Plan (PIRMP), which is maintained and regularly updated in accordance with EPA licence requirements.</p> <p>In an email dated 29 July 2025, the Department confirmed that these specific requirements can be addressed as a post-approval matter</p>



GOVERNMENT AGENCY	COMMENTS
<p>Hazards and Risk:</p> <ul style="list-style-type: none">• A site-wide Hazard Analysis prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011), including:<ul style="list-style-type: none">- A clear indication of class, storage and handling quantities and location of all dangerous goods and hazardous materials for the entire site;- A verification of the proposal and the changes made to the site under MOD 31 would comply with the relevant Australian Standards;- Details on the new installations and changes in existing plant, including but not limited to equipment, process, operating conditions, storage location/quantities;- The risk analysis must be comprehensive and consider risk of propagation and cumulative risk for the entire site. Where the risk from the existing operations do not affect the risk from the proposal, the risk profile of the existing operation should be illustrated for reference;- Demonstration the cumulative risk would comply with Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning (DoP, 2011); <p>Urban Design and Visual Impact:</p> <ul style="list-style-type: none">• An assessment of the potential visual impacts of the modification on the amenity of the surrounding area; <p>Planning Agreement / Development Contributions:</p> <ul style="list-style-type: none">• Demonstration that satisfactory arrangements have been or would be	<p>through existing conditions of consent such as pre-construction hazard studies and the PIRMP of the EPL.</p> <p>Refer to Section 8.2 and the Risk Assessment provided in Appendix B.</p> <p>Refer to Visual Assessment provided in Section 8.2.</p> <p>The proposed modification has been assessed in relation to the need for local and regional infrastructure. As the modification does not involve any increase in scale, intensity, or nature of operations that</p>



GOVERNMENT AGENCY	COMMENTS
<p>made to provide, or contribute to the provision of, necessary local and regional infrastructure required to support the modification;</p>	<p>would generate additional demand on public infrastructure, it is not expected to create a requirement for new or upgraded local or regional infrastructure.</p> <p>Accordingly, a calculation of development contributions has not been undertaken. Existing infrastructure and previously secured arrangements remain sufficient to support the modified development without the need for further contributions or planning agreements.</p>
<p>NSW EPA</p> <p>Key Areas:</p> <p><u>Environmental impacts of the project</u></p> <p>1.1. The description should include the following for both the construction and operation of the project:</p> <ul style="list-style-type: none">• Details of the premises covered by the project including any relationship with any existing Environment Protection Licences;• The layout of all the physical elements of the project within the project area, including all buildings, structures, works, haulage activities, pollution controls, stockpile and material handling areas, sealed and unsealed areas, landscaping and open space;• All mitigation measures that will be built into the physical layout and design of the project (such as noise walls);	<p>The site is currently subject to an EPL number 833 dated 3 June 2025 under the Protection of the Environment Operations Act 1997 authorising Manildra to undertake chemical production, chemical storage and agricultural processing activities on the site.</p> <p>Refer to Appendix I which contains the Proposed Modified Plans.</p> <p>Refer to Noise Impact Assessment (Appendix C).</p>



GOVERNMENT AGENCY	COMMENTS
<ul style="list-style-type: none"> • Any ancillary infrastructure for which approval is being sought (such as upgrades to utilities or surrounding roads); • Identify those components of the physical layout and design that may change during the detailed design of the project, and set clear limits within which this change may occur without requiring amendments to the DA or modifications to the development consent if the project is approved; • Plans showing the layout and design in plan-view and cross section; <p>1.2. Identify any likely interactions between the development and any existing/approved developments and land uses in the area;</p> <p>1.3. Identify all sensitive receivers likely to be affected by the development using clear maps/plans, including key landform areas, such as conservation areas and waterways;</p> <p>1.4. Identify all potential environmental emissions, assess the likely environmental impacts, and describe the proposed mitigation measures to minimise environmental pollution to achieve compliance with relevant environmental legislation, policies, and guidelines;</p> <p>1.5. The EIS must accurately summarise the key findings of the detailed technical studies in the appendices of the EIS and use suitable cross-referencing to reduce repetition between the two parts of the EIS;</p> <p><u>EPA Licensing and Approval Requirements</u></p>	<p>As above</p> <p>As above</p> <p>Refer to Appendix I which contains the Proposed Modified Plans</p> <p>Refer to Section 4.2.</p> <p>Refer to Noise Impact Assessment (Appendix C).</p> <p>As above.</p> <p>Noted. Refer to Section 8.2.</p>



GOVERNMENT AGENCY	COMMENTS
<p>2.1. Identify all approvals and licences required under environment protection legislation including details of all scheduled activities under schedule 1 of the Protection of the Environment Operations Act 1997;</p> <p>2.2. Outline how the proposal and its environmental protection measures would be implemented and managed so as to demonstrate that the proposal is capable of complying with statutory obligations under EPA licences or approvals (e.g. outline of an environmental management plan);</p> <p><u>Construction Works</u></p> <p>3.1. The EIS must include detail of the construction works including:</p> <ul style="list-style-type: none">• Any earthworks or site clearing; re-use and disposal of cleared material (including use of spoil on-site);• Identify, characterise and classify the following in accordance with the EPA's Waste Classification Guidelines (2014):<ul style="list-style-type: none">i. all waste that will be generated onsite through excavation, demolition or construction activities, including proposed quantities of the waste;ii. all waste that is to be removed to an offsite location, including proposed quantities. Include the commitment to ensure this waste is taken to a facility that can lawfully receive it;	<p>Refer to Noise Impact Assessment (Appendix C).</p> <p>As above</p> <p>Typical earthworks include but not limited to excavation, piling, and concreting.</p> <p>Waste management included in the Project Specific MOD 31 Construction Safety & Environmental Management Plan (CSEMP) & in accordance with SS approved Waste Management Plan (Condition 41 of the Consent).</p>



GOVERNMENT AGENCY	COMMENTS
<ul style="list-style-type: none">• Construction timetable and staging; hours of construction; proposed construction methods;• Environment protection measures, including noise mitigation measures - in accordance with the Interim Construction Noise Guideline (DECC, 2009), dust control measures and erosion, and sediment control measures- in accordance with Managing urban stormwater: Soils and construction, vol. 1 (Landcom 2004); <p>3.2. Include a site diagram showing the site layout and location of environmental controls;</p> <p>3.3. Construction noise associated with the proposed development should be assessed using the Interim Construction Noise Guideline (DECC, 2009);</p>	<p>Construction hours as per Condition 11 of SS Development Consent 06_0228.</p> <p>Construction methods include:</p> <p>Civil Works: Including but not limited to excavation, piling, concreting, crane operations, manual handling and mobile equipment</p> <p>Mechanical Installation: Including but not limited to welding, crane operations, manual handling, mobile equipment, transport of equipment, mechanical assembly, conveyor installation.</p> <p>Electrical: Including but not limited to installation of cable trays, conduits, cables runs, termination, installation of equipment.</p> <p>Refer to Noise Impact Assessment (Appendix C).</p> <p>Shoalhaven Starches existing approved Erosion and Sediment Control Plan will be implemented during construction as per Condition 19 of the Consent</p>



GOVERNMENT AGENCY	COMMENTS
<p><u>Air Issues</u></p> <p>4.1. The EIS must demonstrate the proposal's ability to comply with the relevant regulatory framework, specifically the POEO Act and the Protection of the Environment Operations (Clean Air) Regulation 2022. This consideration should include section 129 of the POEO Act concerning control of "offensive odour";</p> <p>4.2. The EIS must include an air quality impact assessment (AQIA). The AQIA must be carried out in accordance with the document, Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (2022);</p> <p>4.3. The EIS must detail emission control techniques/practices that will be employed at the site and identify how the proposed control techniques/practices will meet the requirements of the POEO Act, POEO (Clean Air) Regulation (2022) and criteria within Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (2022);</p> <p><u>Noise and Vibration</u></p> <p>5.1. Operational and construction activities on the premises that maybe considered vibration intensive should be assessed using the guidelines contained in the Assessing Vibration: a technical guideline (DEC, 2006);</p> <p>5.2. If blasting is required for any reasons during the construction or operational stage of the proposed development, blast impacts should be demonstrated to be capable of complying with the guidelines contained in Australian and New Zealand Environment Council –</p>	<p>Refer to section 8.2 of this report.</p> <p>Refer to Section 8.2 and the Air Quality Assessment (Appendix A).</p> <p>As above.</p> <p>As above.</p> <p>Refer to Section 8.2 and the Noise Impact Assessment (Appendix C).</p>



GOVERNMENT AGENCY	COMMENTS
<p>Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration (ANZEC, 1990);</p> <p>5.3. Operational noise from noise intensive activities to be undertaken on the premises should be assessed using the guidelines contained in the NSW Noise Policy for Industry (EPA, 2017);</p> <p>5.4. If applicable, noise on public roads from increased road traffic generated by land use developments other than road projects should be assessed using the guidelines contained in the NSW Road Noise Policy (EPA, 2011) and associated application notes;</p> <p>5.5. If applicable, noise on rail lines from increased rail traffic generated by land-use developments other than rail projects should be assessed using the guidelines contained in the Rail Infrastructure Noise Guideline (EPA, 2013) and associated application notes;</p>	<p>As above.</p> <p>As above.</p> <p>As above.</p>
<p><u>Waste, chemicals and hazardous materials and radiation</u></p> <p>6.1. Assess and describe all aspects of waste generation, management and disposal associated with the proposed development;</p> <p>6.2. Demonstrate compliance with all regulatory requirements outlined in the POEO Act and associated waste regulations;</p> <p>6.3. Outline contingency plans for any event that may result in environmental harm, such as excessive stockpiling of material, or dirty water volumes exceeding the storage capacity available on-site;</p>	<p>Waste volumes to be handled in accordance with SS approved Waste Management Plan as per Condition 41 of existing Consent. Refer to Section 1.3 of Air Quality Assessment (Appendix A) and Section 3.34 of Site Hazard Analysis (Appendix B).</p> <p>To be addressed via Pollution Incident Response Management Plan and MOD 31 Construction Safety & Environmental Management Plan (CSEMP)</p>



GOVERNMENT AGENCY	COMMENTS
<p>6.4. Demonstrate that appropriate spill containment will be provided for storage, filling and loading of all fuels and other chemicals to be used on site, in accordance with all relevant Australian Standards, and/or NSW EPA's Storing and Handling of Liquids: Environment Protection-Participants Manual (DECC, 2007);</p> <p>6.5. Demonstrate compliance with Part 9.3E of the POEO Act for the use of any industrial chemicals, including details of activities involving Schedule 6 or Schedule 7 chemicals listed on the IChEMS register. Additionally, demonstrate a system for periodic review to ensure that any new IChEMS Register requirements are incorporated;</p> <p>6.6. Assess and describe any potential risks relating to all known and potential contaminants of concern (CoC) including per- and I substances (PFAS) that may be associated with the proposed development and if applicable, how they will be mitigated. Consideration should be given to potential health and environment related impacts caused by the CoC. The assessment should consider various sources, receptors and exposure pathways including but not limited to ingestion (drinking water and food consumption), inhalation, and dermal contact;</p> <p>6.7. Identify the measures that would be implemented to ensure that the development is consistent with the aims, objectives and guidance in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21;</p> <p>Water</p> <p>7.1. Demonstrate that all practical measures to prevent, control, abate or mitigate water pollution have been implemented, including a description of options that were explored (such as reuse to avoid a discharge or treatment);</p> <p>7.2. Provide details of the proposal that are essential for predicting and</p>	<p>No new Hazardous Chemicals or fuels proposed with MOD 31. Condition 39A addresses existing chemical storage & containment.</p> <p>N/A. No listed chemicals are proposed for MOD 31.</p> <p>GHD Site Contamination Report addresses existing PFAS risk associated with existing fire fighting foams used on site.</p> <p>MOD 31 does not introduce any additional fire fighting foam storage. The Heat Recovery building will use water only for fire fighting.</p> <p>No other CoC associated with MOD 31.</p> <p>All waste managed in accordance with SS Waste Management Plan as per Condition 41 of the Consent</p> <p>N/A. No new water discharges to site WWTP.</p> <p>Stormwater discharges to receiving bodies addressed in the IWCMS.</p>



GOVERNMENT AGENCY	COMMENTS
<p>assessing potential impacts to receiving waters. This could include (but is not limited to):</p> <ul style="list-style-type: none"> • Site layout, including details of the existing and proposed water management system; • Drainage map for the entire site identifying sub-catchments, flow paths, drainage infrastructure, design sizing of structures, water storages, discharge points, and any potential flow paths to receiving waters; • How stormwater will be managed in all phases of the project. Information should include, where appropriate, measures to avoid or minimise erosion, leachate generation, and sediment mobilisation at the site; • Any in-water activities (such as piling or dredging); <p>7.3. Include water balance(s) for ground and surface water, including any intake and discharge locations, volumes, frequency and duration;</p> <p>7.4. Identify and estimate the quality and quantity of all pollutants that may be introduced into the water cycle by source and discharge point, including residual discharges after mitigation measures are implemented. This should be undertaken for construction and operational phases;</p> <p>7.5. Include a water pollution impact assessment undertaken consistent with the guidance available at https://www.epa.nsw.gov.au/your-environment/water/managing-water-pollution-in-nsw/environment-protection-licensing/water-pollution-discharge-assessments. The level of assessment should be commensurate with the risk to the environment and human health;</p> <p>7.6. Describe any surface water quality monitoring programs, including</p>	<p>SS Stormwater MP will updated & implemented prior to construction as per Condition 22 of the Consent.</p> <p>Refer to Integrated Water Cycle Management Strategy (Appendix H)</p> <p>As above</p> <p>N/A. No in-water activities.</p> <p>Water use on site will decrease as a result of this MOD.</p> <p>This is due to the steam being recovered in a closed-loop system replacing water that would be used to generate that steam. Based on 75 tph steam saving this equates to ~ 500 KL water savings per day (182 ML pa).</p> <p>Also water savings due to the decrease in cooling tower use.</p>



GOVERNMENT AGENCY	COMMENTS
<p>proposed monitoring locations, frequency and indicators of surface water quality. Analytical limits of reporting should have regard to any identified guideline values. Water quality monitoring should be undertaken in accordance with the Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (2004);</p> <p>7.7. The EIS must describe how stormwater will be managed in all phases of the project, including details of how stormwater and runoff will be managed to minimise pollution. Information should include measures to be implemented to minimise erosion, leachate and sediment mobilisation at the site;</p> <p>Groundwater</p> <p>8.1. Provide details of the project that are essential for predicting and assessing impacts to groundwater with a description of the existing environment, including:</p> <ul style="list-style-type: none">• Geological, topographical, and hydrogeological resource descriptions, maps, and cross-sections;• Assessment of groundwater quality, users of groundwater, existing bores including depths and construction, assessment of local land use;• A hydrogeological interpretation of water-bearing geological units, depth to water table, groundwater gradient, Conceptual hydrogeological model, assessment of groundwater dependent ecosystems;	<p>Refer to Integrated Water Cycle Management Strategy (Appendix H)</p> <p>As above</p> <p>Managed in accordance with SS Stormwater Management Plan as per Condition 22 of the Consent & Allen Price IWCMS.</p> <p>No water quality monitoring proposed</p> <p>SS Stormwater Management Plan as per Condition 22 of the Consent & Allen Price IWCMS.</p>



GOVERNMENT AGENCY	COMMENTS
<ul style="list-style-type: none">• Site map and cross-sections showing and characterising any proposed excavations and spoil emplacement (relative to water table) with topography;• Proposed groundwater monitoring program;• Assessment should be in accordance with Groundwater assessment toolbox for major projects in NSW - Overview document (DPE, 2022); <p>Soils</p> <p>9.1. The EIS should include an assessment of the potential impacts on soil and land resources should be undertaken, being guided by the Soil and Landscape Issues in Environmental Impact Assessment (DLWC 2000). The nature and extent of any significant impacts should be identified. Particular attention should be given to:</p> <ul style="list-style-type: none">• Soil erosion and sediment transport- in accordance with Managing urban stormwater: Soils and construction, vol. 1 (Landcom 2004) and vol. 2 (A. Installation of services; B Waste landfills; C Unsealed Roads; D Main Roles) (DECC2008);• Mass movement (landslides) – in accordance with Landslide risk management guidelines presented in the Australian Geomechanics Society (2007);	<p>Refer to Section 8.2.8. and Geotechnical, Contamination and Acid Sulphate Soils Assessment GHD (Appendix G.)</p>



GOVERNMENT AGENCY	COMMENTS
<ul style="list-style-type: none">• Urban and regional salinity – guidance given in the Local Government Salinity Initiative booklets which includes Site Investigation for Urban Salinity (DLWC, 2002); <p>9.2. A description of the mitigation and management options that will be used to prevent, control, abate or minimise identified soil and land resource impacts associated with the project. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented;</p> <p><u>Contamination</u></p> <p>10.1. Identify the likelihood of contamination at the site and surrounding land (on different media such as soils, groundwater, ground gas, surface water and sediments, where applicable) by considering the context of past, current, and proposed land uses. The EIS must document how the assessment of contaminated land has been undertaken with regard to the relevant guidelines for contaminated land made or approved by the NSW EPA;</p> <p>10.2. All reports on contamination must be prepared by a suitably qualified contaminated land consultant who is also certified;</p> <p>10.3. Where contamination is considered likely based on past or current land uses or other factors (such as offsite contamination migrating onto the site), undertake detailed site investigation/s to determine the nature and extent of the contamination;</p> <p>10.4. Where contamination exists, assess if remediation of the land is required, having regard to current and future land uses; and the</p>	<p>Refer to the Geotechnical, Contamination and Acid Sulphate Soils Assessment (Appendix G)</p>



GOVERNMENT AGENCY	COMMENTS
<p>ecological and human health risks posed by the contamination to both onsite and offsite receptors;</p> <p>10.5. Where a detailed site investigation is prepared and/or remediation is considered necessary, a NSW EPA accredited Site Auditor must be engaged to undertake an audit. The EIS must include copies of any Interim Audit Advice provided by the auditor and a Site Audit Statement and Site Audit Reports issued by the auditor which certifies the site can be made suitable for the proposed use;</p> <p>10.6. The following references should be included as relevant guidelines that must be followed when assessing contaminated land:</p> <ul style="list-style-type: none">• Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (DUAP and EPA, 1998);• Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (EPA, 2015);• Contaminated land sampling design guidelines – Part 1 and 2 (EPA, 2022);• Consultants reporting on contaminated land: contaminated land guidelines (EPA, 2020);• Guidelines for the NSW Site Auditor scheme 3rd edition (EPA, 2017);• Any other relevant guidelines made or approved by the EPA under s105 of the Contaminated Land Management Act 1997;	<p>As above</p> <p>Refer to Section 8.2 and the Geotechnical, Contamination and Acid Sulphate Soils Assessment (Appendix G)</p>



GOVERNMENT AGENCY	COMMENTS
<p><u>Climate Change</u></p> <p>11.1. Provide estimate of greenhouse gas (GHG) emissions for the project by carrying out a Greenhouse Gas Assessment consistent with the most recent version of the EPA's Greenhouse Gas Assessment Guide for Large Emitters (GHG guide) that is available on the EPA's website. The GHG estimate is to confirm if the project is likely to result in 25,000 tonnes or more of scope 1 and 2 emissions (CO₂-e), in any financial year during the operational life of the project. Input data and assumptions used to estimate GHG should be accompanied by supporting evidence;</p>	<p>The NSW Guide for Large Emitters specifies that an assessment is required for a modification when an “additional 25,000 tonnes or more of scope 1 and 2 emissions (CO₂-e) in any financial year when the modification project becomes operational, over and above emissions from the existing licensed premises.”</p> <p>As part of the modification proposal, scope 1 emissions will reduce by 95,266 tCO₂-e/pa as a result of the modification. This indicates that the modification will have the following changes to CO₂e emissions:</p> <ul style="list-style-type: none">- Scope 1 emissions: reduction of 95,266 tCO₂-e/pa- Scope 2 emissions: increase of 69,379 t CO₂-e/pa- Overall emissions: reduction of 25,887 CO₂-e/pa <p>Therefore the overall change in CO₂-e emissions will be less than the criteria required for assessment under the <i>NSW Guide for Large Emitters</i>, i.e. an assessment is not required.</p>
<p>Shoalhaven City Council</p> <p>Key areas:</p> <p><u>Works and Services</u></p>	<p>Refer to Section 8.2.</p>



