



Shoalhaven Starches Pty Ltd

Expansion Development Consent 06_0228

Annual Environmental Management Report 2021

COMMERCIAL IN CONFIDENCE

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Document Control

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| Application No. | | | 06_0228 | |
| Annual Review start date | | | 1st July 2020 | |
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| Reporting officer | | | John Studdert | |
| Reporting officer title | | | Quality Assurance & Environmental Coordinator | |
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1. STATEMENT OF COMPLIANCE

During the reporting period Shoalhaven Starches (SS) has demonstrated a high level of compliance with its Consolidated Development Consent 06_0228 (the 'Consent'). Of the approximately 175 conditions of consent, 2 non-compliances were identified. Table 1 summarises the non-compliances which are further discussed in section 9.1 of the report.

Table 1 Non-compliances Summary

| Schedule Condition | Condition Description (summary) | Details | Section in Annual Review |
|--------------------------|----------------------------------|---|--------------------------|
| Sch.3 Cond. 6A-D, & 9 | Quarterly Air Quality Monitoring | Quarter 4 odour & boiler monitoring was not performed in accordance with the Environment Protection Licence (EPL) requirements. | 9.1.1 |
| Sch. 3 Cond. 9 | Emission Limits – Boiler Stacks | Boiler 4 stack (Point 42) exceeded the total solid particles EPL limit. | 9.1.2 |

N.B. The above non-compliances exclude the non-compliances raised in the 2019 Independent Environmental Audit which are discussed in Table 18 of this report.

2. INTRODUCTION

The Annual Environmental Management Report 2021 (AEMR) has been prepared to satisfy Schedule 4, Condition 3 (Annual Reporting) of Shoalhaven Starches Expansion Development Consent 06_0228 issued by the NSW Department of Planning, Industry & Environment (DPIE). The format of the report has been prepared in accordance with the Annual Review Guideline, published by the NSW Government in October 2015.

Table 2 lists the annual reporting requirements and the relevant section in the document where this information can be found.

Table 2 Annual Report Requirements

| | |
|---|-------------------|
| By the end of October each year, or other timing as may be agreed by the Secretary, the Applicant shall review the environmental performance of the Development to the satisfaction of the Secretary. This review must: | Section in report |
| a) be submitted to the Secretary by the end of October each year; | - |
| b) describe the development that was carried out over the previous 12 month period, and the development that is proposed to be carried out over the next year; | 4.3 and 10 |
| c) include a summary of monthly production levels over the year; | 4.1 |
| d) include a comprehensive review of the monitoring results and complaints records of the Development over the previous year, which includes a comparison of these results against: | 6 and 7.1 |
| (i) the relevant statutory requirements, limits or performance measures/criteria; | 6 |
| (ii) requirements of any plan or program required under this consent; | 6 |
| (iii) the monitoring results of previous years; and | 6 |
| (iv) the relevant predictions in the EA; | 6 |
| e) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; | 9.1 |
| f) identify any trends in the monitoring data over the life of the Development; | 6 |
| g) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies; and | 6 |
| h) describe what measures will be implemented over the next year to improve the environmental performance of the Development. | 6 and 10 |

2.1 BACKGROUND

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

The Shoalhaven Starches factory located on Bolong Road, Bomaderry, produces a range of products for the food, beverage, confectionary, paper and motor transport industries including starch, gluten, glucose and ethanol. Ethanol production results in some liquid and solid by-products, which are processed through the stillage recovery process plant. The solids in the stillage are recovered as Dried Distillers Grains (DDG) and sold as a high protein animal feed. The waste water resulting from the ethanol production is treated in the site's wastewater treatment plant and is re-used in the factory, with surplus treated water irrigated onto Shoalhaven Starches Environmental Farm to the north of Bolong Road, which comprises over 1000 hectares of land used for fodder crops, pasture and cattle grazing.

Biogas generated from the anaerobic wastewater treatment process is recovered and used in the gas-fired boilers located at the factory for process heat, reducing the site's use of Natural Gas and coal.

In 2009 the Minister for Planning issued Project Approval 06_0228 pursuant to the then Part 3A of the Environmental Planning & Assessment Act for an application made by Shoalhaven Starches to increase its ethanol capacity to meet the expected increase in demand for ethanol arising from the NSW Government ethanol mandate by upgrading the existing ethanol plant located at the Shoalhaven Starches Plant at Bomaderry.

This Project Approval (now referred to as a 'Development Consent') enables Shoalhaven Starches to increase its ethanol production at its Bomaderry Plant from 126 million litres per year up to 300 million litres per year. The Consent also consolidated all previous approvals into the one Consolidated Development Consent 06_0228.

Unfortunately, the expected increase in demand for ethanol to meet the demand arising from this mandate has not occurred due largely from a failure of the mandate to be imposed on petroleum suppliers. As a result, Shoalhaven Starches have been investigating alternative markets for the ethanol that is and will be produced at the Bomaderry plant in accordance with the Development Consent.

Figure 1 shows the Shoalhaven Starches Development Consent site boundary which includes the Factory and Environmental Farm operations.

Figure 1 Shoalhaven Starches Development Consent 06_0228 Boundary



3. CONSENTS AND LICENCES

Shoalhaven Starches operates primarily under one consolidated Development Consent 06_0228 (the 'Consent') issued by the NSW Department of Planning on the 28th January 2009. The issue of this Consent included the surrender of all previous development consents and project approvals.

Compliance with the site's Environment Protection Licence (EPL) 883 is reported annually to the NSW Environment Protection Authority (EPA) via the EPA Annual Return and EPA Annual System Performance Report.

A number of development applications to modify the Consent and the associated environmental assessments (EA) have been approved by the DPIE.

Table 3 lists the site's current approved modifications (MODs) to the Consent and the current EPA licence.

Table 3 Development Consent and Licences

| Consent Number | Description | Date Issued |
|------------------|---|-------------|
| 06_0228 | Shoalhaven Starches Expansion Project | 28-1-2009 |
| MP06_0228 MOD 1 | Deletion of Dried Distillers Grain (DDG) Pelletiser | 30-9-2011 |
| MP06_0228 MOD 2 | Operational & Energy Efficiency Improvements | 14-9-2012 |
| MP06_0228 MOD 3 | Relocation of car park | 9-10-2012 |
| MP06_0228 MOD 4 | Modification to the footprint, design and location of Dried Distillers Grain (DDG) Pelletising Plant | 25-3-2014 |
| Mp06_0228 MOD 5 | Modification to the footprint, design and odour controls on the Dried Distillers Grain (DDG) Pelletising Plant | 16-9-2015 |
| MP06_0228 MOD 6 | Modification to demolish a building and construct a temporary car park | 25-11-2015 |
| MP06_0228 MOD 7 | Relocation of Starch Dryer No.5 | 18-1-2016 |
| MP06_0228 MOD 8 | Alterations to Existing Flour Mill | 1-3-2016 |
| MP06_0228 MOD 9 | Packing Plant | 8-3-2017 |
| MP06_0228 MOD 10 | Flour Mill B | 18-4-2017 |
| MP06_0228 MOD 11 | DDGS Dryers | 1-9-2017 |
| MP06_0228 MOD 12 | Beverage Grade Ethanol | 1-9-2017 |
| MP06_0228 MOD 13 | Conversion of Boilers | 18-1-2018 |
| MP06_0228 MOD 14 | Use of Paper Mill Site | 27-4-2018 |
| MP06_0228 MOD 15 | Carbon Dioxide Plant | 7-8-2018 |
| MP06_0228 MOD 16 | Flour, Gluten and Starch Increase | 18-6-2019 |
| MP06_0228 MOD 17 | Relocation of the approved No.5 Starch Dryer baghouse, installation of a service lift, alterations to the Specialty Products Building and Product Dryer Building including increase of building footprint, elevation of service conduit and alternative woodchip fuel source for Boilers 2 and 4. | 23-10-2020 |
| MP06_0228 MOD 18 | Relocation of gas fired boiler to enable the production of hand sanitizer grade ethanol and the repurposing of existing de-fatting plant for production of hand sanitizer. | 4-9-2020 |
| MP06_0228 MOD 19 | Expansion of the ethanol distillery plant including new distillery columns, three ethanol storage tanks and cooling towers to facilitate the production of 100 mega litres (ML) of beverage grade ethanol within the approved limits and additional site infrastructure. | 8-3-2021 |

| Licence Number | Description | Version Date |
|----------------|------------------------------------|--------------|
| 883 | Environment Protection Licence 883 | 1-06-2021 |

4. OPERATIONS SUMMARY

4.1 LIMITS ON CONSENT

The limits on Consent, as required under Schedule 2, Condition 6 are:

(1) *The Applicant must not produce on site:*

- a) *more than 1,112,800 tonnes of industrial grade flour per year; and*
- b) *more than 300 million litres of ethanol per year*
- c) *more than 1.5 million litres of hand sanitiser per year*

The annual reporting requirements as stipulated in Schedule 4, Condition 3 c) require a summary of monthly production levels over the year. A summary of monthly production levels for flour and ethanol in 2021 are shown in Figure 2 and Figure 3.

Figure 2 - Monthly Ethanol Production Volumes

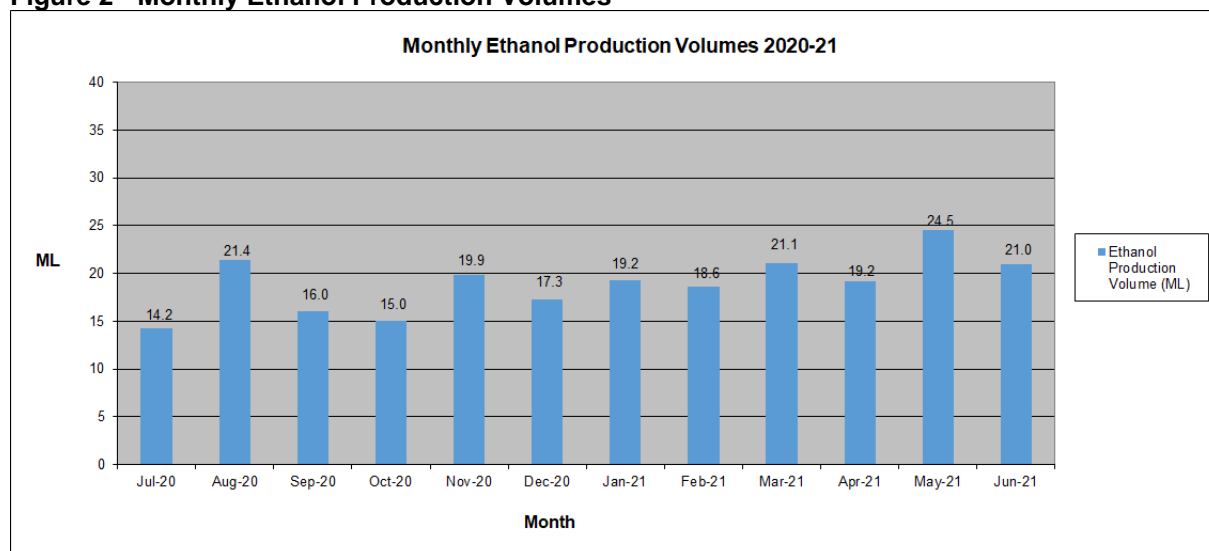
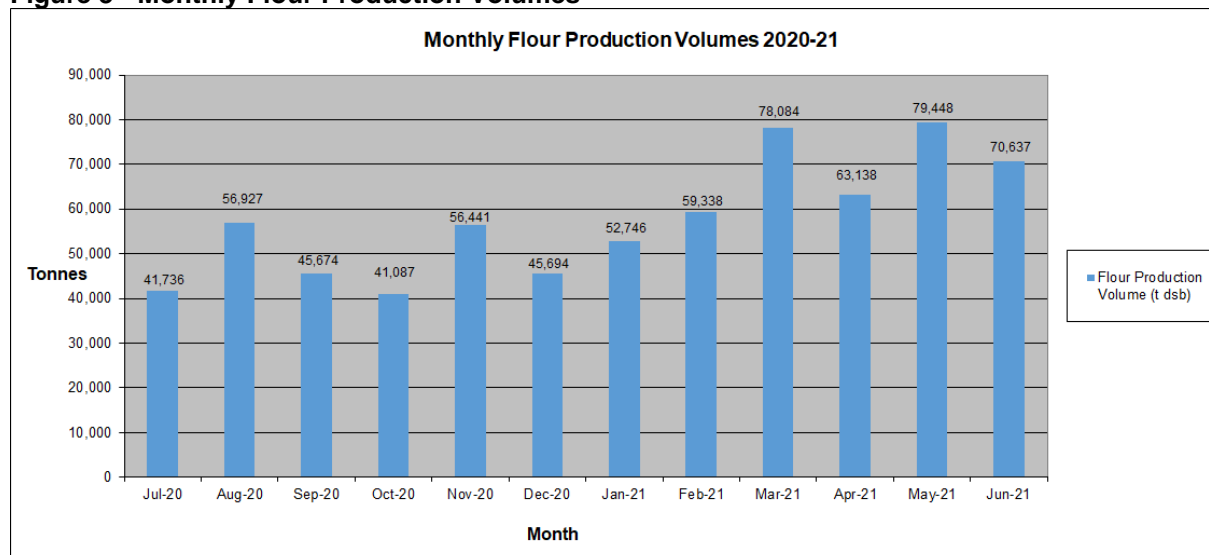


Figure 3 - Monthly Flour Production Volumes



A comparison of annual production levels from previous years against the approved production volumes are shown in Figure 4 and Figure 5.

Figure 4 Annual Ethanol Production Volumes

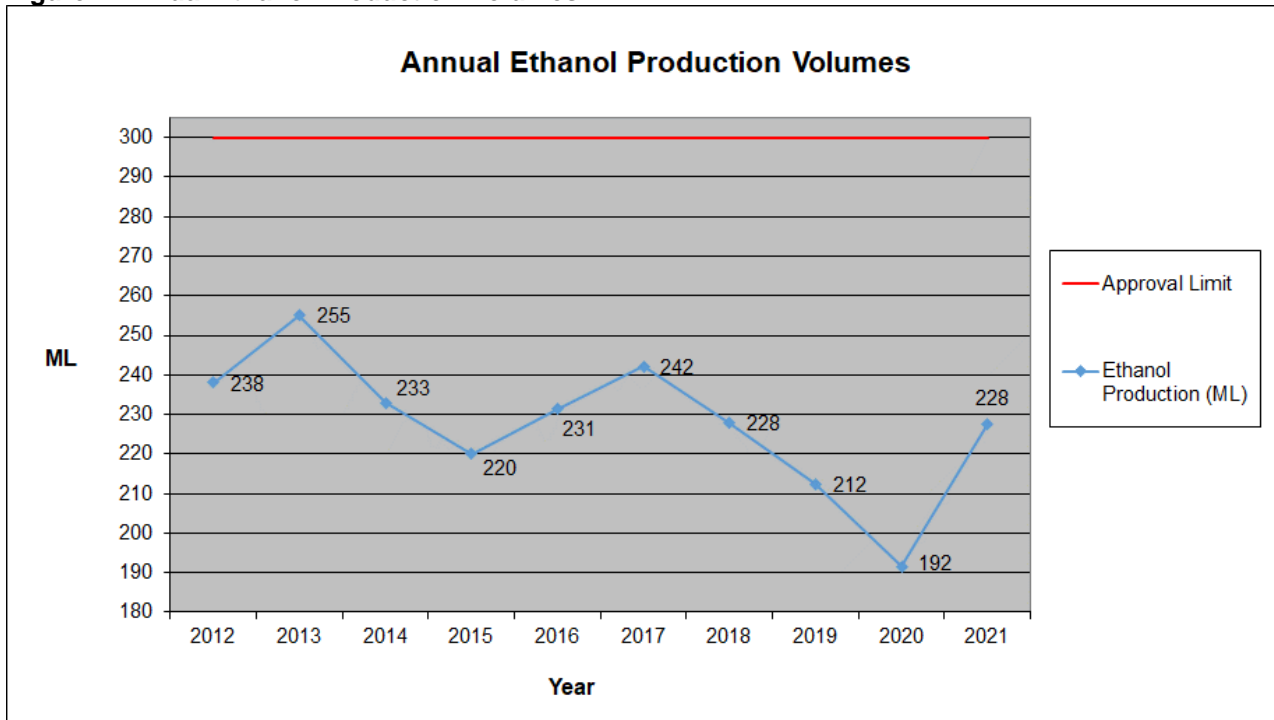
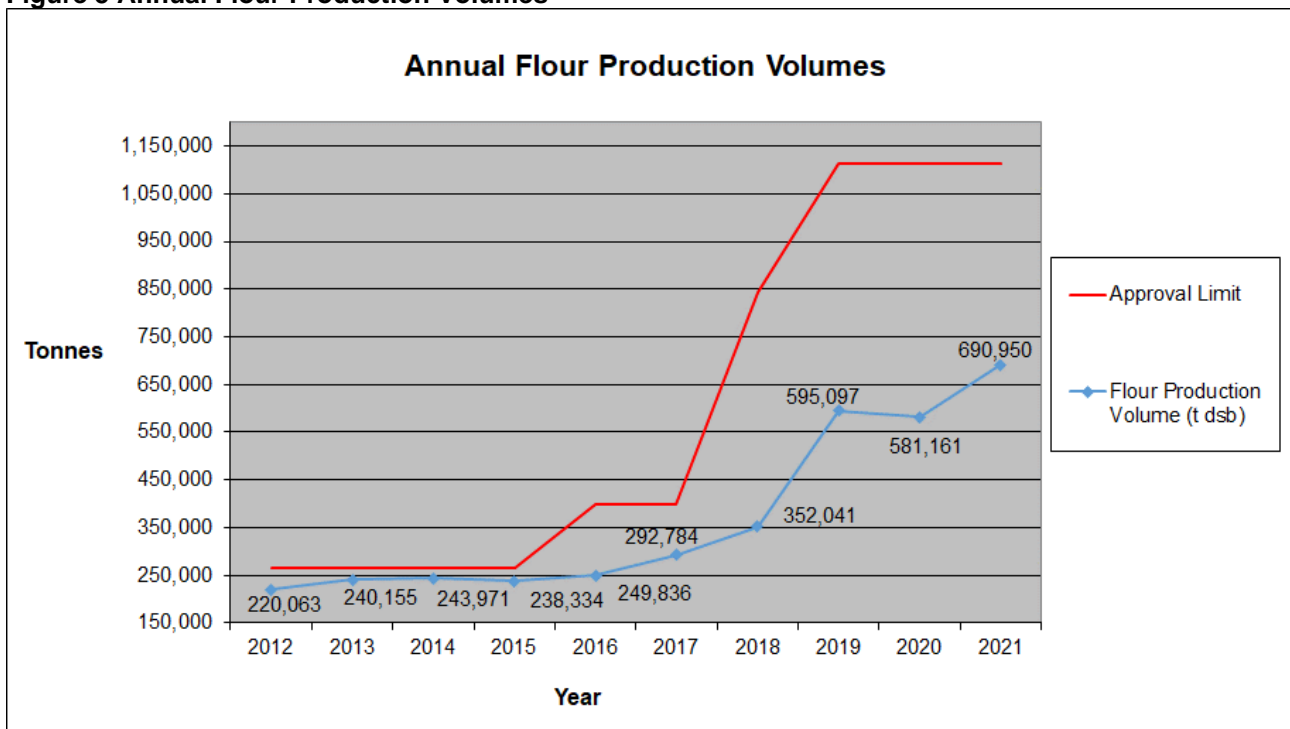


Figure 5 Annual Flour Production Volumes



4.2 HOURS OF OPERATION

The construction and operation hours for the site are carried out in accordance with schedule 3, condition 11 of the Consent, which are shown in Table 4 below.

