

## ASSESSMENT REPORT

### Shoalhaven Starches Ethanol Expansion Project Section 75W Modification (MP 06\_0228)

#### MOD 15 – Supagas Carbon Dioxide Plant



*Shoalhaven Starches Factory, Bomaderry*

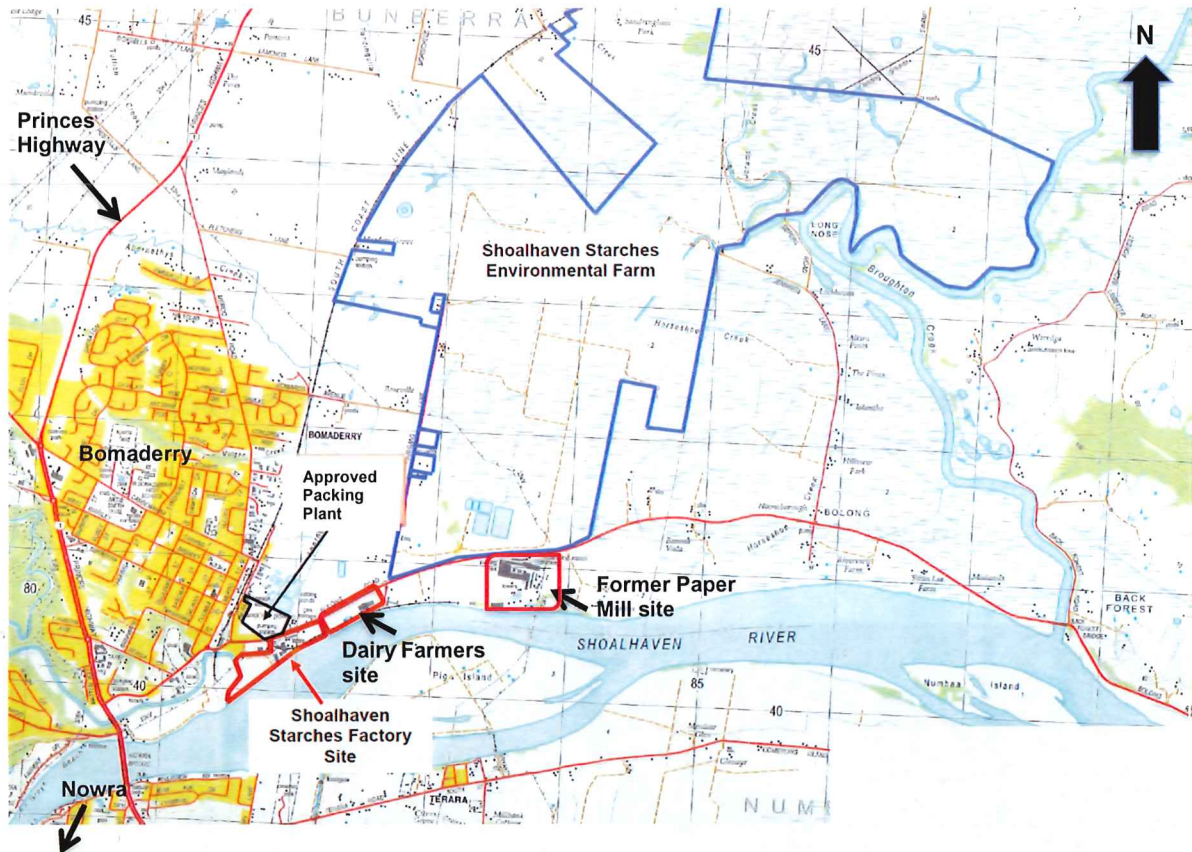
#### 1. BACKGROUND

This report assesses a modification request by Shoalhaven Starches Pty Ltd (the Proponent) to modify its factory in Bomaderry on the NSW South Coast.

Shoalhaven Starches has operated a factory at Bomaderry in the Shoalhaven local government area 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, paper and fuel products. The factory is a 24/7 operation and has around 300 employees.

Wastewater generated from processing activities is treated and irrigated on a nearby 'environmental farm' owned by the Proponent. The environmental farm covers over 1,000 hectares (ha) of rural land on the northern bank of the Shoalhaven River and contains a wastewater treatment plant, storage ponds and extensive irrigation system for discharging treated wastewater from the factory (see **Figure 1**).

In recent years, the Shoalhaven Starches factory has expanded to incorporate adjacent industrial premises that have closed down, including the former Dairy Farmers complex and the former Shoalhaven Paper Mill site.



**Figure 1 - Shoalhaven Starches Factory, Packing Plant, Environmental Farm and Former Paper Mill, Bomaderry**

In 2009, the then Minister for Planning approved a major expansion to fuel-grade ethanol production at the factory. The approval required the Proponent to implement significant odour controls, including a wastewater treatment plant. The odour controls were implemented in 2011-12 and have been successful in substantially reducing odour complaints from the nearby residential areas.

### 1.1 Site Description

The factory and environmental farm are located on the eastern fringe of Bomaderry and 2 kilometres (km) to the north-east of the township of Nowra. 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 to the north-west of the factory. 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.

The Proponent has approval to construct a packing plant on the northern side of Bolong Road. Preliminary earthworks commenced on the packing plant site in 2018.

## 1.2 History of Planning Approvals & Modifications

Prior to 2009, the Proponent operated its factory and environmental farm 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 *Environmental Planning and Assessment Act 1979* (EP&A Act). The SSEEP approval consolidated all previous planning approvals for the site with the aim of simplifying regulation and compliance.

The SSEEP is shown on **Figure 2** and involved:

- staged increases of ethanol production from 126 megalitres a year (ML/yr) to 300 ML/yr following successful implementation of a range of odour controls
- implementation of mandatory odour controls including a wastewater treatment plant and biofilter
- installation of additional infrastructure at the dried distillers grain (DDG), ethanol and starch plants, a new packing plant, rail siding and product and wastewater pipelines.

By June 2012, the Proponent 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, as demand for ethanol in fuels has not increased as predicted, ethanol production levels at the factory in 2015 were in the order of 219 ML/yr.

Given the reduced market demand for ethanol, the Proponent has been progressively installing infrastructure over the last few years, that will allow optimisation of flour products and increased production of beverage grade ethanol for alcohol products. This has required several modifications to the SSEEP approval, which has focused on infrastructure on the factory site including a new starch dryer, flour mill and a beverage grade ethanol distillery.

### ***Modifications to 06\_0228***

The Minister for Planning has approved fourteen modifications to the SSEEP approval since 2009. The most recent modifications reflect the changed focus to increased flour, starch, gluten and beverage grade ethanol production. **Table 1** summarises these modifications.