GOVERNMENT AGENCY	COMMENTS
<p>A comprehensive understanding of the risks associated with the potential failure of the gantry and its impact on the functionality of Bolong Road is required;</p> <p>There appear to be modifications to the car park entrance and exit that will affect the road. I recommend that the scope of works include resurfacing (re-asphalting) at least up to the median to account for the significant impact of Manildra's operations on the road;</p> <p>Any road modifications must address existing drainage concerns;</p>	<p>To be included in the detailed road design and construction certificate process.</p> <p>Refer to Integrated Water Cycle Management Strategy (Appendix H)</p>



GOVERNMENT AGENCY	COMMENTS
<p>Consideration should be given to expanding the gantry to accommodate pedestrian traffic across the road, thereby mitigating the risks associated with Manildra personnel crossing Bolong Road on foot;</p> <p><u>Flood Unit</u></p> <p>The report states that all flood related data is based on the 1990 Shoalhaven River Flood Study, including the hazard and hydraulic categories. This is incorrect as Council's data for the site is based on the Lower Shoalhaven River Flood Study (2022), which identifies most of the Manildra site as High Hazard Floodway, with some High Hazard Flood Storage and Low hazard Flood Storage areas. In other words, the data they refer to was superseded in January 2023 when Council adopted the 2022 study;</p>	<p>While consideration was given to the potential for the gantry to provide pedestrian access over Bolong Road, the gradient ramp/stairs and their landing footprints either within the road reserve (adjacent to existing footpaths, or with adjacent Shoalhaven Starches site was determined not to be viable. It is noted however that part of recent modifications, footpaths are provided on both sides of Bolong Road, and formal pedestrian refuges located as key crossing locations between Shoalhaven Starches site on the north and southern side of Bolong Road.</p> <p>The gantry will accommodate Manildra employees & contractors via swipe card access. Not open to the public as it will allow access to the Manildra site.</p> <p>Refer to the accompanying Flood Assessment in Appendix E.</p>



GOVERNMENT AGENCY	COMMENTS
<p>Confirm that the switch room is to be established at the 2050 Flood Planning Level as a minimum, being 5.5m AHD. It is not clear from the drawings at what level this room is proposed;</p> <p>Proposed development acceptable subject to confirmation of no adverse flood impacts through a flood impact assessment, as proposed. This assessment needs to include considerations of impacts from climate change using Council's sea level rise framework and the latest guidance in Australian Rainfall and Runoff relating to projected increase in rainfall intensities;</p> <p>The proposed development may trigger the need for an integrated water cycle management strategy, in accordance with DCP Chapter G2 (refer to Table 5). I am not sure what the stormwater quality strategy Manildra has in place (if any) and whether it can cope with proposed expansion (increase in impervious services) without additional treatment or if treatment is required;</p> <p><u>Property Unit</u></p> <p>Landowner consent for an application to Council can be made on standard terms.</p> <p>My interest is in lease of air space. Lease of air space can be considered under s149 Roads Act. With DA referral I would provide recommendation for consent to be conditioned requiring lease of air space agreement with Council under Roads Act, prior to CC. Valuer to be engaged by Council and negotiation to take place with proponent on lease amount and terms.</p>	<p>Relevant approvals I with Shoalhaven Council for or any works in, on, or over a public road under the Section 138 Roads Act and Airspace lease licence to occupy public land under the Local Government Act 1993 will be pursued post approval of the modification.</p> <p>The proposed gantry over Bolong Road has been designed to ensure it presents as an acceptable and appropriate entry statement to Bomaderry, while also reflecting the established industrial character of</p>



GOVERNMENT AGENCY	COMMENTS
<p>Council resolution required for lease or air space, noting lease of air space requires approval of Secretary DPHI under the Act;</p> <p>Planning</p> <p>The proposed gantry over Bolong Road will act as an entry gate to Bomaderry and as such there is a need to provide for a higher level of finish/detail to the structure to minimise it's visual impact and to provide a better visual entry to Bomaderry. It will also need to be maintained to a suitable standard through time, so it does not become a less than desirable entry statement;</p> <p>In respect to visual impact, could you explain of any other solutions that were considered and why they have been discounted – ie. Pipes in a pit under the road / using the existing pedestrian crossing etc;</p>	<p>the surrounding area. The structure will incorporate a higher level of finish and detail, including durable and visually neutral materials, to minimise its visual prominence and integrate with the industrial setting. In addition, a long-term maintenance program will be implemented to ensure the gantry retains a consistent and well-presented appearance over time, thereby avoiding any decline in visual quality at this key entry point.</p> <p>In respect to alternatives, a range of design and servicing solutions were considered. Subsurface options such as locating the pipes within a pit under the road were discounted due to the significant engineering complexity, cost implications, and potential disruption to Bolong Road during both construction and future maintenance. Similarly, the use of existing infrastructure such as the pedestrian crossing was examined but found unsuitable given clearance requirements, safety constraints, and the technical limitations associated with accommodating the necessary services. The gantry therefore represents the most practical, functional, and safe option to achieve the required infrastructure outcome, while also allowing for careful attention to its presentation and ongoing maintenance.</p> <p>Through this approach, the gantry will deliver the required utility while ensuring it contributes positively as an entry statement to Bomaderry, consistent with the industrial character of the locality and broader visual amenity considerations.</p>



GOVERNMENT AGENCY	COMMENTS
<p>Is there any intention to incorporate signage panels or VMS to the sides of the gantry? If so these would need to be detailed on the application and comply with TfNSW Policy & SEPP TI 2021;</p> <p><u>Shoalhaven Water</u></p> <p>Following our meeting earlier this week and review of the plans provided in D25/102340, Shoalhaven Water is requesting further information to be provided on the impact of the proposed road widening for the carpark entry and any proposed structural supports for the gantry, on Council critical 200mm and 355mm watermains (and any service connections) located on the northern side of Bolong Road;</p>	<p>N/A no signage forms part of the proposal</p> <p>The design of the northern car park entry and exit driveways, as well as the structural supports for the proposed gantry over Bolong Road, has considered the location of watermains on the northern side of Bolong Road. Further liaison with Shoalhaven Water will take place as detailed construction plans are prepared.</p>



5.2 COMMUNITY ENGAGEMENT

This section covers community and stakeholder engagement carried out during the preparation of the modification proposal.

Shoalhaven Starches undertook a community newsletter mail-out via Australia Post, commencing 14 July 2025 and concluding 8 August 2025, to ensure broad and inclusive community participation. The mail-out was distributed to all residents and businesses across the South Coast region, covering postcodes 2540, 2541 and 2505. The newsletter provided information about the proposed Modification, including:

- Details of how to access the Modification submission on the Department of Planning, Housing and Infrastructure (DPHI) website, and
- A dedicated email address for submitting feedback and questions.

This approach was designed to be consistent with the Department's Undertaking Engagement Guidelines for State Significant Projects, ensuring information was accessible, clear, and delivered in a timely manner.

All submissions and comments received via a supplied email address were logged, reviewed, and categorised by theme (e.g., environmental concerns, traffic, amenity, operational impacts). Each issue was assessed against the scope of the Modification and responded to either:

- Through updates and clarifications in the Modification Report,
- Direct correspondence with the stakeholder, or
- Identification of mitigation measures for consideration in the ongoing design and operation of the project.



6.0 PROPOSED MODIFICATION TO PROJECT APPROVAL MP06_0228

6.1 SUMMARY OF MODIFICATION PROPOSAL

MOD 31 seeks to undertake a range of heat recovery updates that enable infrastructure to capture and transform waste heat into usable energy to drive the ethanol, starch, and gluten manufacturing processes. This modification will result in a reduction of the amount of virgin steam that is required by 75 tph (637,500 tpa), therefore, removing the need to burn natural gas at the onsite co-generation plant and other gas-filled boilers.

Table 3 and Figure 4-6 (page 56-58) provides a detailed overview of these works.

Table 3: Detailed Description of Proposed Modification

Component	Description
DDG Heat Exchangers	<ul style="list-style-type: none">Installation of two heat exchangers, designated #4 and #5 DDG Heat Exchangers.Associated pipework linking the structures occurs overhead via pipe bridges or gantries. <p>Note: Separate approval of this component is now being pursued via Mod 33.</p>
Distillery Heat Recovery Evaporators	<ul style="list-style-type: none">The drawings indicate four units situated on the eastern side of the distillery (beverage grade ethanol plant) occupying an area of 13.5 by 13 m. A fifth unit is proposed on the northern side of the distillery, west of the control room. - Height 58.7 m.
Distillery Heat Recovery Building	<ul style="list-style-type: none">Four storey, 52.10 m x 19.75 m building, height 26.33 mBuilding also includes two switch rooms on the lower two floors.Relocation of existing underground services.An overhead gantry, spanning Bolong Road, is proposed linking the distillery heat building and distillery heat recovery evaporators. The gantry has a nominal clearance above Bolong Road of 5 m (total

	<p>height 17.2m). The gantry will contain pipelines and cabling, and an access walkway. The length of the gantry is 40 m.</p>
<p>Northern Carpark Extension</p>	<ul style="list-style-type: none"> • Expansion of existing car park located on the northern side of Bolong Road. • It is proposed to expand this car park by an additional 78 parking spaces to accommodate the relocation of spaces associated with the new distillery heat recovery building, and to provide additional parking for construction contractors. The proposal also includes the formation of new entry and exit points. • A smaller carpark extension is proposed on the western side of the existing carpark area comprising 16 additional parking spaces.
<p>Electrical Cable</p>	<ul style="list-style-type: none"> • Electrical cabling required to connect two substations, one near Abernethys Creek (western substation) and the other, yet to be constructed, within the eastern plant area (eastern substation). The eastern substation is designated as the main distribution substation 0.2 and 0.3, • At the western substation, the electrical cable is above ground, passing above Bolong Road via an overhead gantry/electrical cable bridge parallel to Abernethys Creek. • The overhead gantry/electrical bridge has a nominal clearance above Bolong Road of 6 m (13.6m height x 53.2m length). • North of the carbon dioxide gas plant, the electrical cable continues below ground in an easterly direction then turning south, going below Bolong Road, connecting with the eastern substation. The depth of the trench is anticipated to be approximately 1.5 m.



Beverage Grade Ethanol Distillery Heat Recovery:

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

In addition, Shoalhaven Starches employs approximately 500 full-time employees and 400 contractors at its Nowra facility and thousands more indirectly across the supply chain. Shoalhaven Starches also represents 98% of the Manildra groups total direct CO₂e emissions (395,916 t CO₂-e in 2023-24 NGER) with most of the historical emissions coming from electricity usage and coal (representing 85% of its total CO₂e emissions in the Shoalhaven Starches operations annually).

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

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

Steam plays a crucial role in the ethanol manufacturing process as it provides the necessary energy (heat) to drive the various stages of production. At the Shoalhaven Starches plant, approximately 4 kg of steam is required to manufacture 1 L of ethanol (all grades) and accounts for approximately 14% of manufacturing cost.

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

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

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

Although the steam no longer possesses the energy required for the distillation, 85% of its potential energy remains which is extremely valuable and is not currently being



captured or utilised. This is extremely inefficient and presents a significant opportunity to reduce the energy intensity of Shoalhaven's ethanol manufacturing process.

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

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

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

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

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

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

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

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

Not only will this component of this Modification Proposal reduce emissions and energy intensity associated with the production of ethanol, but it will also directly reduce

manufacturing costs by up to 14% and unlock approximately 26% of the facility's total steam capacity (~280tpa).

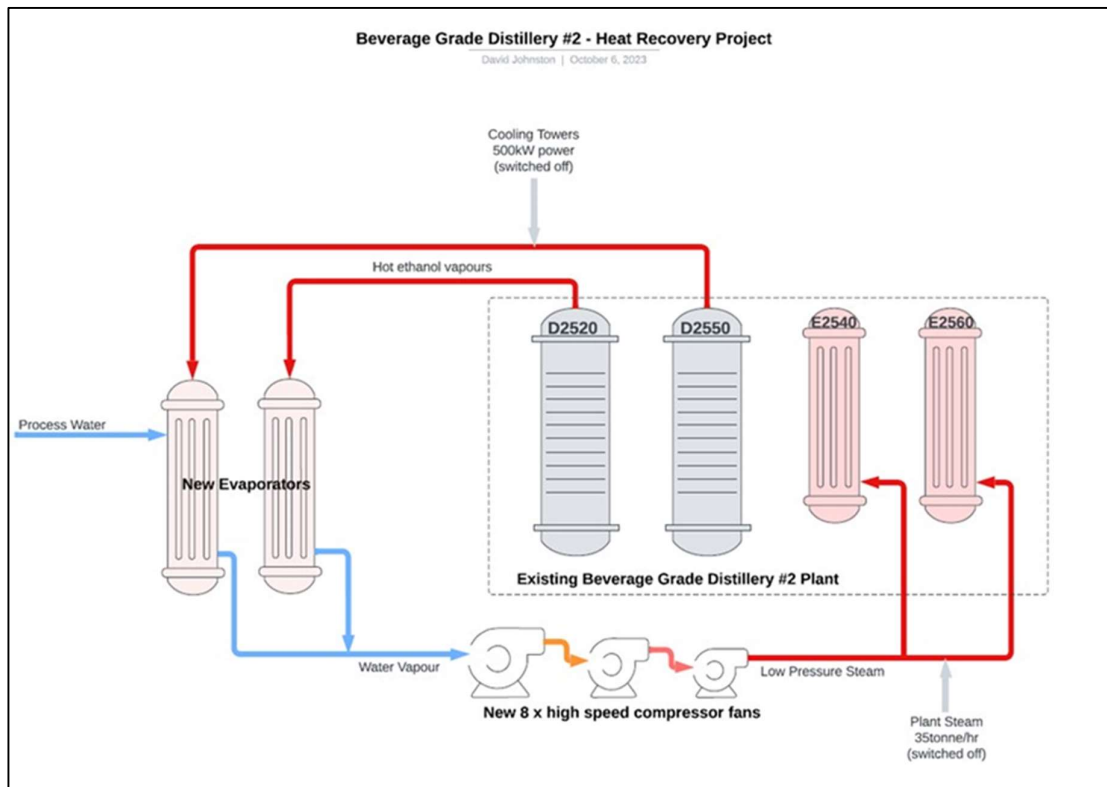


Figure 2 – High-level Overview of the MVR Technology Applied to One of Shoalhaven's Two Beverage-Grade Distilleries (Source: Shoalhaven Starches)

Fuel Grade Ethanol Reconfiguration and Heat Recovery:

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

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

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

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

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

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

Figure 3 provides a visual representation of the fuel plant reconfiguration process.

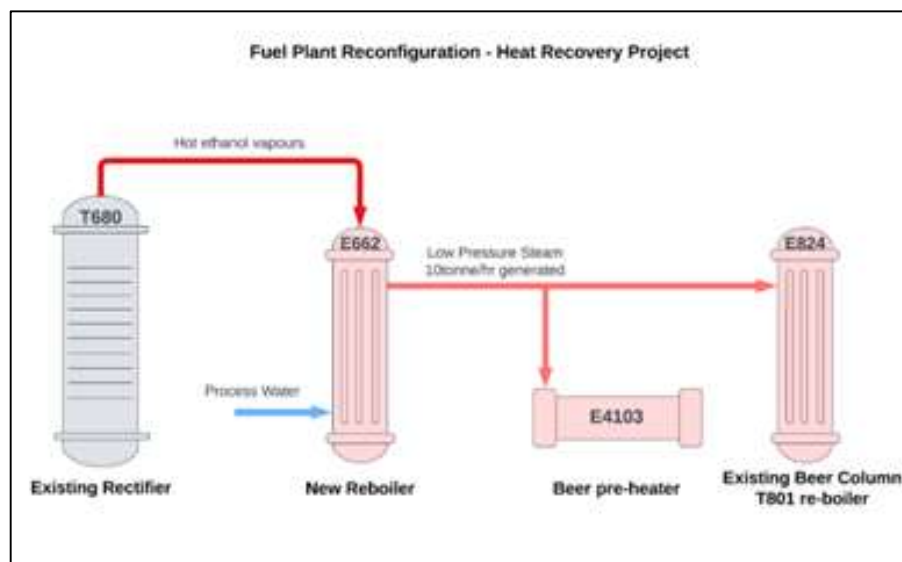


Figure 3 – High-Level Overview of Fuel Plant Reconfiguration (Source: Shoalhaven Starches)

Dried Distillers' Grain Heat Recovery:

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

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

This element of the Project will reduce emissions by 12,702 tCO₂e when it is completed in February 2026 by reducing the amount of virgin steam required by 10tph. However, these savings will not be applied to DDG but rather to gluten and starch. This element of



the project will install a heat recovery system onto the DDG dryers which will capture hot process gasses and transfer it through a heat exchanger to the process water that heats the air. This will reduce the amount of energy required to heat the process water.

This water process water will bypass the DDG dryers and rather impart their emissions savings on the gluten and starch dryers further down the processing line. Based on 2022 production figures, this would reduce starch and gluten manufacturing emissions intensity by 12.5% (0.36 to 0.31) and 28.7% (0.10 to .07) for gluten.

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

Plans of the Modification Proposal are attached to this submission in Appendix I.

The overall Modification Proposal is expected to involve an estimated development cost of \$100 million and is envisaged to involve the employment of 50 construction workers and post construction, 1 additional operational staff.

The works associated with this modification have been designed to align with the approved facility layout and operational workflows of the Shoalhaven Starches Factory site, ensuring that construction activities and system tie-ins can be staged without interrupting ongoing production. The integration points are located within existing plant, minimising the need for additional land disturbance. The upgrades also complement previously approved efficiency measures and support the long-term operational objectives of the facility by contributing to reduced greenhouse gas emissions, improved resource recovery, and enhanced energy security. In doing so, the modification represents an incremental but strategically significant enhancement to the approved development, aligning with both current operations and the broader program of continuous improvement proposed for the site.

Administrative Updates to Consolidated Consent:

As part of ongoing compliance review and management of the consents, we have identified the following conditions within the consolidated conditions of consent that would benefit from clarification or administrative amendment.

Schedule 2

- Condition 15: Modification of Cogeneration Plant Location Prior to Construction;

Schedule 3

- Condition 6A – Independent Odour Audit Requirements – Quarterly Monitoring;
- Condition 6C: Odour Monitoring and Reporting – DDG Exhaust Stack and Starch Dryer;
- Condition 6D – Enclosure and Ducting of Evaporator Units and Associated Equipment;
- Condition 8B – Operational Preconditions and Hazardous Materials Flood Protection;
- Condition 8C – Operation of MOD 29 Equipment Contingent on Biofilter No.3 Commissioning; and
- Condition 26C – Storage of Hazardous Materials Above the 1% AEP Flood Level.



These proposed 'House Keeping' changes are not intended to alter the substantive obligations of the consent but rather to improve clarity, and ensure consistency across the consolidated approval.

Appendix J provides a detailed description of the proposed changes to these conditions including reasons and justification for the changes.

