



# Shoalhaven Starches Expansion Modification 19

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State Significant Development Modification Assessment  
(06\_0228-Mod-19)



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# Glossary

Abbreviation	Definition
<b>AHD</b>	Australian Height Datum
<b>BCA</b>	Building Code of Australia
<b>CIV</b>	Capital Investment Value
<b>Council</b>	Shoalhaven City Council
<b>Department</b>	Department of Planning, Industry and Environment (DPIE)
<b>EES</b>	Environment, Energy and Science Group, DPIE
<b>EIS</b>	Environmental Impact Statement
<b>EPA</b>	Environment Protection Authority
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979</i>
<b>EP&amp;A Regulation</b>	Environmental Planning and Assessment Regulation 2000
<b>EPI</b>	Environmental Planning Instrument
<b>EPL</b>	Environment Protection Licence
<b>ESD</b>	Ecologically Sustainable Development
<b>FRNSW</b>	Fire and Rescue NSW
<b>LEP</b>	Local Environmental Plan
<b>Minister</b>	Minister for Planning and Public Spaces
<b>SEARs</b>	Planning Secretary's Environmental Assessment Requirements
<b>Planning Secretary</b>	Secretary of the Department of Planning, Industry and Environment
<b>SEPP</b>	State Environmental Planning Policy
<b>SRD SEPP</b>	State Environmental Planning Policy (State and Regional Development) 2011
<b>SSD</b>	State Significant Development
<b>TfNSW</b>	Transport for NSW

# Executive Summary

Shoalhaven Starches Pty Ltd (the Applicant) operate a factory at Bomaderry on the south coast of NSW. The factory processes wheat to produce flour, gluten, glucose, starch and ethanol for food, beverage, hand sanitiser, paper and fuel products. The factory has operated since 1979 and has approximately 300 employees.

In 2009, the then Minister for Planning approved an expansion to fuel-grade ethanol production at the factory and required the Applicant to implement a range of odour controls, including a wastewater treatment plant. These controls have substantially reduced odour from the factory and its irrigation areas. Since 2009, the Applicant has installed additional infrastructure at the factory, through modifications to the project approval. These modifications have allowed the Applicant to optimise production of flour and beverage-grade ethanol, to offset a reduced demand for fuel-grade ethanol in NSW.

The original project approval (06\_0228) was modified 15 times under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). In September 2018, the project was transitioned to State significant development (SSD) and on 16 June 2019 modification 16 was approved by the Independent Planning Commission (the Commission) under Section 4.55(2) of the EP&A Act. The project has since been modified on two separate occasions under Section 4.55(1A) with Modification 17 approved by the Commission on 23 October 2020.

On 29 September 2020, the Applicant lodged a modification application MP06\_0228-Mod-19 (MOD 19) under Section 4.55(1A) of the EP&A Act for the expansion of the ethanol distillery plant including new distillery columns, three ethanol storage tanks and cooling towers to facilitate the additional production of 100 mega litres (ML) of beverage grade ethanol within the approved limits and additional site infrastructure.

The modification would facilitate changes to the site's plant, equipment and infrastructure to improve the production efficiency of the Shoalhaven Starches factory and provide flexibility in the production of ethanol.

No reportable political donations have been made by the Applicant within the previous two years, therefore the Minister for Planning and Public Spaces is the consent authority for the application under section 4.5(a) of the EP&A Act. The Commission has determined all previous modifications of the approval due to reportable political donations having previously been made.

The Department has assessed the modification application in accordance with the EP&A Act. The Department did not exhibit the modification in accordance with Clause 117(3B) of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation). However, it was made publicly available on the Department's website on 2 October 2020 and was referred to Shoalhaven City Council (Council), the NSW Environment Protection Authority (EPA), Biodiversity and Conservation Division (BCD) and Fire and Rescue NSW for comment. No objections were raised by Council, EPA, BCD or Fire and Rescue NSW.

The Department's assessment identified two key issues, air quality and hazards and risk. The Department consulted with the EPA and identified emissions generated from the new ethanol distillery plant and equipment would remain compliant with the relevant impact assessment criteria. The Department's internal hazards specialists reviewed the Preliminary Hazard Analysis, concluding the cumulative risk from the modified factory would comply with the NSW land use safety risk criteria. Other aspects including, noise, flooding and visual amenity would be appropriately managed through existing and modified conditions.

The Department's assessment has concluded the modification should be approved, subject to modifying the conditions.

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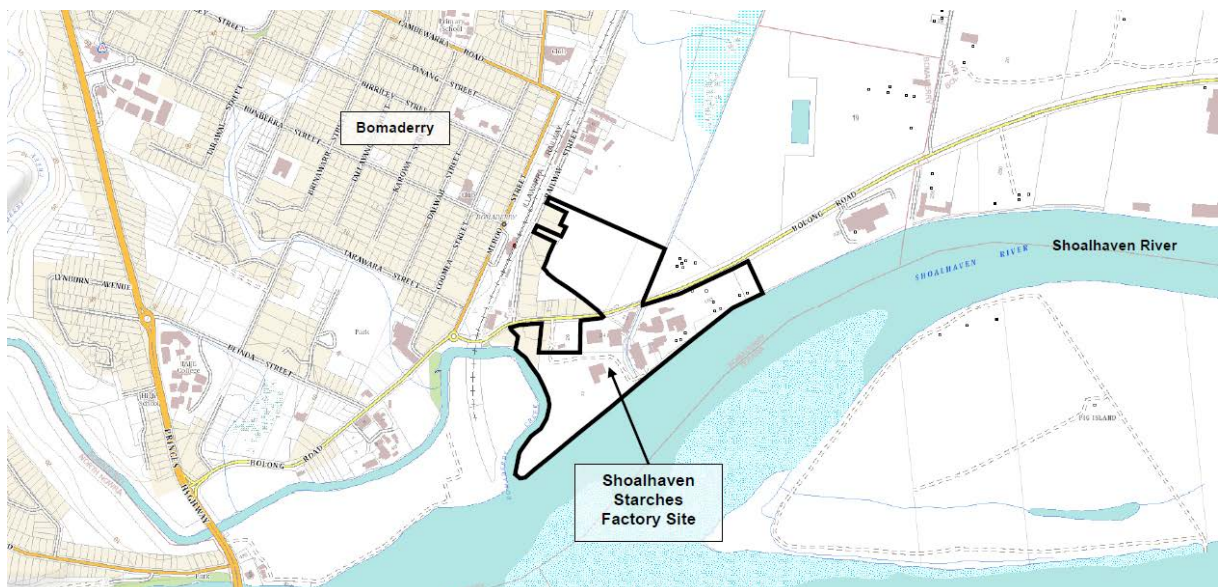
# 1 Introduction

This report provides an assessment of an application to modify the State significant development (SSD) consent for the Shoalhaven Starches Expansion (MP 06\_0228) in Bomaderry.