**Table 1:** *Modifications to the Shoalhaven Starches Ethanol Expansion Project (06\_0228)*

<b>MOD No.</b>	<b>Date Approved</b>	<b>Description</b>
1	30 Sept 2011	<u><i>Remove DDG Pellet Plant</i></u> <ul style="list-style-type: none"> <li>• remove the requirement for the 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>
2	14 Sept 2012	<u><i>Fermenter and Distillery</i></u> <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>
3	9 Oct 2012	<u><i>Relocate Car Park</i></u> <ul style="list-style-type: none"> <li>• relocate approved 60 space staff car park to the former Dairy Farmers site</li> <li>• include the former Dairy Farmers site at 220 Bolong Road in the project approval, following acquisition by the Proponent.</li> </ul>
4	24 Mar 2014	<u><i>Relocate DDG Pellet Plant</i></u> <ul style="list-style-type: none"> <li>• relocate the approved DDG pelletising plant within the factory site, increase its footprint and approved height, from 21 m to 28 m.</li> </ul>
5	16 Sept 2015	<u><i>DDG Pellet Plant Stack</i></u> <ul style="list-style-type: none"> <li>• modify the design, footprint and odour controls on the DDG pelletising plant including a 49 m high air discharge stack</li> <li>• construct eight storage silos up to 26 m high.</li> </ul>

<b>MOD No.</b>	<b>Date Approved</b>	<b>Description</b>
6	25 Nov 2015	<u>Demolition</u> <ul style="list-style-type: none"> <li>demolish a disused industrial building "Moorehouse" purchased by the Proponent</li> <li>construct a temporary car park on the northern side of Bolong Road adjacent to the Shoalhaven Water pumping station.</li> </ul>
7	18 Jan 2016	<u>Starch Dryer No. 5</u> <ul style="list-style-type: none"> <li>relocate the approved Starch Dryer No. 5 within the factory site to the former "Moorehouse" site and increase the overall footprint</li> <li>construct a substation, pipes and pipe gantry to supply the starch dryer.</li> </ul>
8	1 Mar 2016	<u>Extend Existing Flour Mill</u> <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>
9	8 Mar 2017	<u>Packing Plant Relocation</u> <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>
10	18 April 2017	<u>Flour Mill B</u> <ul style="list-style-type: none"> <li>construct a new flour mill B and increase flour production on site from 400,000 842,400 tpa. Relocate storage silos and construct a mill feed structure.</li> </ul>
11	1 Sept 2017	<u>Dryers, Cooling Towers, Maintenance Building and Biofilters</u> <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>
12	1 Sept 2017	<u>Beverage Grade Ethanol</u> <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 sidings and provide additional car parking.</li> </ul>
13	18 Jan 2018	<u>Conversion of Boilers</u> <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>
14	27 April 2018	<u>Use of Former Paper Mill Site</u> <ul style="list-style-type: none"> <li>incorporate the former Shoalhaven Paper mill into the project approval and use the site for buffer storage for products, plant, construction materials and shipping containers.</li> </ul>

### **Council Issued Consents**

Separate to the SSEEP approval, the Proponent sought and 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 approval to the Proponent 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 Proponent. These include the Algae Demonstration Facility and the Meat Processing Plant, both located at the former Dairy Farmers site.

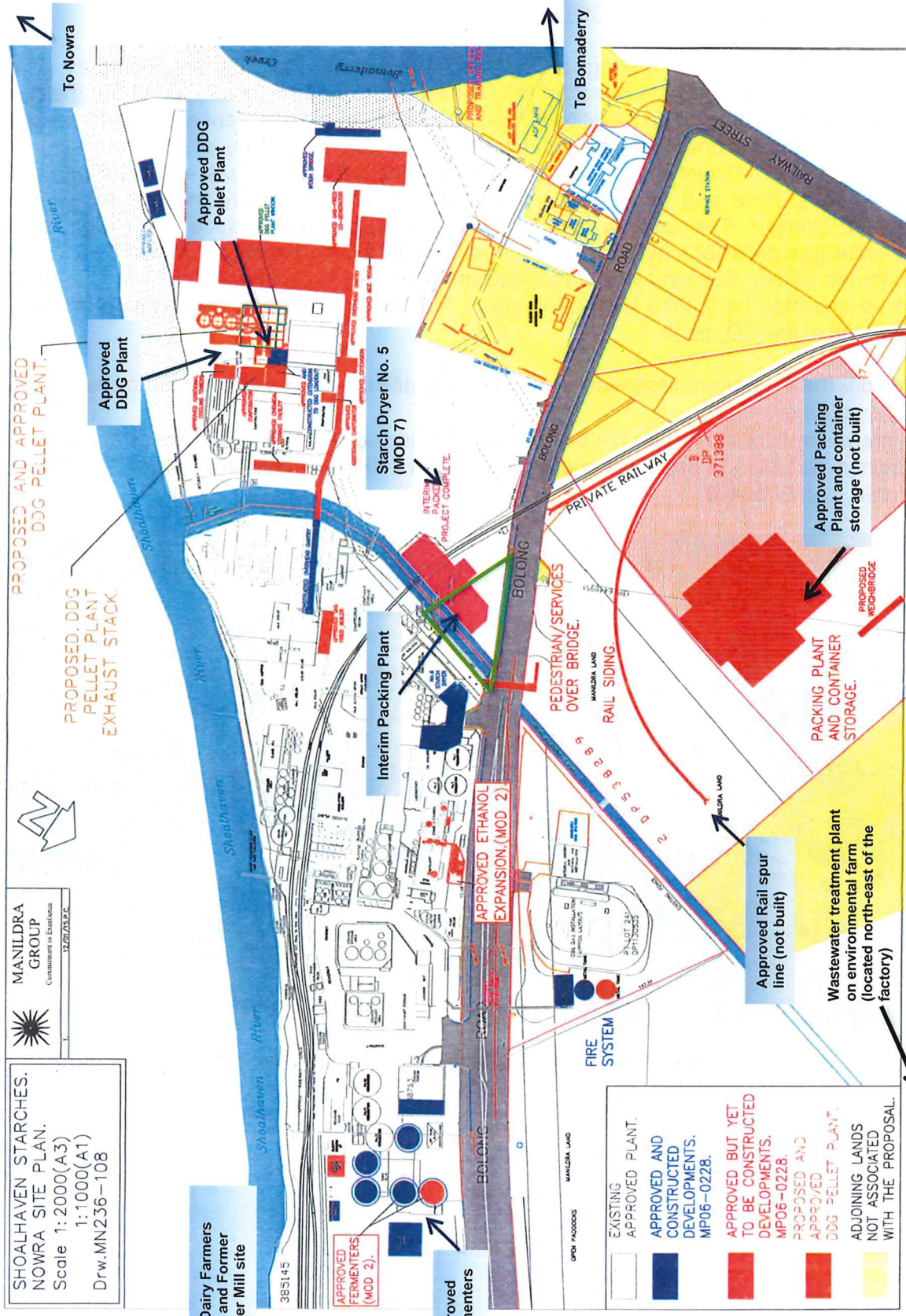


Figure 2 - Shoalhaven Starches Approved Ethanol Expansion Project (06\_0228)