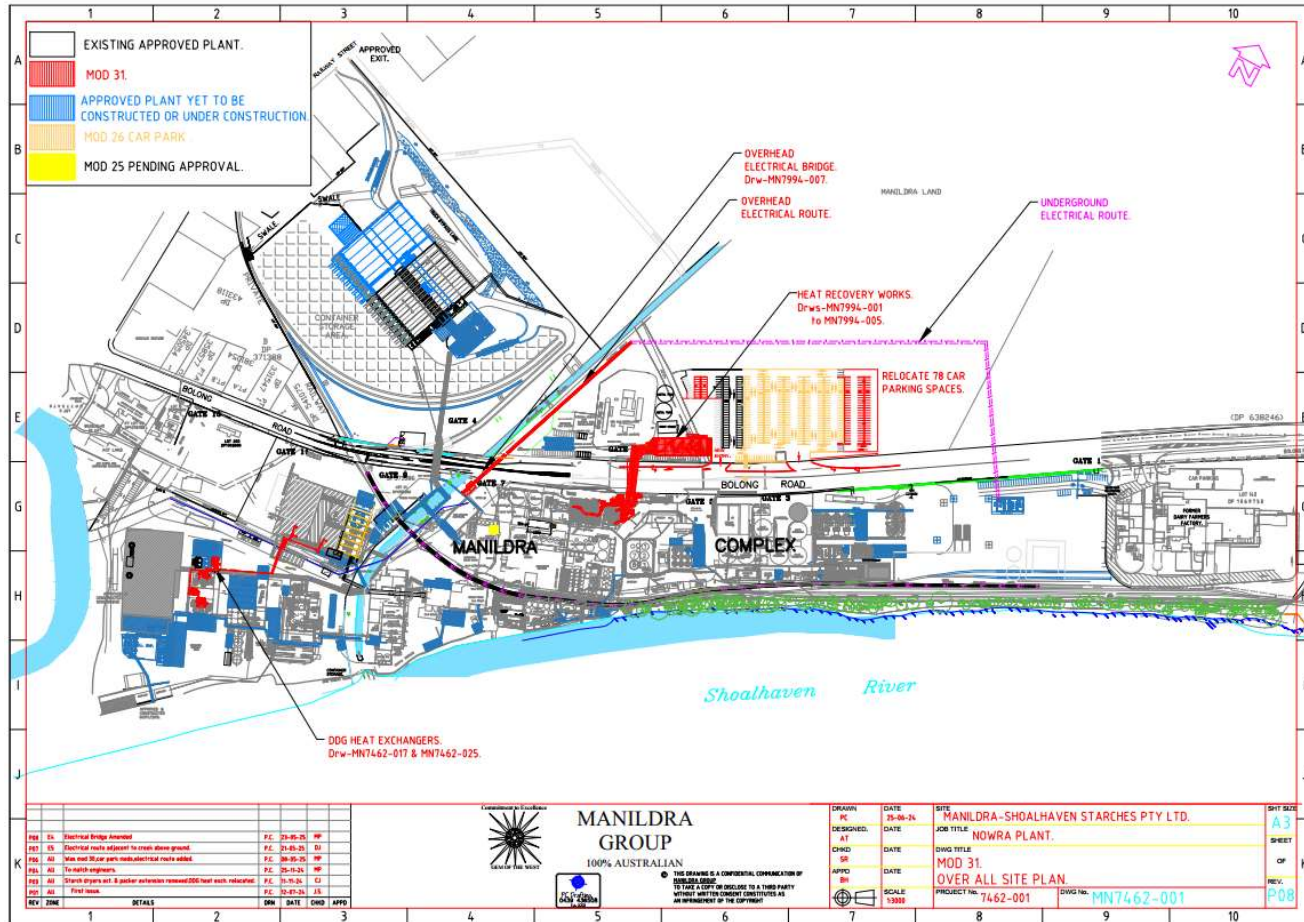


Figure 4 - Overall Site Plan of proposed works associated with Modification Application (Source: Shoalhaven Starches Pty Ltd)

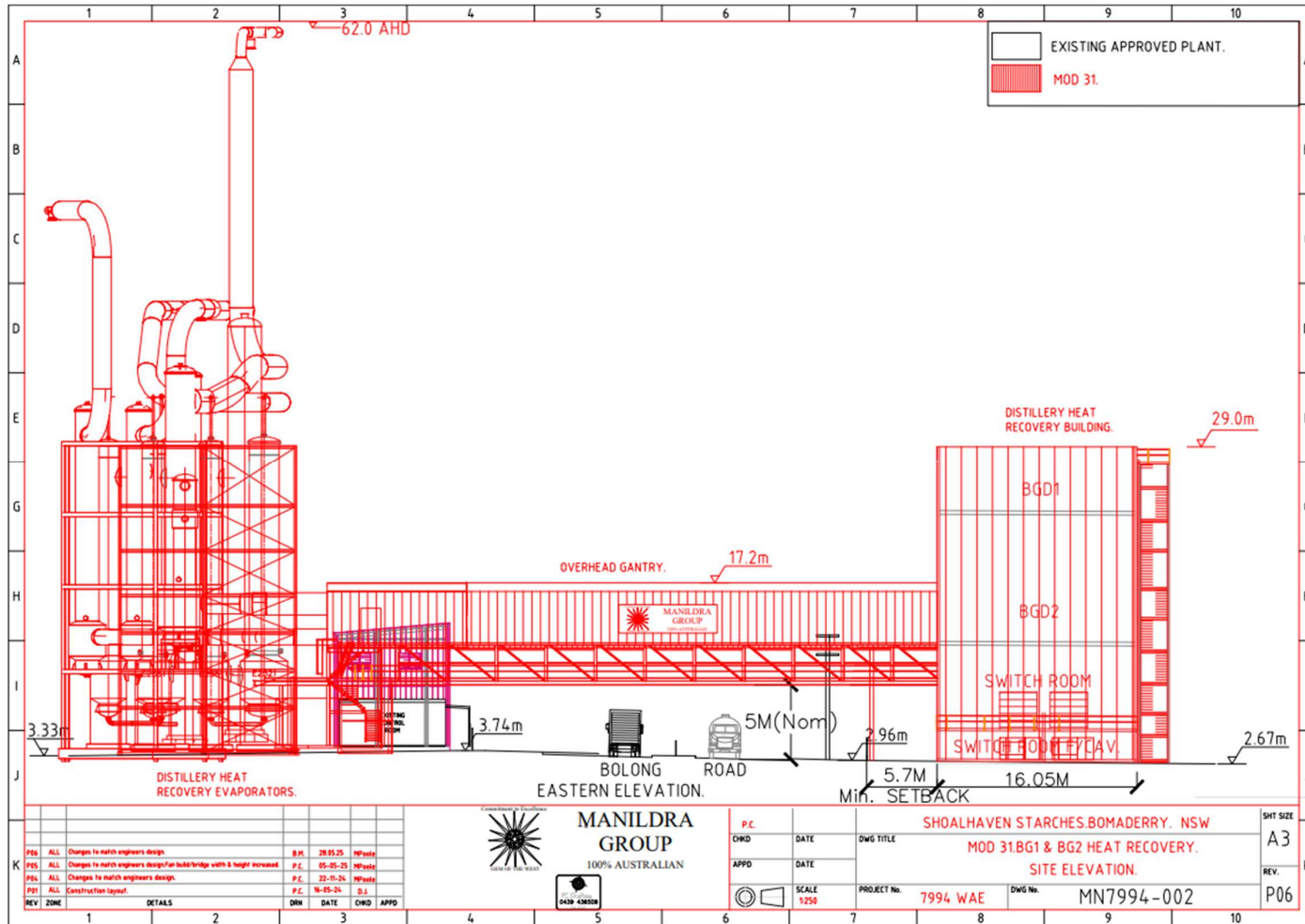


Figure 5: Proposed Heat Recovery Evaporators (left) gantry (centre) and Building (right) (Source Shoalhaven Starches)

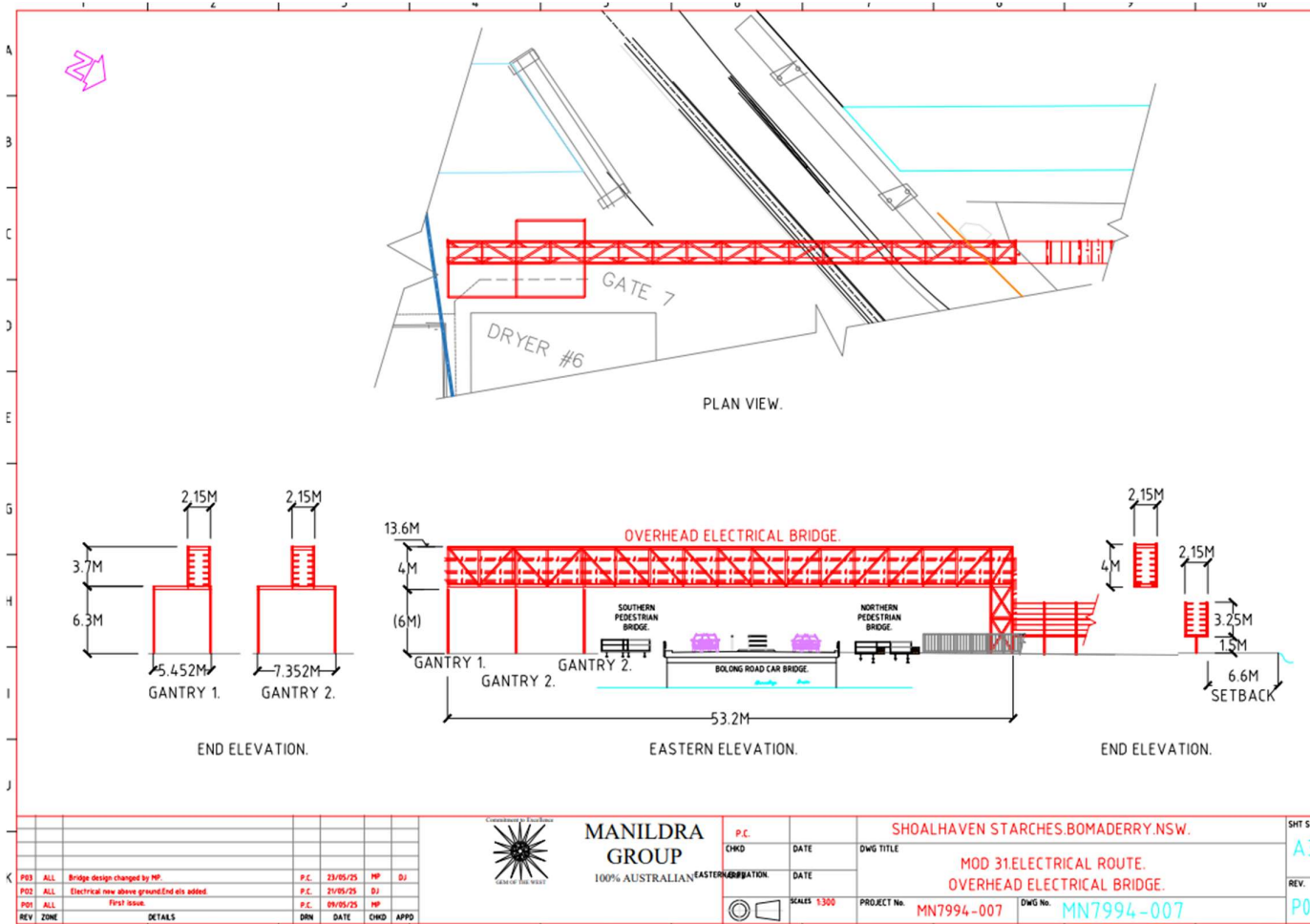


Figure 6: Proposed Overhead Electrical Cable (Source Shoalhaven Starches)

7.0 SECTION 4.55(2) OF THE EP&A ACT

The Shoalhaven Starches Expansion Project was a 'transitional Part 3A Project' for the purposes of Schedule 6A of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Originally, Section 75W governed the modification of major projects approved under the now repealed Part 3A of the EP&A Act.

As of the 1 March 2018 the transitional arrangements for former Part 3A projects were discontinued. The discontinuation of the transitional arrangements for Part 3A projects means that modifications are assessed through the State Significant Development (SSD) pathway. As such, this Modification Application is made pursuant to Section 4.55 of the EP&A Act.

This application is made pursuant to Section 4.55(2) of the EP&A Act.

Section 4.55(2) of the EP&A Act reads:

(2) Other modifications

A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if—

- (a) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all), and*
- (b) it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 4.8) in respect of a condition imposed as a requirement of a concurrence to the consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent, and*
- (c) it has notified the application in accordance with—*
 - (i) the regulations, if the regulations so require, or*
 - (ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and*
- (d) it has considered any submissions made concerning the proposed modification within the period prescribed by the regulations or provided by the development control plan, as the case may be.*

Subsections (1) and (1A) do not apply to such a modification.

Fundamentally an application made pursuant to Section 4.55(2) must demonstrate that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified.

Such an assessment would typically need to appreciate both the qualitative and quantitative aspects of the development being compared in its proper context as described by Bignold J at paragraphs 54 to 56 in *Moto Projects (No.2) Pty Ltd v North Sydney C* [1999] NSWLEC 280. This judgment includes the following comments:

54. *The relevant satisfaction required by s 96(2)(a) to be found to exist in order that the modification power be available involves an ultimate finding of fact based upon the primary facts found. I must be satisfied that the modified development is substantially the same as the originally approved development.*
55. *The requisite factual finding obviously requires a comparison between the development, as currently approved, and the development as proposed to be modified. The result of the comparison must be a finding that the modified development is “essentially or materially” the same as the (currently) approved development.*
56. *The comparative task does not merely involve a comparison of the physical features or components of the development as currently approved and modified where that comparative exercise is undertaken in some type of sterile vacuum. Rather, the comparison involves an appreciation, qualitative, as well as quantitative, of the developments being compared in their proper contexts (including the circumstances in which the development consent was granted).*

The “Modifying an Approved Project” draft guidelines produced as part of the Draft Environmental Impact Assessment Guidance Series by the NSW Department of Planning and Environment in June 2017, provides some guidance when assessing modifications of State Significant development:

For SSD, a proponent must demonstrate that the change, if carried out, would result in a development that would be substantially the same development as the original development. In order to draw this conclusion, a proponent must have regard to the following considerations, which have been established through decisions of the NSWLEC:

- “Substantially” means “essentially or materially” or “having the same essence.”
- A development can still be substantially the same even if the development as modified involves land that was not the subject of the original consent (provided that the consent authority is satisfied that the proposal is substantially the same).
- If the development as modified, involves an “additional and distinct land use”, it is not substantially the same development.



- Notwithstanding the above, development as modified would not necessarily be substantially the same solely because it was for precisely the same use as that for which consent was originally granted.
- To determine whether something is “substantially the same” requires a comparative task between the whole development as originally approved and the development as proposed to be modified. In order for the proposal to be “substantially the same”, the comparative task must:
 - *result in a finding that the modified development is “essentially or materially” the same*
 - *appreciate the qualitative and quantitative differences in their proper context*
 - *in addition to the physical difference, consider the environmental impacts of proposed Modification Applications to approved developments.*

Comments

It is considered the modification proposal is substantially the same as that approved and is development that could be considered “materially the same as that previously approved”. Furthermore, it is considered that the modifications proposed are of the same ‘essence’ as the approved development given that:

- The proposal maintains the current approved land uses and does not seek to alter the over-riding character of development over the site;
- The proposed built form is substantially the same as that already approved, in that development is to consist of industrial buildings, structures, plant and equipment located within the general confines of the overall approved Shoalhaven Starches operations.
- The proposed modifications do not represent an expansion of the Shoalhaven Starches’ footprint and the modifications will be located within the areas of the site that already contain approved development.
- The proposed development maintains the same form as that approved with due consideration given in the Modification Application to relevant issues pertaining to air quality, noise and flood impacts.
- The proposal does not seek to increase overall production from the site, nor will it involve the generation of any additional significant environmental impacts.

A development can still be substantially the same even if the development as modified involves land that was not the subject of the original consent (provided that the consent authority is satisfied that the proposal is substantially the same).



Comment

The Modification Proposal does not involve land that was not the subject of the approval which was in place at the time that the Shoalhaven Starches Expansion Project site transitioned from the Transitional Part 3A provisions to being assessed as State Significant Development

If the development as modified, involves an “additional and distinct land use”, it is not substantially the same development.

Comment

The Modification Proposal does not involve an ‘additional and distinct land use’. The proposed modification involves undertaking a range of heat recovery updates that enable infrastructure to capture and transform waste heat into usable energy to drive the ethanol, starch, and gluten manufacturing processes within the footprint of the existing factory site; that already serves the existing Shoalhaven Starches operations.

Notwithstanding the above, development as modified would not necessarily be substantially the same solely because it was for precisely the same use as that for which consent was originally granted.

Comment

The modification proposal does not seek to change the nature of the approved use of the site, it will remain as originally approved.

To determine whether something is “substantially the same” requires a comparative task between the whole development as originally approved and the development as proposed to be modified. In order for the proposal to be “substantially the same”, the comparative task must:

- *result in a finding that the modified development is “essentially or materially” the same*
- *appreciate the qualitative and quantitative differences in their proper context*
- *in addition to the physical difference, consider the environmental impacts of proposed Modification Applications to approved developments.*

Comment

Quantitatively, the proposal does not represent any increases in production in the terms of processing of flour and starch / gluten or overall ethanol production.

The qualitative elements of the proposal demonstrate that the environmental and amenity impacts of the modification proposal are limited and justifies this proposal being considered as a modification.



The rationale that underpins the heat recovery upgrades does not seek to enable an increase in production from the site but rather to improve sustainable operations:

- The proposal results in a reduction of the amount of virgin steam that is required by 75 tph (637,500 tpa), therefore, removing the need to burn natural gas at the onsite co-generation plant and other gas-filled boilers.
- Shoalhaven Starches will be able to capture and transform waste heat into usable energy to drive the ethanol, starch and gluten manufacturing processes.

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

This proposal will not significantly expand the overall footprint of the approved Shoalhaven Starches factory operations. The proposed modification works are located within the overall Shoalhaven Starches operations that have existing or approved development. The bulk, character and scale of the structures associated with this modification application will not be dissimilar to that of other industrial type development associated with the existing factory site. The works will be sited in the midst of the existing factory complex and will be viewed within this context.

The works associated with this modification application do not represent an additional and or distinct land use as all proposed modifications facilitate and improve the existing approved production processes.

The proposal will not comprise any qualitative or quantitative changes in overall production from the site. The proposal essentially seeks provide a more overall sustainable and efficient factory operation.

The modified proposal represents a scale of development that will be commensurate with the bulk, scale and character of the approved development.

It is our view that the proposed modification will not have significant environmental impacts, and the modified development is substantially the same as approved Project. As such the modification proposal is considered consistent with provisions of Section 4.55(2) of the Act in this instance.

Given the above circumstances it is our view the development as modified by this modification application will be substantially the same development as the development for which consent was originally granted having regard to both the qualitative and quantitative elements of that development.



8.0 SECTION 4.15(1)(A) – ENVIRONMENTAL PLANNING PROVISIONS

In determining an application made pursuant to Section 4.55 of the EP&A Act the consent authority must take into consideration such of the matters referred to in Section 4.15(1) as are of relevance to the development the subject of the application.

8.1 ENVIRONMENTAL PLANNING INSTRUMENTS

8.1.1 STATE ENVIRONMENTAL PLANNING POLICIES

Table 4 details State Environmental Planning Policies (SEPP) that apply to the land and whether they are applicable to the proposal.

Table 4 – State Environmental Planning Policies that Apply to the Subject Site

STATE ENVIRONMENTAL PLANNING POLICY	APPLICABLE YES/NO
State Environmental Planning Policy (Planning Systems) 2021	Yes (Proposal involves modification of SSD)
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004	No
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008	No
State Environmental Planning Policy (Biodiversity & Conservation) 2021	Yes
State Environmental Planning Policy (Housing) 2021	No
State Environmental Planning Policy (Transport & Infrastructure) 2021	Yes
State Environmental Planning Policy (Industry and Employment) 2021	No
State Environmental Planning Policy No 65-Design Quality of Residential Apartment Development	No
State Environmental Planning Policy (Primary Production) 2021	No
State Environmental Planning Policy (Precincts – Central River City) 2021	No
State Environmental Planning Policy (Precincts – Western Parklands City) 2021	No
State Environmental Planning Policy (Precincts – Eastern Harbour City) 2021	No
State Environmental Planning Policy (Precincts – Regional) 2021	No
State Environmental Planning Policy (Primary Production) 2021	No
State Environmental Planning Policy (Resilience & Hazards) 2021	Yes



SEPP – Transport & Infrastructure

Schedule 3 -Traffic Generating Development

Division 17, Schedule 3 of the SEPP – Transport & Infrastructure identifies categories of development considered to be traffic generating due to their scale, type, or location. Developments that meet or exceed the specified thresholds – such as certain industrial uses, residential estates, retail centres, or freight and logistics facilities – are required to be referred to Transport for NSW (TfNSW) for review and comment.

Division 17 of this SEPP relates to Road and Traffic while Schedule 3 of the SEPP outlines traffic generating development which requires referral to TfNSW.

Schedule 3 includes the following criteria that may have relevance to this proposal:

DEVELOPMENT PURPOSE	COLUMN 1: SIZE OR CAPACITY - SITE WITH ACCESS TO ANY ROAD	COLUMN 2 SIZE OR CAPACITY – SITE WITH ACCESS TO CLASSIFIED ROAD OR TO ROAD THAT CONNECTS TO CLASSIFIED ROAD (IF ACCESS WITHIN 90M OF CONNECTION, MEASURED ALONG ALIGNMENT OF CONNECTING ROAD)
Any other purpose	200 or more motor vehicles per hour	50 or more motor vehicles per hour

The accompanying Traffic Impact Assessment prepared by ARC states that once operational MOD 31 infrastructure will not result in any increases in Shoalhaven Starches staff trips nor generate any additional truck trips. Occasional maintenance of the infrastructure will be required once operational, but this will not warrant any road network upgrades. Additionally, the proposed modification will only generate a very minor number of truck trips, averaging an estimated of no more than 1 truck per day during the 12-18 months of construction.

SEPP – Resilience & Hazards

Part 2 - Coastal Management

Part 2 of the SEPP (Resilience and Hazards) 2021 sets out development controls for land identified within Coastal Management Areas under the Coastal Management Act 2016. The intent of these provisions is to ensure that development in coastal environments is appropriately located, designed, and managed to protect coastal processes, maintain public access, and safeguard environmental, social, and economic values.