Table 4 Construction and Operation Hours for the Development

| Activity | Day | Time |
|-------------------------------|-----------------------------------|---------------------------|
| Construction | Monday – Friday | 7:00am to 6:00pm |
| | Saturday | 8:00am to 1:00pm |
| | Sunday and Public Holidays | Nil |
| Piling activities | Monday – Friday | 9:00am to 5:00pm |
| Operation | All days | Any time |
| <u>Use of Paper Mill site</u> | <u>Monday – Saturday</u> | <u>7:00 am to 6:00 pm</u> |
| | <u>Sunday and Public Holidays</u> | <u>8:00 am to 6:00 pm</u> |

Note: Construction activities may be conducted outside the hours in Table 4 provided that the activities are not audible at any residence beyond the boundary of the site.

4.3 DEVELOPMENT DURING THE REPORTING PERIOD

The following development activities occurred during the reporting period:

- Preparation and submission of modification (MOD 19) application involving the proposed upgrade to the ethanol distillery plant to increase the proportion of beverage grade ethanol and other works. The modification includes:
 - **Beverage Grade Ethanol**
 - 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.
 - **Ethanol Plant**
 - installation of three distillery columns and associated processing equipment within the Ethanol Distillery Plant
 - three new ethanol storage tanks and ethanol loadout area
 - relocation of ethanol distillery control room.
 - **Cooling towers**
 - 12 new cooling towers to service ethanol plant modifications.
 - **ISO Container Storage**
 - relocation of existing ISO container storage area to accommodate the installation of new cooling towers.
 - **Product Dryer Building and Specialty Products Building**
 - construction of Cable Stay Pipe Bridge from eastern side of Abernethy's Creek to Specialty Product and Starch Dryer No. 5 building.
 - relocation of six approved but not constructed product tanks.
 - construction of ten new product tanks.

- **Electrical Substation**
 - relocation of approved but not constructed electrical substation to the northern side of the Starch Dryer No. 5 building.
 - **Interim Packing Plant**
 - three product silos above interim packing plant.
 - **Car Parking**
 - extend the existing car park location within the south-western part of the site to provide an additional 31 car parking spaces.
- Preparation of modification (MOD 20) application to undertake the following minor amendments to the Supagas Carbon Dioxide (CO₂) Plant approved under MOD 15 which will be facilitated through a Section 4.55(1A) modification. Supagas capture waste CO₂ gas from Shoalhaven Starches fermenter tanks, purify the CO₂ gas and convert to a liquid to supply various food, hospitality and industrial uses. The modification includes:
 - Installation of two (2) 150 kL capacity Liquid CO₂ storage vessels. Each vessel will be 17.2 m high and 3.8 m diameter.
 - Installation of the above Liquid CO₂ storage vessels will require the relocation of a set of existing ambient vaporisers.
 - Installation of an additional NO_x removal bed to accommodate the expected longer running period of the plant. Vessel dimensions are 2.4 m high x 0.92 m diameter.
 - Interconnecting pipework from the process to the new equipment.
 - Concrete bases for the above equipment items. This will include piling due to the substandard grade of the existing soil.

The above modification will enable:

 - Improved storage volume capacity of liquid CO₂ product during planned and unplanned outages.
 - Better batching/quarantining of product and quality control.
 - Better availability of product during high demand periods.
 - Reduced plant fatigue and damage
 - Projects associated with the MOD 16 Consent which commenced construction during the reporting year include:
 - Specialty Products Building (SPB) and associated equipment for production of specialised products such as cationic starch.
 - Product Dryer No.9, to be installed within the SPB, to initially dry gluten, and which may be converted to a starch dryer once Gluten Dryer No.8 is installed.
 - Installation and commissioning of Flour Mill C (MOD 16) to increase the proportion of flour that can be processed on site, reducing the proportion of flour that is required to be transported into the site via rail from Manildra owned Flour Mills. This will allow Manildra's other flour mill sites to produce higher grades of flour to further increase export opportunities for the Company.
 - Commencement of construction of Gas-fired Boiler 8 (MOD 18) required to ensure a stable supply of steam to the distillery necessary to enable production of the higher grades of ethanol such as hand sanitiser grade and beverage grade ethanol.
 - Completion of construction and commissioning of the mechanical vapour recompression (MVR) evaporators approved under MOD 2 and then modified and relocated under MOD 12.

The MVR evaporation is very energy efficient and will increase the solids in the feed to the Ethanol Plant and thus reduce the amount of liquid that needed to be heated to evaporate the ethanol in the distillery providing significant energy savings.

The evaporators will also provide significant water savings by recovering up to 2.4 million litres per day which is re-used within the factory processes and reduce the amount of wastewater generated on site.

- The use of woodchip in the coal-fired boilers 2 and 4 (in accordance with MOD 17) commenced during the reporting year.

5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REPORT

Follow-up actions from the previous AEMR 2020 submitted to the DPIE on the 30th October 2020 are outlined in the DPIE's letter dated 12th November 2020. The DPIE review letter considered that the 2020 annual report generally satisfied Schedule 4, Condition 3 of the Consent as modified.

The DPIE review letter requested, in accordance with Schedule 4, Condition 6 of the Consent, to make the copy of the Annual Report available on the company website, including any other documents as required under Condition 6 and also ensure that these documents are up-to-date. This request has been completed by Shoalhaven Starches.

6. ENVIRONMENTAL PERFORMANCE

The environmental monitoring reporting requirements under Schedule 4, Condition 3 d), e), f), and g) are as follows:

- d) include a comprehensive review of the monitoring results and complaints records of the Development over the previous year, which includes a comparison of these results against the*
 - (i) the relevant statutory requirements, limits or performance measures/criteria;*
 - (ii) requirements of any plan or program required under this consent;*
 - (iii) the monitoring results of previous years; and*
 - (iv) the relevant predictions in the EA;*
- e) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;*
- f) identify any trends in the monitoring data over the life of the Development;*
- g) identify any discrepancies between the predicted and actual impacts of the Development, and analyse the potential cause of any significant discrepancies;*

A summary of the key environmental aspects monitored during the reporting period are shown in the following sections. Comparison against the relevant predictions in the EA and/or EPL limits are shown where applicable and have been updated to include the latest MOD 19 Consent.

6.1 WATER USE

Water is supplied to the Shoalhaven Starches site by Shoalhaven City Council (Council), which includes both potable and raw water supplies. Raw water is referred to water supplied by Council that has been taken from the Shoalhaven River upstream section prior to treatment by the Council's potable water treatment plant.

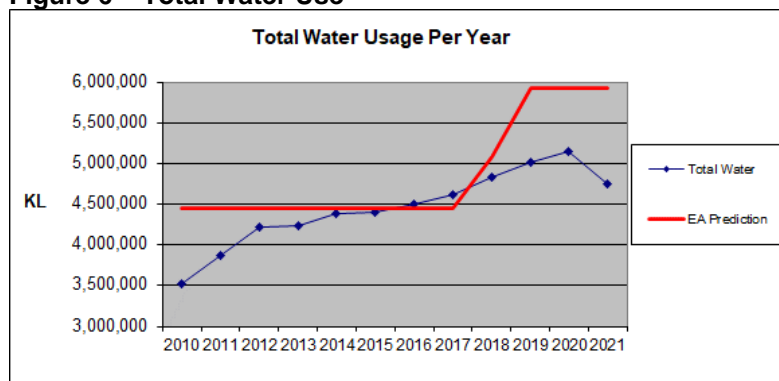
Shoalhaven Starches operates its own integrated waste water treatment plant and recovers water from its Reverse Osmosis (RO) plant for re-use in its factory operations.

6.1.1 Total Water

Figure 6 shows total water use on site which includes purchased Council water and RO water. Total water use has decreased by 7.7% in 2021.

Factors that will affect the amount of water used on site includes wheat quality which will vary from season to season, the amount of flour throughput and the types of finished products manufactured based on market demand, with each product having different water usage requirements.

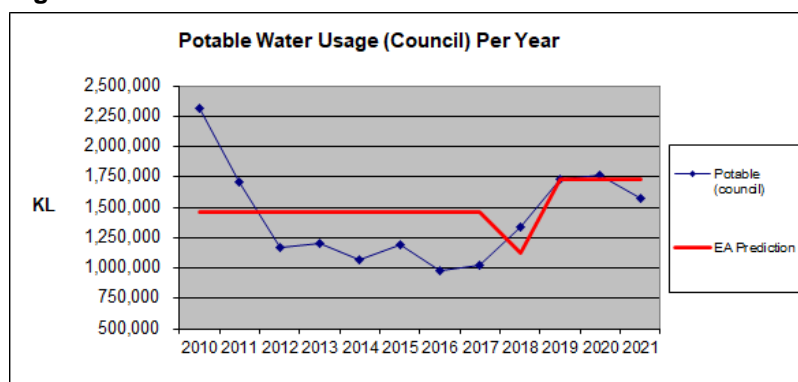
Figure 6 – Total Water Use



6.1.2 Potable Water

Figure 7 shows Council potable water use has decreased by 10.5 % in 2021. It is anticipated the demand for council potable water use will continue to decrease in the next reporting year as water savings from operation of the MVR evaporators occurs, with up to water savings of 2,400 KL per day expected once the plant is fully operational.

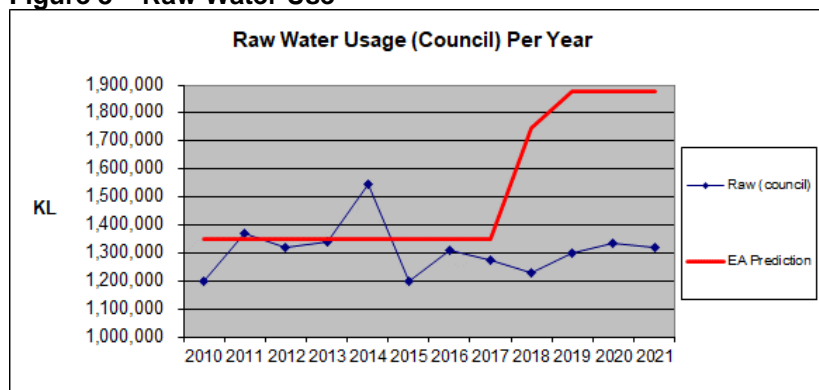
Figure 7 – Potable Water Use



6.1.3 Raw Water

Figure 8 shows council raw water use has decreased slightly by 1.3% in 2021. Raw water is used in cooling towers and feedwater for the boilers.

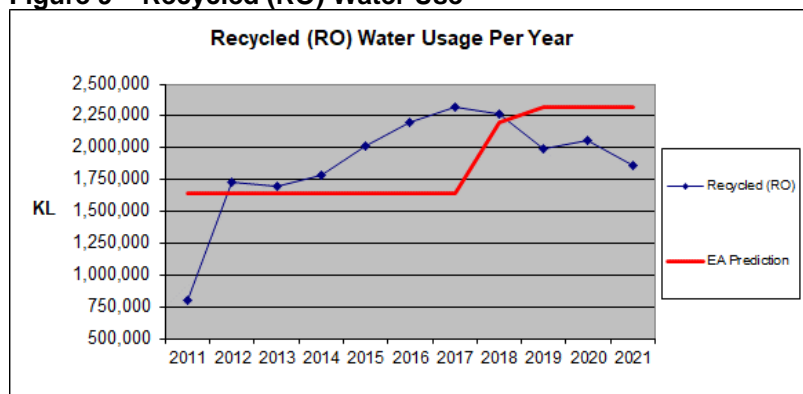
Figure 8 – Raw Water Use



6.1.4 Recycled Water

Treated water from the company's reverse osmosis (RO) plant is re-used back in the factory operations. Figure 9 shows recycled water use has decreased by 9.3% in 2021.

Figure 9 – Recycled (RO) Water Use



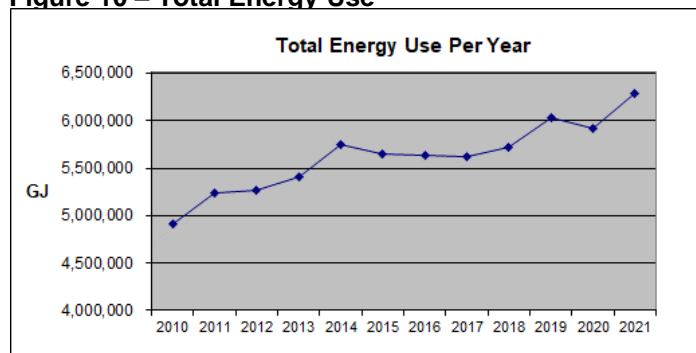
Water use on site is continually monitored and actions implemented to improve water efficiency during the production process. Installation of the company's wastewater treatment plant and increased RO capacity has reduced our council potable water usage since it was installed in 2010-11 (refer to Figure 7).

6.2 ENERGY USE

6.2.1 Total Energy

Figure 10 shows total on-site energy use (which includes coal, natural gas, biogas, and electricity) has increased by 6.3% in 2021. Energy use will vary depending on the amount of flour processed and the types of finished products manufactured based on market demand, with each product having different energy intensities associated with its production.

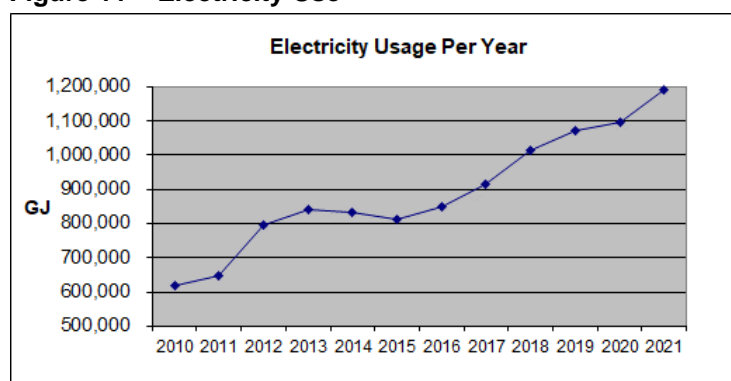
Figure 10 – Total Energy Use



6.2.2 Electricity

Figure 11 shows electricity use has increased by 8.5% in 2021.

Figure 11 – Electricity Use



6.3 WASTE

6.3.1 Liquid Waste

Figure 12 shows total factory wastewater volumes to the site's wastewater treatment plant (WWTP) has decreased by 8.7% in 2021. Wastewater volumes decreased during the reporting period due to the operation of the MVR evaporators which recovers and re-use process water that would otherwise be sent to the site's WWTP.

Figure 12 – Total Liquid Waste Volumes to WWTP

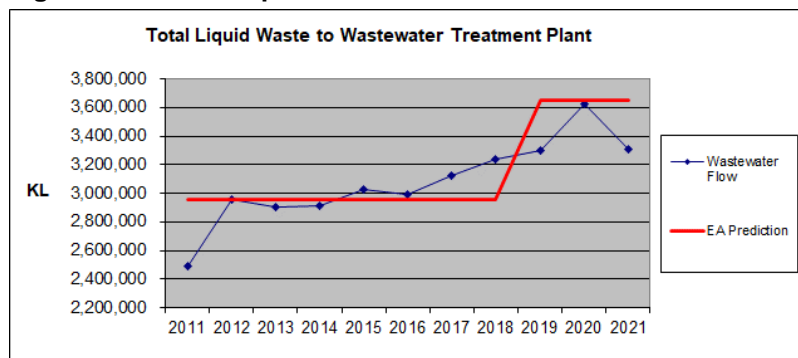
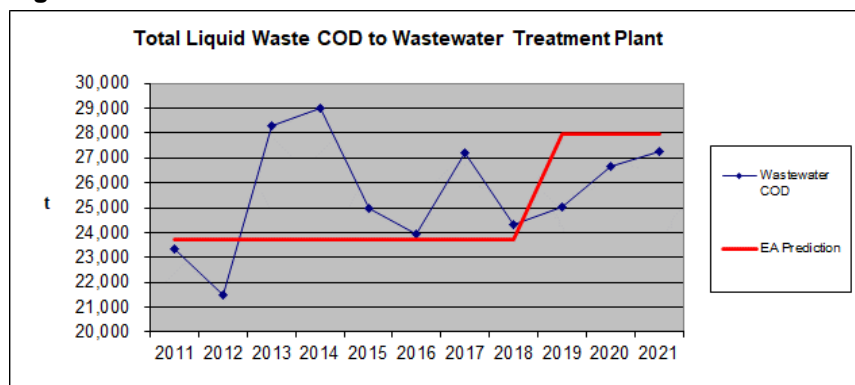


Figure 13 shows total wastewater chemical oxygen demand (COD) load to the WWTP has increased by 2.3% in 2021. The COD volumes will vary due to errors in measurement uncertainty associated with continuous COD measurements and fluctuations in the strength and volume of the wastewater generated from the factory.

Figure 13 – Total COD to WWTP



The WWTP continues to operate effectively as shown by the treated irrigation water quality monitoring results shown in the following section.

6.3.2 Treated Irrigation Water

The wastewater treatment plant (WWTP) continues to perform well since it was installed and began operating in 2011. Surplus treated water that is not passed through the Aerobic Membrane Bio-reactor (MBR) and RO process for factory re-use is stored in ponds for irrigation on the sites Environmental Farm.

Irrigation water quality monitoring is conducted in accordance with the sites EPL (Monitoring Point 2). The average annual results are shown in Figures 14 – 18 (there are no EPL limits prescribed).