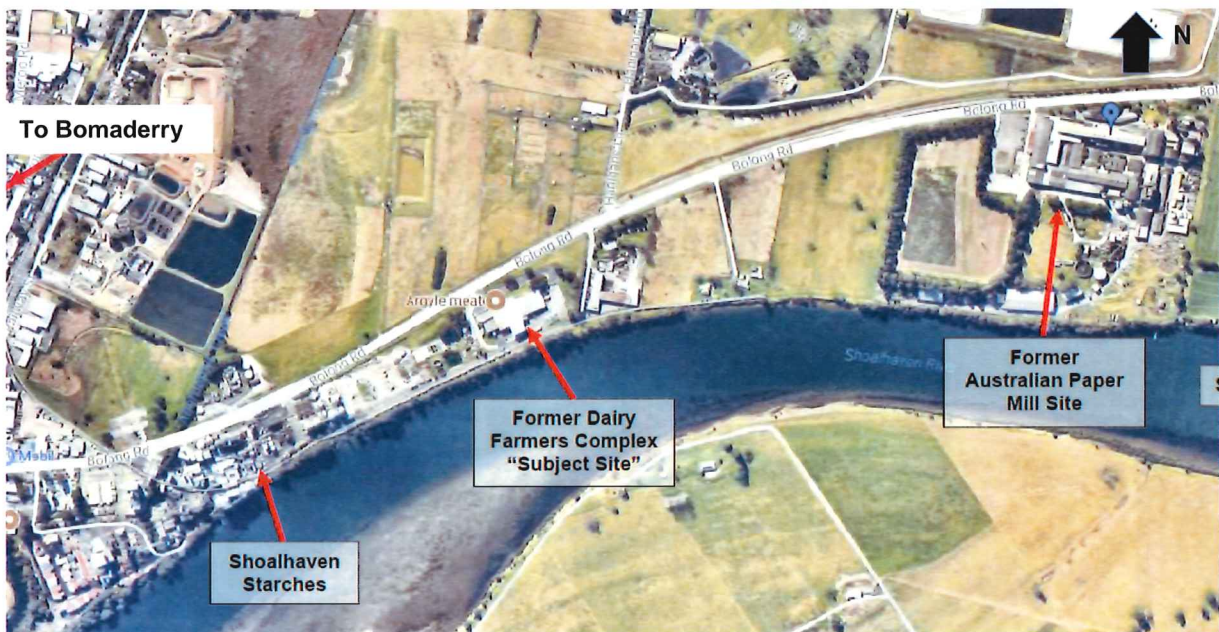
## 2. PROPOSED MODIFICATION

In March 2018, the Proponent lodged a modification request under Section 75W of the EP&A Act to construct a carbon dioxide (CO<sub>2</sub>) plant at the factory.

The Proponent proposes to construct a CO<sub>2</sub> plant at the former Dairy Farmers complex. The CO<sub>2</sub> plant would capture waste gas from the fermenter tanks at the factory, and treat the gas to a food grade standard. The modification includes a pre-treatment plant near the fermenter tanks, above ground and underground pipework and the main CO<sub>2</sub> plant comprising of compressors, driers, liquefiers and storage tanks. The waste CO<sub>2</sub> gas would be purified, converted to a liquid and transported off-site to food and hospitality markets for use in carbonated drinks. The capture and treatment of CO<sub>2</sub> would reduce the Proponent's greenhouse gas emissions by up to 100 tonnes per day. The modification would allow the Proponent to further close-the-loop on production by reusing a waste stream. The CO<sub>2</sub> plant would be operated by a third party, Supagas. **Figures 3 to 7** show the location and key components of the CO<sub>2</sub> plant.

In addition, the Proponent proposes a few minor modifications to approved structures at the factory, including:

- internal re-fit of the former fire pump house for use as the ethanol plant control room
- minor relocation of approved cooling towers within the dried distillers grain (DDG) plant area, see **Figure 8**.



*Figure 3 – Location of Shoalhaven Starches Factory and Former Dairy Farmers Site*

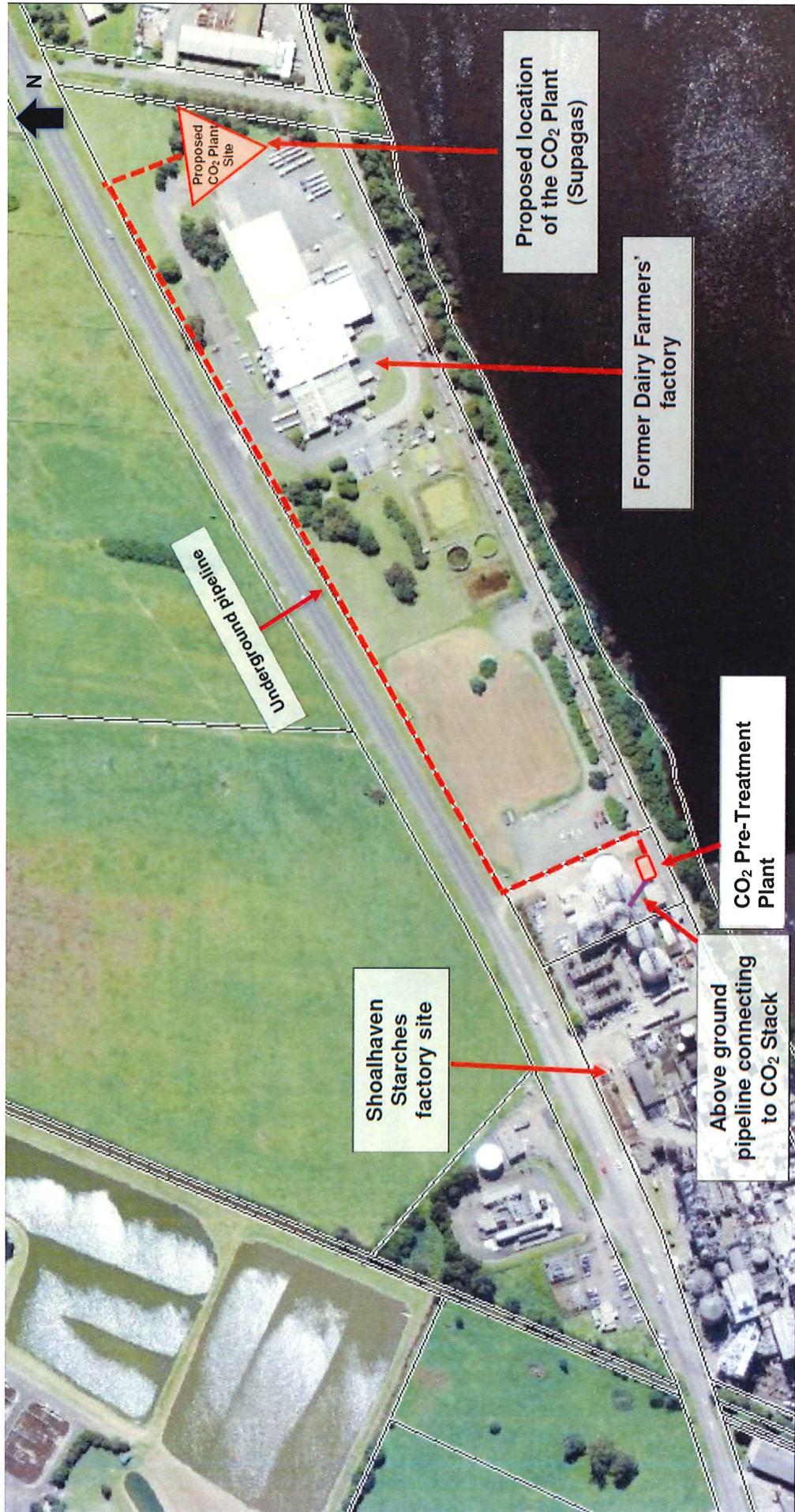


Figure 4 – Location of Proposed Main CO<sub>2</sub> Plant, Pre-Treatment Plant and Pipelines