Division 1 outlines the controls to be applied to development in the Coastal Wetlands and Littoral Rainforests Area.

Coastal Wetlands and Littoral Rainforests Area.

Mapping supporting the SEPP outlines the subject land is not mapped as containing coastal wetlands or littoral rainforest.

Coastal Environment Area

Division 3 of the SEPP stipulates the controls to be applied to development in the Coastal Environment Area.

The subject land is mapped under this SEPP Mapping as being located within the Coastal Environment Area as seen below in Figure 7.



Figure 7 - Coastal Environment Area Map (Source: NSW Spatial Viewer)

Clause 2.10 of the SEPP specifies matters that must be considered in determining development applications on land within the Coastal Environment Area. Clause 2.10 reads:

- 1) *Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:*
 - a) *the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,*
 - b) *coastal environmental values and natural coastal processes,*
 - c) *the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,*

- d) *marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,*
 - e) *existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability,*
 - f) *Aboriginal cultural heritage, practices and places,*
 - g) *the use of the surf zone.*
- 2) *Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:*
- a) *the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or*
 - b) *if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or*
 - c) *if that impact cannot be minimised—the development will be managed to mitigate that impact.*

Comment:

- The proposal is not near a headland or rock platform and as such does not impact on public access to these areas.
- The proposal will not adversely impact on the visual amenity and scenic qualities of the coast.
- The Modification Application is supported by a Flora and Fauna Assessment prepared by Lodge Environmental. The assessment concludes that the proposed development is unlikely to have a significant effect on any listed communities or species or their habitat in accordance with the EP&A Act, BC Act and EPBC Act provided the recommendations in the assessment are adhered to.
- The Modification Application is supported by an Integrated Water Cycle Management Study prepared by Allen Price (**Appendix H**) which incorporates erosion and sediment control measures to minimise impact on the water quality of the adjoining watercourses.
- The proposed development is not located within close proximity to the surf zone and will not impact on coastal environmental values or natural coastal processes.

Coastal Use Area

Division 4 of the SEPP specifies the controls to be applied to development in the Coastal Use Area. The subject land is also within the Coastal Use zone as seen below in **Figure 6**.



- (ii) *if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or*
- (iii) *if that impact cannot be minimised—the development will be managed to mitigate that impact, and*
- (c) *has taken into account the surrounding coastal and built environment, and the bulk, scale and size of the proposed development.*

Comment:

- The proposal will not impact on existing safe access to the foreshore. The proposal is not near a beach, headland or rock platform and as such does not impact on public access to these areas.
- The works associated with this modification proposal will not cause overshadowing of the foreshore area or wind funnelling. The development will not block views from public places. The proposal will not adversely impact on the visual amenity and scenic qualities of the coast.
- As detailed above, the proposal will not adversely impact on Aboriginal cultural heritage and places.
- The works associated with this modification proposal are of a bulk, scale and size that are consistent with existing industrial development on the site and will not create an adverse visual impact in this locality.

Under these circumstances the proposal is considered to be consistent with the objectives.

SEPP – Resilience & Hazards

Chapter 3 - Hazardous & Offensive Development

Chapter 3 of the SEPP (Resilience and Hazards) 2021 deals with Hazardous and offensive development. Clause 3.11 of the SEPP requires that a person who proposes to carry out development for the purposes of a potentially hazardous industry must prepare a preliminary hazard analysis in accordance with the current circulars or guidelines published by the Department of Planning and submit the analysis with the development application.

The Modification Proposal is supported by a Hazard Analysis prepared by Pinnacle Risk Management Pty Ltd. This matter is further addressed in Section 7.2.4 of this Modification Report.

SEPP – Resilience & Hazards

Chapter 4 - Remediation of Land

Chapter 4 of the SEPP (Resilience and Hazards) 2021 provides a state-wide planning approach to the remediation of contaminated land. Under Chapter 4, the consent



authority is required to consider whether land is contaminated and whether the proposed remediation of any proposed contaminated site will satisfactorily render the land suitable for the intended use, when determining a Development Application.

In support of the proposed modification, GHD were engaged to prepare a Preliminary Site Investigation to assess the likelihood for contamination to exist at the proposed structures from past or present activities and provide recommendations for further investigation and/or options management.

Based on investigation results, potential for contamination was identified in 8 Areas of Environmental Concern (AECs) potentially impacting soil, surface water and groundwater. The occurrence of contamination (if present) is expected to be localised.

Based on the investigation results for contamination, a Targeted Site Investigation is recommended for the AECs where the likelihood of contamination to exist is assessed as moderate to high and high. AECs where the likelihood of contamination was assessed as moderate, low to moderate, low and very low can be managed at the time of construction should contamination be encountered.

It is recommended that a Construction Environmental Management Plan be prepared to manage the potential contaminant exposure risks during construction activities, and manage potential unexpected finds (e.g. buried waste, demolition waste etc). that could be encountered.

SEPP (BIODIVERSITY AND CONSERVATION) 2021

In March 2021, the State Environmental Planning Policy (Biodiversity and Conservation) replaced the SEPP (Koala Habitat Protection) as the policy framework guiding Koala habitat protection. Part 4.1 of the SEPP (Biodiversity and Conservation) 2021 states that all LGAs listed in Schedule 2 of this SEPP are subject to the development controls outlined in Chapter 4. The City of Shoalhaven is listed within Schedule 2, indicating that these development controls apply to the subject site.

As the Shoalhaven LGA does not have an approved koala plan of management as defined by Part 4.3 - Section 4.14 of this SEPP and as the subject site is greater than one (1) hectare, the consent authority is required to assess whether the Modification Proposal is likely to have any impact on koalas or koala habitat. If the consent authority is satisfied that the development is likely to have a higher level of impact on koalas or koala habitat, the consent authority must consider a Koala Assessment Report (KAR) for the development.

In relation to the provisions of this SEPP, the Flora and Fauna assessment (**Appendix D**) prepared by Lodge Environmental identifies that the subject land does not contain any Koala feed trees, and the nearest Koala record is over 4km away with no habitat connectivity to the Subject Land. As such, the native vegetation within the subject land cannot be considered core Koala habitat. Therefore, the no further consideration of Chapter 4 of the SEPP is required.

8.1.2 LOCAL ENVIRONMENTAL PLAN

Shoalhaven Local Environmental Plan 2014

The parcels of land associated with the proposed heat recovery upgrades and those located within the Shoalhaven Starches factory site are all zoned E4 General Industrial; while the relocation of the 78 parking spaces are on land zoned RU2 Rural Landscape; under the provisions of the Shoalhaven LEP 2014 (SLEP 2014) (refer Figure 9).

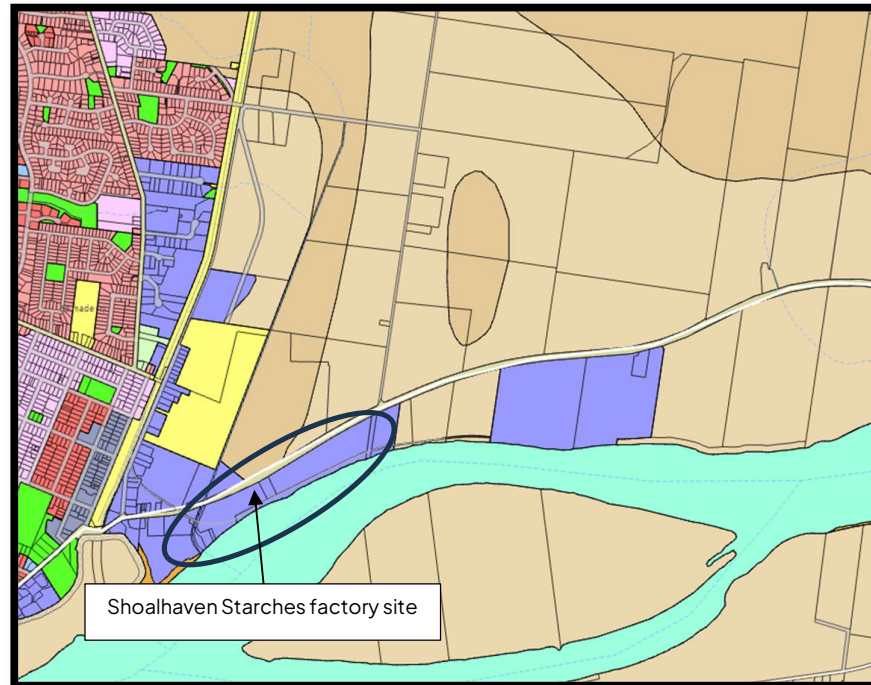


Figure 9- Extract of zoning map (Source: SLEP 2014)

The objectives of the E4 zone are:

- *To provide a wide range of industrial and warehouse land uses.*
- *To encourage employment opportunities.*
- *To minimise any adverse effect of industry on other land uses.*
- *To support and protect industrial land for industrial uses.*
- *To allow a diversity of activities that do not significantly conflict with the operation of existing or proposed development.*
- *To enable other land uses that provide facilities or services to meet the day to day needs of workers in the area.*

It is our view that the proposal is consistent with these objectives for the E4 zone as the proposal involves modifications to an existing industrial facility.



“General industries” are permissible within the E41 zone subject to consent (Table 5). The proposal involves modifications to an existing industrial development and is therefore permissible with consent.

Table 5 – Land Use Permissibility – E4 Zone Shoalhaven LEP 2014

Permitted without consent	Nil.
Permitted with consent	Bulky goods premises; Depots; Freight transport facilities; General industries ; Industrial training facilities; Kiosks; Light industries; Markets; Neighbourhood shops; Roads; Take away food and drink premises; Timber yards; Warehouse or distribution centres
Prohibited	Agriculture; Air transport facilities; Airstrips; Amusement centres; Animal boarding or training establishments; Camping grounds; Caravan parks; Cemeteries; Charter and tourism boating facilities; Child care centres; Correctional centres; Crematoria; Eco-tourist facilities; Educational establishments; Environmental facilities; Exhibition villages; Extractive industries; Farm buildings; Forestry; Function centres; Health services facilities; Highway service centres; Home-based childcare; Home businesses; Home occupations; Home occupations (sex services); Information and education facilities; Marinas; Mooring pens; Moorings; Office premises; Open cut mining; Places of public worship; Registered clubs; Residential accommodation; Respite day care centres; Restricted premises; Retail premises; Sex services premises; Tourist and visitor accommodation; Water recreation structures; Wharf or boating facilities.

A small portion of the works associated with this modification are within the RU2 Zone.

The objectives of the RU2 zone are:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.

It is our view that the proposal is consistent with these objectives as:

- The proposed works associated with the Modification Proposal within the RU2 zone relate to the relocation of car parking spaces.
- The proposed modification within the RU2 zone relates to upgrade works to the existing WTP, and specifically works to the existing wet weather storage ponds. These works will not involve substantial changes to the outward appearance of these existing works.
- The proposed modification within the RU2 zone relates to upgrade works to the existing WTP which will be compatible with the existing use of the subject land.

Table 6 outlines the land use table provisions applicable to the RU2 zone that apply to the site.



Table 6- Land Use Permissibility –RU2 Zone (Shoalhaven LEP 2014)

Permitted without consent	Extensive agriculture; Forestry; Home occupations
Permitted with consent	Agriculture; Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Artisan food and drink industries; Boat building and repair facilities; Boat sheds; Building identification signs; Business identification signs; Camping grounds; Caravan parks; Cellar door premises; Cemeteries; Charter and tourism boating facilities; Community facilities; Crematoria; Depots; Dual occupancies (attached); Dwelling houses; Eco-tourist facilities; Environmental facilities; Environmental protection works; Extractive industries; Farm buildings; Flood mitigation works; Food and drink premises; Freight transport facilities; Funeral homes; Group homes; Hazardous industries; Helipads; Home-based child care; Home businesses; Home industries; Information and education facilities; Marinas; Markets; Mooring pens; Moorings; Offensive industries; Places of public worship; Plant nurseries; Recreation areas; Recreation facilities (indoor); Recreation facilities (major); Recreation facilities (outdoor); Roads; Roadside stalls; Rural industries ; Tourist and visitor accommodation; Veterinary hospitals; Water recreation structures; Water supply systems
Prohibited	Hotel or motel accommodation; Pubs; Serviced apartments; Any other development not specified in item 2 or 3

“Rural industries” are defined for the purposes of the SLEP 2014 as meaning:

rural industry means the handling, treating, production, processing, storage or packing of animal or plant agricultural products for commercial purposes, and includes any of the following—

- (a) agricultural produce industries,
- (b) livestock processing industries,
- (c) composting facilities and works (including the production of mushroom substrate),
- (d) sawmill or log processing works,
- (e) stock and sale yards,
- (f) the regular servicing or repairing of plant or equipment used for the purposes of a rural enterprise.

Note—

Rural industries are not a type of **industry**—see the definition of that term in this Dictionary.

The Shoalhaven Starches overall operations process wheat, other grains and flour to produce a range of products. Such an activity is consistent with the definition of an ‘agricultural produce industry’ which is defined under the SLEP 2014 as meaning:



agricultural produce industry means a building or place used for the handling, treating, processing or packing, for commercial purposes, of produce from agriculture (including dairy products, seeds, fruit, vegetables or other plant material), and includes wineries, flour mills, cotton seed oil plants, cotton gins, feed mills, cheese and butter factories, and juicing or canning plants, but does not include a livestock processing industry.

Note—

*Agricultural produce industries are a type of **rural industry**—see the definition of that term in this Dictionary.*

As outlined in the 'note' in the above definition Agricultural produce industries are a type of rural industry. The Modification Proposal forms part of the Shoalhaven Starches operations. The Modification Proposal involves works that are ancillary to the use of the site as a rural industry and therefore permissible with consent within the RU2 zone (refer Table 5 and Table 6).

The SLEP 2014 also has a number of specific provisions that apply to the land. The implications that these provisions have in relation to this proposal are discussed in Table 7 below:



Table 7 - Shoalhaven Local Environment Plan Provisions

CLAUSE	PROVISIONS	COMMENTS
<p>4.3 Height of Buildings</p>	<p>(1) <i>The objectives of this clause are as follows:</i> (a) <i>to ensure that buildings are compatible with the height, bulk and scale of the existing and desired future character of a locality,</i> (b) <i>to minimise visual impact, disruption of views, loss of privacy and loss of solar access to existing development,</i> (c) <i>to ensure that the height of buildings on or in the vicinity of a heritage item or within a heritage conservation area respect heritage significance.</i> (2) <i>The height of a building on any land is not to exceed the maximum height shown for the land on the Height of Buildings Map.</i> (2A) <i>If the Height of Buildings Map does not show a maximum height for any land, the height of a building on the land is not to exceed 11 metres.</i></p>	<p>Although there is no maximum height specified for the subject land, Clause 4.3(2A) imposes a maximum building height of 11 m where no specific height limit is designated.</p> <p>The Modification Proposal includes: Gantry – 17.2m Distillery Heat Recovery Building – 29m Distillery Heat Recovery Evaporators – 58.7m Control Room Additions – 9.99m</p> <p>Under these circumstances, the proposal involves structures that will exceed the maximum building height limit of 11 m.</p> <p>However, as this application is a Modification Application under Section 4.55 of the EP&A Act, a Clause 4.6 variation request is not required and therefore has not been provided.</p> <p>It is also noted that the proposed structures remain below the height of existing approved buildings on the site, which already accommodate taller industrial plant and equipment necessary for the facility’s operation. The proposed heights therefore do not introduce new or unreasonable visual or amenity impacts, and are consistent with the established character and scale of built form within the Manildra facility.</p>
<p>Clause 4.6 Exceptions to development standards</p>	<p>(1) <i>The objectives of this clause are as follows:</i> (a) <i>to provide an appropriate degree of flexibility in applying certain development standards to particular development,</i></p>	<p>The proposal will involve the erection of structures that will exceed the 11 metres building height limit set by Clause 4.3(2A).</p>



	<p>(b) to achieve better outcomes for and from development by allowing flexibility in particular circumstances.</p> <p>(2) Development consent may, subject to this clause, be granted for development even though the development would contravene a development standard imposed by this or any other environmental planning instrument. However, this clause does not apply to a development standard that is expressly excluded from the operation of this clause.</p> <p>(3) Development consent must not be granted for development that contravenes a development standard unless the consent authority has considered a written request from the applicant that seeks to justify the contravention of the development standard by demonstrating:</p> <p>(a) that compliance with the development standard is unreasonable or unnecessary in the circumstances of the case, and</p> <p>(b) that there are sufficient environmental planning grounds to justify contravening the development standard.</p> <p>(4) Development consent must not be granted for development that contravenes a development standard unless:</p> <p>(a) the consent authority is satisfied that:</p> <p>(i) the applicant's written request has adequately addressed the matters required to be demonstrated by subclause (3), and</p> <p>(ii) the proposed development will be in the public interest because it is consistent with the objectives of the particular standard and the objectives for development within the zone in which the development is proposed to be carried out, and</p> <p>(b) the concurrence of the Director-General has been obtained.</p> <p>(5) In deciding whether to grant concurrence, the Director-General must consider:</p> <p>(a) whether contravention of the development standard raises any matter of significance for State or regional environmental planning, and</p> <p>(b) the public benefit of maintaining the development standard, and</p>	<p>The proposed development will be erected within the broader approved Shoalhaven Starches factory site and operations.</p> <p>As the proposed works will be built within the existing industrial complex it is not expected that the new structures will have an undue effect due to its height. A written request pursuant to Clause 4.6 is not required for the contravention of a development standard arising as a result of a modification application per <i>SDHA Pty Ltd v Waverley Council [2015] NSWLEC 65</i> at [34] – [35]. However, as this application is a Modification Application under Section 4.55 of the EP&A Act, a Clause 4.6 variation request is not required and therefore has not been provided.</p> <p>It is also noted that the proposed structures remain below the height of existing approved buildings on the site, which already accommodate taller industrial plant and equipment necessary for the facility's operation. The proposed heights therefore do not introduce new or unreasonable visual or amenity impacts, and are consistent with the established character and scale of built form within the Manildra facility.</p>
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	<p>(c) any other matters required to be taken into consideration by the Director- General before granting concurrence.</p> <p>(6) Development consent must not be granted under this clause for a subdivision of land in Zone RU1 Primary Production, Zone RU2 Rural Landscape, Zone RU3 Forestry, Zone RU4 Primary Production Small Lots, Zone RU6 Transition, Zone R5 Large Lot Residential, Zone E2 Environmental Conservation, Zone E3 Environmental Management or Zone E4 Environmental Living if:</p> <p>(a) the subdivision will result in 2 or more lots of less than the minimum area specified for such lots by a development standard, or</p> <p>(b) the subdivision will result in at least one lot that is less than 90% of the minimum area specified for such a lot by a development standard.</p> <p>Note. When this Plan was made it did not include all of these zones.</p> <p>(7) After determining a development application made pursuant to this clause, the consent authority must keep a record of its assessment of the factors required to be addressed in the applicant's written request referred to in subclause (3).</p>	
<p>Clause 5.10 Heritage Conservation</p>	<p>(1) The objectives of this clause are:</p> <p>(a) to conserve the environmental heritage of Shoalhaven; and</p> <p>(b) to conserve the heritage significance of heritage items and heritage conservation areas including associated fabric, settings and views; and</p> <p>(c) to conserve archaeological sites; and</p> <p>(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.</p> <p>(2) Development consent is required for any of the following:</p> <p>(a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance):</p> <p>(i) a heritage item,</p> <p>(ii) an Aboriginal object</p> <p>(iii) a building, work, relic or tree within a heritage conservation area,</p>	<p>There are no heritage items within the subject land, and the subject site is not located within a heritage conservation area.</p> <p>The proposed development as modified will not impact on any heritage items in the vicinity of the site and is not considered to have any archaeological potential.</p>



	<p>(b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,</p> <p>(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved damaged or destroyed,</p> <p>(d) disturbing or excavating an Aboriginal place of heritage significance,</p> <p>(e) erecting a building on land:</p> <p>(i) on which a heritage item is located or that is within a heritage conservation area;</p> <p>(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,</p> <p>(f) subdividing land:</p> <p>(i) on which a heritage item is located or that is within a heritage conservation area, or</p> <p>(ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.</p>	
<p>Clause 5.21 Flood Planning</p>	<p>(1) The objectives of this clause are as follows—</p> <p>(a) to minimise the flood risk to life and property associated with the use of land,</p> <p>(b) to allow development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change,</p> <p>(c) to avoid adverse or cumulative impacts on flood behaviour and the environment,</p> <p>(d) to enable the safe occupation and efficient evacuation of people in the event of a flood.</p> <p>(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development—</p>	<p>The Modification Application is supported by a Flood Compliance Report prepared by WMAwater.</p>



	<p>(a) is compatible with the flood function and behaviour on the land, and</p> <p>(b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and</p> <p>(c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and</p> <p>(d) incorporates appropriate measures to manage risk to life in the event of a flood, and</p> <p>(e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses.</p> <p>(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters—</p> <p>(a) the impact of the development on projected changes to flood behaviour as a result of climate change,</p> <p>(b) the intended design and scale of buildings resulting from the development,</p> <p>(c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,</p> <p>(d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.</p> <p>(4) A word or expression used in this clause has the same meaning as it has in the Considering Flooding in Land Use Planning Guideline unless it is otherwise defined in this clause.</p> <p>(5) In this clause—</p> <p>Considering Flooding in Land Use Planning Guideline means the Considering Flooding in Land Use Planning Guideline published on the Department's website on 14 July 2021.</p>	
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	<p><i>Flood planning area has the same meaning as it has in the Floodplain Development Manual.</i></p> <p><i>Floodplain Development Manual means the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.</i></p>							
<p><i>Clause 7.1 Acid sulphate soils</i></p>	<p>(1) <i>The objective of this clause is to ensure that development does not disturb, expose or drain acid sulphate soils and cause environmental damage.</i></p> <p>(2) <i>Development consent is required for the carrying out of works described in the Table to this subclause on land shown on the Acid Sulphate Soils Map as being of the class specified for those works, except as provided by this clause.</i></p> <table border="1" data-bbox="436 706 1228 901"> <thead> <tr> <th>Class of Land</th> <th>Works</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Any works.</td> </tr> <tr> <td>2</td> <td>Works below the natural ground surface. Works by which the water table is likely to be lowered.</td> </tr> </tbody> </table>	Class of Land	Works	1	Any works.	2	Works below the natural ground surface. Works by which the water table is likely to be lowered.	<p>The Modification Application is supported by an assessment of ASS prepared by GHD. This assessment identifies that ASS may be encountered at variable depths within the proposed development areas where deep footing systems such as bored or CFA piles or trenching/excavations deeper than 1 m are required. It is recommended that an acid sulphate soil management plan (ASSMP) be developed and actioned where excavations associated with the proposed development will disturb ASS and/or require dewatering which could result in the lowering of the water table.</p>
Class of Land	Works							
1	Any works.							
2	Works below the natural ground surface. Works by which the water table is likely to be lowered.							