The modification application seeks approval for the expansion of the ethanol distillery plant including new distillery columns, three ethanol storage tanks and cooling towers to facilitate the additional production of 100 mega litres (ML) or beverage grade ethanol within the approved limits and additional site infrastructure. The application was lodged by Shoalhaven Starched Pty Ltd (the Applicant) pursuant to section 4.55(1A) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

## 1.1 Background

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

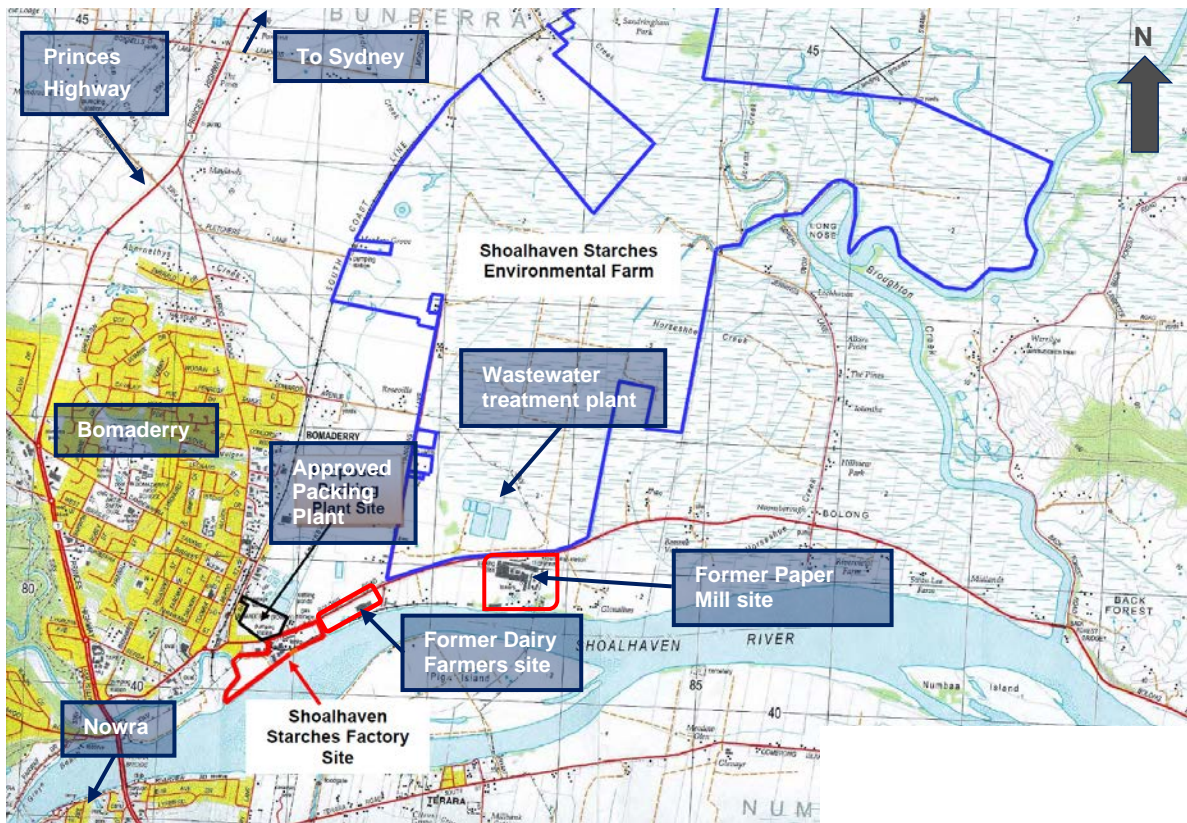


**Figure 1 | Local Context Map**

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

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

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



**Figure 2 | Regional Context Map**

## 1.2 Approval history

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

### Shoalhaven Starches Ethanol Expansion Project (06\_0228)

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

The SSEEP involved:

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

By June 2012, the Applicant had installed the mandatory odour controls and the Department approved the increase in ethanol production (as prescribed in the conditions) to the maximum volume permitted being 300 ML/yr, subject to conditions, including quarterly odour monitoring and annual odour audits. However, demand for ethanol in fuels has not increased as predicted and ethanol production levels at the factory in 2017 were around 237 ML/yr.



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

### Modifications to 06\_0228

The Minister for Planning and Public Spaces has approved 18 modifications to the SSEEP since 2009. All modifications were approved by the former Planning Assessment Commission or Independent Planning Commission (the Commission) under the Minister's delegation. Table 1 summarises the modifications.

**Table 1 | Summary of Modifications**

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

<b>MOD 7</b>	<ul style="list-style-type: none"> <li>relocate the approved Starch Dryer No. 5 to the former "Moorehouse" site, increase the footprint and construct a substation, pipework and pipe gantry.</li> </ul>	Minister	s75W	18 Jan 2016
<b>MOD 8</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	Minister	s75W	1 Mar 2016
<b>MOD 9</b>	<ul style="list-style-type: none"> <li>increase the size of the approved packing plant to increase the type and volume of packaged dried products</li> <li>construct a container storage and truck loading area with noise barriers</li> <li>extend and duplicate the approved rail spur line</li> <li>install product pipes under Bolong Road, a small bag packer at the DDG pellet plant and a new stormwater detention tank.</li> </ul>	Minister	s75W	8 Mar 2017
<b>MOD 10</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	Minister	s75W	18 April 2017
<b>MOD 11</b>	<ul style="list-style-type: none"> <li>reduce the number of approved dryers and relocate approved footprint, relocate cooling towers, construct a forklift maintenance building, install two biofilters, construct hardstand for container storage, store coal and woodchips on the factory site and environmental farm.</li> </ul>	Minister	s75W	1 Sept 2017
<b>MOD 12</b>	<ul style="list-style-type: none"> <li>increase production of beverage grade ethanol and reduce production of fuel grade ethanol</li> <li>install ethanol distillery infrastructure including rectification columns, cooling towers, a substation, storage tanks and pipes</li> <li>extend two rail siding and provide additional car parking.</li> </ul>	Minister	s75W	1 Sept 2017
<b>MOD 13</b>	<ul style="list-style-type: none"> <li>increase steam production from three existing boilers by converting to coal fired boilers and installing baghouses.</li> </ul>	Minister	s75W	18 Jan 2018
<b>MOD 14</b>	<ul style="list-style-type: none"> <li>incorporate the former Shoalhaven Paper mill into the project approval and use the site for</li> </ul>	Minister	s75W	27 April 2018

buffer storage for products, plant, construction materials and shipping containers.

<b>MOD 15</b>	<ul style="list-style-type: none"> <li>construct a carbon dioxide plant at the former Dairy Farmers complex to capture and treat waste gas to a food grade standard for sale to food and hospitality markets.</li> </ul>	Minister	s75W	7 Aug 2018
<b>MOD 16</b>	<ul style="list-style-type: none"> <li>construction of new flour mill and gluten dryer, specialty products building, boiler and coal-fired cogeneration plant</li> <li>conversion of two gluten dryers to starch dryers.</li> </ul>	Minister	s4.55(2)	18 June 2019
<b>MOD 17</b>	<ul style="list-style-type: none"> <li>extension of product dryer building and service conduit.</li> <li>relocation of Starch Dryer no.5 baghouse and car parking</li> <li>use of alternative woodchip fuel source for boilers.</li> </ul>	Minister	s4.55(1A)	23 October 2020
<b>MOD 18</b>	<ul style="list-style-type: none"> <li>production of hand sanitiser grade ethanol and hand sanitiser including the relocation of gas fired boiler and repurposing of de-fatting plant.</li> </ul>	Minister	s4.55(1A)	4 September 2020