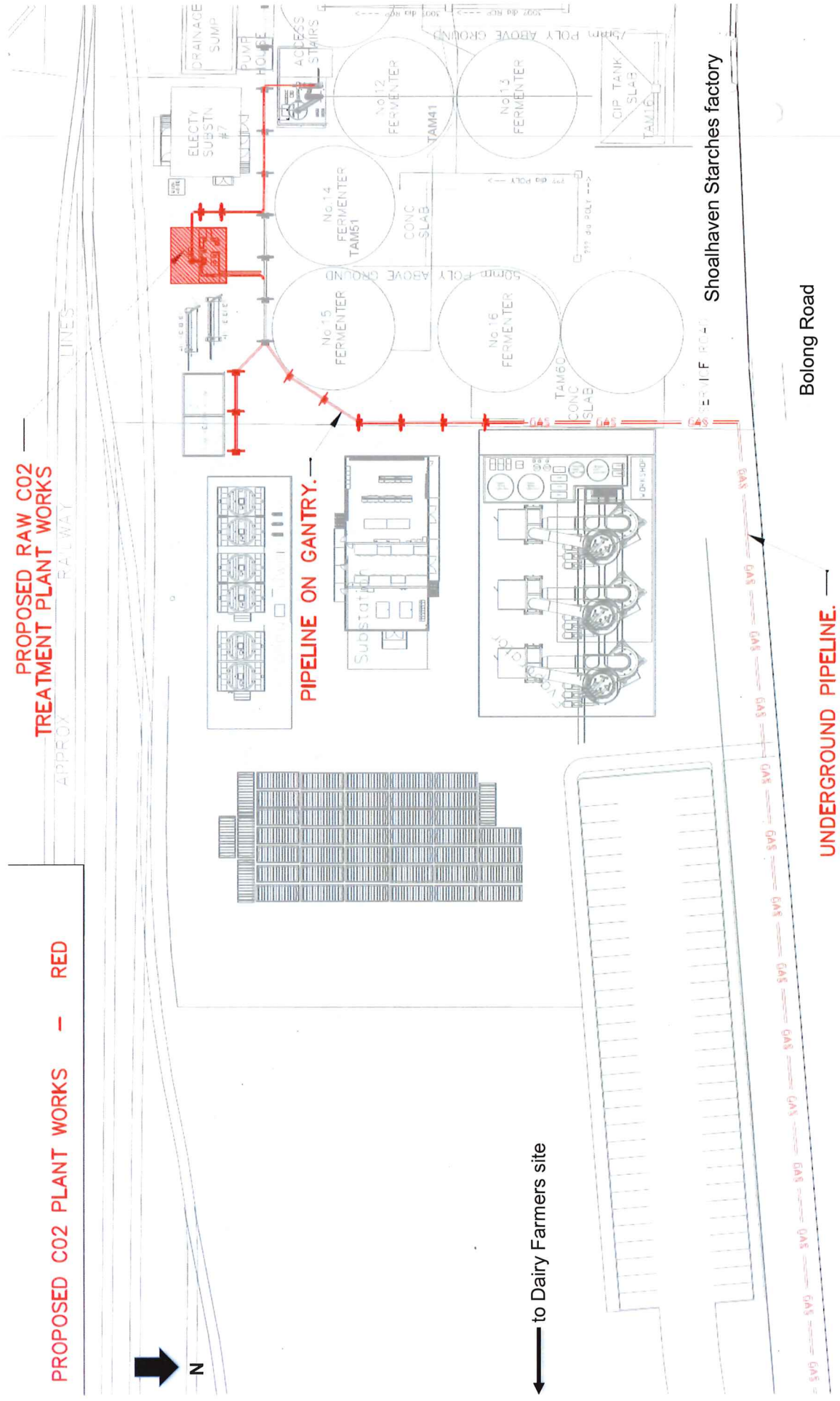


Figure 5 – Key Components of Proposed Pre-Treatment Plant at the Factory



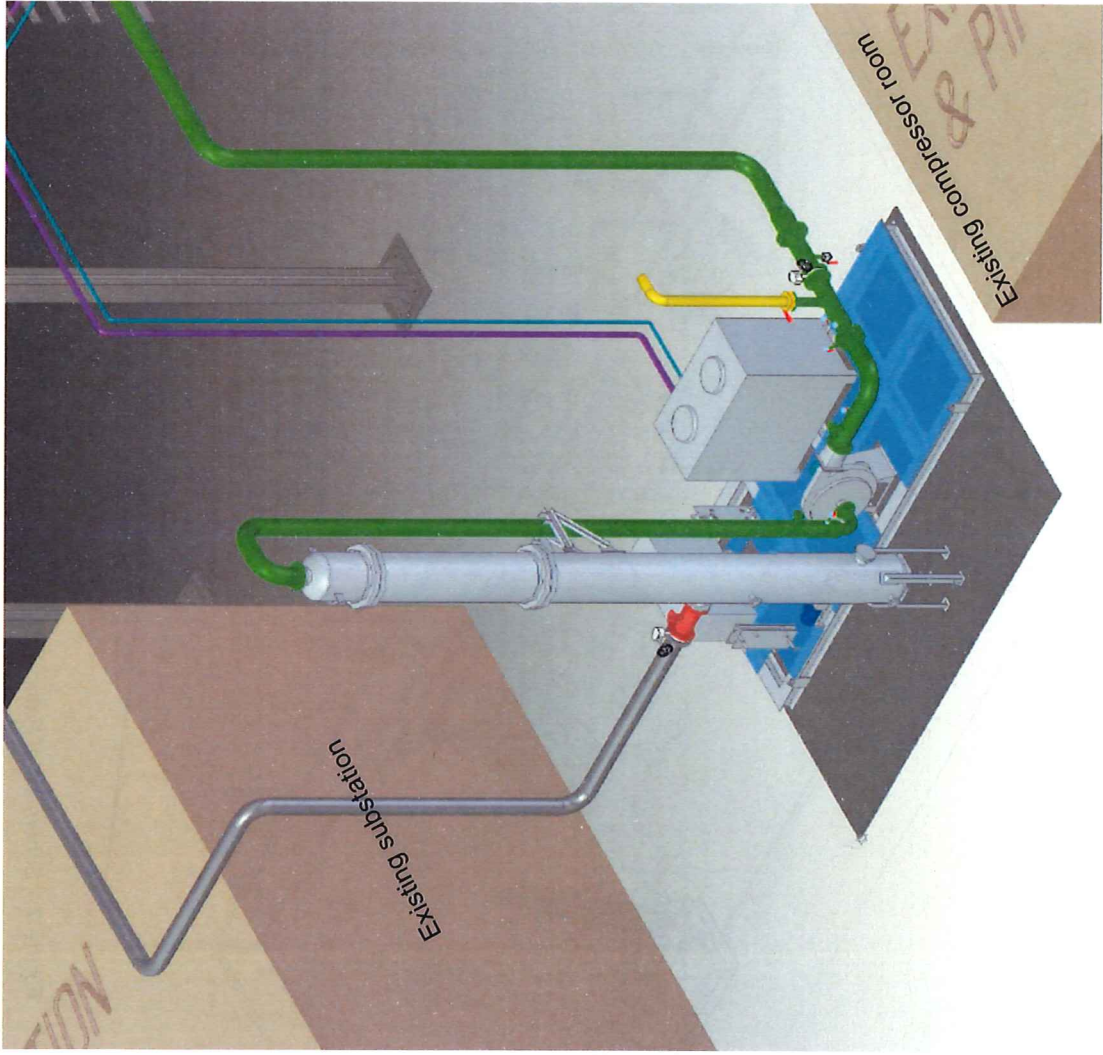