	3	<p><i>Works more than 1 metre below the natural ground surface.</i></p> <p><i>Works by which the water table is likely to be lowered more than 1 metre below the natural ground surface.</i></p>	
	4	<p><i>Works more than 2 metres below the natural ground surface.</i></p> <p><i>Works by which the water table is likely to be lowered more than 2 metres below the natural ground surface.</i></p>	
	5	<p><i>Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.</i></p> <p>(3) <i>Development consent must not be granted under this clause for the carrying out of works unless an acid sulphate soils management plan has been prepared for the proposed works in accordance with the Acid Sulphate Soils Manual and has been provided to the consent authority.</i></p> <p>(4) <i>Despite subclause (2), development consent is not required under this clause for the carrying out of works if:</i></p> <p>(a) <i>a preliminary assessment of the proposed works prepared in accordance with the Acid Sulphate Soils Manual indicates that an acid sulphate soils management plan is not required for the works, and</i></p> <p>(b) <i>the preliminary assessment has been provided to the consent authority and the consent authority has confirmed the assessment by notice in writing to the person proposing to carry out the works.</i></p>	



	<p>(5) Despite subclause (2), development consent is not required under this clause for the carrying out of any of the following works by a public authority (including ancillary work such as excavation, construction of access ways or the supply of power):</p> <p>(a) emergency work, being the repair of the works of the public authority required to be carried out urgently because the works have been damaged, have ceased to function or pose a risk to the environment or to public health and safety,</p> <p>(b) routine management work, being the periodic inspection, cleaning, repair or replacement of the works of the public authority (other than work that involves the disturbance of more than 1 tonne of soil).</p> <p>(c) minor work, being work that costs less than \$20,000 (other than drainage work).</p> <p>(6) Despite subclause (2), development consent is not required under this clause to carry out any works if:</p> <p>(a) the works involve the disturbance of less than 1 tonne of soil, and</p> <p>(b) the works are not likely to lower the watertable.</p>	
<p>Clause 7.4 Coastal Risk Planning</p>	<p>(1) The objectives of this clause are as follows:</p> <p>(a) to avoid significant adverse impacts from coastal hazards,</p> <p>(b) to ensure uses of land identified as coastal risk are compatible with the risks presented by coastal hazards,</p> <p>(c) to enable the evacuation of land identified as coastal risk in an emergency,</p> <p>(d) to avoid development that increases the severity of coastal hazards.</p>	<p>The Coastal Risk Planning Map that accompanies the SLEP 2014 does <u>not</u> identify the subject land as a “Coastal Risk Planning Area”. The provisions of this clause therefore do not apply to the subject site.</p>



	<p>(2) This clause applies to the land identified as “Coastal Risk Planning Area” on the Coastal Risk Planning Map.</p> <p>(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that the development:</p> <p>(a) will avoid, minimise or mitigate exposure to coastal processes, and</p> <p>(b) is not likely to cause detrimental increases in coastal risks to other development or properties, and</p> <p>(c) is not likely to alter coastal processes and the impacts of coastal hazards to the detriment of the environment, and</p> <p>(d) incorporates appropriate measures to manage risk to life from coastal risks, and</p> <p>(e) is likely to avoid or minimise adverse effects from the impact of coastal processes and the exposure to coastal hazards, and</p> <p>(f) provides for the relocation, modification or removal of the development to adapt to the impact of coastal processes and coastal hazards, and</p> <p>(g) has regard to the impacts of sea level rise.</p> <p>(4) A word or expression used in this clause has the same meaning as it has in the NSW Coastal Planning Guideline: Adapting to Sea Level Rise (ISBN 978-1-74263-035-9) published by the NSW Government in August 2010, unless it is otherwise defined in this clause.</p> <p>(5) In this clause: coastal hazard has the same meaning as in the Coastal Protection Act 1979.</p>	
<p>Clause 7.5 Terrestrial Biodiversity</p>	<p>(1) The objective of this clause is to maintain terrestrial biodiversity, by:</p> <p>(a) protecting native flora and fauna,</p>	<p>The Terrestrial Biodiversity Map that accompanies the SLEP 2014 does not identify the subject land</p>



	<p>(b) protecting the ecological processes necessary for their continued existence, and</p> <p>(c) encouraging the recovery of native flora and fauna, and their habitats.</p> <p>(2) This clause applies to land:</p> <p>(a) identified as “Biodiversity—habitat corridor” or “Biodiversity—significant vegetation” on the Terrestrial Biodiversity Map, and</p> <p>(b) situated within 40m of the bank (measured horizontally from the top of the bank) of a natural waterbody.</p> <p>(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider:</p> <p>(a) whether the development is likely to have:</p> <p>(i) any adverse impact on the condition, ecological value and significance of the fauna and flora on the land, and</p> <p>(ii) any adverse impact on the importance of the vegetation on the land to the habitat and survival of native fauna, and</p> <p>(iii) any potential to fragment, disturb or diminish the biodiversity structure, function and composition of the land, and</p> <p>(iv) any adverse impact on the habitat elements providing connectivity on the land, and</p> <p>(b) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.</p> <p>(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:</p> <p>(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or</p>	<p>as including areas of Biodiversity - habitat corridor and/or Biodiversity - significant vegetation.</p> <p>The Modification Application is supported by a Flora and Fauna Assessment. Refer to Appendix D.</p>
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	<p>(b) if that impact cannot be reasonably avoided by adopting feasible alternatives—the development is designed, sited and will be managed to minimise that impact, or</p> <p>(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.</p> <p>(5) For the purpose of this clause: <i>bank</i> means the limit of the bed of a natural waterbody. <i>bed, of a natural waterbody,</i> means the whole of the soil of the channel in which the waterbody flows, including the portion that is alternatively covered and left bare with an increase or diminution in the supply of water and that is adequate to contain the waterbody at its average or mean stage without reference to extraordinary freshets in the time of flood or to extreme droughts.</p>	
<p>Clause 7.6 <i>Riparian land and watercourses</i></p>	<p>(1) The objective of this clause is to protect and maintain the following:</p> <p>(a) water quality within watercourses,</p> <p>(b) the stability of the bed and banks of watercourses,</p> <p>(c) aquatic and riparian habitats,</p> <p>(d) ecological processes within watercourses and riparian areas.</p> <p>(2) This clause applies to all of the following:</p> <p>(a) land identified as “Riparian Land” on the Riparian Lands and Watercourses Map,</p> <p>(b) land identified as “Watercourse Category 1”, “Watercourse Category 2” or “Watercourse Category 3” on that map,</p> <p>(c) all land that is within 50 metres of the top of the bank of each watercourse on land identified as “Watercourse Category 1”, “Watercourse Category 2” or “Watercourse Category 3” on that map.</p>	<p>The Riparian Lands and Watercourses Map that accompanies the SLEP 2014 identifies a category 1 watercourse (Shoalhaven River), adjacent to the southern boundary of the Shoalhaven Starches factory site and a category 2 watercourse Abernethy’s Creek flowing through the factory site (north south).</p> <p>The Modification Application is supported by an assessment of the impacts that the proposed works will have on the creek and riverbank stability of the Shoalhaven River prepared by GHD (Appendix G).</p> <p>The Modification Application is supported by a Flora and Fauna Report prepared by Lodge Environmental. Refer to Appendix D.</p>



	<p>(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider:</p> <p>(a) whether or not the development is likely to have any adverse impact on the following:</p> <p>(i) the water quality and flows within the watercourse,</p> <p>(ii) aquatic and riparian species, habitats and ecosystems of the watercourse,</p> <p>(iii) the stability of the bed and banks of the watercourse,</p> <p>(iv) the free passage of fish and other aquatic organisms within or along the watercourse,</p> <p>(v) any future rehabilitation of the watercourse and its riparian areas, and</p> <p>(b) whether or not the development is likely to increase water extraction from the watercourse, and</p> <p>(c) any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.</p> <p>(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:</p> <p>(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or</p> <p>(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or</p> <p>(c) if that impact cannot be minimised—the development will be managed to mitigate that impact</p> <p>(5) For the purpose of this clause: bank means the limit of the bed of a watercourse. bed, of a watercourse, means the whole of the soil of the channel in which the watercourse flows, including the portion</p>	<p>The Modification Application is also supported by an Integrated Water Cycle Management Strategy prepared by Allen Price (Appendix H) which addresses measures to protect water quality of the Shoalhaven River.</p>
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	<p><i>that is alternatively covered and left bear with an increase or diminution in the supply of water and that is adequate to contain the watercourse at its average or mean stage without reference to extraordinary freshets in the time of flood or to extreme droughts.</i></p>	
<p><i>Clause 7.7 Landslide risk and other land degradation</i></p>	<p><i>(1) The objective of this clause is to maintain soil resources and the diversity and stability of landscapes, including protecting land:</i></p> <p><i>(a) comprising steep slopes, and</i></p> <p><i>(b) susceptible to other forms of land degradation.</i></p> <p><i>(2) This clause applies to the following land:</i></p> <p><i>(a) land with a slope in excess of 20% (1:5), as measured from the contours of a 1:25,000 topographical map, and</i></p> <p><i>(b) land identified as “Sensitive Area” on the Natural Resource Sensitivity—Land Map.</i></p> <p><i>(3) Before determining a development application for development on land to which this clause applies, the consent authority must consider any potential adverse impact, either from, or as a result of, the development in relation to:</i></p> <p><i>(a) the geotechnical stability of the site, and</i></p> <p><i>(b) the probability of increased erosion or other land degradation processes.</i></p> <p><i>(4) Before granting consent to development on land to which this clause applies, the consent authority must be satisfied that:</i></p> <p><i>(a) the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or</i></p> <p><i>(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or</i></p>	<p>The proposed works involve land identified as sensitive land under the SLEP 2014 mapping. Under these circumstances the provisions of this clause will apply to this proposal.</p> <p>As outlined above in GHD have undertaken a geotechnical assessment. This is addressed further in Section 7.2.9 of this Modification Report.</p>



	<p>(c) if that impact cannot be minimised Ξ the development will be managed to mitigate that impact.</p> <p>(5) In this clause, topographical map means the most current edition of a topographical map, produced by Land and Property Information division of the Department of Finance and Services, that identifies the Council’s local government area and boundary.</p>	
<p>Clause 7.8 Scenic protection</p>	<p>(1) The objective of this clause is to protect the natural environmental and scenic amenity of land that is of high scenic value.</p> <p>(2) This clause applies to land identified as “Scenic Protection” on the Scenic Protection Area Map.</p> <p>(3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must:</p> <p>(a) consider the visual impact of the development when viewed from a public place and be satisfied that the development will involve the taking of measures that will minimise any detrimental visual impact, and</p> <p>(b) consider the number, type and location of existing trees and shrubs that are to be retained and the extent of landscaping to be carried out on the site, and</p> <p>(c) consider the siting of the proposed buildings.</p>	<p>The subject land is not identified as being within a “Scenic Protection” area by Scenic Protection Area Mapping that accompanies the SLEP 2014. The provisions of this clause therefore do not apply to the subject site.</p> <p>The visual impact associated with this proposal are discussed in Section 7.2.11 of this Modification Report.</p>



<p>Clause 7.9 HMAS Albatross airspace operations</p>	<p>(1) The objectives of this clause are as follows—</p> <p>(a) to provide for the effective and on-going operation of the HMAS Albatross Military Airfield by ensuring that such operation is not compromised by proposed development that penetrates the Limitation or Operations Surface for that airport,</p> <p>(b) to protect the community from undue risk from that operation.</p> <p>(2) If a development application is received and the consent authority is satisfied that the proposed development will penetrate the Limitation or Operations Surface, the consent authority must not grant development consent unless it has consulted with the relevant Commonwealth body about the application.</p> <p>(3) The consent authority may grant development consent for the development if the relevant Commonwealth body advises that—</p> <p>(a) the development will penetrate the Limitation or Operations Surface but it has no objection to its construction, or</p> <p>(b) the development will not penetrate the Limitation or Operations Surface.</p> <p>(4) The consent authority must not grant development consent for the development if the relevant Commonwealth body advises that the development will penetrate the Limitation or Operations Surface and should not be carried out.</p> <p>(5) In this clause—</p> <p>Limitation or Operations Surface means the Obstacle Limitation Surface or the Procedures for Air Navigation Services Operations Surface as shown on the Obstacle Limitation Surface Map or the Procedures for Air Navigation Services</p>	<p>As highlighted in Section 5.1 above, the Australian Department of Defence have been consulted in relation to this proposal. None of the proposed works associated with this Modification Proposal that are to be situated within the Nowra Airfield Defence Aviation Area declaration as highlighted by the submission prepared by Department of Defence will have a height (including flume height) above 90 metres. Under these circumstances no further assessment is required in this regard.</p>
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	<p>Operations Surface Map for the HMAS Albatross Military Airfield.</p> <p>Relevant Commonwealth body means the body, under Commonwealth legislation, that is responsible for development approvals for development that penetrates the Limitation or Operations Surface for the HMAS Albatross Military Airfield</p>	
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8.1.3 DEVELOPMENT CONTROL PLANS (DCP) AND POLICIES

Shoalhaven Development Control Plan (SDCP) 2014

Chapter G2 Sustainable Stormwater Management and Erosion / Sediment Control

The purpose of this chapter of the SDCP is to provide guidance about how to implement sustainable stormwater management and design principles for stormwater management.

The Modification Application is supported by an Integrated Water Cycle Management Strategy (ICMS) that has been prepared to address the provisions of this chapter of the SDCP (Appendix H). The IWCMS concludes the proposed works are unlikely to generate stormwater pollutants within the site.

Potential short term stormwater quality impacts from the construction works can, according to Allen Price will be mitigated by the implementation of an erosion and sediment control plan and staged earthworks such that the performance objectives and criteria in Chapter G2 can be satisfied. Allen Price indicates that the proposal is considered adequate from a stormwater management perspective.

Chapter G9: Development on Flood Prone Land

The provisions of *Chapter G9: Development on Flood Prone Land* of the Shoalhaven SDCP 2014 have relevance to this proposal.

This Modification Application is supported by a Flood Compliance Report prepared by WMAwater (Appendix E).

Tables 10, 11 and 12 below addresses the relevant provisions (Sections 5.1, 5.2 and 5.4.4 respectively) of Chapter G9 of the Shoalhaven SDCP 2014 having regard to the findings of the Flood Compliance Report prepared by WMAwater in relation to this Modification Proposal.



Table 10 Performance Criteria – General (Section 5.1 SDCP 2014)

PERFORMANCE CRITERIA	RESPONSE
P1 Development or work on flood prone land will meet the following:	
The development will not increase the risk to life or safety of persons during a flood event on the development site and adjoining land.	The works are such that the construction will require 60 additional temporary contractors and one additional full time worker. Subsequently, there will not be a significant increase in the permanent workforce on the site or provide an additional threat to the safety of any worker during a flood.
The development or work will not unduly restrict the flow behaviour of floodwaters.	Refer Flood Impact Assessment in Appendix E
The development or work will not unduly increase the level or flow of floodwaters or stormwater runoff on land in the vicinity.	Refer Flood Impact Assessment in Appendix E. As the majority of local catchment runoff is entirely contained within land owned by Shoalhaven Starches, so also are any affectations.
The development or work will not exacerbate the adverse consequences of floodwaters flowing on the land with regard to erosion, siltation and destruction of vegetation.	The works are largely within existing built-up industrial land clear of vegetation. All runoff under existing and future conditions will reach the ground in nearly identical locations; the works will have no significant impact on erosion or siltation.
The structural characteristics of any building or work that are the subject of the application are capable of withstanding flooding in accordance with the requirements of the Council.	A separate structural report will be provided for the rail line.
The development will not become unsafe during floods or result in moving debris that potentially threatens the safety of people or the integrity of structures.	A separate structural report will be provided for the rail line.
Potential damage due to inundation of proposed buildings and structures is minimised.	Structural failure of the works during a flood will potentially increase the rate of inflow of floodwaters from the Shoalhaven River to the northern floodplain. However, the increased rate of inflow is unlikely to cause damage to surrounding buildings or structures outside Shoalhaven Starches lands.
The development will not obstruct escape routes for both people and stock in the event of a flood.	The works will not occupy escape routes or cause workers to become trapped.



The development will not unduly increase dependency on emergency services.	The works are such that their construction will not significantly increase the number of workers on the site or provide an additional threat to the safety of any worker during a flood.
Interaction of flooding from all possible sources has been taken into account in assessing the proposed development against risks to life and property resulting from any adverse hydraulic impacts.	Refer to Flood Impact Assessment in Appendix E.
The development will not adversely affect the integrity of floodplains and floodway's, including riparian vegetation, fluvial geomorphologic environmental processes and water quality.	The works will be constructed on land designated as high hazard floodway in the 1% AEP event. The site is industrial land with nil existing vegetation (apart from grass) and is beyond the influence of normal fluvial geomorphic processes. The works will have no impact on water quality or the integrity of the floodplain and floodways.

Table 11 Performance Criteria - General (Section 5.2 of SDCP)

Performance Criteria	Response
P2 Filling or excavation on flood prone land will meet the following:	
High hazard floodway areas are kept free of fill and/or obstructions.	Part of the works may be in a high hazard floodway as that is the only possible location for the works within the plan layout.
The proposed fill or excavation will not unduly restrict the flow behaviour of floodwaters.	Refer to Section 3 of the Flood Impact Assessment in Appendix E
The proposed fill or excavation will not unduly increase the level or flow of floodwaters or stormwater runoff on land in the vicinity, including adjoining land.	Refer to Section 3 of the Flood Impact Assessment in Appendix E.
The proposed fill or excavation will not exacerbate erosion, siltation and destruction of vegetation caused by floodwaters flowing on the land.	The works are largely within existing built-up industrial land clear of vegetation. The works will not exacerbate erosion, siltation and destruction of vegetation caused by floodwaters flowing on the land.
The proposed fill or excavation will not be carried out on flood prone land if sufficient flood free area is available for development within the subject property.	The proposed location of the works is the only possible location within the existing plant layout.