### Council Issued Consents

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

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

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

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

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

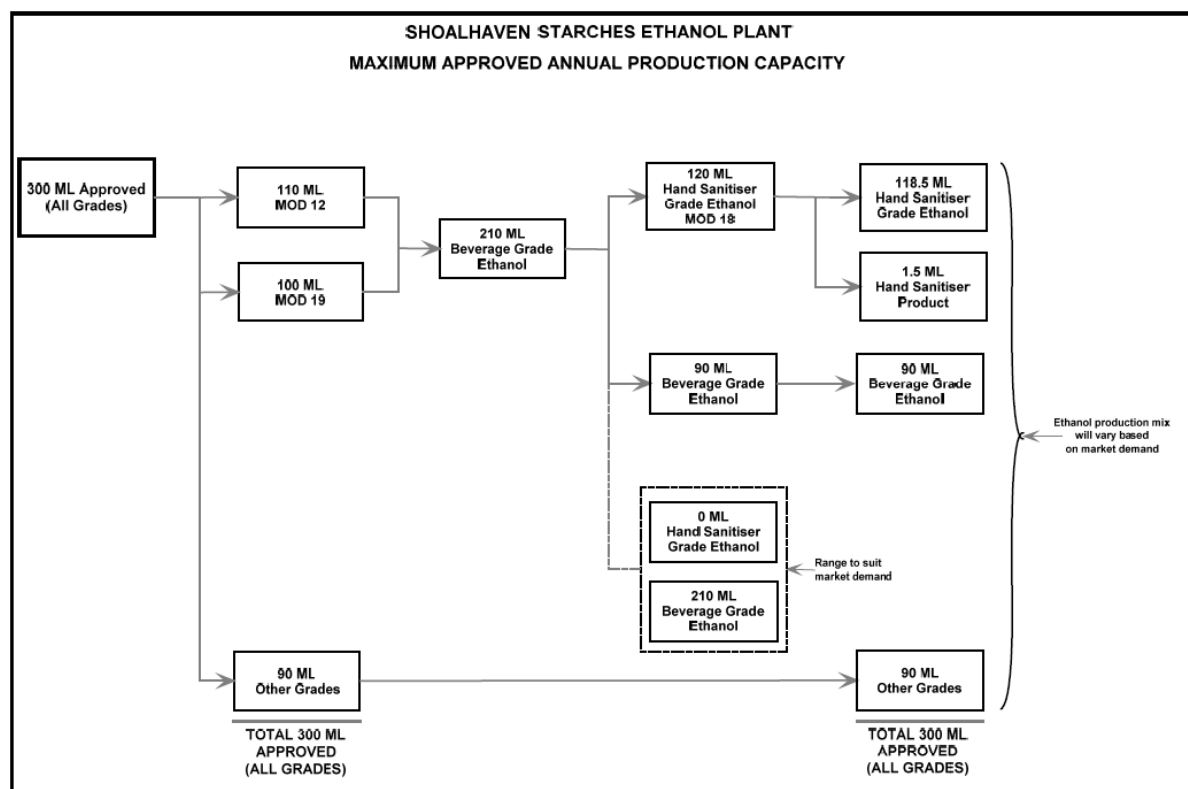
## 2 Proposed modification

### 2.1.1 Proposed Modification

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

The Department notes the modification does not seek to increase ethanol production above the approved limits of 300 ML of ethanol per annum, but to increase the flexibility of ethanol grade production within the approved limits (see **Figure 3**). Currently, the development produces 120 ML of hand sanitiser grade ethanol, 110 ML of beverage grade ethanol with a remaining 70 ML for the production of fuel grade ethanol. The modification will enable the production of 210 ML of beverage grade ethanol. As hand sanitiser grade ethanol is produced from beverage grade ethanol, the proposed 210 ML allows for greater flexibility in market demand between hand sanitiser grade ethanol and beverage grade ethanol.

**Figure 4** shows the location of all aspects of the modification and **Figure 5** to **Figure 10** show further details of the key components.



**Figure 3 | Ethanol Production – Proposed mix of ethanol grade**

**Table 2 |** Component of Modification

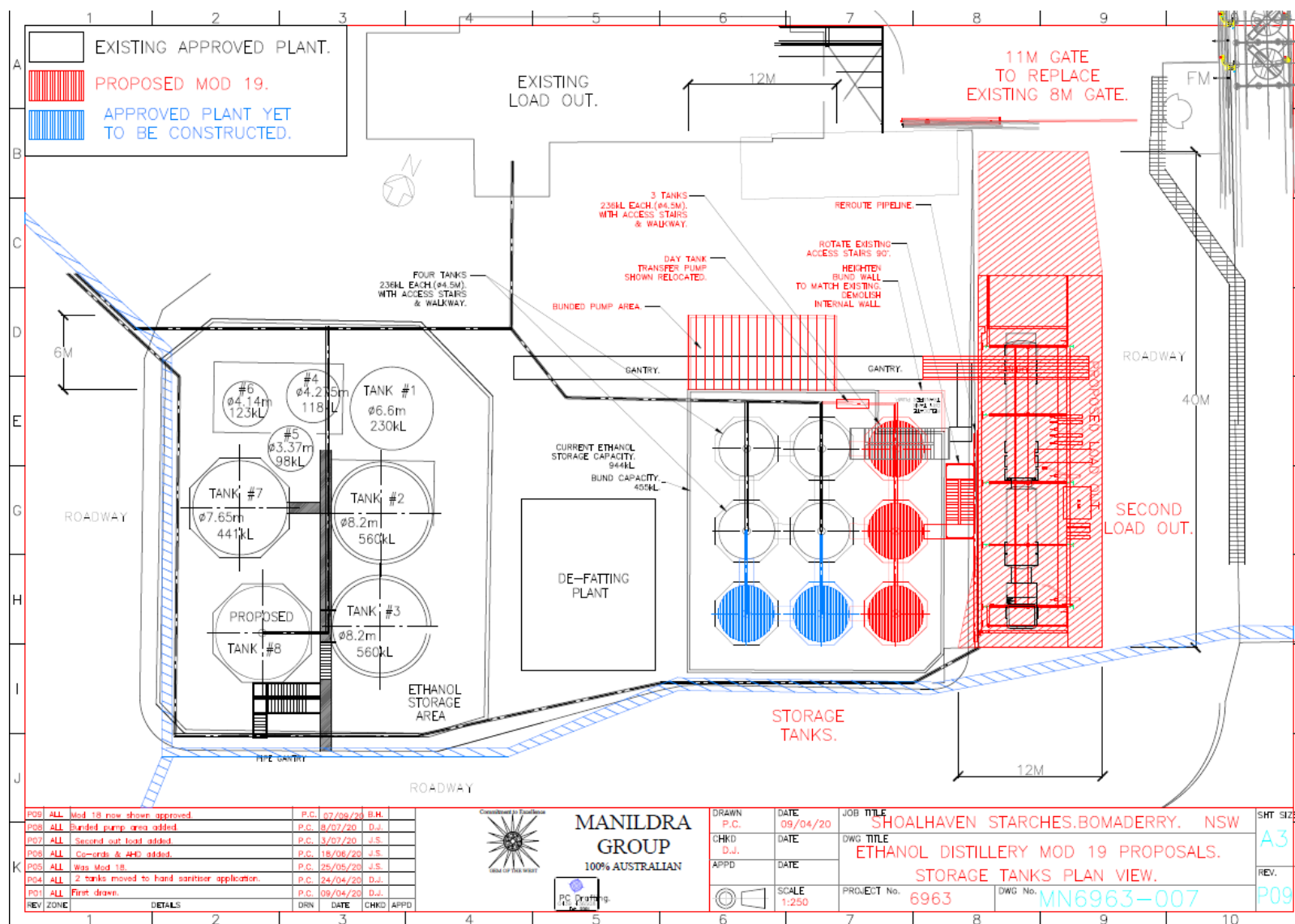
Modification Aspect	Description
<b>Beverage Grade Ethanol</b>	<ul style="list-style-type: none"><li>production of an additional 100 ML of beverage grade ethanol per annum within the existing 300 ML ethanol limit, allowing up to a total maximum of 210 ML of beverage grade ethanol.</li></ul>
<b>Ethanol Plant</b>	<ul style="list-style-type: none"><li>installation of three distillery columns and associated processing equipment within the Ethanol Distillery Plant</li><li>three new ethanol storage tanks and ethanol loadout area</li><li>relocation of ethanol distillery control room.</li></ul>
<b>Cooling towers</b>	<ul style="list-style-type: none"><li>12 new cooling towers to service ethanol plant modifications.</li></ul>
<b>ISO Container Storage</b>	<ul style="list-style-type: none"><li>relocation of existing ISO container storage area to accommodate the installation of new cooling towers.</li></ul>
<b>PDB and SPB</b>	<ul style="list-style-type: none"><li>construction of Cable Stay Pipe Bridge from eastern side of Abernethy's Creek to Specialty Product and Starch Dryer No. 5 building.</li><li>relocation of six approved but not constructed product tanks.</li><li>construction of ten new product tanks.</li></ul>
<b>Electrical Substation</b>	<ul style="list-style-type: none"><li>relocation of approved but not constructed electrical substation to the northern side of the Starch Dryer No. 5 building.</li></ul>
<b>Interim Packing Plant</b>	<ul style="list-style-type: none"><li>three product silos above interim packing plant.</li></ul>
<b>Car Parking</b>	<ul style="list-style-type: none"><li>extend the existing car park location within the south-western part of the site to provide an additional 31 car parking spaces.</li></ul>