Figure 6 – Schematic of Proposed Pre-Treatment Plant at the Factory

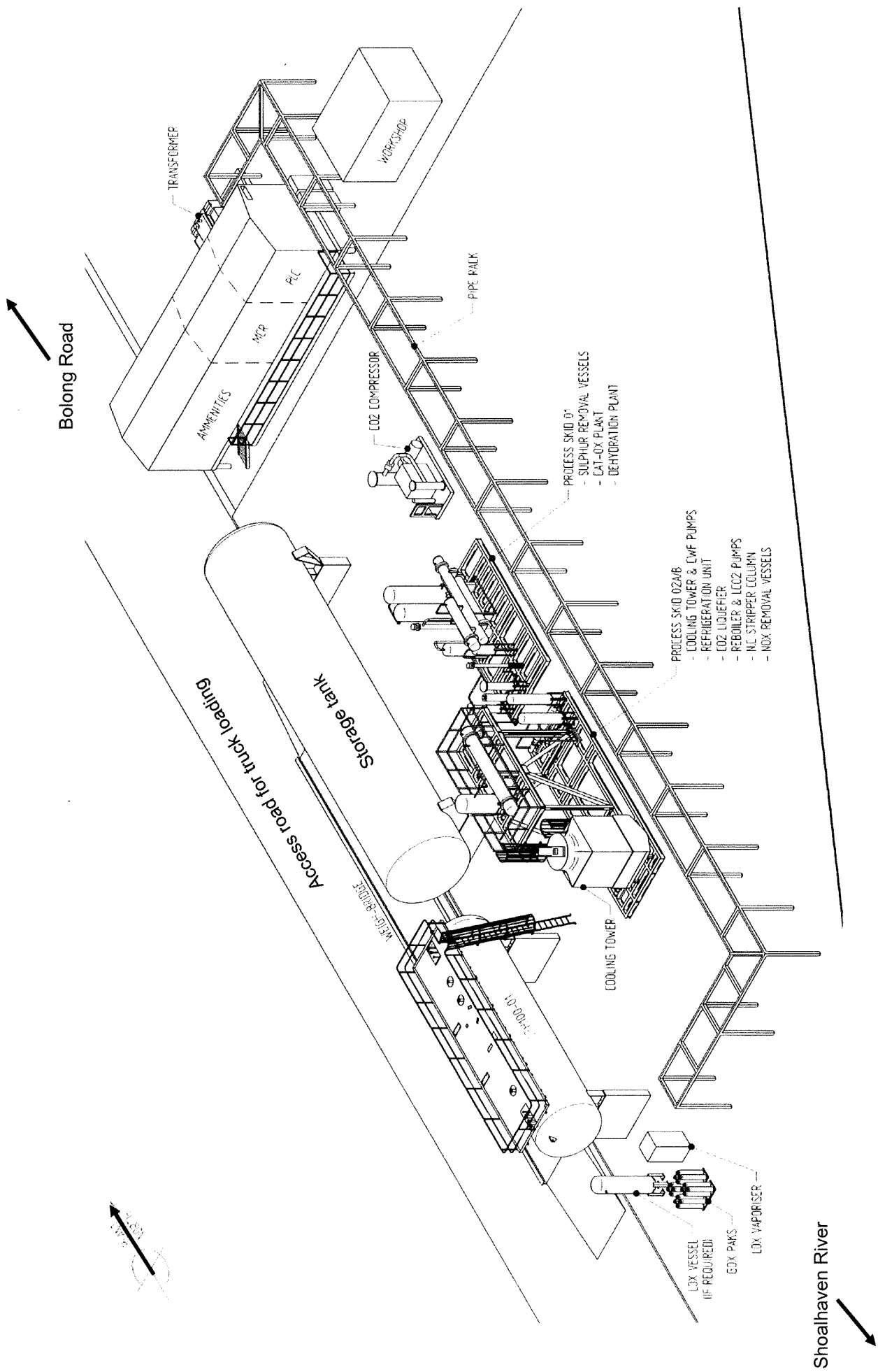


Figure 7 – Schematic of Proposed Main CO<sub>2</sub> Processing Plant at the Dairy Farmers Site