Figure 14 Irrigation Water Quality – BOD

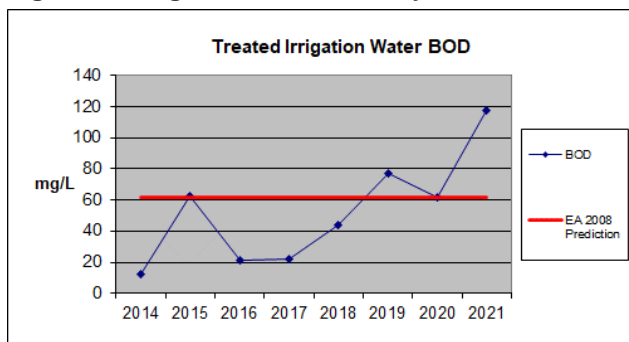


Figure 15 Irrigation Water Quality - Conductivity

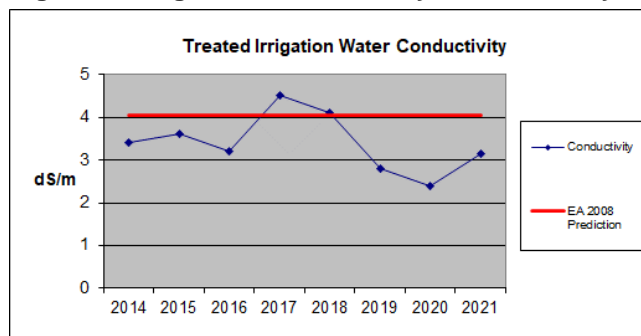


Figure 16 Irrigation Water Quality – Total Nitrogen

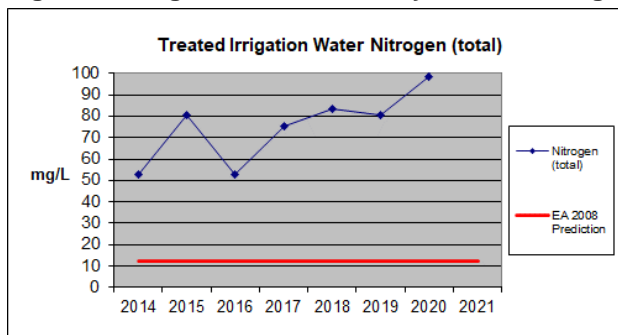


Figure 17 Irrigation Water Quality – Total P

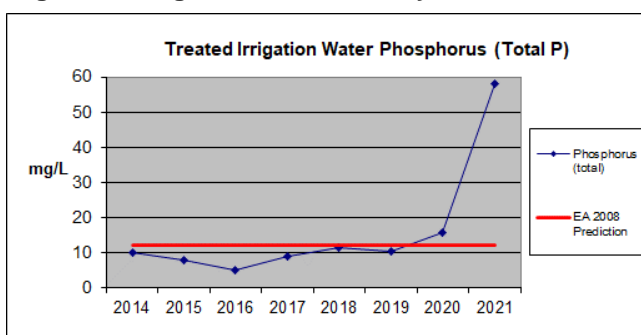
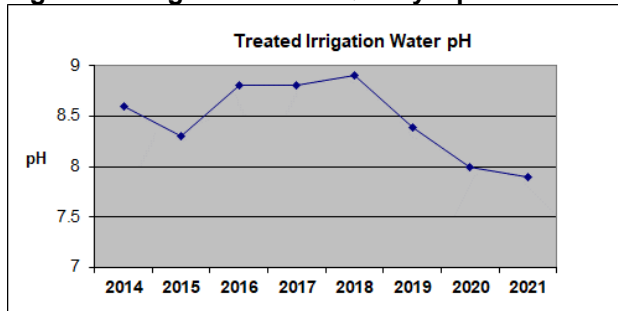


Figure 18 Irrigation Water Quality – pH

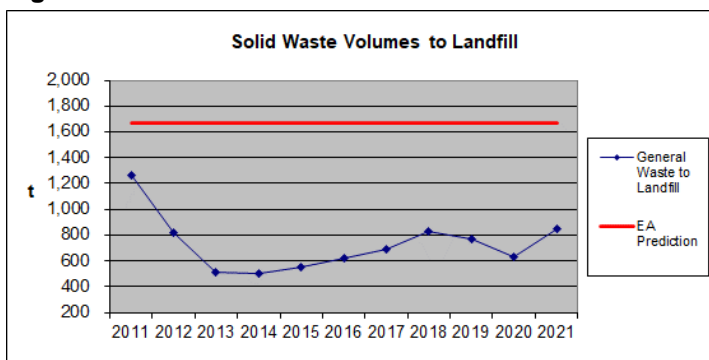


The 2021 results show the conductivity is below predicted levels in the EA. Total nitrogen (N) and Phosphorous levels are above the EA prediction, however the uptake of nitrogen and phosphorous for pasture growth outstrips supply from the wastewater. The pH results remain relatively steady (no predictions in the EA).

6.3.3 Solid Waste

Figure 19 shows solid waste to landfill has increased by 35% in 2021. Whilst recycling of waste continues on-site, solid waste is expected to continue to increase as further expansion projects are completed in the next few years.

Figure 19 – Annual Solid Waste Volumes to Landfill



6.3.4 Waste Recycling

Figure 20 shows total waste recycled has increased by 75% in 2021. Figure 21 shows the annual recycled volumes by type during the reporting year.

Figure 20 – Annual Recycled Waste Volumes

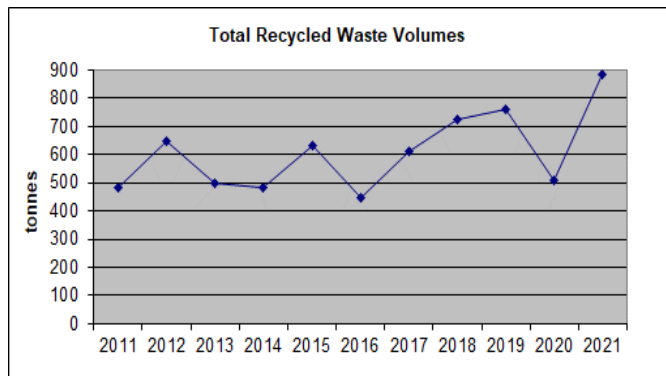
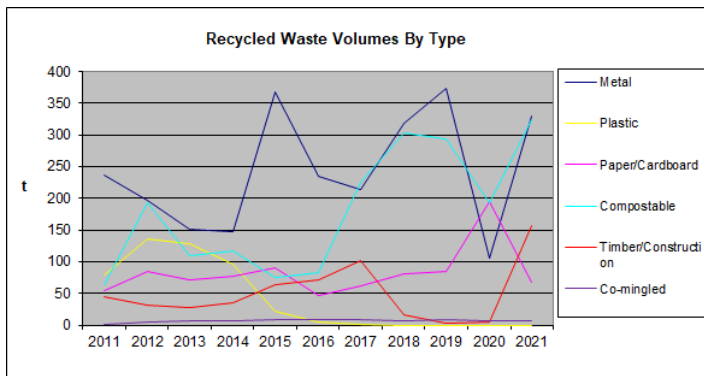


Figure 21 – Annual Recycled Waste Volumes by Type



6.4 AIR EMISSIONS

The emission testing results of the Boiler stacks, as required by condition 9 of the Consent and the site's EPL is shown in the following sections.

6.4.1 Boilers 5 and 6 Monitoring Results

Quarterly air emission testing results from the combined Boilers No. 5 and 6 stack (Monitoring Point 35) in 2021 are all within EPL limits, as shown in Figures 22 – 25.

Figure 22 - Total Solid Particulates

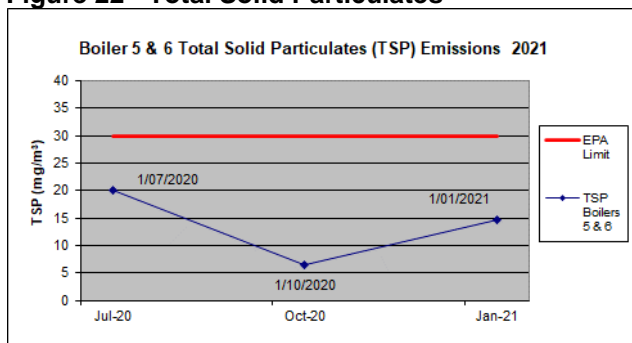


Figure 23 – Volatile Organic Compounds (VOCs)

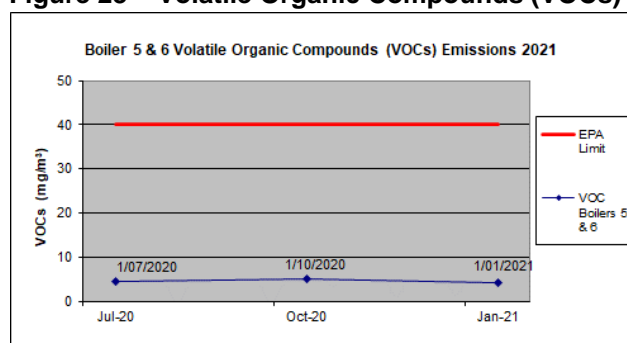


Figure 24 - Oxides of Nitrogen

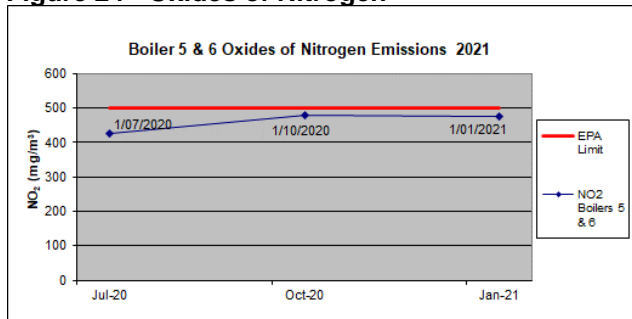
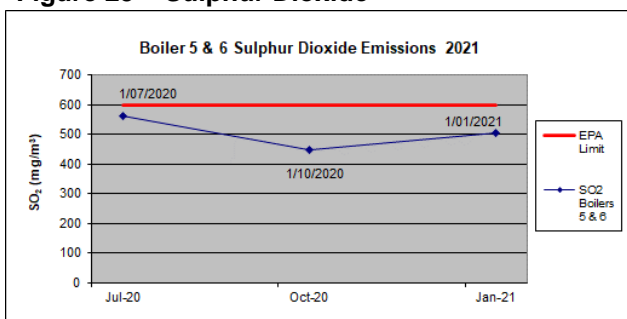


Figure 25 – Sulphur Dioxide



Figures 26 to 29 provide a comparison of average annual air emissions monitoring results from previous years. The results show the pollutants tested are all below EPL limits and are relatively steady. The decline in sulphur dioxide is likely the result of reduced sulphur level in the boiler feedstock (coal).

Figure 26 - Total Solid Particulates - Annual

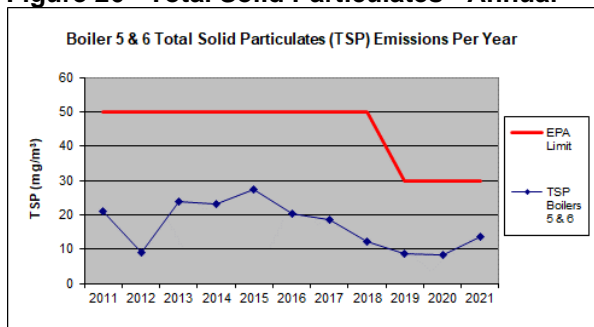


Figure 27 – Oxides of Nitrogen - Annual

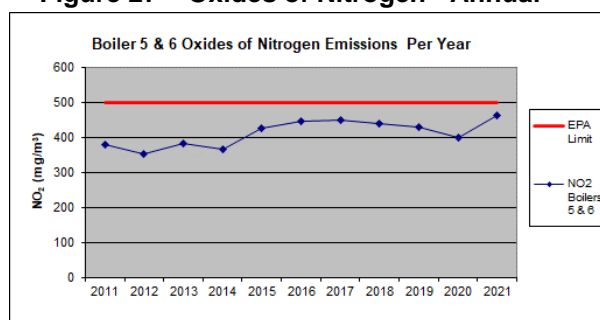


Figure 28 – Sulphur Dioxide – Annual

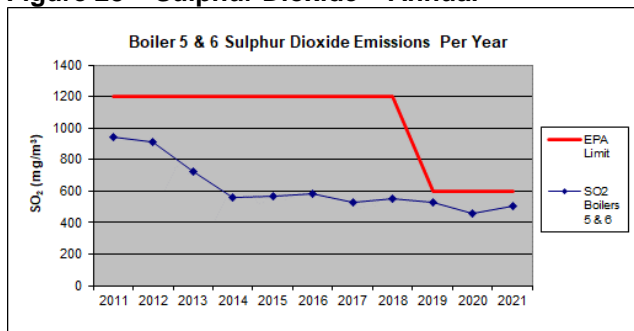
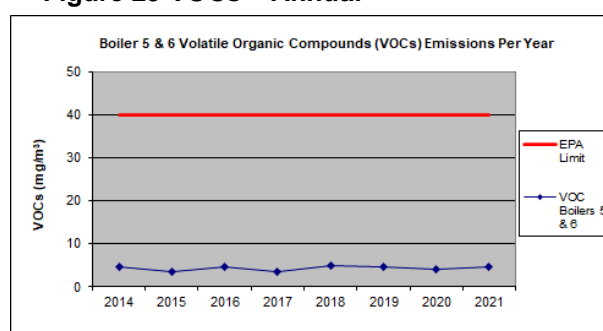


Figure 29 VOCs – Annual



6.4.2 Boiler 2 Monitoring Results

Quarterly air emission testing for Boiler No. 2 (EPL Monitoring Point 45) are all within EPL limits as shown in Figures 30 to 33.

Figure 30 - Total Solid Particulates

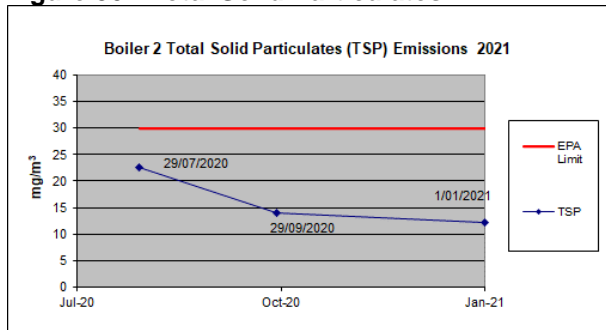


Figure 31 – Volatile Organic Compounds (VOCs)

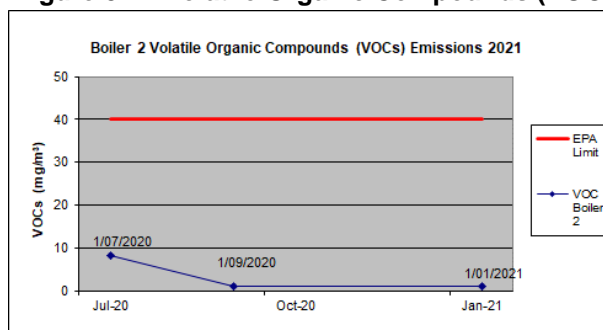


Figure 32 - Oxides of Nitrogen

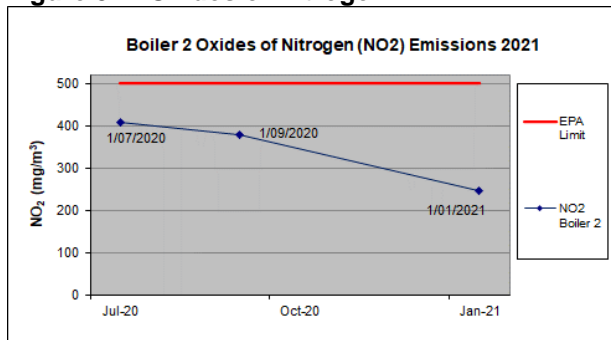
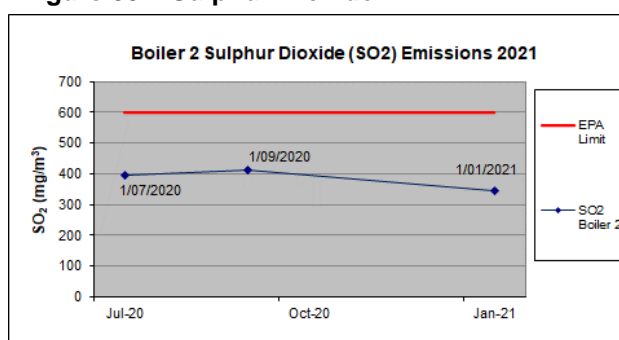


Figure 33 – Sulphur Dioxide



6.4.3 Boiler 4 Monitoring Results

Quarterly air emission testing results for the Boiler 4 stack (Monitoring Point 42) in 2021 are shown in Figures 34 to 37.

One non-compliance against the EPL limits for total solid particulates occurred during the reporting year which is discussed in section 9.1 of this report.

Figure 34 - Total Solid Particulates

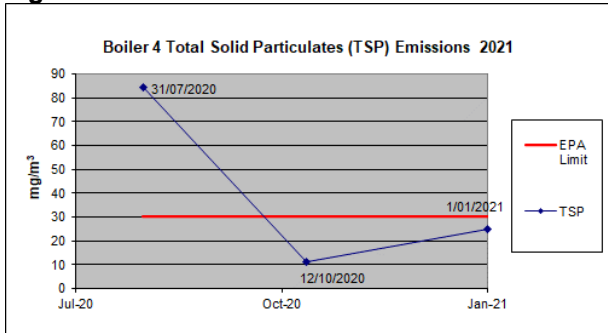


Figure 35 – Volatile Organic Compounds (VOCs)

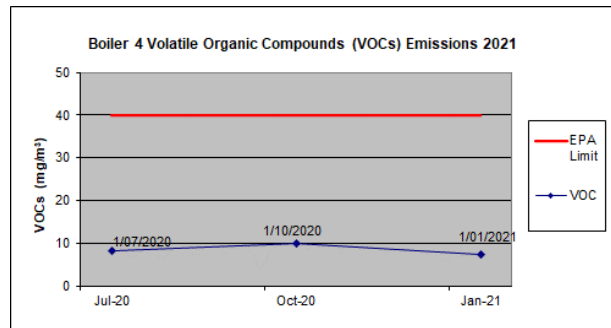


Figure 36 - Oxides of Nitrogen

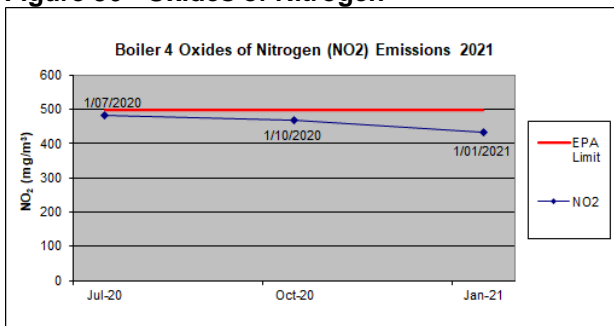
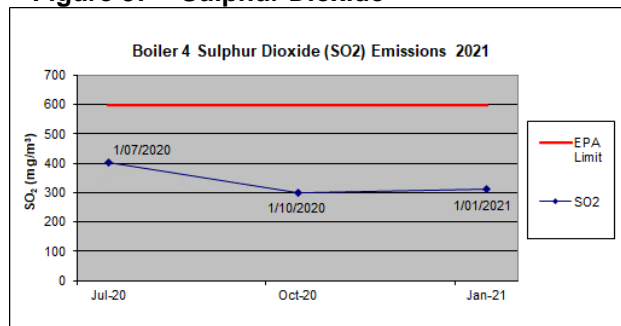


Figure 37 – Sulphur Dioxide



6.5 ODOUR

6.5.1 Quarterly Odour Monitoring

Quarterly odour monitoring has been completed in accordance with the site's EPL, except for Quarter 4, which is discussed in section 9.1. There are no specific odour limits (or EA predictions) for the EPL monitoring point sources. Figures 38 to 47 show the historical quarterly odour results up to and including the 2021 reporting year (the labelling 2019-2 refers to Quarter 2 2019-20, noting the EPL end of year reporting period is 30th April). Results shown as zero represents the EPL point was not operating or not available on the days of testing.