The proposed excavation does not create new habitable rooms, non-habitable storage areas or carparks with floor levels below the existing ground level.	No excavation will be undertaken apart from the creation of foundations of similar.
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Table 12 Performance Criteria – Site Specific Flood Related Development Controls – Lower Shoalhaven River (Section 5.4.4 of SDCP)

Specific Controls	Response
Industrial Development at Bomaderry	
The potential hydraulic effects of any future construction works shall be minimised through locating them in the “shadow” of other buildings or away from the main flow paths where possible.	Refer to Section 5.3 & 5.4 of the Flood Impact Assessment in Appendix E.
Any proposed works must be designed and located to minimise any increase in flood damages to other users/occupiers of the floodplain.	Refer to Section 5.3 & 5.4 of the Flood Impact Assessment in Appendix E.
A full hydraulic assessment will be required prior to any future development or redevelopment to assess the potential impacts upon flooding.	Refer to Section 5.3 & 5.4 of the Flood Impact Assessment in Appendix E.

8.1.4 ENVIRONMENTAL PLANNING & ASSESSMENT (EP & A) ACT

The EP&A Act is the principal planning and development legislation in New South Wales.

Section 4.36(2) of the EP&A Act declares development that is state significant development (SSD), and further details that a State Environmental Planning Policy may declare any development to be SSD. This is further discussed in Section 5.2.9 below.

As will be discussed previously the proposal is identified as SSD under State Environmental Planning Policy (Planning Systems) 2021 (the “Planning Systems SEPP”).

Section 4.38 outlines the parameters for which the consent authority is to determine a development application in respect of State significant development including a development being partly prohibited by an environmental planning instrument under section 4.38 (3).

Sections 4.41 and 4.42 identify the relevant approvals that are not required for developments classified as state significant developments. Upon consideration of the types of approvals applied under this part, the following permits were determined to be applicable to the proposed development:

- An environment protection licence under Chapter 3 of the Protection of the Environment Operations Act 1997 (for any of the purposes referred to in section 43 of that Act); and
- A consent under section 138 of the Roads Act 1993.



8.1.5 PROTECTION OF THE ENVIRONMENT OPERATIONS ACT AND ASSOCIATED REGULATIONS

The existing Shoalhaven Starches factory site and Environmental Farm are subject to an Environmental Protection Licence (EPL) under the Protection of the Environment Operations Act 1997 (POEO Act) (EPL No. 883) issued by the EPA. The licence imposes requirements in terms of:

- discharges to air, water and land;
- irrigation controls;
- management of irrigation;
- maintenance of irrigation reticulation;
- odour control;
- noise.

If approved, the proposed modification may necessitate the terms/provisions of this licence to be also reviewed.

8.1.6 BIODIVERSITY CONSERVATION (BC) ACT & REGULATIONS

The *Biodiversity Conservation Act 2016 (BC Act)* establishes a framework and scientific method for measuring the impact of proposed developments on biodiversity values and subsequent tools to avoid, minimise and offset any identified impacts. This requires certain matters in respect of biodiversity values and vegetation clearing to be addressed by proposed developments.

Part 6 of the BC Act establishes a Biodiversity Offset Scheme (BOS) which aims to ensure there is no net loss of biodiversity values. Entry into the BOS is triggered by exceeding the thresholds as outlined in Part 7 of the *NSW Biodiversity Conservation Regulation 2017 (BC Reg)* and includes those listed in Table 8 below.

Table 8: Biodiversity Offset Scheme (BOS) Triggers

Potential Trigger	Threshold	Triggered	Comment
Area threshold	> 0.5 ha of native vegetation clearance based on a minimum lot size of one to 40 hectares	No	Clearing not expected to exceed the 0.5 ha clearing threshold.
Biodiversity Values Map (BVM)	Impacts to any areas identified on the BVM	Yes	The property is on the BVM.
State Significant Development (SSD)	BOS automatically triggered by all SSD	No	The proposed is a modification to a SSD. In this instance, it's not an automatic trigger of the BOS.



Section 30A of the Biodiversity Conservation (Savings and Transitional) Regulation 2017 stipulates that a BDAR is required to be submitted and taken into consideration if Division 4 of Part 7 of the BC Act would have applied to the original development (as proposed to be modified) if planning approval had been granted after the commencement of the new Act.

The Flora and Fauna Report (Appendix D) submitted with this modification confirms that there will be no impact on any active and mapped area of Biodiversity Value, nor will there be an impact on native vegetation above the relevant impact threshold. Therefore, a BDAR assessment is not required.

8.1.7 FEDERAL ENVIRONMENT AND BIODIVERSITY CONSERVATION (EPBC) ACT

The EPBC Act establishes a process for assessing the environmental impact of activities and developments where MNES may be affected. Under the Act any action which “has, will have, or is likely to have a significant impact on a matter of national environmental significance” is defined as a “controlled action”, and requires approval from the Commonwealth Department of Climate Change Energy, the Environment and Water who is responsible for administering the EPBC Act.

The Flora and Fauna Assessment has been undertaken in accordance with the provisions of this legislation. The report states that the proposed development is unlikely to have a significant effect on any listed communities or species or their habitat in accordance with the EP&A Act, BC Act and EPBC Act provided the recommendations contained in this report are adhered to.



8.2 THE LIKELY IMPACTS OF THE DEVELOPMENT, INCLUDING ENVIRONMENTAL IMPACTS ON BOTH NATURAL AND BUILT ENVIRONMENTS, AND SOCIAL AND ECONOMIC IMPACTS IN THE LOCALITY

8.2.1 RISK ASSESSMENT OF POTENTIAL ENVIRONMENTAL IMPACTS

The purpose of this section of the Modification Report is to provide a risk assessment of the potential environmental impacts associated with the modification proposal. This section (Error! Reference source not found.) compares the potential impacts from the proposed modification against the approved project. The comparison uses the key environmental impacts assessed in the original EA that supported the original MPO6_0228 and summarises the relative change in environmental impacts associated with the proposed modification.

Table 9 – Risk Assessment

RELATIVE CHANGE IN ENVIRONMENTAL IMPACT	ADDITIONAL MANAGEMENT OR MITIGATION MEASURES REQUIRED	SIGNIFICANCE OF ISSUE WITH THIS MODIFICATION PROPOSAL
Air Quality (including Odour) Assessment		
<p>One of the primary issues that was addressed in the original EA for the Shoalhaven Starches Expansion Project concerned the need for a comprehensive air quality assessment (including odour assessment) and reduction of odours as part of the project.</p> <p>The Modification Application is supported by an Air Quality Assessment prepared by GHD (Appendix A).</p> <p>The Air Quality Impact Assessment identifies potential impacts associated with dust emissions during construction of the proposed works are considered to be low risk for dust soiling and negligible risk for human health and ecological impacts. Recommendations for dust management during construction are provided by GHD to further reduce the risk of dust impacts from construction of the proposed modification.</p> <p>A quantitative air quality assessment was also undertaken by GHD in accordance with the Approved Methods to assess operation of the proposed modification works.</p> <p>Based on assumptions as outlined in the assessment, GHD indicate that the proposed modification is predicted to comply with the relevant air quality assessment criteria when assessed in accordance with the Approved Methods</p>	<p>The Air Quality Assessment prepared by GHD proposes specific mitigation measures to further minimise the risk of dust impacts at receptor locations during construction works include:</p> <ul style="list-style-type: none"> • <i>Prepare a construction dust management plan for the works</i> • <i>Inform construction staff of activities likely to cause high dust emissions (as part of site inductions) and appropriate methods to mitigate dust emissions.</i> • <i>Use dust suppression watering via water truck or cart during high dust generating activities</i> • <i>Reducing or stopping construction works if dust plumes are observed travelling off site beyond the site boundary.</i> • <i>Covering of loads during transport to prevent loss of material during haulage.</i> 	<p>This matter is further addressed in Section 8.2.2 of this Modification Report.</p>
Transport and Traffic		
<p>The Modification Application is supported by a Traffic Impact Study (TIS) prepared by ARC (Appendix F The TIS concludes:</p> <ul style="list-style-type: none"> ○ All access to the new MOD 31 infrastructure will be provided via existing intersections that provide geometry appropriate to the maximum 	<p>ARC recommend that a Construction Traffic Management Plan (CTMP) be prepared. ARC have prepared a Draft CTMP has been prepared which indicates that the construction of the MOD 31 infrastructure can be undertaken safely and efficiently without impacting the local road network. The</p>	<p>This issue is further addressed in Section 8.2.9 of this Modification Report.</p>

<p>sized vehicles entering/departing these sites, and have previously been approved by the NHVR.</p> <ul style="list-style-type: none"> ○ All internal access infrastructure has been designed to accommodate the movements of the largest vehicles travelling within the Shoalhaven Starches site where MOD 31 infrastructure is located. ○ The operation of the MOD 31 infrastructure is not anticipated to generate any additional vehicle trips above the currently approved trip generation of Shoalhaven Starches. ○ The new Northern Car Park driveways will be designed in full accordance with the relevant Austroads guidelines, and continue to provide for LILO movements only ○ The construction of the MOD 31 infrastructure will generate up to 30 additional vehicle trips in a peak hour. This level of additional trips would have no impact on the operation of the local road network, even when considered as being additional to super-peak Base 2020 conditions. ○ Significant parking is provided across Shoalhaven Starches such that even if the MOD 31 construction staff parking demand were considered separately to a super-peak staff demand, these parking areas would still provide significant spare capacity. As such, the MOD 31 construction, or indeed general Shoalhaven Starches operations, will generate no on-street parking demand. 	<p>CTMP would be finalised further to consideration of any future Conditions of Consent in a MOD 31 approval, and implemented prior to any construction work commencing.</p>	
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<p>o A Draft CTMP has been prepared which indicates that the construction of the MOD 30 infrastructure can be undertaken safely and efficiently without impacting the local road network. The Draft CTMP will be finalised further to consideration of any future Conditions of Consent in a MOD 31 approval, and implemented prior to any construction work commencing.</p> <p>In summary, ARC has concludes that MOD 31 is entirely supportable further to access, traffic and parking considerations</p>		
<p>Site Contamination</p>		
<p>The Modification Application is supported by site contamination assessment undertaken by GHD (Appendix G) who conclude:</p> <p><i>Based on previous and current investigation results, eight Areas of Environmental Concern (AECs) which were relevant to the current investigation areas:</i></p> <ul style="list-style-type: none"> • <i>AEC 1: Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals</i> • <i>AEC 2: Fill of unknown quality and origin. General fill occurrence within proposed development areas.</i> • <i>AEC 3: Miscellaneous storage of various items</i> • <i>AEC 4: Storage and use of fuels and chemicals associated with operations at the plant</i> • <i>AEC 5: Storage and use of PFAS based firefighting foams.</i> 	<p>Based on the results of this PSI for contamination, a Targeted Site Investigation (TSI) is recommended for AECs where the likelihood of contamination to exist is assessed as moderate to high, to assess if SPR linkages are complete. AECs where the likelihood of contamination was assessed as moderate, low and very low can be managed at the time of construction should contamination be encountered.</p> <p>It is recommended that a Construction Environmental Management Plan (CEMP) be prepared to manage the potential contaminant exposure risks during construction activities, and manage potential unexpected finds (e.g. buried waste, demolition waste, ACM, etc.) that could be encountered. Therefore, the CEMP should also include an Unexpected Finds Protocol (UFP) and site-specific Work Health Safety and Environment (WHSE) plan. A sitespecific WHSE plan should be prepared, to ensure appropriate safety and workplace hygiene practices are implemented</p>	<p>This issue is further addressed in 8.2.6 of this Modification Report.</p>

<ul style="list-style-type: none"> • AEC 6: Storage of coal and ash. • AEC 7: Area formerly occupied by the Algae Demonstration Facility and production of bio-fuels. • AEC 8: Potential leaks from toilet block above ground sewerage tanks <p>The likelihood of contamination occurring in AECs 1, 3, 5, 6, 7 and 8 were low; and moderate for AEC 2 and 4.</p>	<p>to minimise potential risks from exposure to contamination. The WHSE plan must address all relevant regulatory requirements and as a minimum, should consider incorporating the relevant practices set out in CRC Care (2018) National Remediation Framework: Guideline on health and safety, Version 0.1: August 2018.</p> <p>Site workers should be advised of the potential contamination risks at the sites and have appropriate personal protective equipment (PPE) available should contamination be encountered and should have also read and understood management documents that apply to the construction sites.</p> <p>GHD further recommends:</p> <ul style="list-style-type: none"> • Soils excavated as part of the development should be assessed for waste classification to allow off-site disposal of surplus materials to an appropriately licenced waste facility. • For general contamination risk management, a contamination register should be prepared which clearly documents where contamination has been identified at the site or likely to be encountered based on previous investigation results. • Prepare and implement an Environmental Management Plan (EMP) which focuses on improving site practices and minimisation of future contamination. 	
<p>Acid Sulphate Soils</p>		
<p>The Modification Application is supported by an Acid Sulphate Soils (ASS) Assessment undertaken by GHD (Appendix G) which indicates that ASS may be encountered at variable depths within the proposed development areas where deep footing systems such as bored or CFA piles or</p>	<p>GHD recommend that an acid sulfate soil management plan (ASSMP) be developed and actioned where excavations associated with the proposed development will disturb ASS and/or require dewatering which could result in the lowering</p>	<p>This issue is further addressed in Section 8.2.8 of this Modification Report.</p>

<p>trenching/excavations deeper than 1 m are required. Soft dark grey to black clays and loose grey sands were encountered at test locations within or in the vicinity of the development areas, particularly in the main plant area and adjacent to Abernethys Creek and north of the existing northern carpark, which are indicative of coastal ASS</p>	<p>of the water table. It is understood that ASSMPs already exist for some areas of the Main Plant. Existing ASSMPs should be reviewed and updated to reflect changes in ground disturbance activities, quantities and guidelines. Further investigations could be considered to assess the absence or presence of ASS to better inform ASS management options during soil disturbance.</p>	
<p>Noise</p>		
<p>The Noise Impact Assessment (Appendix C) prepared by GHD undertook a construction noise assessment to determine potential for increase in noise levels at sensitive receivers. Construction noise management levels were established from measured background noise levels. Four construction scenarios were modelled to predict noise levels at representative sensitive receivers. The predicted noise levels indicate compliance with the noise management levels for the majority of construction activities at most of the sensitive receivers. However, foundation works and piling works may exceed the noise management level at one receiver and as such mitigation measures have been recommended.</p> <p>Noise sources associated with the operation of the proposed modification were identified and modelled in the site-wide noise model developed by GHD as part of the noise pollution reduction program. The predicted noise levels from the proposed modification were assessed against design noise goals (15 dB below the Environment Protection Licence and Development Consent 06_0228 Condition 12) and show compliance at all sensitive receivers. An analysis for annoying noise characteristics was undertaken and found that the proposed modification does not contain tonal or low</p>	<p>Construction Noise Mitigation Measures</p> <p>Site Inductions</p> <p>All employees, contractors and subcontractors are to receive an environmental induction. The induction should include:</p> <ul style="list-style-type: none"> • All relevant project specific and standard noise mitigation measures • Relevant licence and approval conditions • Permissible hours of work • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/unloading areas and procedures • Site opening/closing times (including deliveries) • Environmental incident procedures. <p>Behavioural practices</p> <ul style="list-style-type: none"> • No swearing or unnecessary shouting or loud stereos/radios on site. • No dropping of materials from height, throwing of metal items and slamming of doors <p>Implement community consultation measures</p> <p>Contact will be established with the local residents and the</p>	<p>Noise impacts are further addressed in Section 8.2.3 of this Modification Report.</p>

<p>frequency noise characteristics.</p> <p>Additionally, cumulative noise levels of the following scenarios have been predicted:</p> <ul style="list-style-type: none"> • Current operations including the proposed modification and the rail line • Current operations including all approved but not yet constructed modifications, the proposed modification and the rail line. <p>Predicted noise levels were analysed for annoying noise characteristics and found low frequency noise to be present at all sensitive receivers. The cumulative noise levels were assessed against the EPL noise limits, which show exceedances at all sensitive receivers. This is consistent with the Stage 1 of the Noise Pollution Reduction Program (Noise PRP) outcomes and a noise mitigation strategy has been developed within the PRP to address the exceedances.</p> <p>Nonetheless, for acoustic compliance, the bi-annual compliance measurement data should be referred to.</p> <p>The proposed modification is anticipated to have no contribution to the overall noise levels from the site as the predicted noise levels are below the design noise goals. In addition, the proposed modification would reduce noise emitted from the Distillery cooling tower array because of a reduction in required cooling capacity.</p>	<p>construction program and progress communicated on a regular basis, particularly when noisy activities are planned. Affected receivers will be notified of the intended work, its duration and times of occurrence. This may include a local community update letters for specific construction activities and a project info line.</p> <p>Implement complaints management measures</p> <ul style="list-style-type: none"> • Complaints will be managed in accordance with the procedure outlined below. Signage at each site will clearly and visibly provide a contact number and name to receive complaints and enquiries about construction. • In this instance the response would be to: – Verbally respond to complainant <ul style="list-style-type: none"> ○ Provide a written response within seven calendar days if the complaint cannot be resolved verbally ○ Log the complaint, and any actions taken with regards to the complaint within a complaints register ○ Undertake monitoring at the complainant’s residence(s) ○ Investigate the nature and reasons of the impact ○ Investigate and implement further mitigation measures to minimise the impact <p>Construction hours and scheduling</p> <ul style="list-style-type: none"> • Comply with the recommended standard construction hours outlined by the ICNG, unless out of hours work has been approved. • No truck movements before 7.00 am or after 6.00 pm. • For any work that would take place outside of normal construction hours: 	
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- Undertake an assessment of the potential noise impacts associated with the proposed activities and outline specific mitigation measures.
- Residents potentially affected by such activities will be notified at least five days before hand.
- Minimise consecutive night activities in the same locality and provide periods of quiet if activities occur for extended periods during the night.
- Conduct activities in a manner that eliminates or minimises the need for audible warning alarms.

Equipment selection

- Use quieter construction methods where reasonable and feasible (e.g. vibratory or bored piling instead of impact hammer piling).

Use and siting of plant

- Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided.
- The offset distance between noisy plant and adjacent sensitive receivers is to be maximised.
- Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.

Plan worksites and activities to minimise noise

- Plan traffic flow, parking and loading unloading areas to minimise reversing movements within the site.

Minimise disturbance arising from delivery of goods to construction sites

- Loading and unloading of materials/deliveries is to occur during standard construction hours.
- Contractors are to avoid dropping materials from height where practicable, during loading and unloading.
- Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible

Operational noise mitigation measures

DDG dryer 4 and 5 heat recovery system

Equipment selection

- The sound power levels of the equipment should be equal or lower than those presented in Table 6.1 of the Noise Impact Assessment

Positioning of equipment

- Equipment should be positioned during detailed design to maximise shielding by existing structures where reasonably possible

Heat recovery building

Detailed design of building

The detailed design of the heat recovery building should consider the following:

- The sound power level of building features (facades and roofs) should be equal or lower than the levels

presented in Table 6.2 of the Noise Impact Assessment

- During the detailed design, the sound power levels of building features should be estimated based on the proposed equipment within the buildings and the transmission loss and dimensions of the building features.
- Where ventilation openings are required in the building facades, these should be fitted with acoustic louvres.
- Ventilation openings should be positioned in the southern and eastern façade as much as reasonably possible.
- If the building is designed with an open-top structure, the internal noise level should be at most 66 dBA. This would be achieved by implementing insulation and cladding to equipment where possible, installing absorptive panelling on the walls and floors, or installing enclosures around equipment.

Equipment Selection

- The selection of HVAC units for the heat recovery building should have equal or lower sound power levels than the levels presented in Table 6.2 of the Noise Impact Assessment.
- The selection of equipment within the heat recovery building should consider quieter options where reasonable and feasible to minimise building breakout noise.

Mechanical vapour recovery

Equipment Selection

The sound power levels of the equipment should be equal or

lower than those presented in Table 6.3 of the Noise Impact Assessment

Positioning of Equipment

- Equipment should be positioned during detailed design to maximise shielding by existing structures where reasonably possible

Pipelines and ducts

Insulation and lagging

- Insulating and lagging of pipelines is recommended to reduce pipeline noise, particularly in areas where fluid or gas flows cause vibration or turbulent flow noise.

Noise validation

All Components

Noise validation report prior to construction

- In accordance with Development Consent condition 14M, a noise validation report will be prepared prior to construction, to demonstrate compliance with the design noise goals can be achieved based on the detailed design. If required, mitigation measures to reduce noise levels to achieve the design noise goals should be provided in the noise validation report.