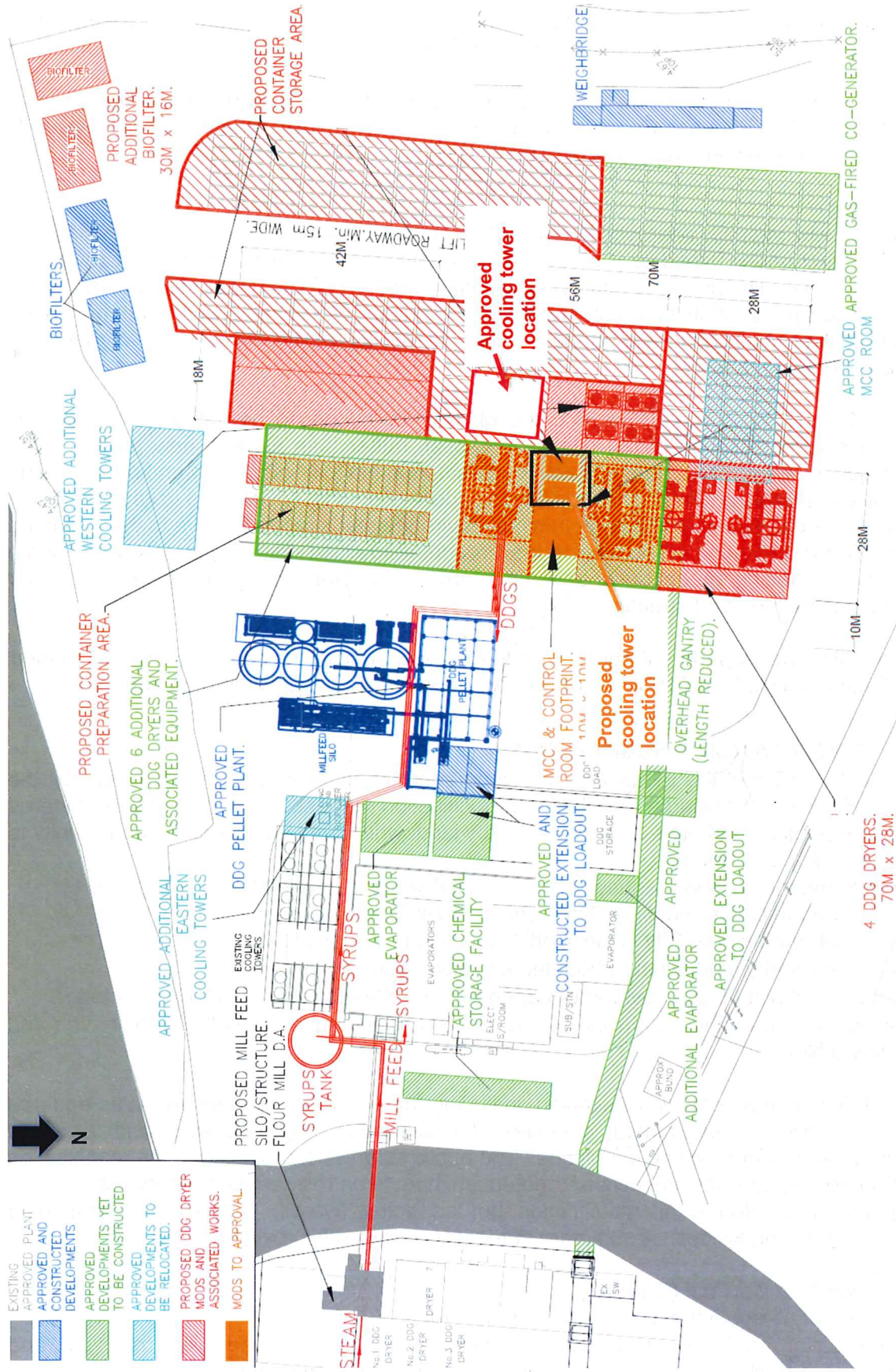


Figure 8 - Relocation of Approved Cooling Towers at Dried Distillers Grain Plant

### 3. STATUTORY CONTEXT

#### Approval Authority

The Minister for Planning was the approval authority for the original project application, and is consequently the approval authority for the modification request.

However, as the Proponent made reportable political donations, the request will be determined by the Independent Planning Commission (the Commission) in accordance with the Minister's Instrument of Delegation, dated 14 September 2011.

#### Section 75W

The project was originally approved under Part 3A of the EP&A Act. The project is a transitional Part 3A project under Schedule 2 to the EP&A (Savings, Transitional and Other Provisions) Regulation 2017. The power to modify transitional Part 3A projects under section 75W of the Act as in force immediately before its repeal on 1 October 2011 is being wound up, but as the request for this modification was made before 1 March 2018, the provisions of Schedule 2 (clause 3) continue to apply.

Under Section 75W of the EP&A Act, the Minister is obliged to be satisfied that what is proposed is a modification of the original proposal, rather than being a new project. The modification involves the capture of a waste stream from the existing factory and reprocessing to produce a saleable product. The modification does not involve any change to key production processes or outputs and would have minimal environmental impacts relative to the approved project. The modification would enable the Proponent to close-the-loop, by reusing a waste stream and reducing greenhouse gas emissions. The other components include minor modifications to approved structures.

Consequently, the Department considered the request should be assessed and determined under Section 75W of the EP&A Act rather than requiring a new development application.

### 4. CONSULTATION & SUBMISSIONS

Under Section 75W of the EP&A Act, the Department is not required to notify or exhibit the request. However, following a review of the modification request, the Department considered it should be publicly exhibited, to provide nearby landowners and occupiers the opportunity to comment. The Department:

- made the modification request publicly available from 9 April 2018 to 23 April 2018:
  - on the Department's website and at NSW Service Centres
  - at Shoalhaven City Council offices in Bridge Street, Nowra
- notified nearby landowners about the exhibition period by letter
- notified relevant State government agencies and Shoalhaven City Council by letter
- advertised the exhibition in the Nowra South Coast Register and the Shoalhaven and Nowra News.

A total of five submissions were received, including four from Government agencies and one from the public. Government agencies did not raise any concerns and provided recommendations for modified conditions. The public submission objected to the modification based on noise and traffic impacts and potential impacts on residences from the use of coal (not specifically related to this modification, but the factory overall). **Appendix B** contains a web link to the submissions. A summary of the issues raised is provided below.

#### **Shoalhaven City Council (Council)**

Council did not object to the modification, subject to:

- clarification that proposed truck (B-double) turning movements are possible and proposed truck parking does not interfere with turning movements
- further details to demonstrate the wastewater treatment system can accommodate the proposed increases in volume

- a flood compliance assessment report detailing flood affectation on individual lots.

Council provided recommended conditions covering the requirements of Shoalhaven Water, cooling tower installation, an acid sulphate soil management plan and a remedial action plan.

### **Environment Protection Authority (EPA)**

The EPA reviewed the modification including the Proponent's noise impact assessment (NIA) and air quality assessment (AQA).

The EPA noted the NIA predicted the CO<sub>2</sub> plant will comply with the existing noise limits for the Shoalhaven Starches factory and recommended conditions covering the sound power levels of new plant and equipment and the requirement for a noise validation study 12 months after operation. The EPA also recommended limiting construction working hours.

The EPA noted the proposal would be unlikely to impact on air quality or odour as it would reduce overall CO<sub>2</sub> emissions from the factory.

### **Roads and Maritime Services (RMS)**

RMS advised that Bolong Road is a regional classified road and Council is best placed to comment on any safety or capacity issues on Bolong Road regarding the modification.

**Department of Industry (DOI)** incorporating Crown Lands & Water and the Department of Primary Industries raised no objection to the modification. DOI recommended works within waterfront land be undertaken in accordance with the Guidelines for Controlled Activities on Waterfront Land 2012.

The Department did not receive a response from the Office of Environment and Heritage or NSW Fire and Rescue.

### **Public Submission**

One (1) public submission was received, objecting to the modification. The submission raised concerns about:

- noise from the factory during night-time periods
- noise from increased truck movements on Cambewarra Road and Meroo Street, Bomaderry, particularly during night-time periods. The submission requested noise levels be tested in consultation with residents and trucks be required to use Bolong Road and the Princes Highway during night-time periods
- need for studies to determine the potential impact on residences from the use of coal at the factory.

### **Proponent's Response to Submissions (RTS)**

On 29 May 2018, the Proponent provided a response to the issues raised in submissions. A web link to the RTS is included in **Appendix B**. The RTS addresses the issues raised in the public submission, noting many of the issues do not relate to the modification, but relate to the entire factory operation.

## **5. CONSIDERATION**

The Department has assessed the merits of the proposed modification and has reviewed the following as part of its assessment:

- Environmental Assessment (EA), Director-General's assessment report and existing conditions of approval (as modified) for the SSEEP
- the EA for the modification, submissions and the Proponent's response to submissions (**Appendix B**)
- relevant environmental planning instruments, policies and guidelines
- requirements of the EP&A Act, including the objects of the Act.

The Department considers the modification would have minor environmental impacts. The Department's assessment is provided in **Table 2**.