The red lines shown in Figures 38 and 39 are running averages for all the gluten and starch dryers respectively. Care should be taken in comparing results and identifying trends as the measurement of uncertainty for odour testing is (generally) 3 times the determined value. Based on this, the long-term odour trends for all odour sources remain relatively steady.

Figure 38 - Gluten Dryers No's. 1, 2, 3 & 4 (EPL Point No's 8, 9, 10 & 11 respectively)

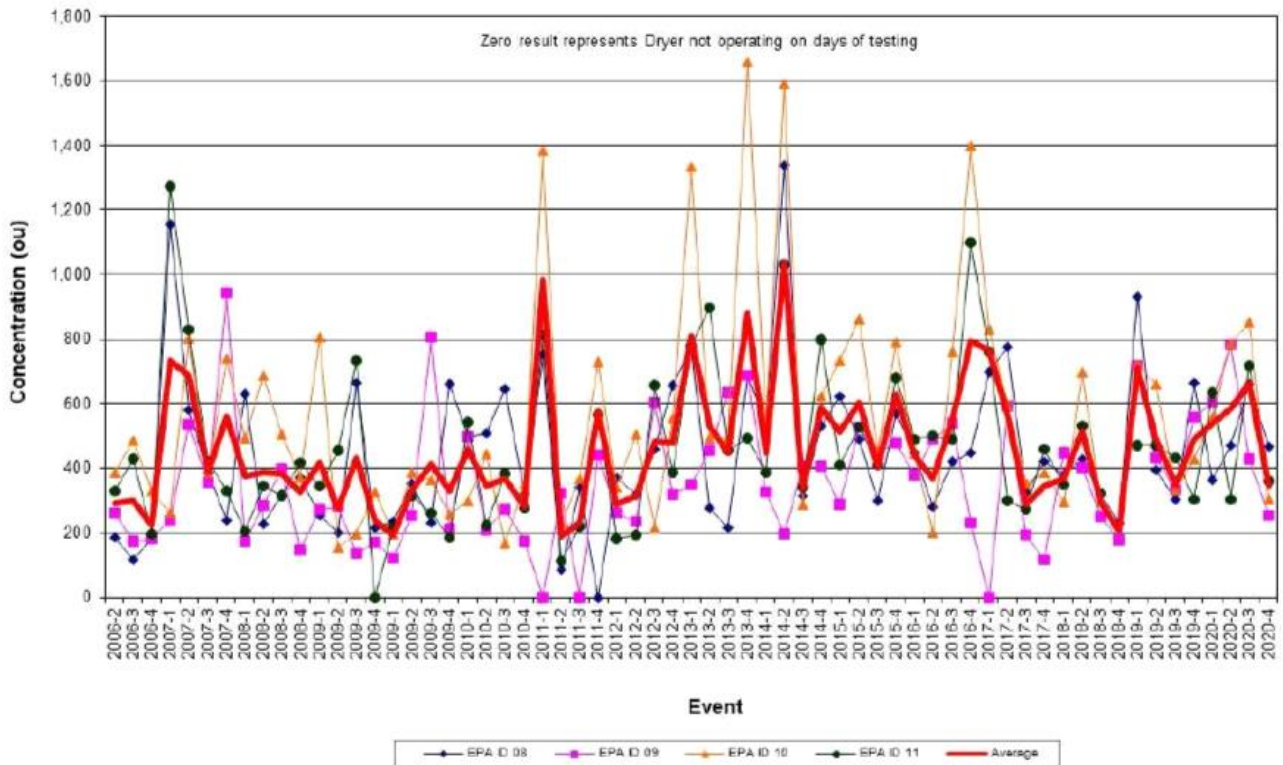


Figure 39 - Starch Dryers No's. 1, 3 & 4 (EPL Point No's. 12, 13 & 14 respectively)

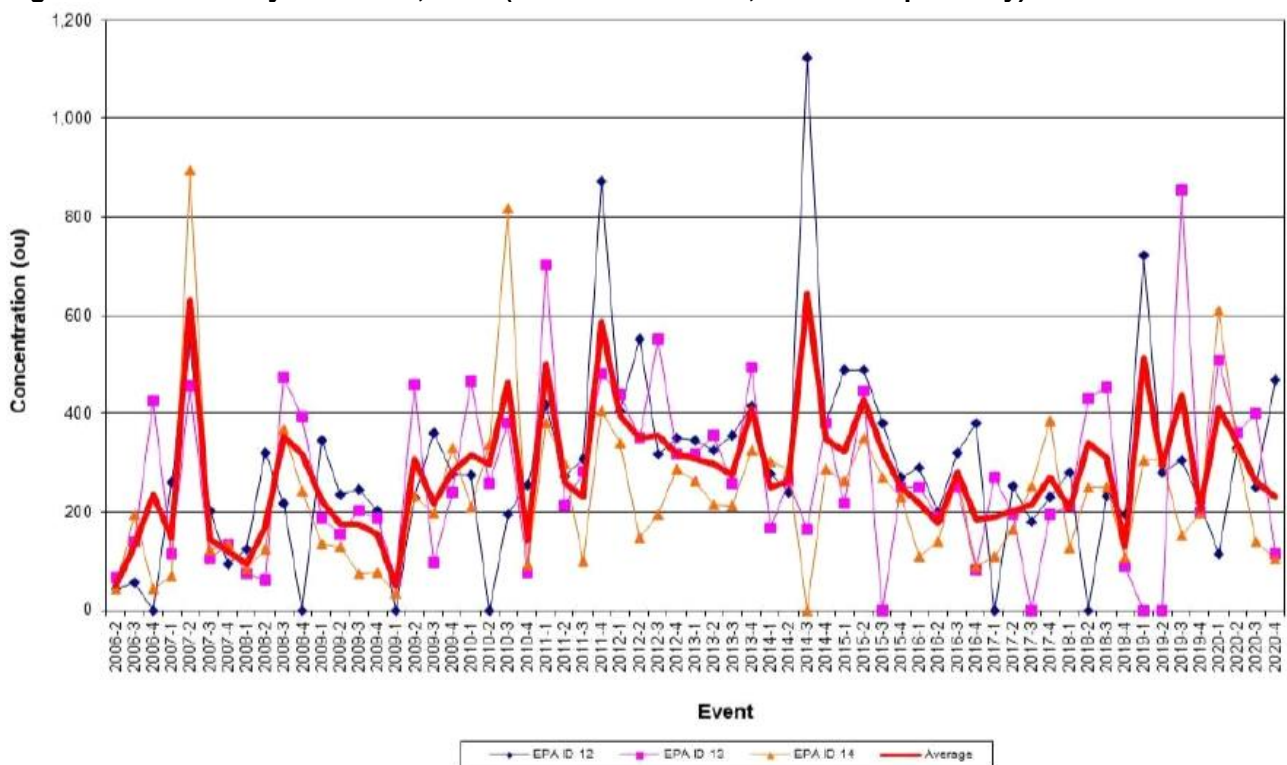
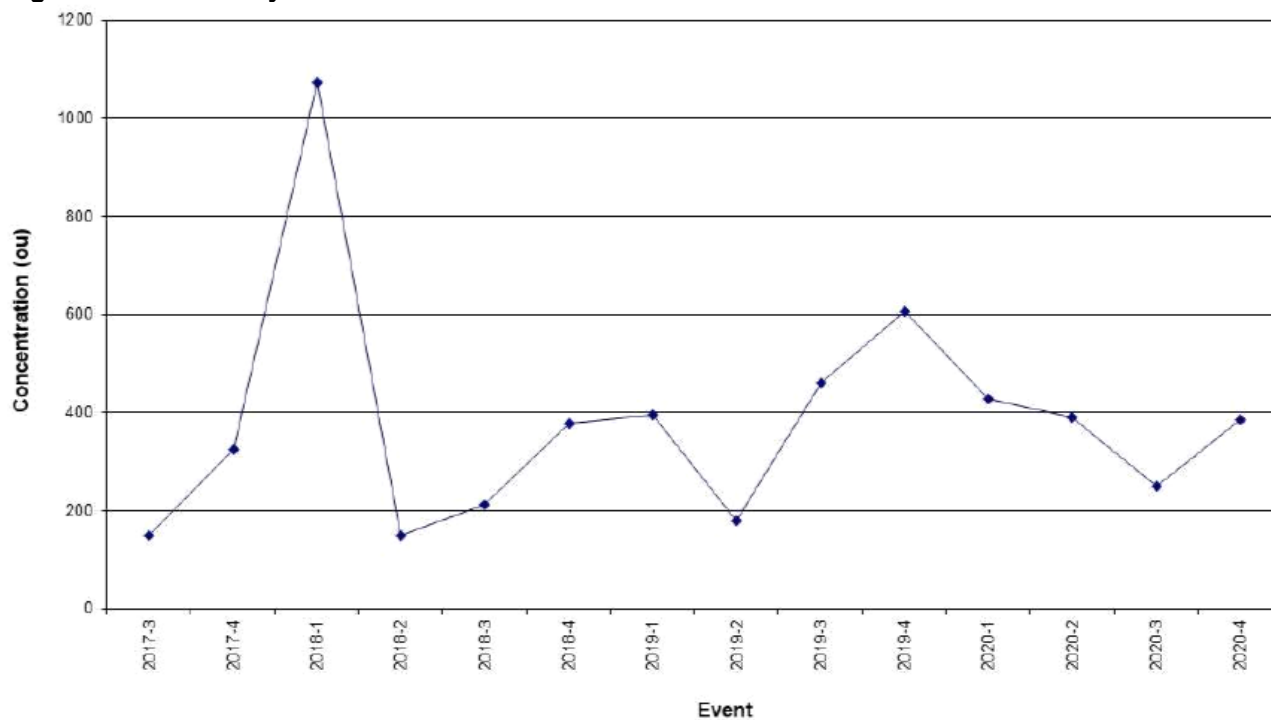


Figure 40 - Starch Dryer No. 5



Significant variations in Fermenter odour shown in Figure 41 from 2010 – 2013 are likely the result of variations in the stage of fermentation when sampling is undertaken. This has been addressed and sampling is now conducted during the filling of a fermenter, with the odour results from 2014 onwards more consistent.

Figure 41 - Fermenter's (EPL Point No. 44)

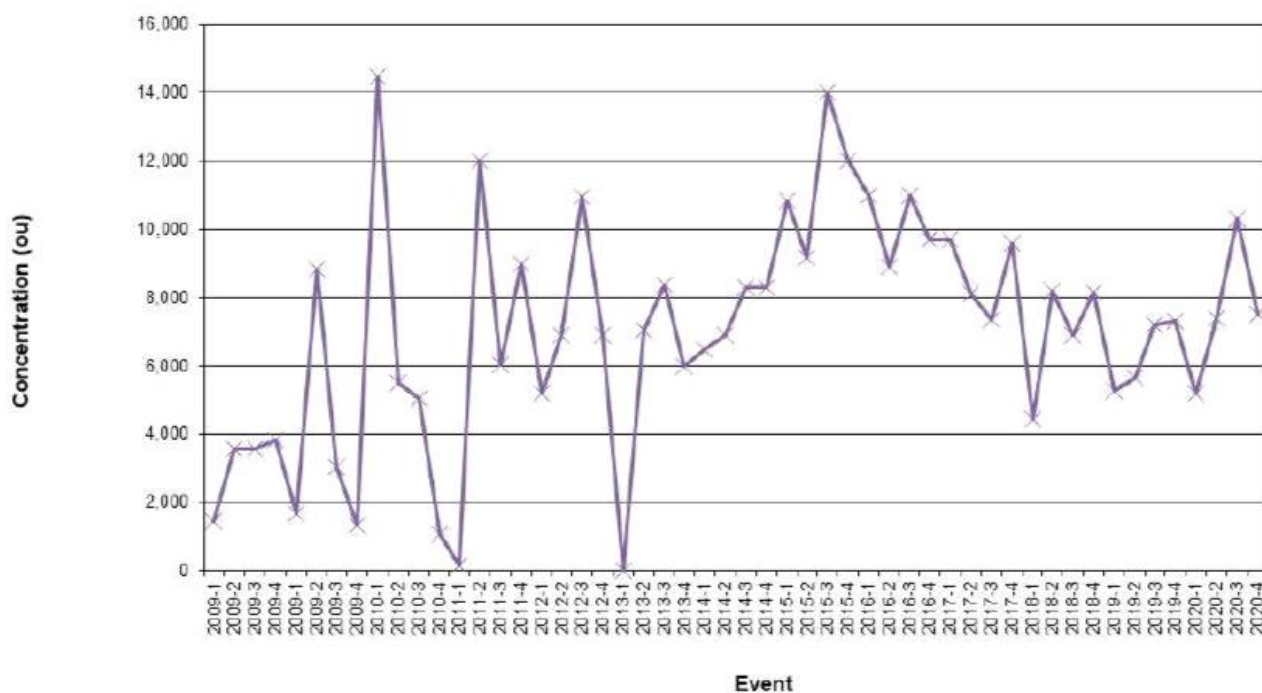
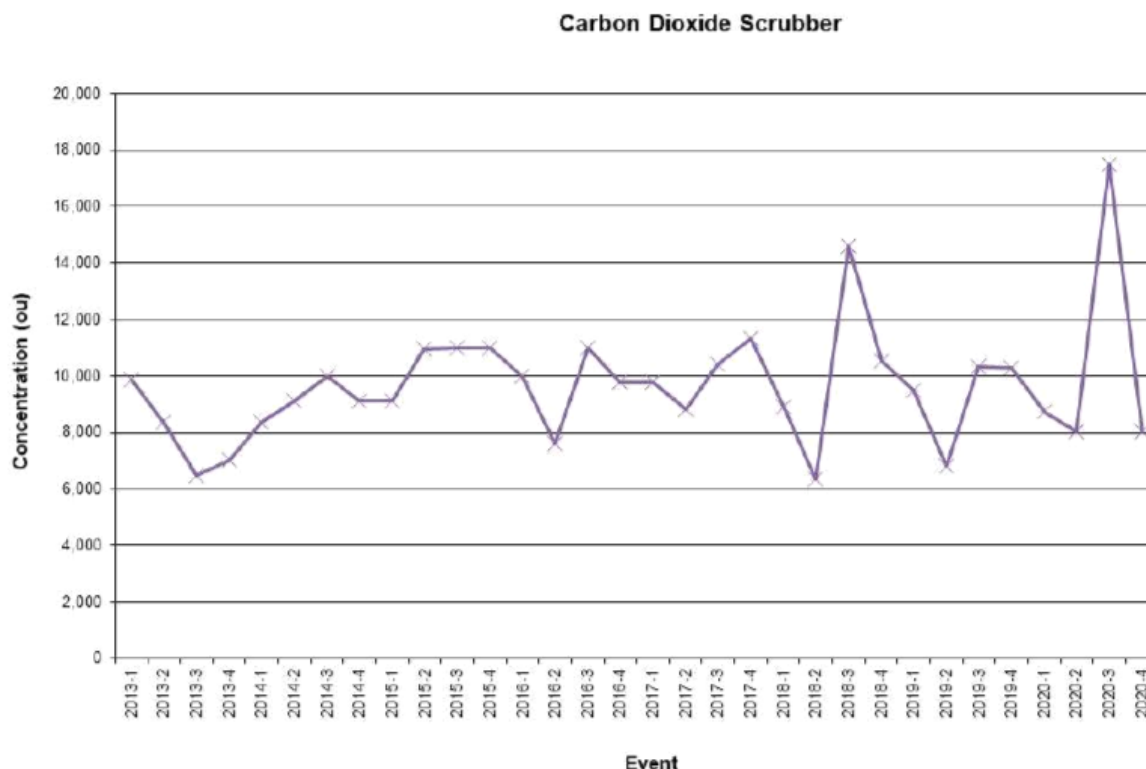


Figure 42 shows the odour emissions from the carbon dioxide (CO₂) scrubber are relatively stable. The CO₂ scrubber takes air emissions from the fermenters through a water scrubber to strip out residual ethanol. The CO₂ outlet odour testing was added to the EPL on 8th November 2013.

Figure 42 - Carbon Dioxide Scrubber (EPL Point No. 16)



Figures 43 to 45 show odour emission results from Boiler 5 & 6 stack (EPL Point 35), Boiler 4 stack (EPL Point 42) and Boiler 2 stack (EPL Point 45) respectively. Odours are captured from the Dried Distillers Grain (DDG) process and directed to the boilers air intake to reduce odours via boiler combustion.

Odour testing for Point 35 and Point 42 was added to the EPL on 8th November 2013 and Point 45 added in October 2018.