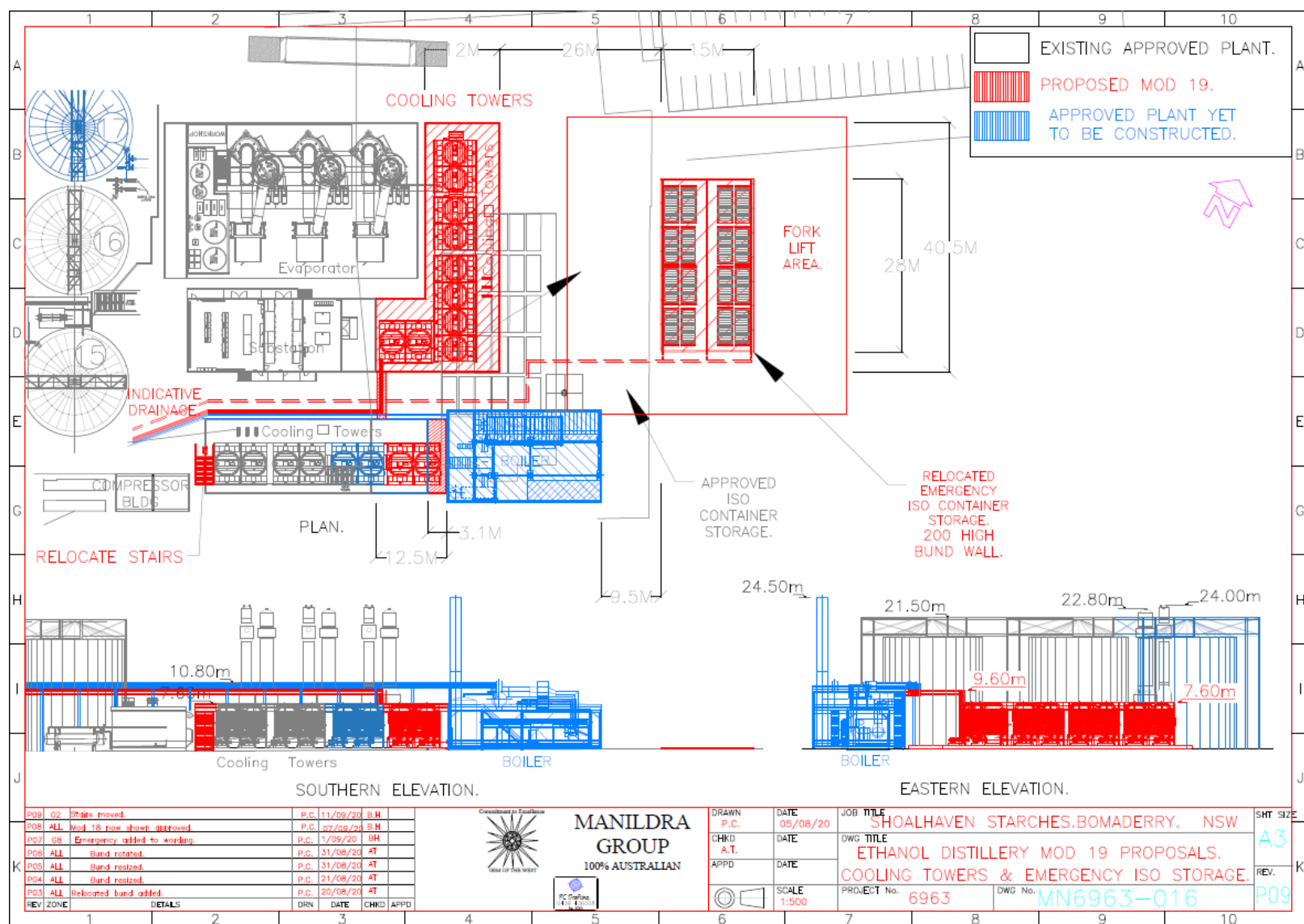






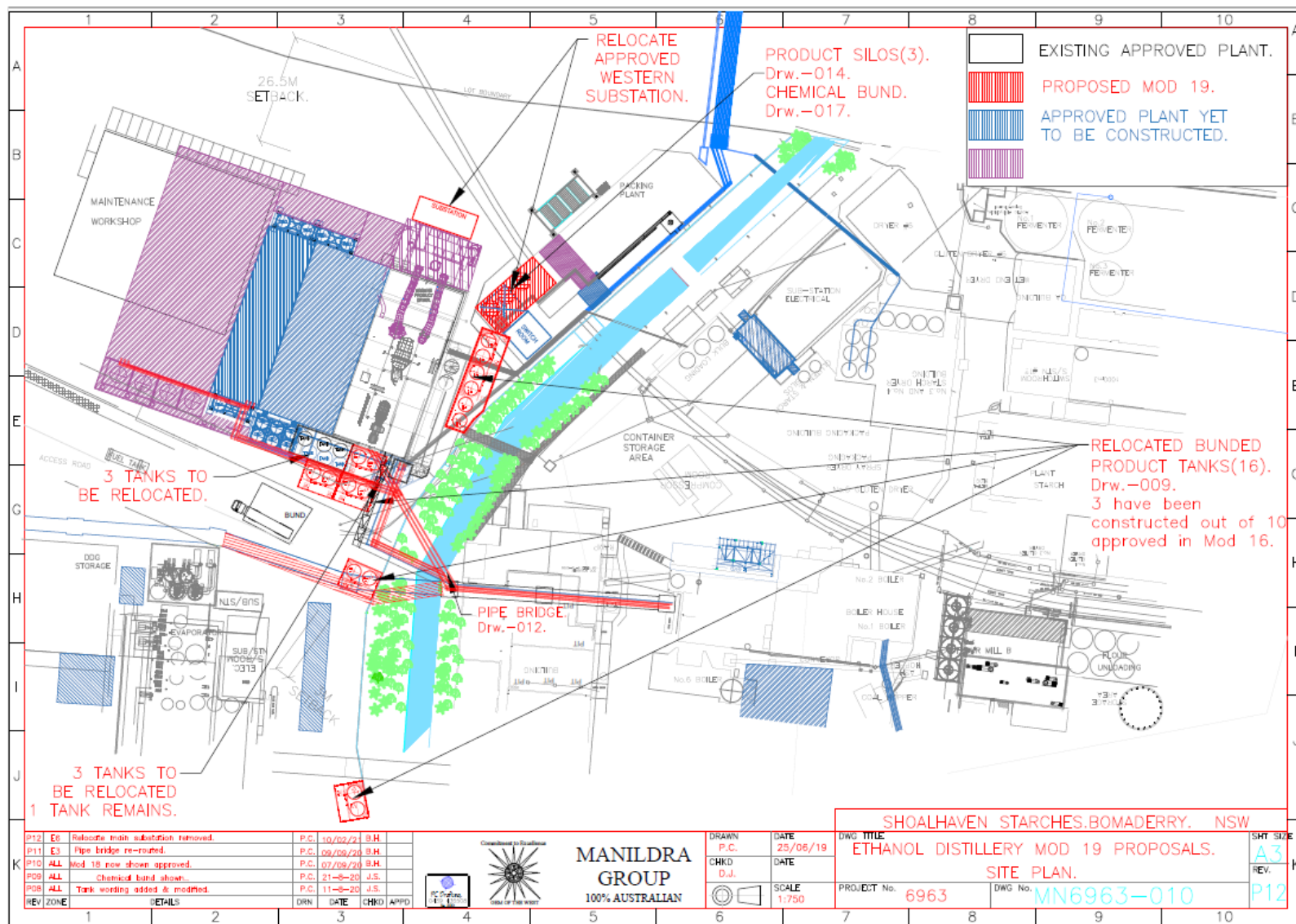


**Figure 7 | Proposed Additional Ethanol Storage Tanks**

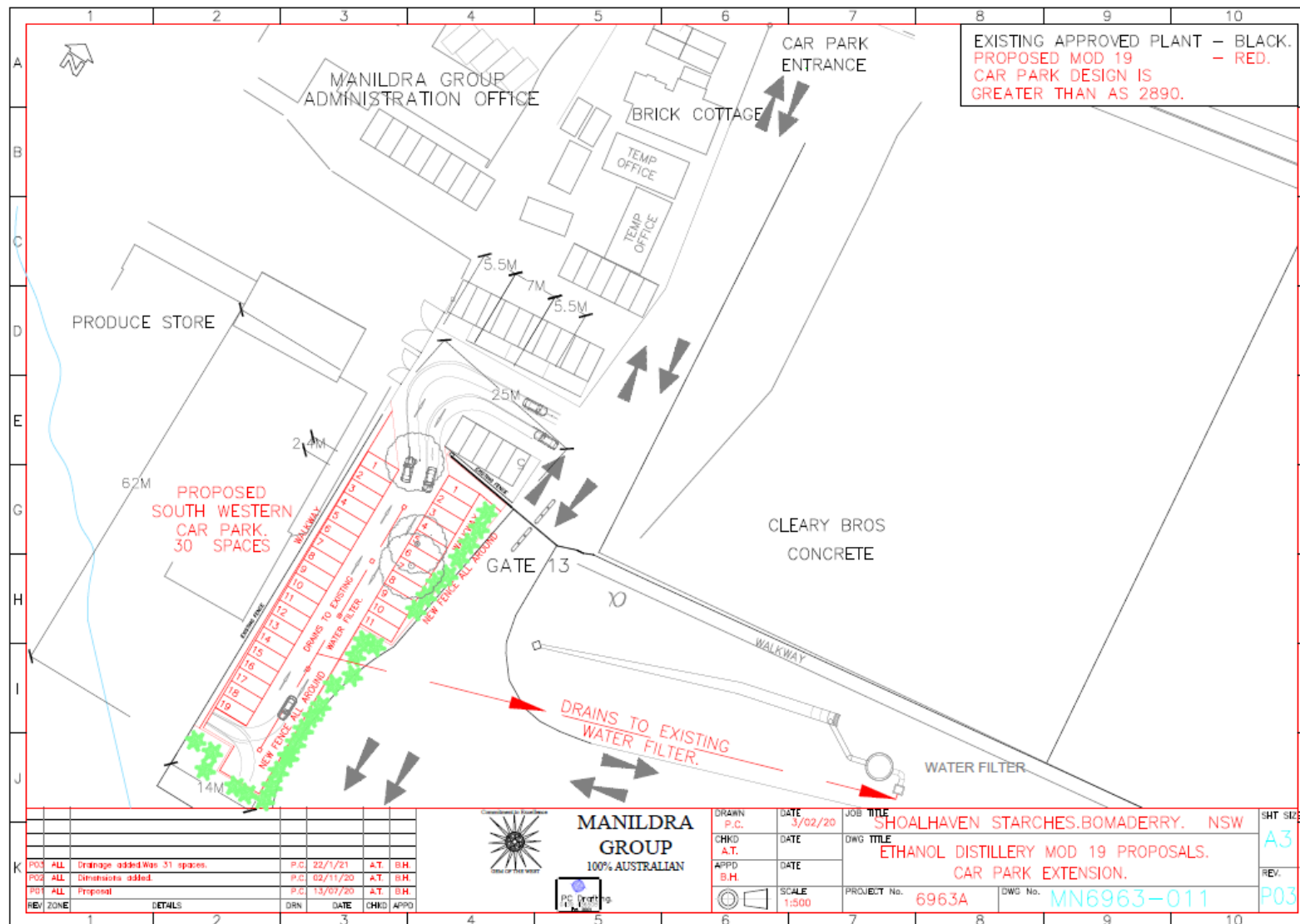


**Figure 8 | Proposed Additional Cooling Towers and ISO Container Storage Relocation**





**Figure 9 | Proposed Modifications to Product Tanks and Electrical Substations**



**Figure 10 | Proposed Car Park Extension**

### 3 Strategic context

The Department has considered the strategic context of the site and is satisfied the proposed modification is consistent with relevant strategic planning documents including the *Illawarra Shoalhaven Regional Plan* (ISRP) 2015.

The ISRP sets a vision and goals for the region covering housing, jobs, environment and transport. The proposed modification would contribute to the goal of driving regional employment and business growth, by providing 5 operational jobs and up to 80 construction jobs. The modification would also contribute to the on-going employment of over 300 staff at the Shoalhaven Starches factory. The modification would enable Shoalhaven Starches to maintain an efficient and competitive manufacturing business that contributes to the local and regional economy.

## 4 Statutory context

### 4.1 Scope of modifications

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

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

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

### 4.2 Consent authority

The Commission has determined all previous modifications of the approval due to reportable political donations having previously been made. No reportable political donations have been made by the Applicant within two years from the date of lodgement of this modification application. Therefore, the Minister for Planning and Public Spaces is the consent authority for the application under section 4.5(a) of the EP&A Act. However, under the Minister's delegation dated 9 March 2020, the Director, Industry Assessments, may determine the application.