**Table 2: Department's Assessment and Recommendations**

Issue	Assessment	Recommendation
<b>Noise</b>	<ul style="list-style-type: none"> <li>• The EA included a noise impact assessment (NIA) to assess the key noise sources from the modification (cooling tower, reboilers, refrigeration, pumps, compressors and truck movements) for comparison with the design noise goals for new plant and equipment (10 decibels below existing noise limits). The design noise goals ensure noise from the modified factory does not increase above the existing noise limits.</li> <li>• The NIA used noise measurements from the existing BOC Gas plant opposite the factory, to predict noise levels from the modification.</li> <li>• The predicted noise levels are 26 dB(A) at all four sensitive receiver locations, which is below the design noise goals of 28 - 32 dB(A). The NIA concluded noise from the CO<sub>2</sub> plant would comply with the noise limits in the project approval and Environment Protection Licence.</li> <li>• Noise from construction activities were predicted to comply with noise management levels established in accordance with relevant guidelines.</li> <li>• Other minor modifications, including the internal re-fit of the former fire pump house and minor relocation of the cooling towers at DDG plant, are unlikely to increase noise from the factory.</li> <li>• The EPA noted the noise levels from the CO<sub>2</sub> plant are predicted to comply with the noise limits at residences. The EPA recommended conditions to ensure new plant complies with the sound power levels in the NIA, a noise validation is completed within 12 months of operation and construction working hours, including piling activities are limited.</li> <li>• The Department notes the EPA's recommendations are included in the existing conditions and they apply to all modifications.</li> <li>• The Department concludes the proposal is unlikely to increase noise above existing limits.</li> </ul>	<p>Manage via existing conditions requiring:</p> <ul style="list-style-type: none"> <li>• a design noise verification report prior to construction of each modification</li> <li>• noise validation monitoring 12 months after operation of each modification</li> <li>• implementation of mitigation measures if noise limits are exceeded</li> <li>• restriction of construction and piling works to specific hours.</li> </ul>
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>• The Proponent provided an air quality assessment (AQA) which considered the air emissions from each stage of CO<sub>2</sub> processing. The AQA noted the processing is primarily enclosed with only minor emissions to air, with no significant assessable odour or other toxic emissions. The modification would reduce CO<sub>2</sub> emissions from the factory by around 100 tonnes per day.</li> <li>• The AQA concluded the modification would not increase air emissions from the overall factory.</li> <li>• The EPA reviewed the AQA and concluded the proposal would be unlikely to impact on air quality.</li> <li>• Council did not raise any concerns about air quality, but recommended the proposed cooling tower is installed, registered and maintained in accordance with the <i>Public Health Act 2010</i>. The Department has included this recommendation in the modified conditions.</li> <li>• The Department concluded the modification would be unlikely to impact on air quality or odour.</li> </ul>	<p>Require the Proponent to:</p> <ul style="list-style-type: none"> <li>• install, register and maintain cooling towers in accordance with the <i>Public Health Act 2010</i>.</li> </ul>
<b>Flooding</b>	<ul style="list-style-type: none"> <li>• The factory and Dairy Farmers site are located on the northern bank of the Shoalhaven River and are described as high hazard and floodway.</li> <li>• The Proponent provided a flood compliance report (FCR) to assess potential impacts on flood levels, flows and velocities.</li> <li>• The FCR noted the works on the factory site (pre-treatment plant) are too small to be accurately modelled and would have minimal impact on flood levels. The FCR considered only the potential impact of the additional plant and equipment on the Dairy Farmers site.</li> <li>• The FCR concluded the modification would result in a slight increase in peak flood levels in the 1 in 100 year flood event upstream, on land owned by Shoalhaven Starches and result in a slight decrease in flood levels downstream. The assessment concluded the changes are not significant.</li> <li>• The FCR did not consider the relocation of cooling towers in the DDG plant area. The Department notes these components were assessed in a previous modification.</li> <li>• In considering Council's Development on Flood Prone Land DCP 2014, the assessment noted the Proponent would need to update its flood</li> </ul>	<p>Manage via existing conditions requiring:</p> <ul style="list-style-type: none"> <li>• an update to the flood management plan</li> <li>• provision of a structural engineer's report for buildings and structures to certify they are built from flood compatible materials and to withstand the forces of flood waters.</li> </ul>

Issue	Assessment	Recommendation
	<p>management plan to account for two additional workers who may be subject to flood risk. The FCR also noted that structural reports would be provided to demonstrate the plant is built to withstand flooding.</p> <ul style="list-style-type: none"> <li>• Council noted the need for a FCR detailing flood affectation on individual lots and did not provide any recommended conditions. The Department considers the FCR satisfies Council's request.</li> <li>• The Department concludes the modification would have minimal impact on flooding and would be adequately managed by existing conditions.</li> </ul>	
<p><b>Traffic, Access and Parking</b></p>	<ul style="list-style-type: none"> <li>• The EA included a traffic impact assessment (TIA) to evaluate impacts on the safety and capacity of the intersection of Bolong Road and the Dairy Farmers site. The TIA considered worst-case traffic volumes, previous modifications and the proposed upgrade works to Bolong Road and the Dairy Farmers site access that are due to commence in late 2018, as part of MOD 12.</li> <li>• The modification would generate a small number of additional vehicle trips, including 8 truck trips per day to transport CO<sub>2</sub> to customers and 4 staff vehicle trips per day.</li> <li>• The TIA concluded the modification would have minimal impact on the safety and efficiency of the Dairy Farmers and Bolong Road intersection.</li> <li>• The TIA concluded construction traffic impacts would be minor and adequate parking would be provided on site for the two staff plus visitors.</li> <li>• Council questioned the proposed truck (B-double) turning movements on the site, noting the location of existing truck parking areas.</li> <li>• One public submission raised concerns about increases in truck movements and noise on Cambewarra Road and Meroo Streets.</li> <li>• The Proponent clarified it would move the existing truck parking areas on site to avoid any conflict with trucks accessing the CO<sub>2</sub> plant. The Proponent also indicated the modification would comply with existing noise limits, including truck movements.</li> <li>• The Department concludes the modification would increase traffic west of the factory by a very small amount and would not impact the safety or efficiency of the Dairy Farmers intersection. Noise from trucks using Cambewarra Road and Meroo Streets would not change significantly due to the modification. The existing conditions restrict trucks from using Cambewarra Road and Meroo Streets from 8pm until 7am, to avoid night-time noise impacts on residential areas.</li> <li>• The Department recommends a condition requiring the Proponent to move and delineate the truck parking area on the Dairy Farmers site.</li> </ul>	<p>Require the Proponent to:</p> <ul style="list-style-type: none"> <li>• move and delineate existing truck parking areas on the Dairy Farmers site, prior to commencing construction of the modification.</li> </ul>
<p><b>Contamination, acid sulphate soils and riverbank stability</b></p>	<ul style="list-style-type: none"> <li>• The EA included an assessment of potential soil contamination around the proposed CO<sub>2</sub> plant, pre-treatment plant and underground pipeline. The assessment also considered the potential to encounter acid sulphate soils (ASS) and potential impacts on the stability of the Shoalhaven River bank.</li> <li>• The assessment found one area of concern, where bonded asbestos was previously recorded in the soils. This area would be traversed by the proposed underground pipeline, in its western section. The assessment proposed an unexpected finds protocol to manage excavation in this area, to mitigate risks to construction workers.</li> <li>• The assessment noted ASS may be present at depths greater than 3 to 4 m below the surface and recommended an ASS management plan be developed to manage excavations.</li> <li>• The assessment concluded the modification would be unlikely to impact on riverbank stability given the distance from the riverbank (40 m for the main CO<sub>2</sub> plant and 20 m for the pre-treatment plant), ground conditions and the relatively light loads of the equipment.</li> <li>• Council recommended the Proponent provide an ASS management plan prior to the issue of a construction certificate and a remedial action plan for works in the western section of the pipeline.</li> <li>• The Department notes the proposal has the potential to encounter contaminated material and ASS and the existing conditions require an unexpected finds protocol and an ASS management plan for each modification, as well as conditions to manage the removal of asbestos containing materials.</li> <li>• The Department recommends the Proponent update its unexpected finds protocol with procedures to manage material containing bonded asbestos.</li> </ul>	<p>Require the Proponent to:</p> <ul style="list-style-type: none"> <li>• update the unexpected finds protocol to include procedures to manage material containing bonded asbestos.</li> </ul> <p>Manage via existing conditions requiring:</p> <ul style="list-style-type: none"> <li>• an update of the ASS management plan to cover the modification.</li> </ul>