Figure 43 - Combined Boiler 5 & 6 Stack (EPL Point No. 35)

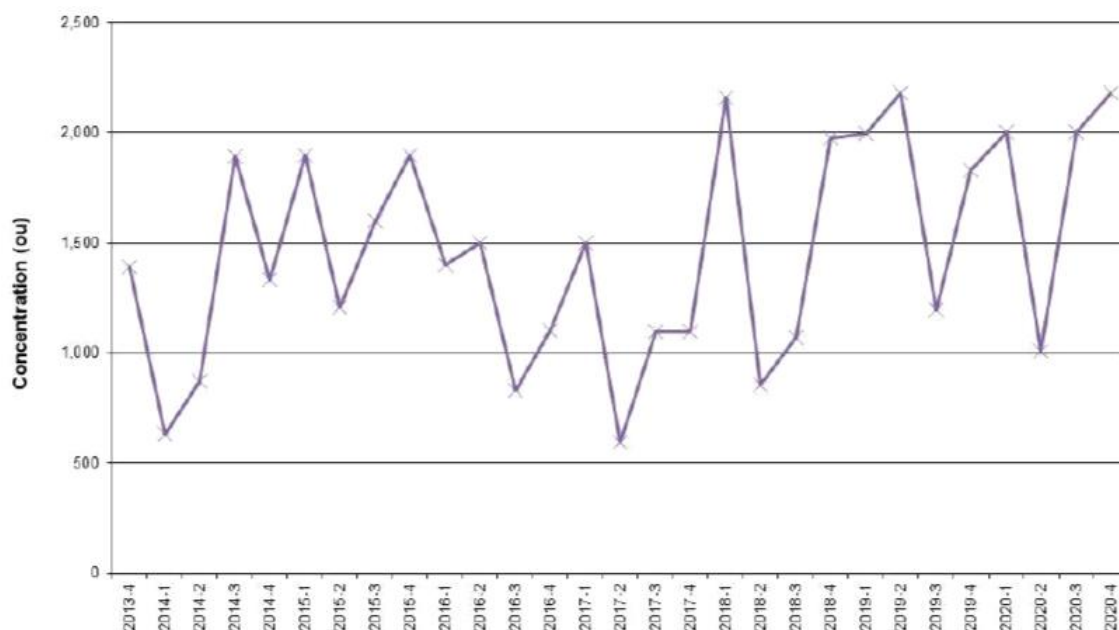


Figure 44 - Boiler 4 (EPL Point No. 42)

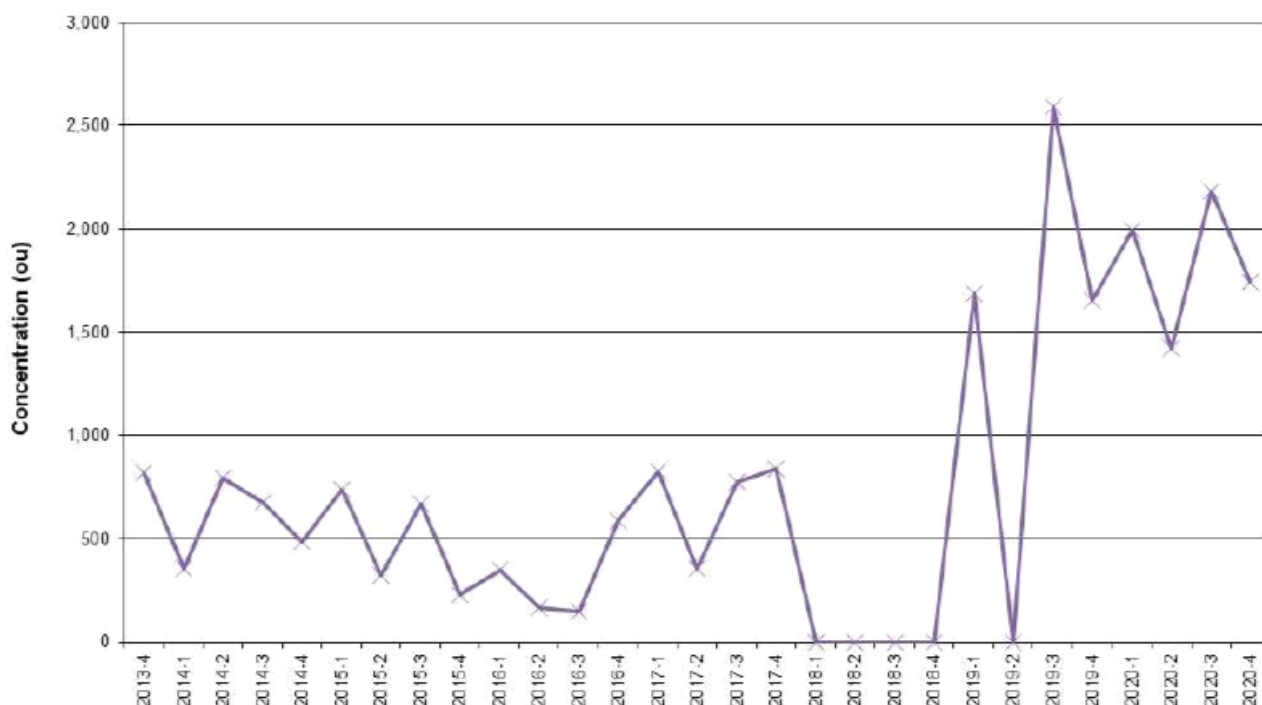


Figure 45 - Boiler 2 (EPL Point No. 45)

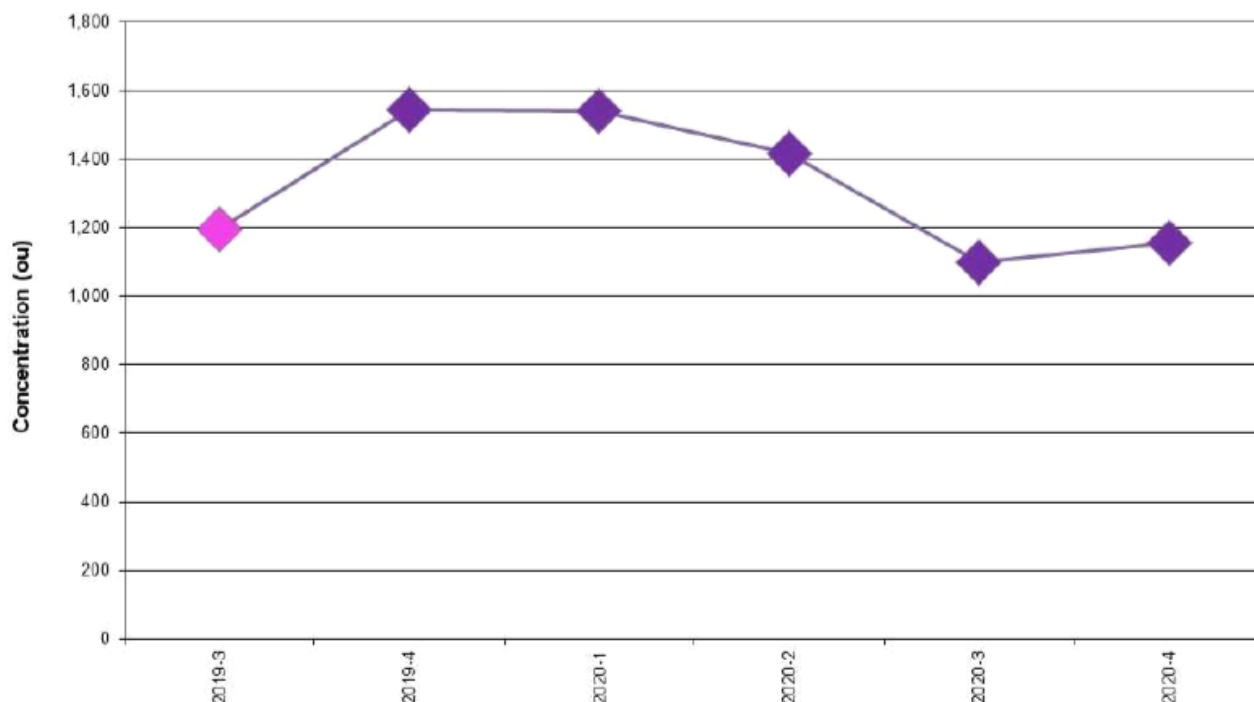


Figure 46 shows the odour results for the biofilter inlet (blue) and biofilter outlet (pink). The biofilter's capture and treat DDG odours from the DDG Evaporator plant. The biofilter outlet results are an average of the two biofilter's A and B. The results show an increase in biofilter outlet odour concentrations which appears to coincide with the addition of DDG Dryer 4 and the recovered odours being sent to the Biofilters.

Investigations are currently underway to address the increased odours which includes an additional odour scrubber and additional Biofilter capacity.

Figure 46 - Biofilter Inlet & Biofilter Outlet A & B (EPL Point No's. 39, 40 & 41)

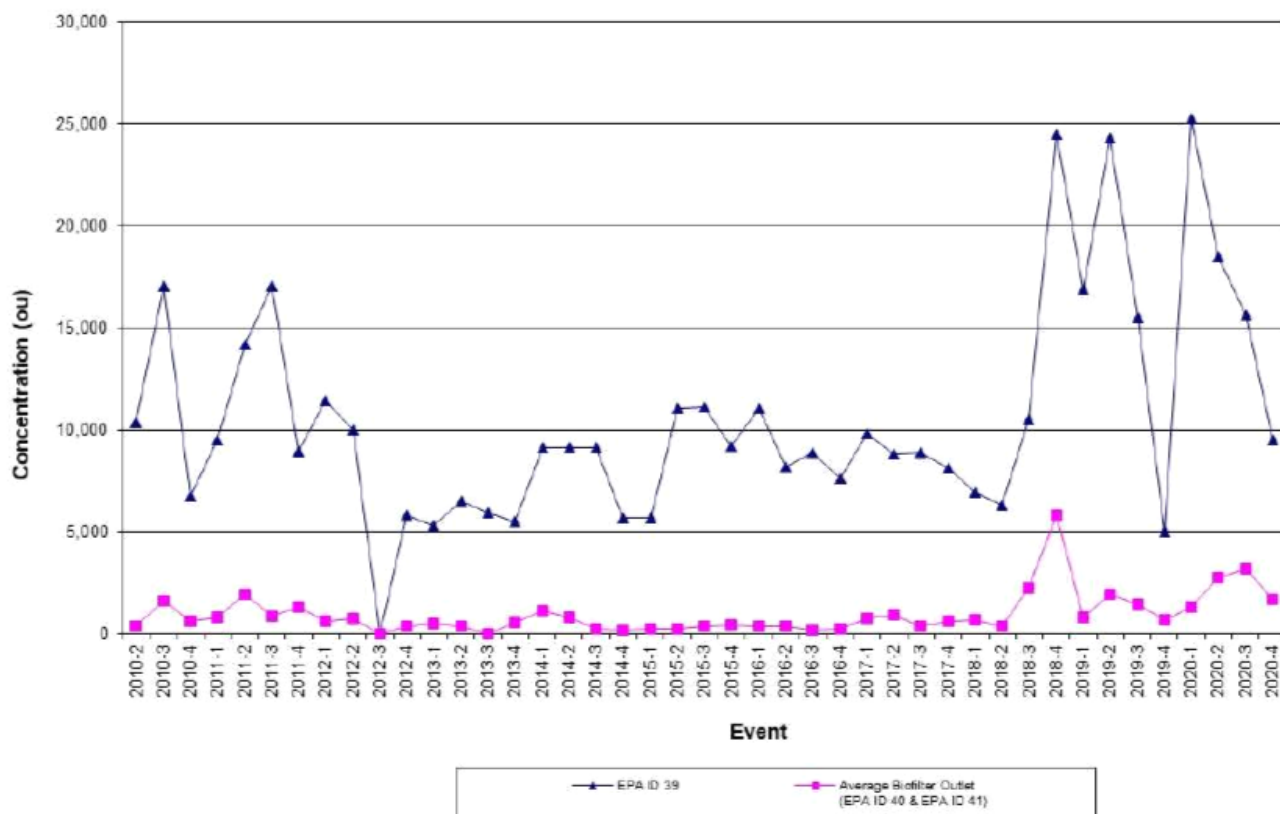
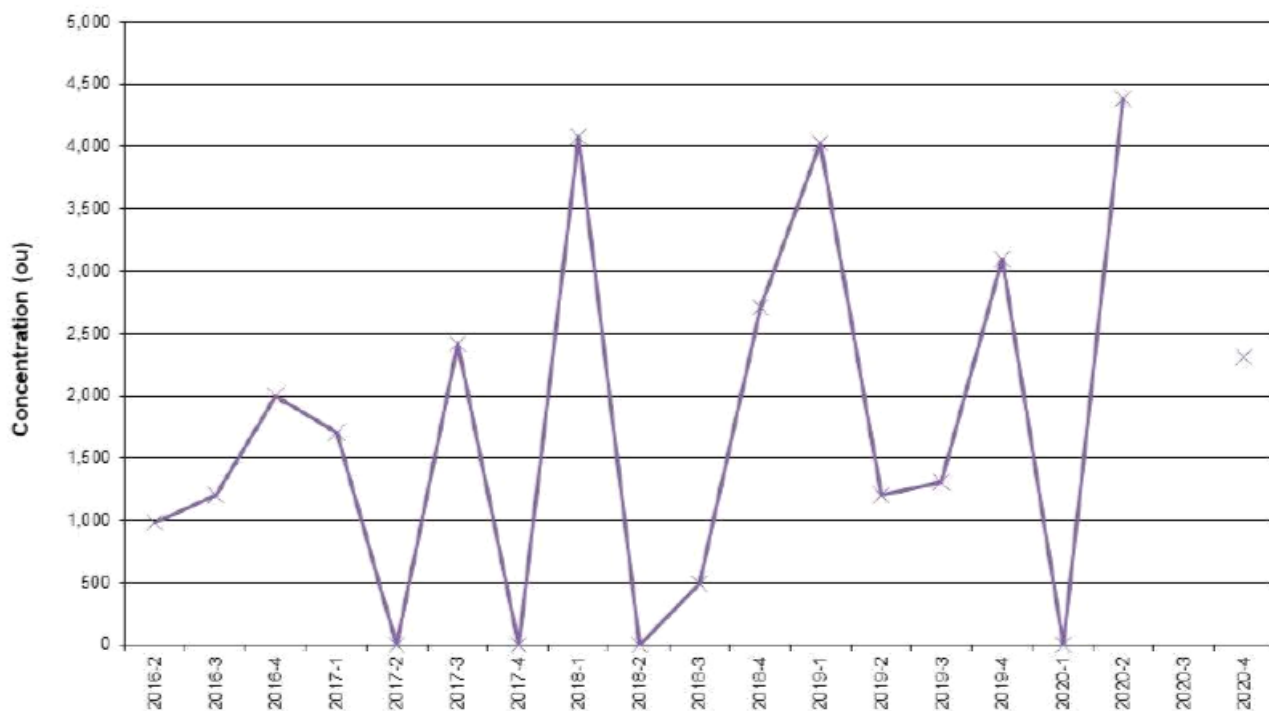


Figure 47 shows the odour results from the DDG Pellet Plant stack which was added to the EPL on 18th December 2015.

Figure 47 – DDG Pellet Plant (EPL Point No. 46)



6.5.2 Annual Odour Monitoring

The following Figures 48 to 53 show the annual odour monitoring results from the sites Environmental Farm. In 2015 the EPL frequency for odour monitoring at the Environmental Farm was reduced from quarterly to yearly as a result of a significant reduction in odour emissions due to the installation of the WWTP in 2010.

The storage ponds store treated water from the WWTP for irrigation on the Environmental Farm. All the pond results show significant reductions in odour since operation of the WWTP.

The Sulphur Oxidation (SO) basin, as shown in Figure 53, is an aerated pond which receives treated water from the anaerobic treatment system prior to entering the MBR and RO systems. All water passing through the MBR-RO system is returned to the factory for re-use. Surplus water from the SO pond is sent to the storage ponds for irrigation.

Note the EPL reporting year is from 1st May 2020 to 30th April 2021, with the 2020-21 result tested in November & December 2020 (Quarter 3).

Figure 48 - Pond No. 1 (EPL Point No. 19)

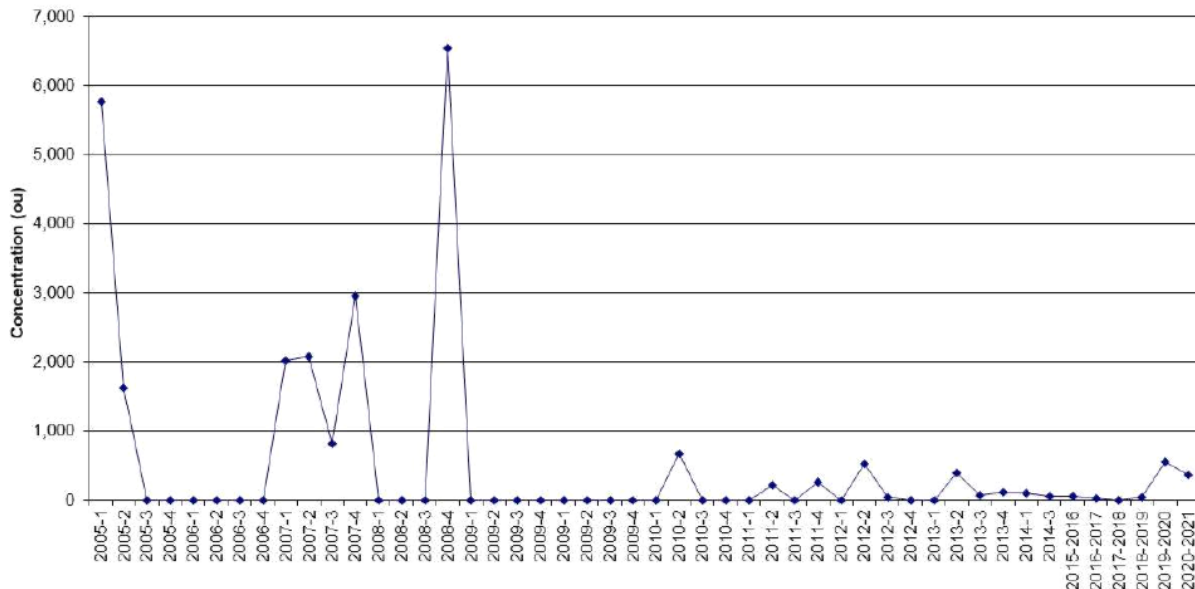
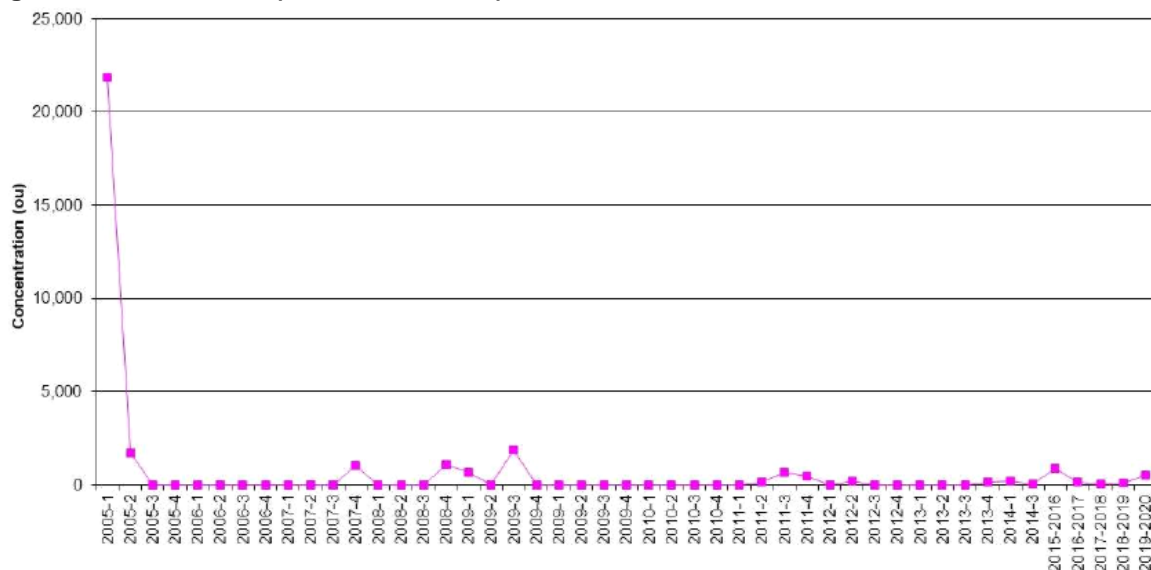


Figure 49 - Pond No. 2 (EPL Point No. 20)



N.B. a sample of Pond 2 was not taken due to very low water level and unsafe access for sampling.