### 4.3 Part 3A transition to State significant development

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

## 5 Engagement

### 5.1 Department's engagement

Clause 117(3B) of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) specifies that the notification requirements of the EP&A Regulation do not apply to section 4.55(1A) modifications for a State significant development. Accordingly, the application was not notified or advertised. However, it was made publicly available on the Department's website on 2 October 2020 and was referred to Shoalhaven City Council (Council), NSW Environment Protection Authority (EPA) and NSW Fire and Rescue for comment.

### 5.2 Summary of submissions

The Department received three submissions from Government agencies. There were no submissions from the public or special interest groups. There were no objections to the modification.

**Council** provided no objection to the modification but provided comments regarding stormwater engineering, environmental health and flooding impacts.

**EPA** did not object to the modification but provided comments on the Noise Impact Assessment (NIA) and requested the NIA to be amended. The EPA additionally recommended the implementation of a condition requiring floating roofs to be installed to the three proposed ethanol storage tanks.

**Fire and Rescue NSW** provided no comments on the modification application.

**Biodiversity and Conservation Division** advised it had no comments on the modification.

The Department additionally requested the Applicant to provide additional information regarding the transportation of dangerous goods at the site and the site's ability to comply with Australian Standards and explosion propagation, ambient background air quality pollutant sources and clarification on the maximum building height of the new distillery columns.

### 5.3 Response to Submissions

The Applicant provided a Response to Submissions (RtS) to address the comments raised by the EPA, Council and the Department on 2 December 2020. The RtS provided an amended NIA, Dangerous Goods Audit, Addendum to the Air Quality Impact Assessment (AQIA) and revised building elevation plans.

The RtS was subsequently referred to the EPA and Council for comment. The EPA raised no objections and advised the amended NIA was satisfactory. Council advised it had no further comments and provided recommended conditions relating to flooding and stormwater.



## 6 Assessment

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

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

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

### 6.1 Air Quality Impacts

A key objective for the Shoalhaven Starches factory is to ensure air quality and odour impacts do not increase with subsequent modifications to the factory. The SSEEP approval required the Applicant to implement significant odour controls, including the wastewater treatment plant, biofilters and cleaning of ductwork throughout the factory. These measures were implemented throughout 2011-12 and have been successful in substantially reducing odour impacts on nearby residential areas.

The Applicant proposes to expand the ethanol distillery plant to produce an additional 100 ML of beverage grade ethanol within the approved limits (300 ML) including the installation of three new distillery columns. The modification will enable the production of up to 210 ML of beverage grade ethanol to provide greater flexibility in product supply.

The operation of the proposed additional distillery columns for the increased production of beverage grade ethanol may generate additional air quality and odour impacts on the locality.

The Applicant provided an Air Quality Impact Assessment (AQIA) prepared by GHD Pty Ltd in accompaniment with the SEE. The AQIA provided an assessment of the off-site odour and air quality impacts of the modification.

#### Odour

The AQIA identified the primary odour sources on-site are the DDG Plant, Starch Plant and the Ethanol Plant. The AQIA demonstrated the modified development will achieve the impact assessment odour criteria at all residential receivers.

For the nearest commercial and industrial receivers (C1 – C7), the odour assessment applied the same odour criteria for residential receivers of 6 odour units (OU). Three commercial/ industrial receivers (C4, C5 and C7) are predicted to exceed the assumed criteria of 6 OU by 1 OU at C4 and C5 and 2 OU at C7. The AQIA notes, however, that at C5 and C7, the assumed criterion is already predicted to be exceeded. The AQIA goes on to state that the predicted exceedences are due to recent higher quarterly odour monitoring results. Following a request for further information, it was clarified that these higher

odour modelling results are due to the recent inclusion of Boilers 2 and 4 as odour sources to be monitored under the site's EPL, effectively adding new sources of odour to the assessment modelling. Boiler's 2 and 4 were converted from gas-fired to coal-fired with Boiler 4 commencing operations in 2019.

The EPA reviewed the SEE and AQIA and raised no issues or concerns regarding air quality impacts. The EPA noted the modification is unlikely to result in significant changes to odour or air emissions as the overall production of ethanol will not be increased.

The EPA initially recommended a condition requiring the Applicant to install floating roofs to the new ethanol storage tanks to manage volatile organic compound (VOC) emissions as a best practice method for mitigating vapours in liquid storage tanks. However, the Applicant raised concern with this requirement noting that floating roofs have the potential to contaminate the ethanol products stored in the tanks and the ethanol product would subsequently not be able to comply with relevant food safety standards.

Following further discussion between the Applicant and the EPA, it was agreed that while this approach represents best practice, it is not specifically required to address emission issues with this modification. Instead, a plan detailing measures and practices to minimise and manage VOC emissions was considered reasonable and has been supported by the EPA to be included as a condition of consent.

The Department has reviewed the SEE and the AQIA in conjunction with the comments and recommendations made by the EPA. The Department is satisfied the revised AQIA sufficiently considers the additional odour impacts of the modification alongside the existing operations of the Shoalhaven Starches facility. The Department is satisfied the imposition of a condition requiring the Applicant to prepare a VOC emission management plan in consultation with the EPA is appropriate in managing potential VOC emissions from ethanol storage tanks.

Overall, the Department is satisfied the odour criteria can be met at all residential receivers as a result of the proposed modification. While the odour model predicts some nearby commercial receivers may not meet the assumed criteria, the Department is satisfied this is a result of the existing operations and not due to the proposed modification. The Department also notes the EPA did not raise any concerns or recommend any further conditions be imposed.

## **Particulates**

The AQIA notes the modification does not present any new sources of combustion and therefore there will be no changes to the existing emission's inventory of the site, and it is predicted that all pollutant emissions will comply with the air quality limits at all receptors. However, the AQIA has provided an assessment of particulate matter impacts generated by the modification.

The assessment identified the development will have full compliance with the PM<sub>2.5</sub> and PM<sub>10</sub> 24 hour criteria at all residential receivers. The AQIA noted exceedances of the PM<sub>2.5</sub> and PM<sub>10</sub> 24 hour criteria for one day of the year and three days of the year, respectively at commercial receptor C6. The AQIA identifies that exceedances are a result of high background concentrations which account for around 90% or more of the particulate matter on these days.

The EPA reviewed the SEE and AQIA and raised no issues or concerns regarding air quality impacts. The EPA noted the modification is unlikely to result in significant changes to air emissions as the overall production of ethanol will not be increased.

The Department has reviewed the SEE and the AQIA in conjunction with the comments and recommendations made by the EPA. The Department understands the Applicant is required to undertake a pollution emissions study under the existing Environment Protection Licence (EPL) to identify the most significant particulate matter emission sources and identify options to reduce emissions and offsite ground level concentrations. The Department supports this requirement.

Overall, the Department is satisfied the revised AQIA sufficiently considers the additional air quality impacts of the modification alongside the existing operations of the Shoalhaven Starches facility and that the limits can be met at all residential receivers.

## **Conclusion**

The Department notes the modification will result in full compliance with the relevant criteria for all pollutants and odour at all residential receivers. The Department acknowledges identified exceedances for odour, PM<sub>10</sub> and PM<sub>2.5</sub> are a result of higher ambient background levels recorded in quarterly monitoring and not a result of the modification, to which the Department considers its contribution to air quality impacts to be minimal in the context of broader site operations and the locality.