	<p>All Components</p> <p>Noise validation report during operation</p> <ul style="list-style-type: none"> Once the proposed modification is operational, a noise validation assessment would be undertaken to confirm if noise levels comply with the predictions detailed in the noise validation report 	
Hazards		
<p>Pinnacle Risk Management (PRM) have prepared Site Hazard Analysis in connection with this Modification Application (Appendix B) and conclude that the relevant risk criteria will be satisfied.</p> <p>According to PRM societal risk, area cumulative risk, environmental risk and propagation risk is also concluded to be acceptable given the proposed controls.</p> <p>The primary reasons for the low risk levels from the modifications are that significant levels of impact from potential hazardous events are local to the equipment.</p> <p>PRM makes no recommendations that would be necessary to further reduce the potential risk levels from the proposed modifications.</p>	<p>No additional management or mitigative measures are proposed in terms of this issue.</p>	<p>This issue is further addressing Section 7.2.4 of this Modification Report.</p>
Flooding		
<p>The subject site is inundated during the 1% Annual Exceedance Probability (AEP) flood event by floodwaters from the Shoalhaven River. The sites are categorised as high hazard floodway and high hazard flood storage. This Modification Application is supported by a Flood Compliance Report prepared by WMAwater (Appendix E).</p>	<p>No additional management or mitigation measures proposed.</p>	<p>This issue is further addressed in Section 8.2.5 of this Modification Report.</p>

Waste Management		
The proposed modifications will not alter the way waste is managed on the site. The site is already subject to an existing Waste Management Plan prepared in accordance with the original Project Approval.	No additional management or mitigation measures proposed, although any approval for this Modification Application should require the existing Waste Management Plan to be revised to incorporate the elements that form part of this Modification Application.	Not a key issue. This issue is not further addressed in this Modification Report.
Site Stormwater Management		
The Modification Application is supported by a IWCMS prepared by Allen Price (Appendix H). According to the IWCMS the proposed works are unlikely to generate stormwater pollutants within the site. Potential short term stormwater quality impacts from the construction works can, according to Allen Price can be mitigated by the implementation of soil and water management plan and staged earthworks such that the Council's stormwater requirements are satisfied. Allen Price indicate that the proposal is considered adequate from a stormwater management perspective and is recommended to be supported by Shoalhaven City Council.	The IWCMS prepared by Allen Price includes conceptual soil & water management and stormwater plans for the proposed works.	This issue is further addressed in Appendix H of this Modification Report.
Visual Impact		
The majority of the works associated with this modification will be situated within the vicinity of existing Shoalhaven Starches factory complex. As the proposed distillery heat recovery evaporators, building and gantry are situated generally within a central position along Bolong Road, the proposal has the potential to become visible from along Bolong Road and to properties to the Bomaderry Urban Area.	Given the established industrial character of the locality, the proposed structures are consistent with the surrounding built form and visual environment. The architectural built form of the proposed distillery heat recovery evaporators, building and gantry are considered sufficient to minimise potential impacts, and no additional mitigation is warranted. The development will sit comfortably within its context and maintain the visual amenity expected in an industrial precinct.	The visual impacts associated with this modification proposal are addressed in Section 8.2.12 of this Modification Report.
Flora and Fauna		
The Modification Application is supported by Flora and Fauna Assessment prepared by Lodge Environmental (Appendix D).	To minimise and mitigate the environmental impacts of the Modification Proposal the Flora and Fauna Report	This issue is further addressed in Section 8.2.6 of this

<p>concludes:</p> <p>This Flora and Fauna Assessment has been prepared to consider the biodiversity values, including threatened fauna, flora, and ecological communities, which are present or that are considered likely to be present within the study area.</p> <p>The proposed modification will impact up to a maximum of 0.08 ha of native vegetation validated as PCT 4049 – South Coast Floodplain Grassy Swamp Forest and representative of the TEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions under the BC Act, and 0.82 ha of exotic vegetation and existing infrastructure.</p> <p>The proposed development impact to native vegetation totals 0.08 ha, at a maximum. The impact to native species is below the Biodiversity Offset Scheme (BOS) entrance threshold of 1 ha for a minimum lot size of 40 – 100 ha. As a result, the BOS entrance threshold is not triggered, and a Development Assessment Report (BDAR) is not required.</p> <p>A Test of Significance applied to these species according to both Commonwealth and State government criteria determined that the development would not result in a significant impact to these species.</p> <p>Potential indirect impacts associated with the proposal can be minimised and mitigated through measures recommended in the Flora and Fauna Report.</p>	<p>recommend the following measures:</p> <ul style="list-style-type: none"> • To mitigate impacts to PCT 4049 – South Coast Floodplain Grassy Swamp Forest and to achieve no net loss of native vegetation, it is recommended that an equivalent area of vegetation be replanted at a density of 1 tree per 2 m² • Additionally, any future landscaping should aim to utilise species indigenous to the area, and ideally those found within the local PCT 4049 – South Coast Floodplain Grassy Swamp Forest wherever possible. • If an injured animal is found within the Subject Land, the project ecologist or WIRES should be contacted to determine the best course of action. • Care must be taken when moving equipment near vegetation to be retained. If works appear to encroach on retained vegetation, advice from a qualified Arborist should be gained to infer appropriate tree protection measures. Generally, the Tree Protection Zone (TPZ) is a hypothetical estimation of the area required to protect a tree from adverse construction and development activities. It is calculated for each tree by multiplying diameter at breast height (DBH) by 12 and is a radius measured in metres from the centre of trunk. It is understood that encroachments into the TPZ can occur for 10% of the zone in accordance with AS4970-2009 Protection of trees on development sites. • Adequate erosion and sediment control measures should always be in place during construction, in accordance with best practice guidelines (Landcom 2004), including: <ul style="list-style-type: none"> ▪ sediment fencing, ▪ vehicle and machinery movement confined to designated work areas, and ▪ consideration given to weather, with works 	<p>Modification Report.</p>
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	<p>stopped if the onset of heavy rain is deemed likely to cause soil erosion or soil structure damage.</p> <ul style="list-style-type: none"> • All weed species should be controlled. A Construction Environmental Management Plan (CEMP) is to be prepared by suitably qualified personnel prior to the release of a construction certificate. The CEMP is to address how to manage the spread and invasion of exotic species into adjacent native vegetation. • Weed material must be disposed of appropriately, at a waste disposal centre, where the composting process will destroy all plant pathogens and seeds. 	
Effluent Irrigation and Storage		
<p>This Modification Proposal will not increase waste waters that will need to be generated, treated and disposed. This Modification Application does not seek to alter the existing approved wastewater treatment and disposal measures for the existing site operations.</p>	<p>No additional management or mitigation measures proposed.</p>	<p>Not a key issue. This issue is not further addressed in this Modification Report.</p>
Wastewater Treatment		
<p><u>Water Discharges</u></p> <p>The Shoalhaven Starches Factory and Environmental Farm are licensed premises under the Protection of the Environment Operations Act. Wastewater discharges from the site are licensed by the DEC (EPL 883).</p> <p>The plant has a licensed outfall into the Shoalhaven River. The outfall point is a 50 cm diameter metal pipe discharging at the end of an existing jetty. It also has a cooling water discharge comprising a 50 cm diameter pipe which discharges onto a gabion spillway.</p> <p>Under the terms of the Company's EPL discharge streams associated with the plant include:</p>	<p>No additional management or mitigation measures.</p>	<p>Not a key issue. This issue is not further addressed in this Modification Report.</p>

<ul style="list-style-type: none">• river water passed through the boiler condensers and the primary side of the heat exchangers;• boiler water treatment plant regeneration waters; and• pH adjusted glucose plant ion exchange unit regeneration waters. <p>All these must be discharged from the cooling water discharges.</p> <p>The limiting conditions in relation to these discharges include:</p> <ul style="list-style-type: none">• The volume of water discharged from the cooling water discharges must not exceed 100,000 kilolitres per day.• The wastewaters discharged at both points shall not exceed a temperature of 32°C.• This Modification Proposal will not involve any changes to these discharge waters.		
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8.2.2 AIR QUALITY ISSUES

GHD were engaged to conduct an Air Quality Assessment for the proposed modifications associated with this Modification Application (**Appendix A**). This section of the Modification Report provides a summary of the findings of the GHD Air Quality Impact Assessment for this Modification Application.

Potential impacts associated with dust emissions during the construction of the proposed modification were assessed using a risk assessment based on the UK IAQM guidance. Construction activities were identified to primarily identified for all construction activities was low risk for dust soiling, and negligible risk for human health and ecological impacts. Recommendations for dust management during construction were provided to further reduce the risk of dust impacts from the construction of the proposed modification.

A quantitative assessment utilising dispersion modelling was adopted to assess odour and air pollutant (including particulates, combustion pollutants and metals) emission during operation of the proposed modification.

An air pollutant emissions inventory was prepared incorporating the reduced gas consumption from installation of the heat recovery upgrades. Compliance with the assessment criteria was predicted at all receptors for all pollutants.

8.2.3 NOISE IMPACT ISSUES

GHD have undertaken a noise impact assessment of the proposed Modification Proposal (**Appendix C**). This section of the report provides a summary of the findings of the Environmental Noise Impact Assessment for this Modification Application.

Four construction scenarios were modelled to predict noise levels at representative sensitive receivers. The predicted noise levels indicate compliance with the noise management levels for the majority of construction activities at most of the sensitive receivers. However, foundation works and piling works may exceed the noise management level at one receiver (R2) and as such mitigation measures have been recommended.

The predicted noise levels from the proposed modification were assessed against design noise goals and shows compliance with the design noise goals at all sensitive receivers. An analysis for annoying noise characteristics was undertaken and found that the proposed modification does not contain tonal or low frequency noise characteristics.

Nonetheless, the proposed modification is anticipated to have no contribution to the overall noise levels from the site as the predicted noise levels are below the design noise goals. In addition, the proposed modification would reduce noise emitted from the Distillery cooling tower array because of a reduction in required cooling capacity. Recommended construction mitigation measures have been provided in the Noise Impact Assessment in Appendix XXX.



8.2.4 SITE HAZARD ANALYSIS

Pinnacle Risk Management were engaged to undertake a Site Hazard Analysis for the proposed modifications. A copy of Pinnacle Risk Management's report in connection with this Modification Application is included as **Appendix B** to this Modification Report. With respect to this Modification Proposal, Pinnacle Risk Management conclude:

- Societal risk, area cumulative risk and environmental risk is also concluded to be acceptable.
- The primary reason for the low risk levels from the modifications is that significant levels of radiant heat from potential fires, overpressures from dust explosion vents and hydrogen sulphide releases from the biogas system are mostly contained on-site.

8.2.5 FLOODING

WMAwater have prepared a Flood Compliance Assessment in relation to this Modification Application (**Appendix E**).

The proposed works are on land inundated in the 1% Annual Exceedance Probability (AEP) flood event by floodwaters from the Shoalhaven River. The construction of any works on the floodplain (i.e. the works are inundated in the probable maximum flood or extreme flood) 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. Prior to construction of the Shoalhaven Starches plant at Bomaderry there would have been significant flow through the site and adjoining land during a flood, as there is across any riverbank. However, since approximately 1960 the ongoing construction of the plant has reduced the flow path through a large part of Shoalhaven Starches lands. This assessment carried out by WMAwater provides an assessment of the implications of the proposed works on surrounding flood levels.

The Flood Compliance Report confirms that the proposed Mod 31 works will not result in unacceptable flood impacts on surrounding properties or the broader floodplain. The modelling demonstrates that any incremental increases in flood levels are negligible and largely confined within land owned by Shoalhaven Starches. The development is consistent with the applicable flood-related controls, maintains safe access and evacuation during extreme events, and does not create adverse changes to flood behaviour. On this basis, the proposed modification is considered compatible with the flood-affected nature of the site and acceptable in terms of flooding impacts.

Importantly, the proposal satisfies the objectives of clause 5.21 of the Shoalhaven LEP 2014 and the Shoalhaven DCP 2014, Chapter G9: Development on Flood Prone Land.

8.2.6 FLORA AND FAUNA

The Modification Application is supported by a Flora and Fauna Assessment prepared by Lodge Environmental (**Appendix D**). The following section of the Modification Report is based upon the findings of the Flora and Fauna Assessment prepared by Lodge Environmental.



The identification of Plant Community Types (PCTs) within subject site was undertaken by Lodge Environmental. A review of the NSW State Vegetation Type Mapping (SVTM) that covers the Subject Land (DCCEEW, 2024) identified one mapped Plant Community Type (PCT) within the Subject Land.

The vegetation within the study area is consistent with the following vegetation types:

- PCT 4049 – South Coast Floodplain Grassy Swamp Forest and;
- PCT 0 – Not classified.

The proposed modification will impact up to a maximum of 0.08 ha of native vegetation validated as PCT 4049 – South Coast Floodplain Grassy Swamp Forest and representative of the TEC Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions under the BC Act, and 0.82 ha of exotic vegetation and existing infrastructure.

The proposed development impact to native vegetation totals 0.08 ha, at a maximum. The impact to native species is below the Biodiversity Offset Scheme (BOS) entrance threshold of 1 ha for a minimum lot size of 40 – 100 ha. Therefore, the BOS entrance threshold is not triggered.

Assessments of Significance were undertaken where necessary. It was determined that the proposal will not constitute a significant impact on the listed entities.

The assessments contained within this report have determined that the proposed development is unlikely to have a significant effect on any listed communities or species or their habitat in accordance with the EP&A Act, BC Act and EPBC Act provided the recommendations contained in this report are adhered to. There will not be an impact on any active and mapped areas of Biodiversity Value, nor will there be an impact on native vegetation above the relevant impact threshold

8.2.7 SITE CONTAMINATION

The Modification Application is supported by a Preliminary Site Investigation (PSI) within the “Geotechnical, Contamination and Acid Sulphate Soil Assessment” carried out by GHD (**Appendix G**). This report prepared by GHD includes an assessment of potential site contamination.

Based on previous and current investigation results, potential for contamination was identified by GHD in eight areas of environmental concern (AECs), which included:

- AEC 1: Former rural land use, including potential historical use of pesticides and herbicides across the site during farming activities, possible storage/use of fuels/other chemicals).
- AEC 2: Fill of unknown quality and origin. General fill occurrence within proposed development areas.
- AEC 3: Miscellaneous storage of various items

- AEC 4: Storage and use of fuels and chemicals associated with operations at the plant
- AEC 5: Storage and use of PFAS based on firefighting foams
- AEC 6: Storage of coal and ash
- AEC 7: Area formerly occupied by the Algae Demonstration Facility and production of bio-fuels
- AEC 8: Potential leaks from toilet block above ground sewerage tanks

The likelihood of contamination occurring in AECs 1,3,4,5 were low and moderate for AEC2.



Figure 10: Location of Sites (GHD)

No obvious evidence of contamination was noted in the soils at the sampling locations. The report concluded that potential for widespread soil contamination that would preclude redevelopment for the proposed works as low. Some relatively localised contamination could exist from previous activities (particularly within the Shoalhaven Starches Plant).

Based on the results of the PSI for contamination, a Targeted Site Investigation is recommended for the AECs where the likelihood of contamination exist is assessed as moderate to high. AEC s where the likelihood of contamination was assessed as moderate, low and very low can be managed at the time of construction, should contamination be encountered.

The PSI recommended that a Construction Environmental Management Plan be prepared to manage the potential contamination exposure risk during construction activities, and manage potential unexpected finds that could be encountered. Therefore, the CEMP

should also include an Unexpected Finds Protocol (UFP) and site-specific Work Health Safety and Environment (WHSE) plan.

Site workers should be advised of the potential contamination risks at the sites and have appropriate personal protective equipment (PPE) available should contamination be encountered and should have also read and understood management documents that apply to the construction sites.

8.2.8 ACID SULPHATE SOILS

The “Geotechnical, Contamination and Acid Sulphate Soil Assessment” carried out by GHD, (**Appendix G**) that supported the Modification Application also includes an assessment in term of Acid Sulphate Soils (ASS).

ASS are naturally occurring soils and sediments containing iron sulphides which when exposed to oxygen can generate sulphuric acid.

The Burrier/Berry 1:25,000 Acid Sulphate Soil Risk Map (1997) Edition 2, prepared by the Department of Land and Water Conservation (DLWC) (DLWC, 1997), indicates that the site is mapped as having a low probability of ASS occurrence. According to GHD, the eastern end of the site is situated within an alluvial levee landform and the western end and mid-section are situated within an alluvial plain landform. The depth of ASS occurrence is depths greater than 3 m below the ground surface at the eastern end and between 1 and 3m of the ground surface at the western end and mid-section.



Figure 14: ASS Occurrence (GHD)



Previous assessments by Coffey (2014a) indicate that ASS is likely to exist at depths greater than 3 m at the Shoalhaven Starches property.

The results of GHD investigations identified that Sites 1 and 2, had no obvious visual evidence of ASS such as corrosion of concrete and steel structures used in the vicinity. Site 3 had no obvious visual evidence of ASS such as scald areas, iron leaching or jarosite staining, noted in non-paved areas adjoining the site. Additionally, no apparent corrosion of concrete and steel structures were observed in the vicinity of the site. Sites 4 and 5 had no obvious visual evidence of ASS such as scald areas, iron leaching or jarosite staining, noted on the surface of the site.

The ASS Assessment concluded that ASS may be encountered at variable depths within the proposed development areas, where deep footing systems such as bored or CFA piles or trenching/excavations deeper than 1m are required. It is recommended that an acid sulfate soil management plan be developed and actioned where excavations associated with the proposed development will disturb ASS and/or require dewatering, which could result in the lowering of the water table. Existing ASSMPs should be reviewed and updated to reflect changes in ground disturbance activities, quantities, and guidelines.

8.2.9 GEOTECHNICAL AND RIVERBANK STABILITY

The “*Geotechnical, Contamination and Acid Sulphate Soil Assessment*” carried out by GHD (**Appendix G**) that supported the Modification Application also includes a geotechnical assessment of the proposed works.

Based on previous geotechnical investigations across the sites, along with recent site observations by a senior GHD engineering geologist, the following conclusions are provided regarding the potential effects of the proposed structures on the stability of Bomaderry, Abernethys Creek, and the Shoalhaven River are made below:

- **Site 1** – Previous investigations indicate the presence of controlled fill up to a depth of 1 m bgl underlain by soft to stiff alluvial clay and sands. Extremely weathered sandstone were encountered from approximately a depth of 9.3 m. Shallow footings may be possible where stiff to very stiff soils occur, but deep piled footings may need to extend beyond 6 m bgl. Location setbacks from Bomaderry Creek and Shoalhaven River mean stability impacts are unlikely.
- **Site 2** – Sandy and gravely fill are likely to be present between the surface and 0.8 m bgl. Alluvial units may extend (up to 15.7 m), including silts and clays. Assuming the proposed structures are supported on deep pile footings and given the setback from both Abernethys Creek and the northern bank of the Shoalhaven River, the additional loads imposed on the upper soil profile are not expected to affect the current creek or river bank stability.
- **Site 3** – Sandy and gravely fill and disturbed ground expected, underlain by variable alluvial soils similar to Site 2. Likely requires deep piles for support. Setback (115 m) from Abernethys Creek reduces stability concerns.
- **Site 4** – Eastern portion currently vegetated and approximately 1 m lower than the adjoining carpark. Fill is likely required to raise levels. North-western portion

already within the carpark, with only layout changes (no civil or structural works proposed).

- **Site 5** –
 - Proposed electrical cable route crosses variable ground conditions. In the west soft to very soft soils and shallow groundwater. In the east, very stiff to hard clays, and/or friable, and medium dense sand was observed.
 - Western section (near Abernethys Creek) includes an overhead bridge founded on piles into rock (below 13.2 m depth), with a 6.6 m offset from the creek bank.
 - Trenching within the mid-section and eastern section may encounter soft soils and groundwater. Appropriate excavation supports and dewatering may be required. Given the presence of soft soils, the risk of slope instability of the creek banks will need to be appropriately managed at this section of the cable trench.
 - Eastern end (substation area) expected to have better trench stability (stiff clays/sands), though groundwater inflows may still need management.

8.2.10 TRAFFIC IMPACTS

The Modification Application is supported by a Traffic Impact Study prepared by ARC Traffic & Transport (“ARC”) (**Appendix F**). This section of the Modification Report provides a summary of the findings of the ARC’s Traffic Impact Study for this Modification Application.

As a result of the installation of the new infrastructure, minor changes to access and parking at the subject site are proposed which include:

- The relocation of approximately 80 staff parking spaces in the Northern Car Park to land immediately east of the existing Northern Car Park;
- The provision of new, separate, entry and exit driveways for the Northern Car Park, while retaining the existing driveway for the adjacent BOC Gases Site (the BOC Site).