Figure 50 - Pond No. 3 (EPL Point No. 21)

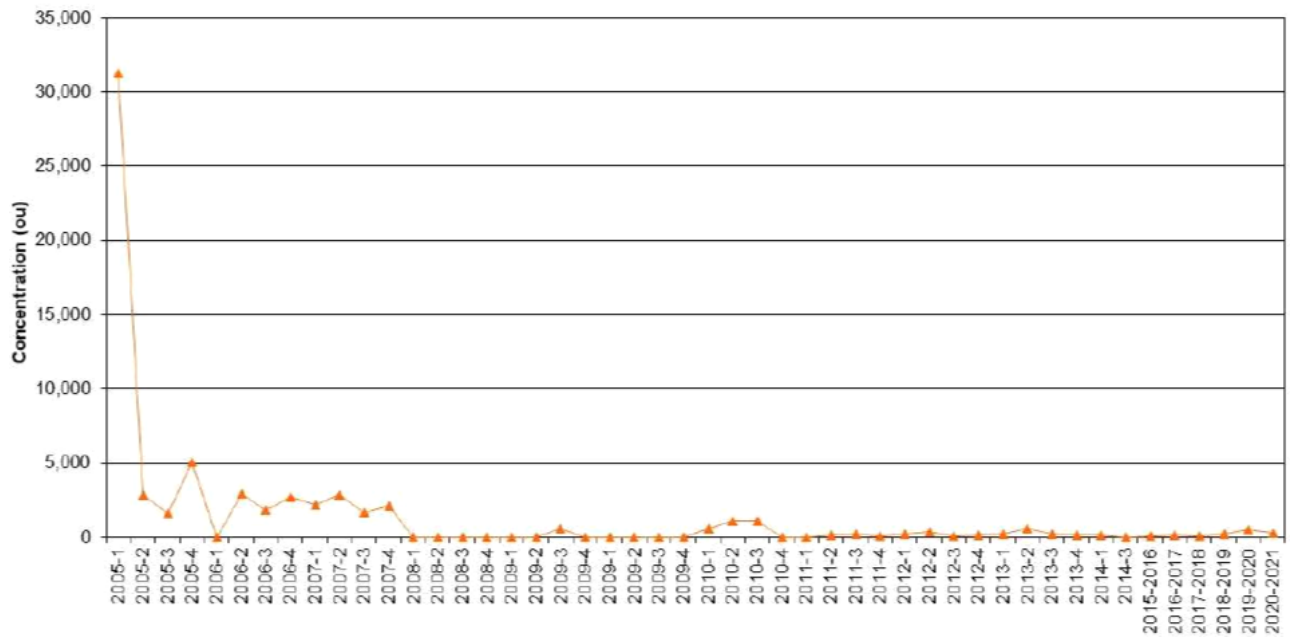


Figure 51 - Pond No. 5 (EPL Point No. 23)

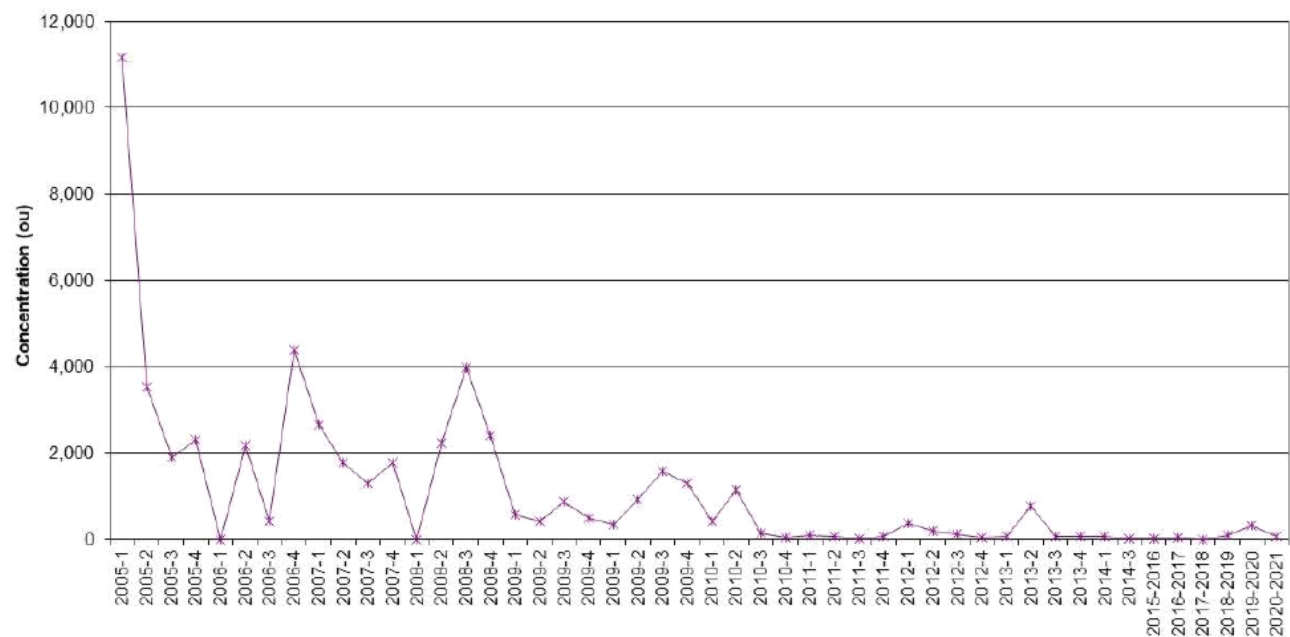


Figure 52 - Pond No. 6 (EPL Point No. 24)

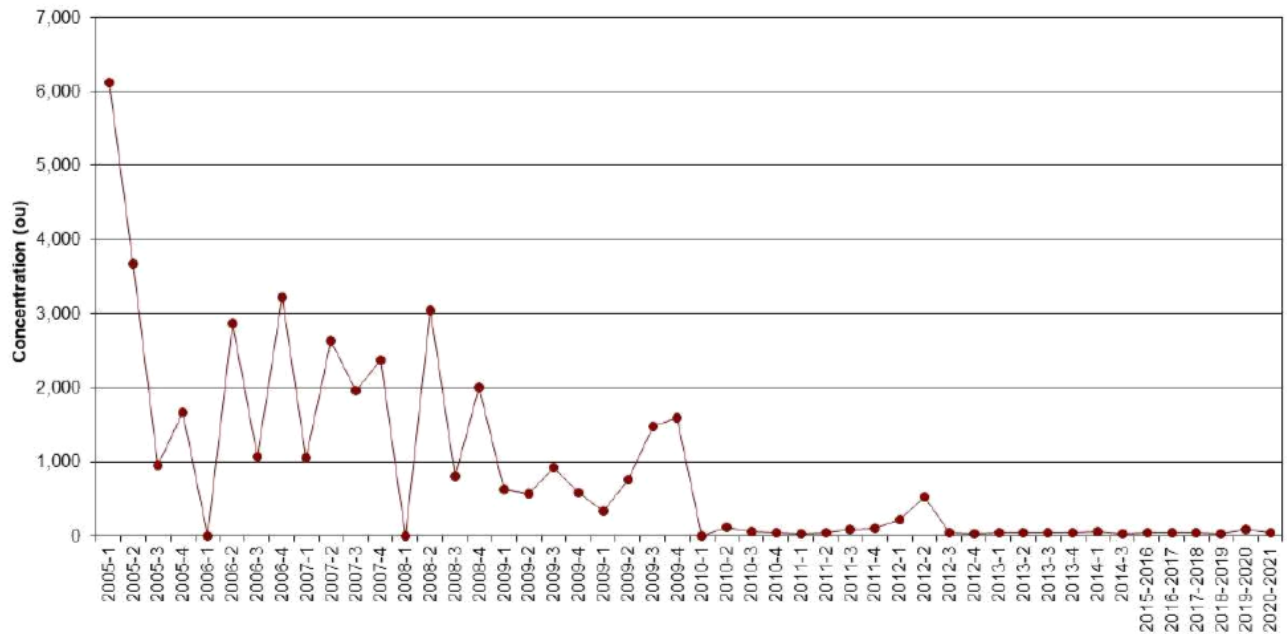
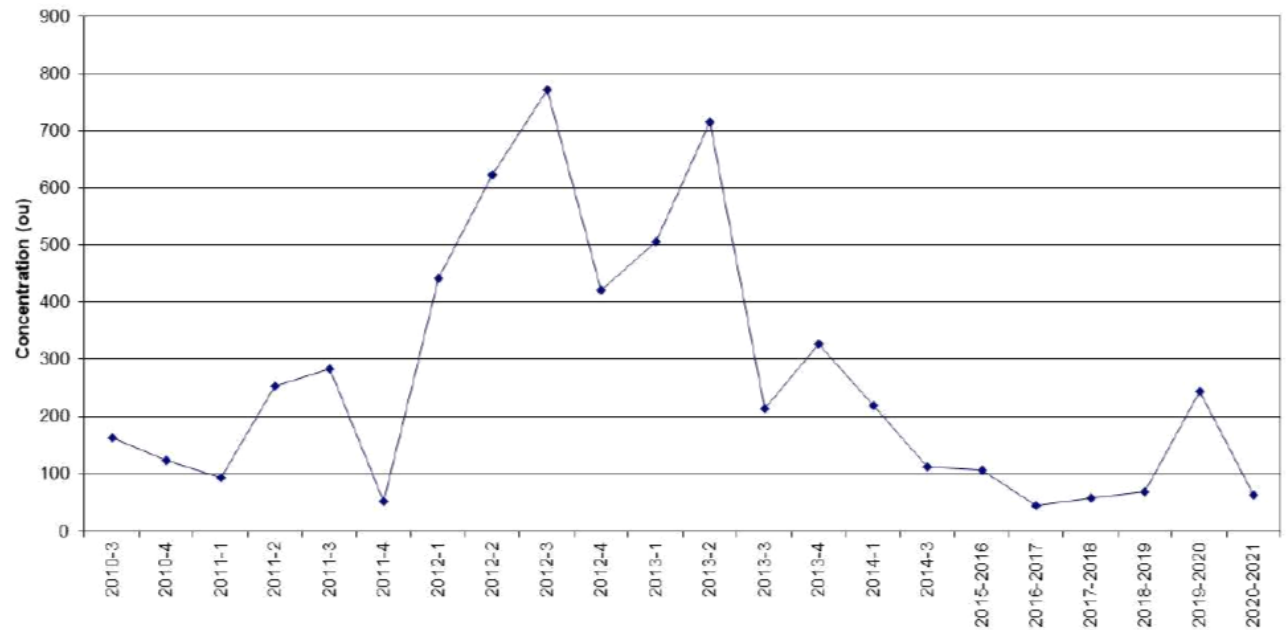


Figure 53 - Sulphur Oxidation Basin (EPL Point No. 25)



6.5.3 Annual Odour Audit

Annual odour modelling is conducted each year and submitted as part of the sites EPL Annual Return and annual odour audit requirements under schedule 3, condition 5 of the Consent. The 2021 independent odour audit was conducted in September 2021 by Northstar Air Quality Pty Ltd.

The odour modelling predicts the ground level odour concentration (in odour units, OU) at the nearest residential receptors. The previous 12 months of odour monitoring data are used to update the site's odour model. The results of the odour modelling for the current reporting period 2021 and the previous year 2020 are shown in Figures 54 and 55 respectively.

A comparison between Figures 54 and 55 shows similar contour plots to the previous year. The plot around the Farm storage dams, north east of the factory, from 2020 to 2021 has decreased due to testing in 2020 being undertaken during very low dam levels and little rainfall creating some stagnant water in some of the dams during testing which generated higher than normal odour results.

The figures below show 2 contour plots for comparison as follows:

1. Red = All odour sources at current ethanol production levels (209 ML pa)*
2. Blue = All odour sources scaled to approved ethanol production limit (300 ML pa)

* Daily production rate converted to annual production equivalent at the time of sampling

Figure 54 - Odour Modelling Contour Plot 2021

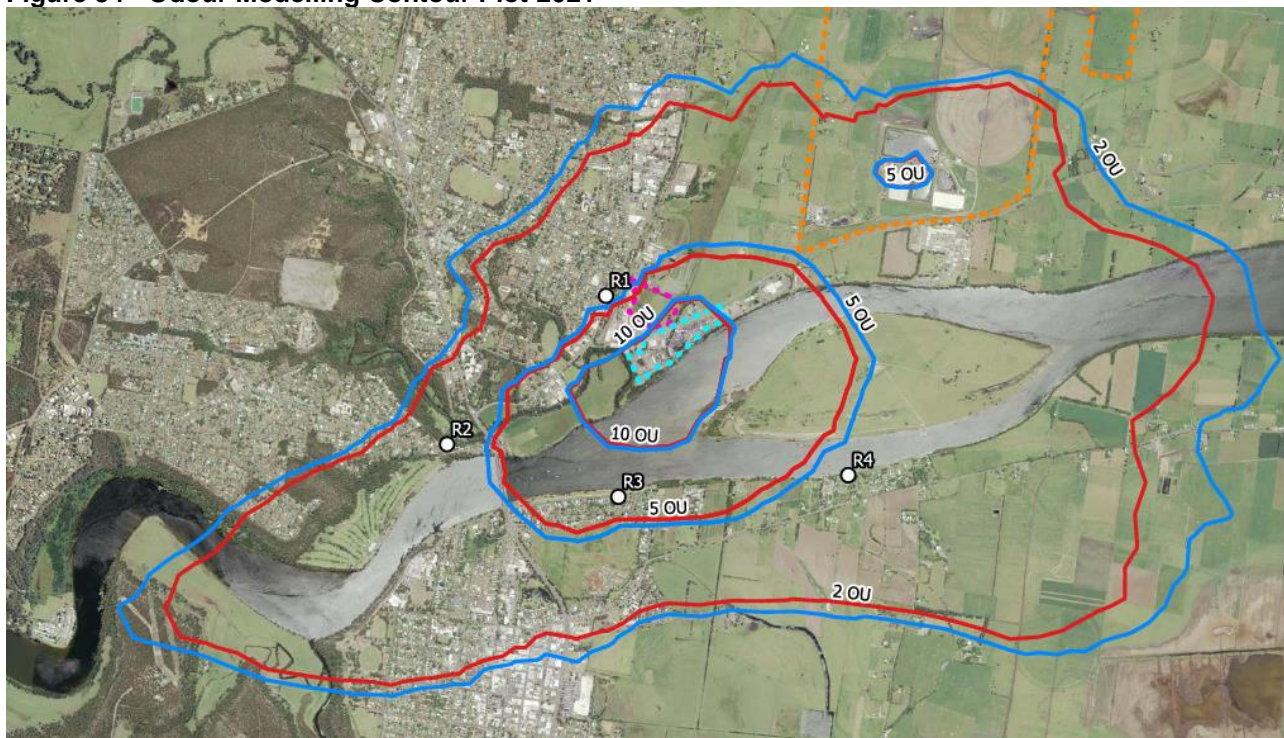


Figure 55 - Odour Modelling Contour Plot 2020

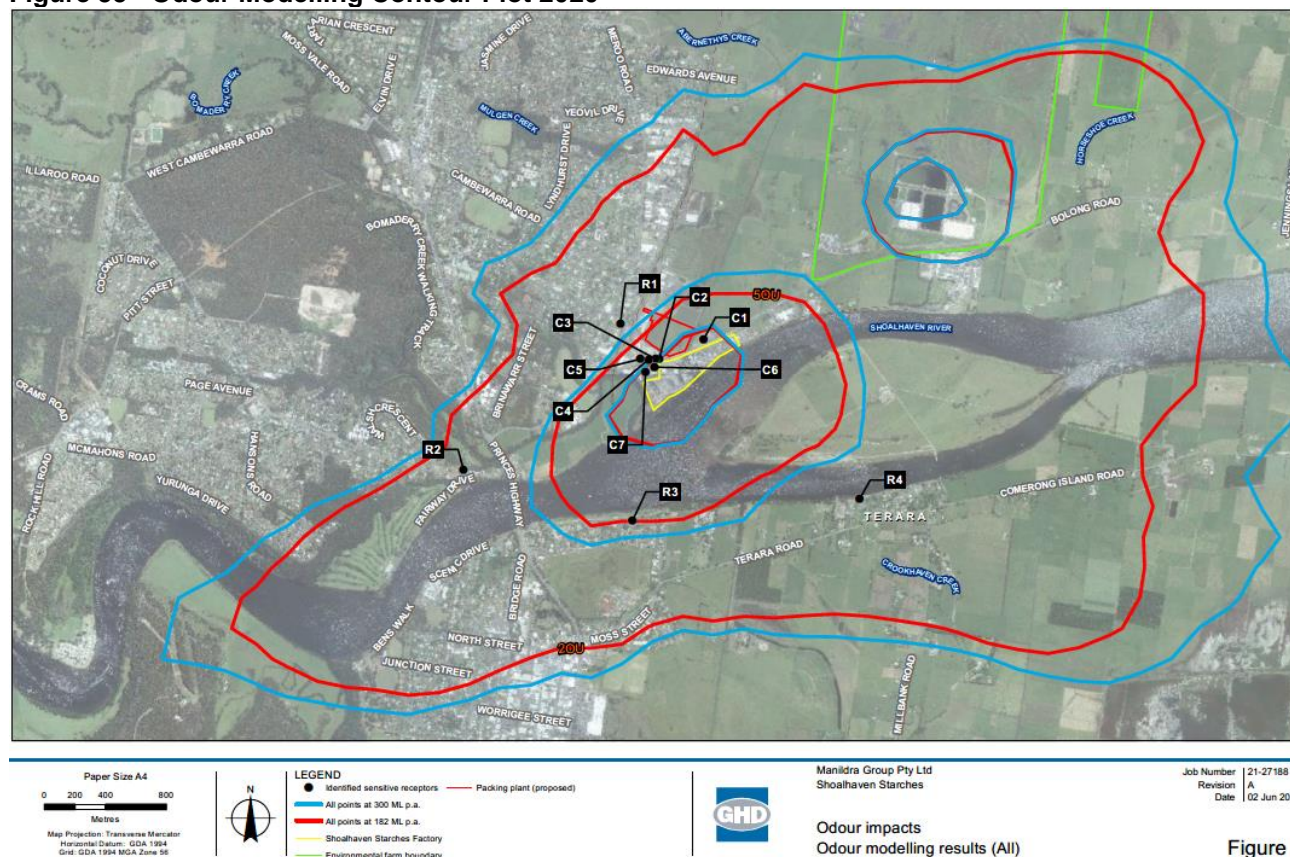


Figure 1

Predicted odour concentrations at all 4 receptor locations are shown in Table 6 below. The results show odour concentrations are below the 2008 EA predictions at Bomaderry and Terara, whilst North Nowra & Nowra are slightly above the odour concentrations approved in the 2008 EA.