The Department recommends the inclusion of a condition requiring the Applicant to prepare a VOC emissions management plan to manage potential emissions associated with the proposed ethanol storage tanks. The Department's assessment concludes the modifications to the Shoalhaven Starches facility will not result in significant air quality impacts and that any residual issues can be effectively managed through the existing EPL and recommended and existing conditions of consent.

## **6.2 Hazards and Risks**

Modifications to factory processes and equipment have the potential to increase hazards and risks at the factory. Pinnacle Risk Management Pty Ltd (Pinnacle) prepared a Preliminary Hazard Analysis (PHA) to assess the potential hazardous events and corresponding risks associated with the modification, particularly the additional distillery columns, new ethanol storage tanks, ISO container storage area relocation and additional product storage tanks. The PHA was prepared in accordance with the Department's Hazardous Industry Planning and Advisory Paper (HIPAP) No. 6 – Hazard Analysis. The PHA evaluated the level of risk to off-site land uses and compared this with the Department's land use safety risk criteria (detailed in HIPAP No. 4).

The PHA identified hazardous scenarios associated with MOD 19 including the release of hazardous materials from ethanol tanks, corrosive tanks, loading bays, and the new distillery columns. The worst-case scenarios are bund fire, tanks top fire and the release of liquid ethanol or corrosive substances. Furthermore, the PHA identified the volume of ethanol vapour held within the proposed distillery columns is insubstantial and as such, a vapour cloud explosion from the proposed distillery columns is unlikely.

The PHA also identifies the introduction of a new chemical in site operations being phosphorus oxychloride. Phosphorus oxychloride is a toxic liquid used for processing starch in batches of 10 litres (L). Due to the storage quantities and controls provided in the PHA, the storage and use of phosphorus oxychloride is not considered to present an off-site risk.

The PHA identified the existing safeguards implemented at the site for the prevention, detection and mitigation of hazardous event relating to the modification. The PHA concluded the risks from the

modification would comply with the Department's risk criteria for fatality risk, injury risk, toxic exposure and propagation due to fire and explosion. Societal risk, area cumulative risk and environmental risk would also be acceptable. The primary reason for the low risk levels is that any significant level of impact would be contained on site and that the likelihood of catastrophic equipment failure is acceptably low.

The Department's Hazards specialist team (Hazards) reviewed the PHA and sought further information regarding the frequency of dangerous goods distribution, the site's capacity to comply with Australian standards particularly related to flammable liquid and corrosive substances, due to the extent of additions to the site, and the impacts of explosion propagation on distillery columns. The Applicant was requested to provide a dangerous goods report (DGR) prepared by an independent dangerous goods consultant to verify compliance with the Australian standards.

The Applicant's DGR identified minor non-compliances with the Australian standards were present at the site, specifically related to storage tank bund capacity and separation. The DGR noted the main reason behind the non-compliances was the design of the existing site which was constructed in accordance with previous Australian standards. The Applicant proposed measures to achieve compliance with the Australian Standards for the modification including raising the bund wall and increasing bund capacity, providing extra screening between tanks to mitigate separation distance and reducing the storage quantity of dangerous goods (DGs) in the depot area.

The Department reviewed the DGR and advised the mitigation measures proposed by the Applicant are appropriate for the modification. To confirm the commitments made in the DGR, the Department has recommended conditions that require the storage of dangerous goods at the site that are associated with this and any future modification application, to comply with the relevant Australian standards.

While the Department is unable to impose conditions that require the retrospective upgrade of the whole site to ensure compliance with the Australian standards for the storage of dangerous goods, the Department acknowledges the Applicant is committed to comply wherever possible. In this regard, the Department has recommended a condition requiring the Applicant to document on findings and proposed actions to meet the Australian standards in an updated Safety Management System (SMS) to be provided within 1 month prior to commissioning. With these proposed conditions in place, the Department is satisfied the modification achieves the relevant hazards risk criteria and will meet the relevant Australian Standards where required.

The Department has reviewed the SEE, PHA and DGR and concludes the modification is unlikely to present off-site risks subject to the implementation of recommendations in the PHA and DGR including the increase of bund capacity and screening and the implementation of the recommended conditions.

### 6.3 Other issues

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

**Table 3** | Assessment of other issues

Findings	Recommendations
<b>Noise</b>	
<ul style="list-style-type: none"><li>• The proposed expansion of the ethanol distillery plant and new cooling towers may present additional noise impacts on the locality.</li><li>• The Applicant provided a noise impact assessment (NIA) prepared by Hardwood Acoustics to assess the noise impacts associated with the modification and demonstrate compliance with the existing noise limits of the consent.</li><li>• The NIA identified the primary noise sources of the modification are the ethanol distillery plant and equipment, which includes fan exhaust from new cooling towers and banded pump motor for ethanol storage silos.</li><li>• Noise modelling undertaken in the NIA identified the predicted noise levels of the modification would comply with the noise limit criteria at all sensitive receivers.</li><li>• The EPA reviewed the NIA and advised the NIA should be updated to provide an assessment of annoying noise characteristics, noise-enhancing weather conditions and a cumulative site noise assessment.</li><li>• The Applicant provided an RtS which included an amended NIA to address the comments raised by the EPA.</li><li>• The EPA reviewed the amended NIA and advised noise impacts could be appropriately managed through the existing EPL and conditions of consent. The EPA recommended a condition be imposed, requiring the Applicant to prepare a compliance noise impact assessment post-operation of the modified plant to ensure operation of the site would not result in exceedances of site wide noise limits.</li><li>• The Department reviewed the amended NIA and concluded the modification would comply with the existing noise limits subject to the implementation of the recommendations outlined in the NIA and EPA's recommended conditions.</li><li>• The Department notes existing conditions requiring design verification prior to construction and noise validation</li></ul>	<ul style="list-style-type: none"><li>• Require the Applicant to undertake noise design verification and noise validation monitoring under existing conditions of consent.</li></ul>



monitoring after operation are sufficient in ensuring the noise limits are not exceeded by the modification.

- The Department is satisfied existing conditions of consent capture the requirements and intent of the recommended conditions from the EPA and are therefore suitable in managing the potential noise impacts of the modification.
- The Department's assessment concludes the modification would not increase noise levels from the factory above existing limits subject to noise design verification and noise validation monitoring.

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## Visual Impacts

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- The modification includes construction of new structures and changes to the positioning and location of the facilities plant and equipment. Particularly, the construction of three new distillery columns with a maximum building height of 53.7 m above ground level, new cooling towers and storage silos.
  - The SEE provided an assessment of visual impacts of the modification, considering the visibility of the modified structures from seven identified key vantage points. The assessment noted the proposed structures are consistent with the scale and height of facilities existing structures. Furthermore, the assessment identified the proposed distillery columns would not exceed the tallest existing structure being the boiler stack, in height.
  - The assessment noted some structures would be visible to passing motorists on Bolong Road and would be visible from the urban area of Bomaderry but is viewed as part of the prevailing scale of the facility. Views from North Nowra and Terara are more distant and partially screened by vegetation.
  - The Applicant additionally consulted with the Australian Department of Defence (Defence) as the site is located within the HMAS Albatross flight zone. Defence confirmed the modification will not infringe the Obstacle Limitation Surface (OLS) of HMAS Albatross.
  - The assessment concluded the modification would not have significant adverse visual impacts given the scale and character is consistent with existing structures.
  - No concerns were raised by Council regarding the modifications impacts on visual amenity.
  - The Department concludes the proposed modifications would blend with the existing industrial character of the site and would have minimal visual impact.
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## Flooding