Issue	Assessment	Recommendation
	<ul style="list-style-type: none"> <li>The Department is satisfied the existing and modified conditions are adequate for managing any soil contamination encountered during construction of the modification.</li> </ul>	
<b>Visual</b>	<ul style="list-style-type: none"> <li>The modification includes plant and equipment on the Dairy Farmers site up to a maximum height of 7.26 m including storage tanks, processing equipment, compressor, pipe racks and a cooling tower. This equipment would be setback 50 m from Bolong Road. The CO<sub>2</sub> pre-treatment plant on the factory site would be 4.1 m high and located behind the existing fermenter tanks at 28 m high.</li> <li>The Dairy Farmers site includes industrial buildings, parking and external storage areas, adjacent to Bolong Road.</li> <li>The EA considered the potential visual impacts noting passing traffic on Bolong Road as the most likely vantage point. All other vantage points are screened from view by intervening vegetation and larger distances.</li> <li>The EA concluded the visual impacts would be minor and consistent with the existing industrial character of the site and broader industrial area of Bomaderry. The Proponent proposes to plant an additional landscape screen in front of the CO<sub>2</sub> plant to minimise the visual impacts when viewed from Bolong Road.</li> <li>The Department considers the new processing equipment is consistent with the existing industrial character of the Dairy Farmers site, the Shoalhaven Starches factory and the existing BOC Gas plant on the northern side of Bolong Road. The potential visual impacts would be minor in the context of the existing industrial buildings.</li> <li>The Department agrees with the proposal for landscape screen planting and recommends it be implemented by the end of December 2018.</li> </ul>	<p>Require the Proponent to:</p> <ul style="list-style-type: none"> <li>plant screening vegetation in front of the main CO<sub>2</sub> plant at the Dairy Farmers site, no later than 31 December 2018.</li> </ul> <p>Manage via existing conditions requiring:</p> <ul style="list-style-type: none"> <li>consultation with Council on landscape setbacks to maintain sight distances.</li> </ul>
<b>Hazards</b>	<ul style="list-style-type: none"> <li>The EA included a Preliminary Hazard Analysis (PHA) which analysed the potential risks from processing, storage and transport of CO<sub>2</sub> for comparison with the Department's land use safety risk criteria.</li> <li>CO<sub>2</sub> and ammonia are the main hazardous materials associated with the modification, with the potential for off-site toxic exposure risk.</li> <li>The PHA considered scenarios such as releases from pipework and equipment, catastrophic failure of storage vessels and releases during road tanker transfers. These scenarios were modelled with climate conditions, with consideration of likelihood and probability, to determine the potential for off-site impacts at sensitive receivers.</li> <li>The PHA concluded there are low risk levels from the modification due to separation distances between the hazards and nearest residences.</li> <li>The Department's hazards specialist reviewed the PHA and concluded societal risk, area cumulative risk, propagation risk and transport risk were assessed as acceptable. The risks from the modification are compliant with the Department's land use safety risk criteria.</li> <li>The Department recommends conditions to manage hazards including implementation of all recommendations in the PHA and a range of pre-construction hazard studies. The Department also recommends the ammonia refrigeration system is designed to relevant Australian Standards.</li> </ul>	<p>Require the Proponent to:</p> <ul style="list-style-type: none"> <li>provide pre-construction studies including a fire safety study, HAZOP, construction safety study, emergency plan, safety management system and final hazard analysis</li> <li>design and construct the ammonia refrigeration system in accordance with Australian Standards.</li> </ul>
<b>Water</b>	<ul style="list-style-type: none"> <li>A small volume of wastewater generated by the CO<sub>2</sub> plant would be transferred to the existing wastewater treatment plant (WWTP) at the factory by a dedicated pipeline.</li> <li>Council requested further information on the capacity of the existing WWTP to take water from the CO<sub>2</sub> plant.</li> <li>In the RTS, the Proponent confirmed the WWTP has sufficient spare capacity, noting the design capacity is 10 megalitres per day (ML/day), with current volumes at 8.4 ML/day, leaving 1.6 ML/day spare capacity. The modification would generate 0.00432 ML/day (4,320 litres per day), representing a 0.05% increase.</li> <li>The Department is satisfied the modification would have minimal impact on the capacity of the existing WWTP.</li> <li>The DOI recommended the works comply with the Guidelines for Controlled Activities on Waterfront Land, 2012, given the pre-treatment plant is located 20 m from the Shoalhaven River bank. The Department has included this requirement in the modified conditions.</li> </ul>	<p>Require the Proponent to:</p> <ul style="list-style-type: none"> <li>ensure works within waterfront land are undertaken in accordance with the Guidelines for Controlled Activities on Waterfront Land 2012</li> </ul>



## 6. CONCLUSION

The Department has assessed the proposed modification in accordance with the relevant requirements of the EP&A Act. The Department concludes the modification would result in minimal environmental impacts beyond the approved facility.

The Proponent proposes to capture carbon dioxide from its existing fermentation processes and re-process the gas to a standard suitable for sale to food and hospitality markets. The modification would capture and re-process up to 100 tonnes of CO<sub>2</sub> per day. The modification would minimise the Proponent's greenhouse gas emissions and further close-the-loop on production by reusing a waste stream.

The modification would have minimal environmental impacts and would comply with existing noise, odour and air emissions limits. The modification would generate a small number of additional truck movements, which would be adequately accommodated on the existing road network without the need for any upgrades. The Proponent has an existing flood management plan that would need updating to include the modification, as it is in an area defined as high-hazard and floodway. The Proponent identified the potential for contaminated soils to be encountered during excavation works and these works would be managed by an unexpected finds protocol, required prior to construction. The CO<sub>2</sub> processing plant would comply with the Department's land use safety risk criteria and would not increase cumulative risks from the factory. The Department has recommended some minor modifications to the existing conditions to manage the minimal environmental impacts of the modification.

Following on from this assessment of the proposed modification, the Department considers the modification application is approvable, subject to any modifying conditions of consent outlined in **Appendix A**. This assessment report is hereby presented to the Commission for determination.

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