Table 6 Annual odour modelling predicted odour concentrations

| Receptor Location | EA 2008 Approval | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-------------------|------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| R1 Bomaderry | 6 | 4.7 | 4.8 | 4.7 | 3.6 | 4.2 | 4.4 | 4.8 | 4.3 | 3.1 | 3.8 | 3.9 | 4.1 |
| R2 North Nowra | 3 | 2.3 | 2.6 | 2.6 | 2 | 2.2 | 2.2 | 2.2 | 2.4 | 2.0 | 3.1 | 2.9 | 3.6 |
| R3 Nowra | 5 | 4.8 | 4.9 | 5.3 | 4.2 | 4.9 | 4.6 | 5.1 | 4.9 | 3.6 | 5.3 | 5.0 | 6.0 |
| R4 Terara | 5 | 5.3 | 5.1 | 5.4 | 3.9 | 4.6 | 4.6 | 5.3 | 4.6 | 3.0 | 4.0 | 3.9 | 4.3 |

N.B. Figures above and below are based on actual emissions, not scaled to 300 ML pa (as per EPL Annual Return requirements)

Figures 56 to 58 show the odour unit concentrations at the nearest residential receptors against predictions in the EA (blue line) and NSW EPA guidelines (red line).

Figure 56 - Odour Modelling Results - Bomaderry

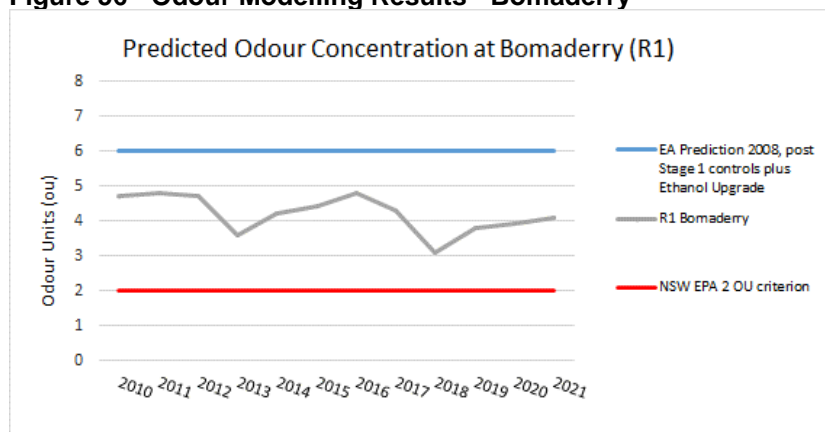


Figure 57 - Odour Modelling Results - North Nowra

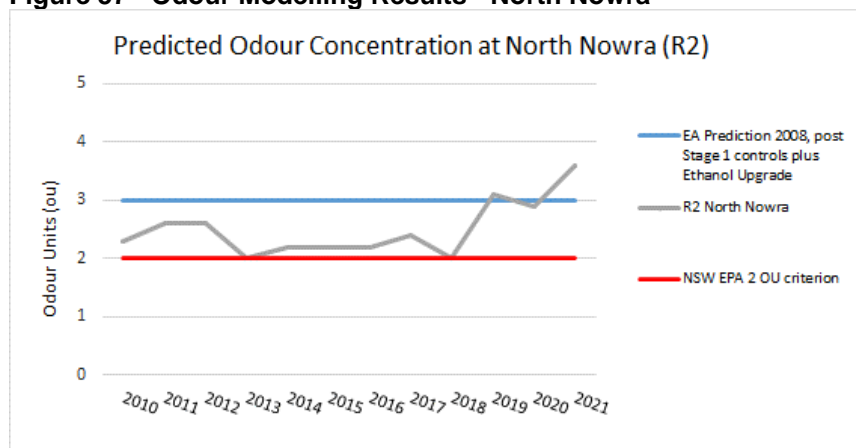
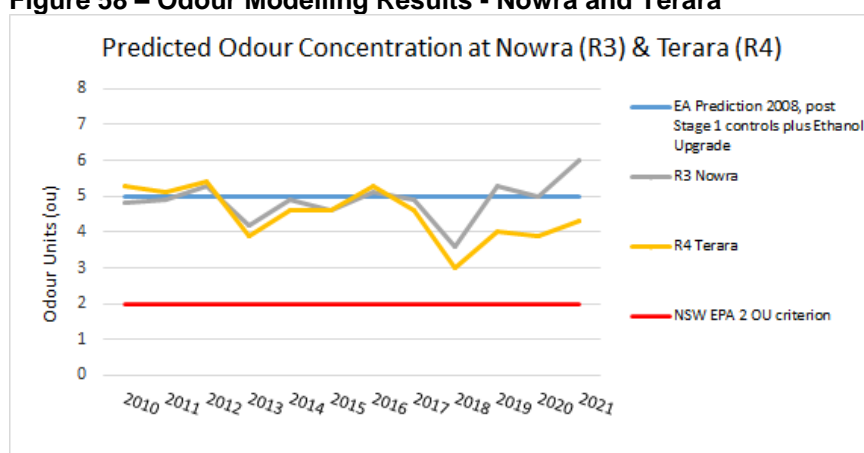


Figure 58 – Odour Modelling Results - Nowra and Terara



As required under condition 5 of the Consent, the annual independent odour audit was completed for the reporting year.

The non-compliances and recommendations from the 2021 odour audit and Shoalhaven Starches response to the audit recommendations are shown in Table 7 and Table 8, which has been submitted to the DPIE and EPA.

Table 7 - 2021 Independent Odour Audit Non-compliances

| Cond. No. | Condition and Requirement | Audit Report Non-compliances | Shoalhaven Starches (SS) Response | Timeframe | Status |
|-----------|---|--|--|-----------|-----------------|
| 5e | Within 3 months of the implementation of the mandatory odour controls (see Appendix 3), and annually thereafter unless the Secretary directs otherwise, the Proponent shall commission and pay the full cost of an Independent Odour Audit of the project. This audit must be conducted by a suitably qualified, experienced and independent expert whose appointment has been endorsed by the Secretary. During the audit, this expert must: e. measure all key odour sources on site, and compare the results of these measurements against the predictions in the EA; | It is noted that the Quarter 4 monitoring has not been performed during the 2020-2021 audit period, due to limited availability of the emissions testing time, as advised by Manildra to EPA by email on 7 May 2021. | The Quarter 4 monitoring was not completed during the 2020-2021 audit period due to the unavailability of the emissions testing consultant. The EPA were notified by phone and email on 7 th May 2021 advising them of the situation. The Quarter 1 (2021-22) odour monitoring was conducted on 7 th & 8 th June and 20 & 22 July 2021. | | Complete Jul-21 |
| 6A(a) | The Proponent shall ensure that any Independent Odour Audit submitted to the Secretary in accordance with Condition 5 of this Schedule includes: a) 3 monthly (quarterly) odour monitoring with samples taken from the carbon dioxide/ethanol recovery scrubber inlet/s and outlet/s; and | It is noted that the Quarter 4 monitoring has not been performed during the 2020-2021 audit period, due to limited availability of the emissions testing time, as advised by Manildra to EPA by email on 7 May 2021. | The Quarter 4 monitoring was not completed during the 2020-2021 audit period due to the unavailability of the emissions testing consultant. The EPA were notified by phone and email on 7 th May 2021 advising them of the situation. The Quarter 1 (2021-22) odour monitoring was conducted on 7 th & 8 th June and 20 & 22 July 2021. | | Complete Jul-21 |
| 6A(b) | The Proponent shall ensure that any Independent Odour Audit submitted to the Secretary in accordance with Condition 5 of this Schedule includes: b. quarterly odour monitoring with samples taken of single vent stack (direct to atmosphere) emissions from a filling fermenter tank | It is noted that the Quarter 4 monitoring has not been performed during the 2020-2021 audit period, due to limited availability of the emissions testing time, as advised by Manildra to EPA by email on 7 May 2021. | The Quarter 4 monitoring was not completed during the 2020-2021 audit period due to the unavailability of the emissions testing consultant. The EPA were notified by phone and email on 7 th May 2021 advising them of the situation. The Quarter 1 (2021-22) odour monitoring was conducted on 7 th & 8 th June and 20 & 22 July 2021. | | Complete Jul-21 |

| Cond. No. | Condition and Requirement | Audit Report Non-compliances | Shoalhaven Starches (SS) Response | Timeframe | Status |
|-----------|---|--|--|-----------|-----------------|
| 6C | The Proponent shall conduct quarterly odour monitoring from the DDG exhaust stack and report the results in the independent odour audit required under Condition 5 of Schedule 3. | It is noted that the Quarter 4 monitoring has not been performed during the 2020-2021 audit period, due to limited availability of the emissions testing time, as advised by Manildra to EPA by email on 7 May 2021. | <p>The Quarter 4 monitoring was not completed during the 2020-2021 audit period due to the unavailability of the emissions testing consultant.</p> <p>The EPA were notified by phone and email on 7th May 2021 advising them of the situation.</p> <p>The Quarter 1 (2021-22) odour monitoring was conducted on 7th & 8th June and 20 & 22 July 2021.</p> | | Complete Jul-21 |
| 6F | The Proponent shall conduct odour validation monitoring on the gluten dryers 3 and 4, following implementation of the mitigation controls required by Condition 3D. Results of the odour validation monitoring shall be included in the independent odour audit required under Condition 5 of Schedule 3. | It is noted that the Quarter 4 monitoring has not been performed during the 2020-2021 audit period, due to limited availability of the emissions testing time, as advised by Manildra to EPA by email on 7 May 2021. | <p>The Quarter 4 monitoring was not completed during the 2020-2021 audit period due to the unavailability of the emissions testing consultant.</p> <p>The EPA were notified by phone and email on 7th May 2021 advising them of the situation.</p> <p>The Quarter 1 (2021-22) odour monitoring was conducted on 7th & 8th June and 20 & 22 July 2021.</p> | | Complete Jul-21 |

Table 8 - 2021 Independent Odour Audit Recommendations

| Audit Reference | Audit Report Recommendations | Shoalhaven Starches (SS) Response | Timeframe | Status |
|-----------------|--|---|-----------|-----------------|
| 20/21-REC-A | Whilst it is acknowledged that the biofilters are achieving a high degree of odour control (i.e. >90 %), the flow-weighted average odour concentration is not achieving the de-facto 500 OU standard. This matter remains an unresolved issue and it is recommended that it is resolved. | Noted. Ongoing observation will continue and remedial action undertaken as required. Odour treatment efficiency of the biofilter is used to assess its operational effectiveness in treating odorous air as opposed to setting a de-facto odour concentration standard. Over the 4 quarters during the reporting year the odour removal efficiency of Biofilter A and Biofilter B is > 90%. | - | Ongoing. |
| 20/21-REC-B | It is noted that the Quarter 4 monitoring has not been performed during the 2020-2021 audit period, due to limited availability of the emissions testing time, as | The Quarter 1 (2021-22) odour monitoring was conducted on 7 th & 8 th June and 20 & 22 July 2021. | - | Complete Jul-21 |

| | | | | |
|-----------------|---|--|----------|------------|
| | advised by Manildra to EPA by email on 7 May 2021. It is recommended that the testing programme is restarted as soon as practicable. | | | |
| 20/21- REC-C | It is recommended that a source apportionment study is completed as a component of the next odour modelling performed, to further understand the relationship between emission rates and the relative contribution of sources to aggregated off-site impacts. | A suitably qualified consultant will be engaged to complete the study. | Sep-2022 | Incomplete |
| 20/21- REC-D | It is recommended that a summary is provided to NSW EPA at the earliest convenience that provides clarification on the respective odour controls implemented across the site. | A summary will be provided to the EPA. | Dec-2021 | Incomplete |

6.6 NOISE

Six monthly noise monitoring has been completed in accordance with the sites EPL and condition 12 of the Consent.

The sites noise limits are shown in Table 9 and the noise monitoring locations shown in Figure 59.

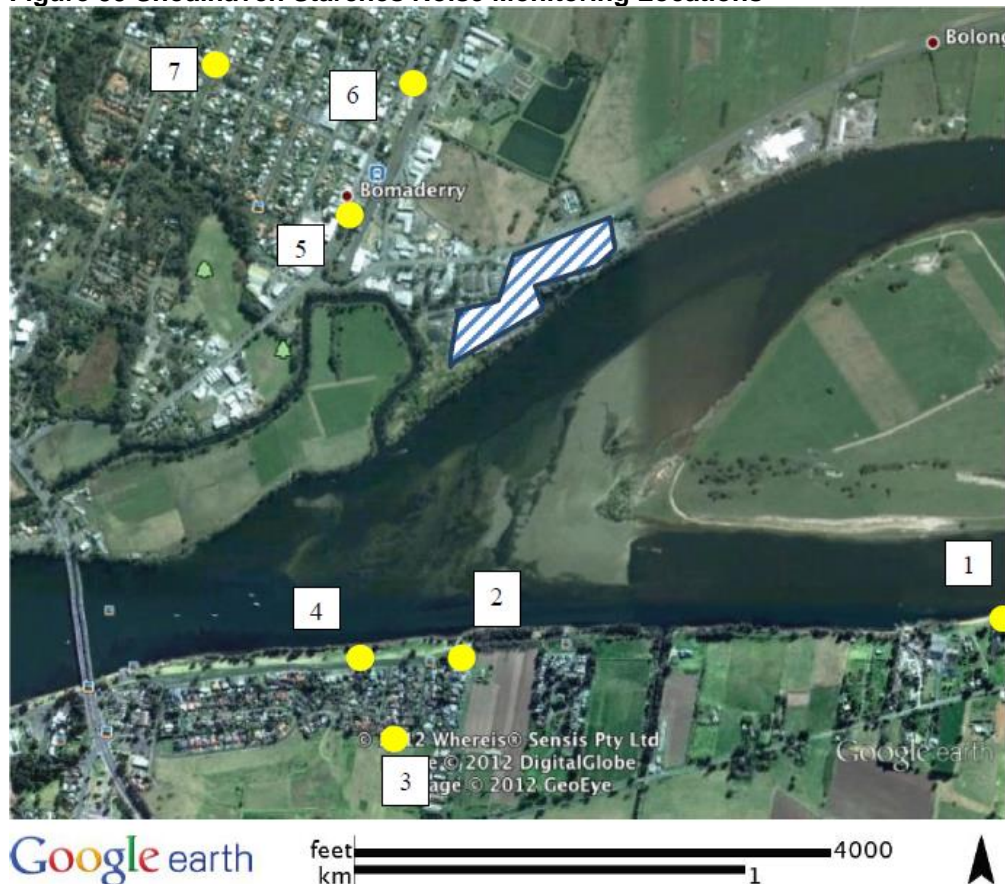
Table 9 Site Noise Limits

| Location | Day/Evening/Night LAeq(15 minute) dB(A) | Night LA1(1 minute) dB(A) |
|--|--|------------------------------|
| 1 - Terara on the south side of the Shoalhaven River | 38 | 48 |
| 2,3 & 4 - DILWra on the south side of the Shoalhaven River | 38 | 48 |
| 5 - Merroo Street, Bomaderry | 42 | 52 |
| 6 - Other residential locations in Bomaderry | 40 | 50 |
| <u>R1 – 390 Bolong Road Bomaderry</u> | <u>40</u> | <u>-</u> |
| <u>R2 – Pig (Burruga) Island</u> | <u>40</u> | <u>-</u> |
| <u>R3 – 39 Hanigans Lane Bomaderry</u> | <u>40</u> | <u>-</u> |
| <u>R4 – 1 Bryant Street Terara</u> | <u>40</u> | <u>-</u> |

Notes:

- Noise limits for Location 6 (other locations in Bomaderry) is depicted in Figure 49 below as Location 7. This is due to two noise monitoring locations (5 and 6) being conducted in Merroo St Bomaderry.
- Noise limits underlined in red are applicable to the use of the Paper Mill site (MOD 14).

Figure 59 Shoalhaven Starches Noise Monitoring Locations



Six monthly noise monitoring results for July 2020 and February 2021 were found to be 100% compliant with the EPL noise limits as shown in Tables 10 and 11 respectively.

Table 10 – July 2020 Noise Monitoring Results

| Location | Date | Measurement Period | Measured levels dB(A) LA _{eq} | 100 percentile limit | Exceedance (yes/no) |
|----------|------------|--------------------|---|----------------------|---------------------|
| 1 | 18/07/2020 | 15 min | <37 | 38 | no |
| 2 | 18/07/2020 | 15 min | <37 | 38 | no |
| 3 | 18/07/2020 | 15 min | <33 | 38 | no |
| 4 | 18/07/2020 | 15 min | <36 | 38 | no |
| 5 | 18/07/2020 | 15 min | <41 | 42 | no |
| 6 | 18/07/2020 | 15 min | <39 | 42 | no |
| 7 | 18/07/2020 | 15 min | <36 | 40 | no |

Table 11 – February 2021 Noise Monitoring Results

| Location | Date | Measurement Period | Measured levels dB(A) LA _{eq} | 100 percentile limit | Exceedance (yes/no) |
|----------|------------|--------------------|---|----------------------|---------------------|
| 1 | 10/02/2021 | 15 min | 34 | 38 | no |
| 2 | 10/02/2021 | 15 min | 36 | 38 | no |
| 3 | 10/02/2021 | 15 min | <33 | 38 | no |
| 4 | 10/02/2021 | 15 min | 33 | 38 | no |
| 5 | 10/02/2021 | 15 min | <41 | 42 | no |
| 6 | 10/02/2021 | 15 min | <37 | 42 | no |
| 7 | 10/02/2021 | 15 min | <37 | 40 | no |

Note the noise limit descriptor has been changed from LA₁₀ to LA_{eq} as per the site's EPL variation on 20-6-18 however the noise limits remain the same.

Historical six-monthly noise monitoring results are shown in Figures 60 and 61.