The report concludes that the operation of the proposed infrastructure is not anticipated to generate any additional vehicle trips above the currently approved trip generation of the Shoalhaven Straches Factory site. Significant parking is provided across the subject site and the proposed development will not generate any on-street parking demand. Additionally, the traffic impact study has determined that the proposed modification is entirely supportable further to access, traffic and parking considerations.

8.2.11 RISK ASSESSMENT ASSOCIATED WITH GANTRY

The construction and operation of the gantry over Bolong Road presents a range of potential risks that require careful consideration to ensure safety, compliance, and uninterrupted road functionality.

The principal risk relates to structural integrity, with the potential for partial or complete failure due to design deficiencies, construction defects, material fatigue, or inadequate maintenance. Such an unlikely event could pose serious safety hazards to motorists and pedestrians and cause significant damage to road infrastructure.



Any structural incident would also compromise the safe operation of Bolong Road and may necessitate full or partial closures, disrupting local and regional traffic, including freight and emergency services.

During construction, risks include falling objects, lane closures, and interaction between construction equipment and live traffic, all of which require robust traffic management planning and coordination with Transport for NSW and Council.

Longer-term risks are associated with weathering, corrosion, or accidental vehicle strike, which could undermine structural safety if not addressed through ongoing inspection and maintenance. Additionally, regulatory and liability risks must be considered, as works over a public road require approval under the Roads Act 1993 and compliance with Transport for NSW technical standards, with the proponent otherwise exposed to legal and financial liability. These risks can be mitigated through measures such as certified structural design in accordance with Australian Standards, independent safety reviews, detailed traffic management planning during construction, and a comprehensive inspection and maintenance regime once operational.

Contingency planning with emergency services and road authorities is also critical to ensure a rapid and effective response in the event of an incident.

Collectively, these measures provide a framework for managing risks and ensuring the safe and reliable integration of the gantry with the ongoing functionality of Bolong Road.

8.2.12 VISUAL IMPACT

The Shoalhaven Starches factory site is situated on Bolong Road, the gateway to Bomaderry, within an area currently containing a mixture of rural and industrial land uses. 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 site, despite being partially screened by vegetation along Bolong Road, the Shoalhaven River and Abernethy's Creek visually dominates the immediate locality. The development is particularly exposed to view along Bolong Road. This view reveals some of the internal structures within the site including recovery and storage tanks, car park, fermentation tanks and the Ethanol Plant.

Overall, the proposed structures are consistent with the established industrial character of Bolong Road, where large-scale plant buildings and infrastructure ranging from 8 to 55 metres in height already define the visual environment. As such, the development will



integrate appropriately within its industrial setting and uphold the visual amenity typical of a heavy industry precinct.

The most relevant vantage points from where the overall factory site is visible (see **Figure 19**) would include:

- The Princes Highway – views of both the existing factory site and former APM site are possible from selected locations along the Princes Highway north of Bomaderry, travelling in both a northerly and southerly direction. Whilst the factory site is visible in the landscape, its overall visual impact is reduced by virtue of the distance between the plant; the intermittent nature of the views; a rise in topography which screens the site from view; and vegetation.
- Burruga (Pig) Island – Burruga Island is situated in the middle of the Shoalhaven River and provides the closest vantage point to the southern boundary of the site. The island however is privately owned and not accessible to the public. Vegetation screening along the riverbank adjacent to the site also reduces the visibility of both the existing factory and former APM site.
- Bolong Road – Bolong Road runs along the frontage of the site. Views of both the factory and former APM site are possible when travelling in either an easterly or westerly direction. Some attempts have been made to provide some tree planting along the boundaries to “soften” the appearance of the development. The existing building forms and structures are however clearly visible to motorists travelling along this stretch of Bolong Road.
- Nowra Bridge – The Nowra Bridge crosses the Shoalhaven River and provides limited opportunities for views of the factory site. The former APM site is not visually prominent from this vantage point. The dominant visual elements from the bridge are the river, vegetation along the riverbanks and the escarpment. The visual impact of the factory site is reduced by distance as well as the bridge structure which permits only glimpses of the site.
- Bomaderry urban area – The existing plant is visible from a number of locations within the eastern outskirts of Bomaderry. Bomaderry is slightly elevated and some locations within the urban area do have extensive views of the site.
- Terara – Distant views of the plant are possible from a number of vantage points in and around the village of Terara on the southern bank of the Shoalhaven River. The visual impact of the site however is reduced by distance, the intervening landform of Burruga (Pig) Island and the vegetated riverbanks.
- Riverview Road – Views of the site are available from residential development on the southern bank of the Shoalhaven River. Vegetation along both the northern and southern banks of the river partially screen the site from view.
- Cambewarra Lookout – Cambewarra lookout is a popular tourist lookout providing panoramic views over the Shoalhaven floodplain and estuary. Shoalhaven Starches, like the other significant industrial sites, is visible from the lookout.

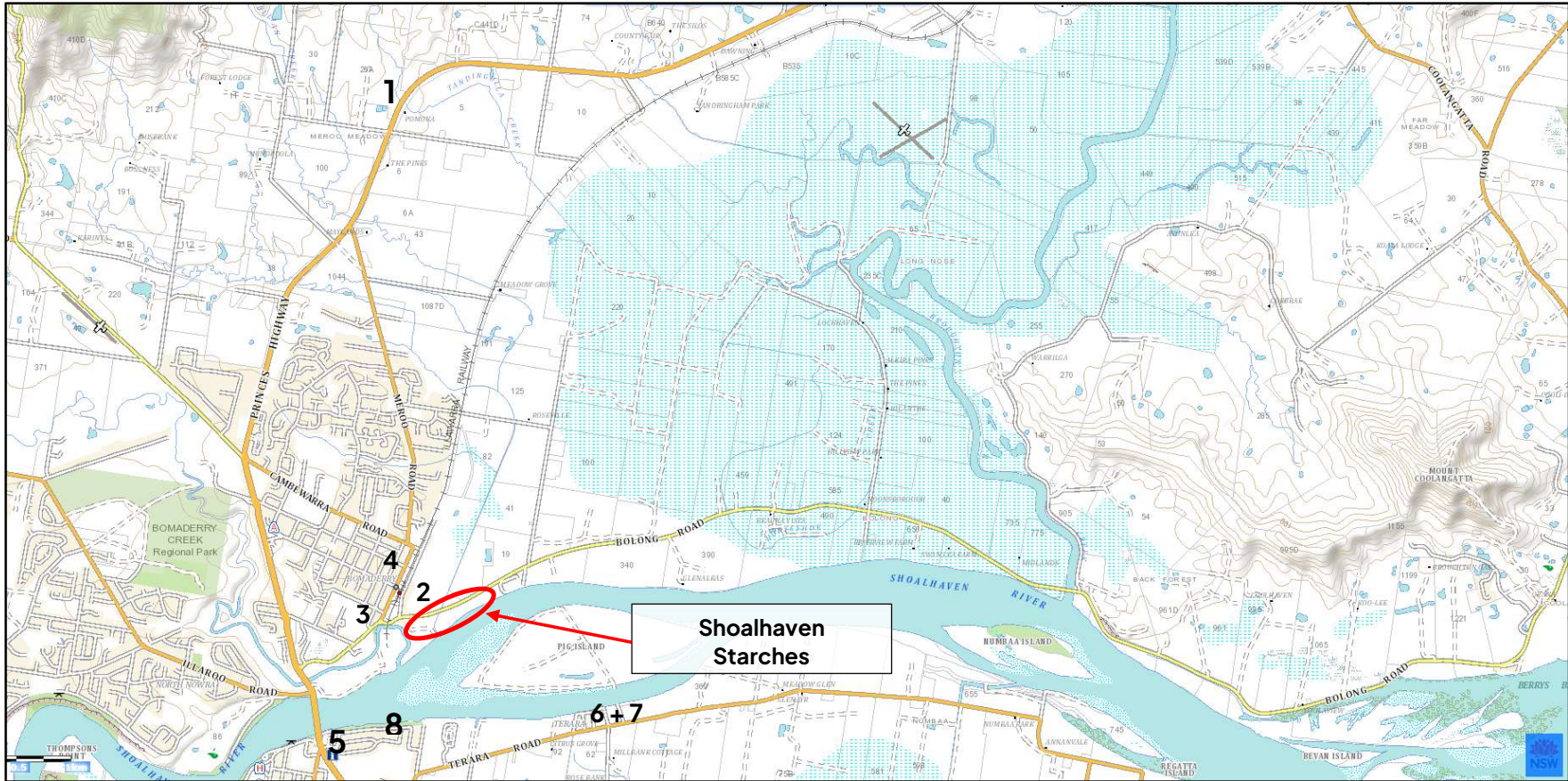


Figure 19: Vantage Points for Plates 1 – 10.

The Proposal

This Modification Proposal seeks:

- Distillery Heat Recovery Evaporators – Four units proposed on the eastern side of the distillery (13.5 m × 13 m footprint) and a fifth unit north of the distillery; maximum height 58.7 m.
- Northern Car Park Expansion – Expansion of existing car park located on the northern side of Bolong Road.
- Distillery Heat Recovery Building and Gantry – Four-storey building (52.1 m × 19.75 m, 26.33 m high) with two switch rooms; linked to the evaporators via a 40 m overhead gantry spanning Bolong Road (5 m clearance, 17.2 m total height) containing pipelines, cabling, and an access walkway.
- Electrical Cable Bridge – Above-ground electrical connection from the western substation crossing Bolong Road parallel to Abernethys Creek via an overhead gantry (13.6 m high, 53.2 m long, 6 m clearance).

The Princes Highway

The Shoalhaven Starches factory site is visible from a section of the Princes Highway between Boxsells Lane and Devitts Lane, Jaspers Brush (refer **Plate 1**). Due to the configuration of the highway and the siting of the factory, only southbound vehicles view the site. Vantage points along this section of the highway are 4.5 to 5.0 km from the site. The site becomes less exposed and is eventually obscured by a rise in topography further south of Boxsells Lane.

Given the distance from these vantage points both sites are only barely visible. The rising topography upon which Bomaderry is sited screens portions of both sites, as does intervening vegetation.

Given the distance of these views, and the screening of the site attributed to terrain and vegetation it is considered the works associated with this Modification Proposal will not adversely impact on views from this vantage point.

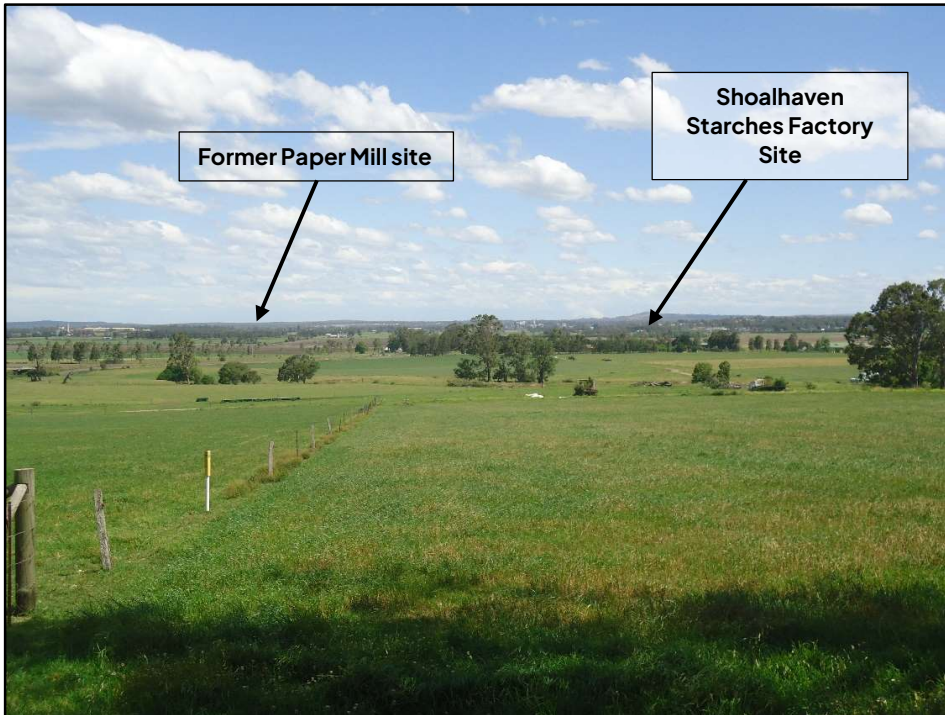


Plate 1: View of Shoalhaven Starches Factory from Princes Highway (within vicinity of Devitts Lane).
(Site of proposed works not clearly visible from this vantage point.)

Bolong Road

The existing factory site is clearly visible from Bolong Road by vehicles approaching from the east and west, and along the frontage of the site refer (**Plate 2**).

The Distillery Heat Recovery Evaporators, Building and Gantry are situated generally within a central position within the existing factory complex site and will be clearly visible from along Bolong Road.

Given the established industrial character along Bolong Road at the Shoalhaven Starches factory complex which is characterised by a combination of large scale heavy industrial plant structures comprising of ethanol distillation columns, storage silos, bulk grain silos, and cooling towers approximately 8 to 55 metres in height, the proposed structures will be compatible with the established surrounding industrialised character and visual environment.

Overall the development will sit comfortably within its industrial backdrop and maintain the visual amenity expected in such a heavy industry precinct

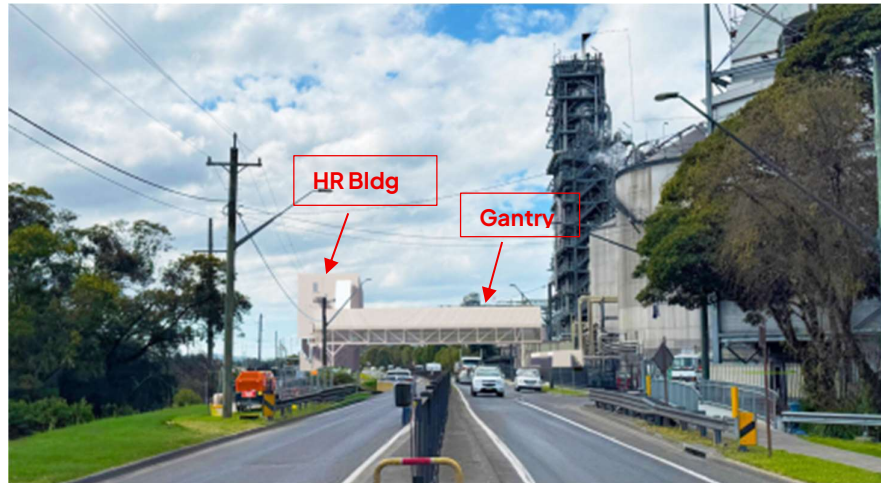


Plate 2: View north east along Bolong Road (source: EJ).

Bomaderry Urban Area

The township of Bomaderry is slightly elevated and some locations within this urban area have extensive views of the site (refer **Plate 3**, **Plate 4**).

In light of the prevailing scale of existing development located within Shoalhaven Starches site the proposed Heat Recovery Building will be partially visible from this vantage point but the Gantry and Evaporators shielded form view by existing buildings and structures.



Plate 3: View of Shoalhaven Starches factory site from Birriley St, Bomaderry (source: EJ)



Plate 4: View of Shoalhaven Starches factory site from Meroo St, Bomaderry (source: EJ)

Nowra Bridge

The view from Nowra Bridge to the east is mainly dominated by the river, riparian vegetation and the floodplain (refer **Plate 5**).



Plate 5: View of Shoalhaven Starches factory site from Nowra Bridge over the Shoalhaven River.

The site is largely obscured by riverside vegetation. The DDG Pellet Plant building is partially visible from this vantage point.

The works associated with proposed heat recovery evaporators, building and gantry will not be visually from the view shown in **Plate 5** above.

Riverview Road

Plate 6 below provides a view of the Shoalhaven Starches factory site from Riverview Road located on the south side of the Shoalhaven River. This view is from a distance of about 750 metres. Riparian vegetation along both the northern and southern banks of the river soften much of the site from view. The proposed works associated with this Modification will rise visually above the riparian vegetation, much as the existing DDG Pellet Mill does from this vantage point. In this regard the proposed works will not be as large as the DDG Pellet Mill building.

As with the view from the Nowra Bridge in **Plate 5** above the works associated with this Modification Proposal will not be visible from the view shown in **Plate 6** below.



Plate 6: View of Shoalhaven Starches factory site from Riverview Road area.

Terara

The village of Terara is approximately 1.5 kilometres from the factory. The view of the Shoalhaven Starches factory site as seen from the banks of the Shoalhaven River adjacent to the village of Terara is shown in **Plate 7**.

The view from this vantage point is across and over Burruga (Pig) Island. Vegetation on the island and along the northern banks of Shoalhaven River also help to obscure the view of the existing factory site.

Various parts of the existing factory site are visible from this vantage point, although somewhat obscured by vegetation. The works associated with the proposed starch grinding baghouse extension to heat recovery evaporators, building and gantry will be mainly obscured by existing buildings associated with the Shoalhaven Starches operations from this vantage point and will not be visually prominent.



Plate 7: View of Shoalhaven Starches factory site from village of Terara.

Cambewarra Lookout

Cambewarra Lookout is situated about 7 km to the north-west of the site. Views from the lookout are from an elevation over 620 m ASL and encompass the Shoalhaven River floodplain and the coast including Jervis Bay. Whilst the Shoalhaven Starches and former Paper Mill factory sites are visible from this vantage point, due to scale of the view, it would be extremely difficult to make out the works associated with the project from this vantage point.

Overall, it is considered that the proposed works will not create a significant adverse visual impact due, principally, due to the works comprising a scale and character consistent with existing development on the site. There are however measures which Shoalhaven Starches could undertake to minimise the visual impact of the proposal. Where appropriate and possible, the proposed structures should be constructed of similar materials as those previously used on the site and be of a non-reflective nature. Colours should blend with existing structures on the site to ensure visual harmony.



Consideration should be given to incorporating a cladding colour, if possible, which will match existing development on the site.

8.3 THE SUITABILITY OF THE SITE FOR DEVELOPMENT

In our view the site is suitable for the development, and including the development as modified by this application:

- The subject land is suitably zoned, and the proposal satisfies state and local planning provisions applying to the land.
- The modified proposal will not have any significant additional impacts on the environmental values of this locality over and above those envisaged by the original approved development.
- The modified development will not result in any significant adverse effects on local amenity.
- The modification proposal does not seek to alter the approved physical extent of operations. Under these circumstances the proposal will not result in any increased inputs to the production process; increased production; or increases in traffic or other impacts on the locality.

Given these circumstances it is our view that the subject site is suitable for the proposed development.

8.4 THE PUBLIC INTEREST

It is our view that the modification proposal is in the public interest:

- The proposal is consistent with the objectives of state and local planning provisions applying to the site.
- The modified proposal will not result in any significant adverse environmental impacts.
- The modified proposal will not result in any significant amenity impacts in the locality.
- The modified proposal will be substantially the same development as that approved under the Project Approval.

9.0 CONCLUSION

The Shoalhaven Starches factory located on Bolong Road, Bomaderry produces a range of products for the food, beverage, confectionary, paper and motor transport industries including starch, gluten, glucose and ethanol.

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. This report supports a Modification Application that seeks approval to modify their Project Approval for the Shoalhaven Starches Expansion Project to:

- undertake a range of heat recovery updates that enable infrastructure to capture and transform waste heat into usable energy to drive the ethanol, starch, and gluten manufacturing processes. This modification will result in a reduction of the amount of virgin steam that is required by 75 tph (637,500 tpa), therefore, removing the need to burn natural gas at the onsite co-generation plant and other gas-filled boilers.

The Shoalhaven Starches Expansion Project was a “transitional Part 3A Project” for the purposes of Schedule 6A of the Environmental Planning & Assessment Act. As of the 1 March 2018 the transitional arrangements for former Part 3A projects have been discontinued. The discontinuation of the transitional arrangements for Part 3A projects and concept plans means that modifications are assessed through the State Significant Development (SSD) pathway. As such this Modification Application is made pursuant to Section 4.55(2) of the Environmental Planning & Assessment Act 1979.

The Modification Application will not involve changes to the size, scale or intensity of the existing Shoalhaven Starches operations. The modification proposal will not result in any increases in overall production rates from the site, nor will it involve any significant changes in level of impacts arising from the approved development.

The Modification Report includes an assessment of the proposal having regard to the relevant matters for consideration as listed under Section 4.15 of the Environmental Planning and Assessment Act, 1979. The assessment concludes that the modification proposal, within its local context, is satisfactory and should be approved. Approval for this Modification Application is sought.

Sebastian Tauni
Registered Planner Plus (EIA) REAP
Allen Price Pty Ltd