- The Applicant provided a flood compliance report (FCR) prepared by WMA Water to assess potential impacts on flood levels, flows and velocities, given the site's location in an area of high hazard and floodway.
- The FCR provided hydraulic modelling of the development which identified the modification works would not present a significant increase to the 1% AEP flood level offsite.
- Particularly, the FCR identified the modifications to the ethanol distillery plant would generate a small increase in flood level to the north of the plant but a decrease in flood level directly south of the plant.
- Council reviewed the FCR and advised the it had no objections to the modification as there will be no increase in flood level outside of the Shoalhaven Starches site.
- However, Council provide recommended conditions of consent regarding flooding engineering reporting.
- The Department notes existing conditions of consent require the Applicant to update the Flood Mitigation Management Plan subsequent to a modification application, which achieves the intent of the conditions recommended by Council.
- The Department concludes the modifications to the Shoalhaven Starches facility will not result in an increase in the 1% AEP flood level offsite.
- Applicant to update Flood Mitigation Management Plan in accordance with existing conditions.

## Stormwater

- The construction of new site infrastructure could impact on the site's existing stormwater systems and its ability to effectively manage stormwater runoff.
- The Applicant identified the site is subject to an existing Stormwater Management Plan (SWMP). A conceptual SWMP was submitted by the Applicant which identifies the location of modifications in relation to the existing stormwater system.
- The Applicant has committed to a detailed stormwater design for the modification to be finalised prior to the issue of a construction certificate (CC).
- The modification was referred to Council for comment. Council recommended a condition of consent be implemented requiring the Applicant to submit detailed stormwater engineering plans to Council prior to the issue of a CC.
- Require Applicant to update the Stormwater Management Plan in consultation with Council to the satisfaction of the Planning Secretary.

- The Department reviewed the conceptual stormwater plan and is satisfied the existing stormwater management system is capable of accommodating the additional site infrastructure.
- The Department notes existing conditions of consent require the Applicant to update the Stormwater Management Plan in consultation with Council and to the satisfaction of the Planning Secretary, which achieves the intent of the conditions recommended by Council.
- The Department's assessment concludes stormwater issues arising from the proposed modification can be suitably managed by the existing conditions of consent.

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### **Traffic, Access and Parking**

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- The modification application includes the construction of an ethanol loadout located to the east of the ethanol storage tanks and the provision of 39 additional car parking spaces.
- Update approved plans of the development to include revised car parking layout plan.

#### Parking

- Additional car parking is proposed to be accommodated via an extension to the existing western car park at the facility (see **Figure 9**).
- The SEE identifies these additional car parking spaces are required to accommodate two new operational staff and 65 construction staff in accordance with the existing car parking rate of 1 space per permanent employee and 0.6 spaces per temporary employee.
- Council provided no objections to the proposed car park extension however, noted it must be designed to comply with Australian Standards including the implementation of a turnaround bay and to consist of sealed roads.
- The Applicant provided a revised car park layout plan which identified a vehicle turnaround bay to enable efficient manoeuvring within the car park.
- The Department considers the proposed additional parking is acceptable as it accounts for the additional staff required for the operation of the distillery expansion and the temporary construction staff required onsite for the construction works.
- The Department's assessment concludes the modification retains an acceptable amount of parking space at the facility and recommends updating the existing approved plans to include the revised car parking layout plan.

#### Access

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- The modification includes the installation of a new ethanol loadout connected to ethanol storage tanks on the eastern side of the site.
- The SEE included a Traffic Impact Assessment (TIA) and SWEPT Path Analysis to demonstrate the new loadout infrastructure would retain sufficient vehicle access and manoeuvrability throughout the site.
- The SWEPT Path Analysis demonstrated the maximum size vehicle being 25 m B-double vehicles can safely and efficiently manoeuvre throughout the site.
- Council raised no issues regarding on-site vehicle manoeuvrability.
- The Department has reviewed the SWEPT Path Analysis and considers the proposed loadout will not negatively impact on internal manoeuvrability for trucks through the site.
- The Department's assessment concludes the modification will not impact upon vehicle manoeuvrability within the site.

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### **Biodiversity**

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- The Department is required to consider the impacts of the modification application on biodiversity values in accordance with clause 7.17(2) of the *Biodiversity Conservation Act 2016* (BC Act).
  - The Department has reviewed the modification application and notes the modification does not extend upon the existing footprint of the approved site nor does it require the removal of vegetation and habitats.
  - The Department considers that a Biodiversity Development Assessment Report (BDAR) is not required in accordance with clause 7.17(2)(c) of the BC Act.
  - Therefore, the Department concludes the proposed modification will not increase impacts on biodiversity values.
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## 7 Evaluation

The Department has assessed the proposed modification in accordance with the relevant requirements of the EP&A Act. On balance, the Department considers the proposed modification is appropriate on the basis that the:

- modification is consistent with relevant strategic plans for the Illawarra-Shoalhaven region
- modification would result in minimal environmental impact beyond the approved development
- air quality would be maintained through implementation of mitigation measures to ensure compliance with air emissions limits.
- operation of the overall factory, with new and relocated plant and equipment, would meet existing noise limits at residential receivers.
- modification would have minimal impact on flooding and visual amenity.

The Department concludes the proposal is in the public interest and the modification application is approvable, subject to conditions (outlined in **Appendix B**).

## 8 Recommendation

It is recommended that the Director, Industry Assessments, as delegate of the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report
- **determines** that the application 06\_0228-Mod-19 falls within the scope of section 4.55(1A) of the EP&A Act
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to approve the modification
- **modify** the consent 06\_0228
- **signs** the attached approval of the modification (**Appendix B**).

**Recommended by:**



2 March 2021

**Shaun Williams**

A/Senior Environmental Assessment Officer  
Industry Assessments

**Recommended by:**



2 March 2021

**Joanna Bakopanos**

Team Leader  
Industry Assessments



## 9 Determination

The recommendation is **Adopted** by:



8 March 2021

**Chris Ritchie**

Director

Industry Assessments

as delegate of the Minister for Planning and Public Spaces

# Appendices

## Appendix A – List of referenced documents

The Department has considered the following documents in its assessment of the modification:

- Statement of Environmental Effects and Planning Report prepared by Cowman Stoddart Pty Ltd, dated 28 September 2020
- Response to Submissions prepared by Cowman Stoddart Pty Ltd, Dated 6 November 2020
- Flood Compliance Report prepared by WMA Water, dated 7 September 2020
- Air Quality Impact Assessment prepared by GHD Pty Ltd, dated September 2020
- Noise Impact Assessment prepared by Harwood Acoustics Pty Ltd, dated 1 September 2020
- Preliminary Hazards Assessment prepared by Pinnacle Risk Management Pty Ltd, dated 2 September 2020
- Clause 4.6 Written Request prepared by Cowman Stoddart Pty Ltd, dated 16 September 2020
- Submissions made on the modification application. Available on the Department's website at: <https://www.planningportal.nsw.gov.au/major-projects/project/40181>
- Relevant environmental planning instruments, policies and guidelines objects and relevant provisions of the EP&A Act.

## **Appendix B – Modification Instrument**

The recommended modification instrument for 06\_0228-Mod-19 can be found on the Department's website at: <https://www.planningportal.nsw.gov.au/major-projects/project/40181>