Figure 60 - Noise Monitoring Results at Nowra (locations 2, 3 & 4) and Terara (location 1)

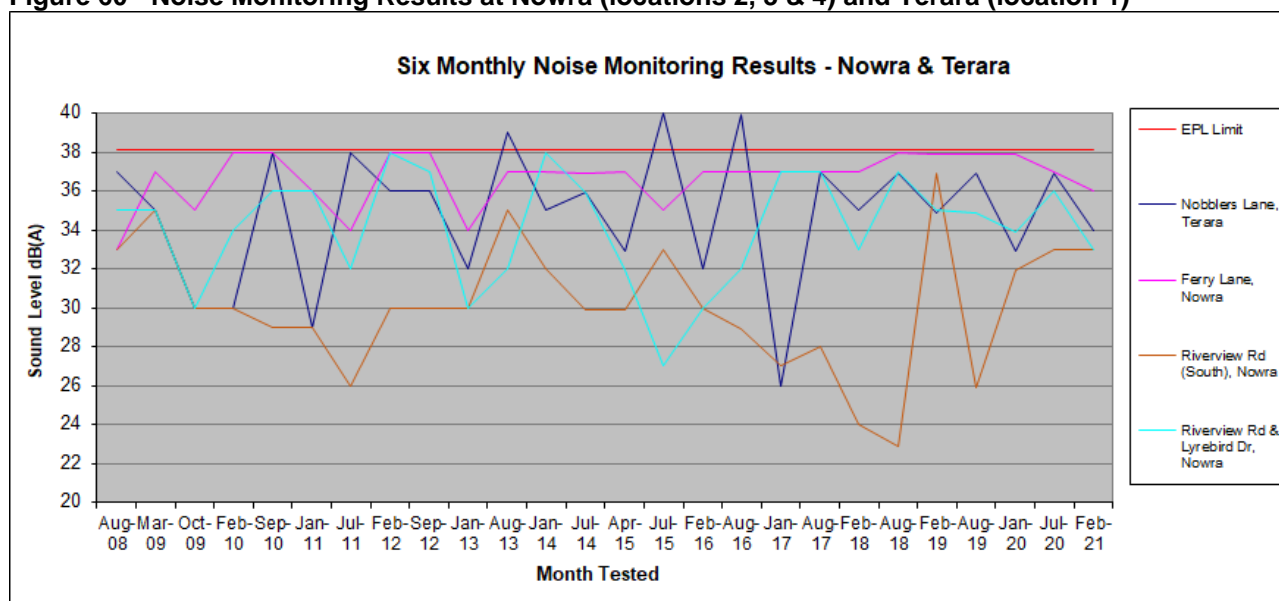
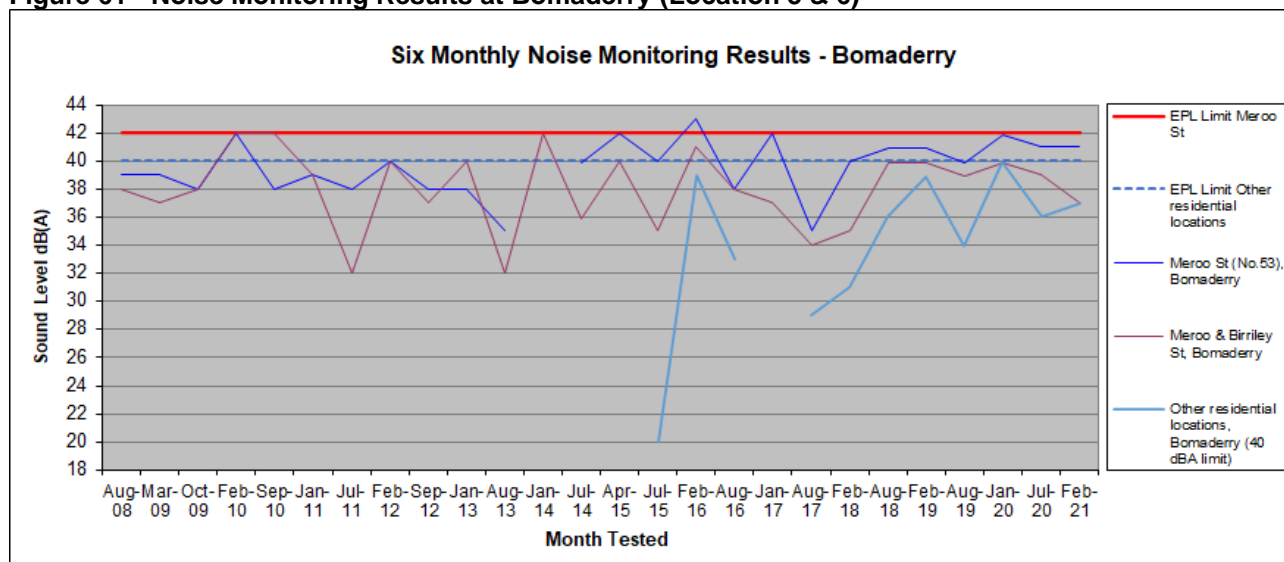


Figure 61 - Noise Monitoring Results at Bomaderry (Location 5 & 6)



N.B. Missing noise results in the above figures are due to unstable/variable weather conditions that would be described as atypical and from the EPA's *Noise Policy for Industry* would require exclusion during any compliance testing.

There is no EPL required for the former Paper Mill site, or any noise testing frequency stipulated in the Consent. Noise verification testing was conducted by The Acoustic Group in February 2019 at the Paper Mill site to determine compliance with the MOD 14 Consent and was found to be compliant with the noise limits which was reported in the 2020 AEMR.

6.6.1 Noise Validation

Noise validation monitoring, as required by condition 14N of the Consent, was conducted during the reporting year for the following project modifications:

- DDG Dryer 4 (MOD 11)
- Boiler 2, 4 & 6 modifications (MOD 13)
- Supagas CO2 Plant (MOD 15)

A copy of the noise validation report for the Supagas CO2 Plant is shown in Appendix A. Final reports for DDG Dryer 4 and Boiler 2, 4 & 6 had not been issued at the time of finalising this report and will be included in next year's AEMR.

The results from the noise validations conclude that the level of noise emission from the operation of the plant and equipment associated with the modification is within the design noise goals at all residential receptor locations. No further recommendations are provided in the reports.

6.7 SOIL MONITORING

Annual soil monitoring has been completed in accordance with the sites EPL (no EPL limits prescribed). Annual testing of the topsoil profile is sampled from representative locations within the approved irrigation area (Point 43) at the sites Environmental Farm.

A summary of the average annual soil results is shown in Table 13.

Table 13 - Annual Soil Monitoring Results

| Parameter | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Units |
|--------------------------------|-------|-------|------|------|------|-------|-------|------|-----------------|
| Cation Exchange Capacity | 40.77 | 39.6 | 38.0 | 41 | 39.3 | 33.7 | 41.3 | 38 | cmol(+)/kg soil |
| Electrical Conductivity | 1.52 | 0.55 | 1.0 | 1.1 | 0.8 | 1.0 | 1.3 | 0.8 | dS/m |
| Exchangeable sodium percentage | 2.9 | 6 | 2.2 | 4.2 | 3.4 | 3.6 | 4.9 | 2.5 | % |
| Nitrate | 69 | 15.88 | 71.9 | 60 | 63.2 | 97.1 | 63.4 | 57.3 | mg/kg |
| Nitrogen (total) | 7.6 | 8217 | 6992 | 7311 | 7668 | 0.6 | 7030 | 6670 | mg/kg |
| Organic Carbon | 91 | 8351 | 4887 | 8705 | 6172 | 5.2 | 7635 | 6034 | mg/kg |
| pH | 7.3 | 8.01 | 7.3 | 7.4 | 7.3 | 7.4 | 7.4 | 7.2 | pH |
| Phosphorus (total) | 2.8 | 446 | 236 | 107 | 241 | 167.4 | 106.8 | 3830 | mg/kg |

General comments on the soil monitoring results are as follows:

- Test results will vary from paddock to paddock due to differences in soil type, irrigation volumes, changes in seasonal conditions, rainfall and land management practices taking place at the paddock scale.
- All soil parameters remain relatively steady compared to previous years.
- Exchangeable sodium percentage (ESP) levels over 5% are classified as being sodic associated with an increased tendency for clay dispersion and loss of permeability. High levels of organic matter and salinity can help counteract the potential of dispersion and maintain soil structural stability. High levels of ESP are a natural feature for low lying areas of the Shoalhaven River.
- Nitrogen and Nitrate levels remain similar to previous years and fluctuate with seasonal conditions and pasture growth and removal.
- Elevated organic carbon levels help maintain soil structural stability.

6.8 LANDSCAPE & VEGETATION MANAGEMENT PLAN

Shoalhaven Starches Landscape & Vegetation Management Plan (LVMP) continued to be implemented during the reporting year. The action plan status of the LVMP is shown in Table 14.

Lantana removal and planting of lomandra species along Abernethy's Creek bank adjacent to the factory south of Bolong Rd towards the outflow to the Shoalhaven River has continued in addition to ongoing weed suppression across the site and along riparian zones.

Additional tree plantings of over 250 casuarina species have been completed on the north side of Bolong Rd running east from Hannigan's Lane for approximately 750 metres to provide landscape screening of Shoalhaven Starches Environmental Farm operations.

Table 14 - LVMP Summary of Actions Update 2021

| ASPECT / FORESHORE | MANAGEMENT ZONE | AREA | ACTIONS | IMPLEMENTATION SCHEDULE | STATUS | REFERENCE |
|--------------------|-----------------|--|--|---|--|-------------------------|
| Phase 1 | | | | | | |
| Landscaping | - | Fermenters | Plant Casuarina Glauca at 1.5m spacing to screen fermenters | | Complete | Appendix A |
| | | New Packaging Plant ¹ | Remove weeds and plant Melaleuca, Eucalyptus and Casuarina species between packaging plant and Bolong Rd. | On completion of construction works | Incomplete (Packing Plant Not Constructed) | Appendix C |
| Shoalhaven River | Zone A | Emergency Revetment | Removal immature coral trees from revetment and adjacent area | | Complete | Figure 4 |
| | | | Complete revegetation of revetment IAW landscaping plan (Appendix B) | | | |
| | | | Plant fast growing Casuarina glauca at rear of revetment | On completion of construction works at flour mill | Complete | |
| | | | Plant Eucalyptus and Melaleuca canopy species, and Lomandra as a groundcover at rear of revetment | | | |
| | | Confluence Shoalhaven River and Bomaderry Creek to 10m behind the bank | Slash and spray Kikuyu grass | | Complete | Figure 4 |
| | | | Eradicate African Boxthorn and remove Lantana | | | |
| | | | Plant out waterline with Grey Mangroves and Juncas Krausii | | | |
| | | | Plant fast growing native species at the top of the bank and canopy species at the rear of the bank, and fill in with groundcovers | | | |
| Bomaderry Creek | Zone A | Confluence with Shoalhaven River to 250m upstream | Slash and spray Kikuyu grass | | Complete | Figure 5 |
| | | | Plant top of bank with canopy species and midstorey species | | | |
| | | | Fill in with groundcovers | | | |
| Abernethy's Creek | Zone A | Western bank, north of Bolong Rd ¹ | Slash and spray Kikuyu grass | To be completed when once Packing Plant is constructed. | Incomplete (Packing Plant Not Constructed) | Figure 6 and Appendix C |
| | | | Plant full list of riparian species at rear of bank | | | |
| | | | Plant top of bank with Melaleuca erificifolia and other listed species | | | |
| | | | Fill in the Lomandra and Dianella spp. | | | |
| Broughton Creek | Zone A | Stock flood refuge area to 10m behind bank | Slash and spray Kikuyu grass | | Complete | Figure 7 |
| | | | Plant canopy and midstorey species at rear of bank | | | |
| | | | Plant scattered Casuarina glauca and Myoporum acuminatum on bank (but not the waterline) | | | |

| | | | | | | |
|---|-----------------|---|---|---|--|----------|
| | | | Erect temporary barriers when area is used as flood refuge | | | |
| | | Embankments with no canopy or midstorey | Slash and spray Kikuyu grass | | Complete | |
| | | | Plant canopy and midstorey species at rear of bank | | | |
| | | | Plant scattered Casuarina glauca and Myoporum acuminatum on bank (but not the waterline) | | | |
| Phase 2 | | | | | | |
| Shoalhaven River | Zone B | Dense area of Acacia mearnsii | Clear 10m x 10m plots and replant with other canopy species at 2m spacing | | Complete | Figure 4 |
| | | | Remove acacia seedlings and monitor success of plantings | | | |
| | | Grassy area behind crib shed | Whipper-snip and spray Kikuyu grass | Commence by June 2022 | Incomplete | |
| | | | Plant toe with water line species | | | |
| | | | Plant canopy and midstorey species at top of bank | | | |
| | | | Fill in with groundcovers | | | |
| | Zone C | Eastern boundary to revetment | Spray lantana | | Complete | |
| | | | Plant out with groundcover species (Lomandra) | | | |
| | | West of Abernethy's | Remove lantana using mosaic approach | | Complete | |
| | | | Suppress African Boxthorn and Blackberry | | | |
| | Unzoned | Between crib shed and revetment | Geotechnical assessment of bank stability to assess potential of removing Coral trees from bank | Coral trees are to remain | Complete | |
| | Bomaderry Creek | Zone B | Upstream and downstream embankment | Remove Lantana using mosaic approach | | |
| Eradicate African boxthorn and Blackberry | | | | | | |
| Frill privet | | | | | | |
| Abernethy's Creek | Zone B | Eastern bank, north of Bolong Rd ¹ | Remove Lantana using mosaic approach | To be completed when once Packing Plant is constructed. | Incomplete (Packing Plant Not Constructed) | Figure 6 |
| | | | Assist natural regeneration, or supplementary plantings | | | |
| | | Both banks, south of Bolong Rd to electrical easement | Spray weeds on embankments | Estimate 2 - 3 years to complete | In progress | |
| | | | Dense plantings of groundcover species | | | |
| | | Both banks, south of electrical | Suppress Privet and spray other weeds | | In progress | |
| | | | Plant eastern bank with selection of midstorey species | | | |

| | | easement to outflow ² | | | | |
|--|---------------------|---|--|-------------------------------------|--|-----------------------|
| Broughton Creek | Zone A | Stock flood refuge area to 10m behind bank | Plant out waterline with suitable mangrove species | | Complete | Figure 7 |
| | | Embankments with no canopy or midstorey | Plant out waterline with suitable mangrove species | | Complete | |
| | Zone B | Transition areas | Slash and spray and Kikuyu grass | | Complete | |
| | | | Plant suitable upper bank canopy and midstorey species | | | |
| Phase 3 Additional Landscaping Works 2011 - 2019 | | | | | | |
| ASPECT / FORESHORE | PA 06_0228 Approval | AREA | ACTIONS | IMPLEMENTATION SCHEDULE | STATUS | REFERENCE |
| Landscaping | MOD 2 | Bolong Rd - DME Storage / Ethanol Loadout | Screen plantings as per Landscape Plan Appendix 2B (MP06_0228 MOD 2) | | Complete | Appendix A |
| | | Bolong Rd - Fermenters / Cooling Towers | Screen plantings as per Landscape Plan Appendix 2B (MP06_0228 MOD 2) | | Complete | |
| | | Bolong Rd - Ethanol Distillery | Screen plantings as per Landscape Plan Appendix 2B (MP06_0228 MOD 2) | | Complete | |
| | | Bolong Rd - Fermenters to Mid-section of Open Paddock | Screen plantings as per Landscape Plan Appendix 2B (MP06_0228 MOD 2) | | Complete | |
| Landscaping | MOD 3 | Bolong Rd - Open Paddock to ex. Dairy Farmers site | Screen plantings as per Landscape Plan Appendix 2C (MP06_0228 MOD 3) | | Complete | Appendix B |
| Landscaping | MOD 9 | Packing Plant ₁ | Screen plantings as per Landscape Plan MN262-002 | On completion of construction works | Incomplete (Packing Plant Not Constructed) | Appendix C & Figure 6 |
| Landscaping | MOD 11 | Coal & Woodchip | Screen plantings as per Landscape Plan MN6638-102 | Complete by December 2019 | Complete | Appendix D |

| | | | | | | |
|-------------|--------|---|--|---|---|------------|
| | | Storage at Farm | | | | |
| Landscaping | MOD 14 | Former Paper Mill Site | Screen plantings as per Landscape Plan MN6416-001 | Complete by end of June 2018 | Complete | Appendix E |
| Landscaping | MOD 15 | SupaGas Plant at ex. Dairy Farmers site | Screen plantings in front of CO2 Plant | On completion of CO2 Plant | Complete August 2019 | Appendix F |
| Landscaping | MOD 16 | BOC Gas site | Provide screening landscaping to the south of the proposed new indoor electrical sub-station along the frontage of Bolong Road. Refer to Plan MN6531-010 | On completion of Indoor Electrical Substation | Incomplete (Substation not constructed) | Appendix G |

Notes:

- 1. Phase 1 & Phase 2 landscape screening & riparian plantings along Abernethy's Creek north of Bolong Rd has not been completed due to the new Packing Plant (MOD 9) project being placed on hold (any plantings will likely be impacted by construction works)*
- 2. Some Phase 2 riparian plantings along Abernethy's Creek south of Bolong Rd towards the Shoalhaven River have been completed; this area will be given priority in the next 3 years.*

7. COMMUNITY

7.1 COMPLAINTS

The annual reporting requirements under schedule 4, condition 3d) are:

d) include a comprehensive review of the monitoring results and complaints records of the Development over the previous year ...

A total of 5 environmental complaints were received in 2021, compared to 8 received in 2020. Total complaints received by year and by type are shown in Figures 62 and 63 respectively.

Table 15 details the types of complaints received during the year and the actions taken to address the complaint.

Table 15 - Summary of Complaints 2021

| Date and Time | Location | Issue | Action Taken |
|---------------------|-------------|---------------------|--|
| 16-7-2020 15:01 | North Nowra | Odour | Odour complaint received via EPA, described as an electrical, acrid smell, similar to a combination of yeast and smoke. Investigation did not reveal any likely causes. EPA advised of the findings. No further action taken. |
| 16-10-2020 14:31 | Bomaderry | Odour / Air Quality | Odour complaint received via EPA of offensive odour coming from SS site. Investigation did not reveal any likely causes. The complainant was contacted to discuss the complaint. EPA advised of the findings. No further action taken. |
| 22-10-2020 14:14 | Bomaderry | Odour | Odour complaint received of odour that comes and goes and is more pronounced during the mornings. Investigation did not reveal any likely causes. Details of the complaint were discussed with the complainant. No further action taken. |
| 26-1-2021 14:35 | Bomaderry | Rail Crossing | Complaint received relating to traffic delays due to train crossing at Bolong Rd during a public holiday. Response sent back to complainant. No further action taken. |
| 22-3-2021 16:00 | Bomaderry | Odour | Odour complaint received of a fermenter/yeasty odour. Investigation did not reveal any likely causes. Details were discussed with the complainant. No further action taken. |

Note: complaints received are aligned with the EPL reporting year from 1st May 2020 to 30th April 2021.

Figure 62 – Total Complaints received by Year

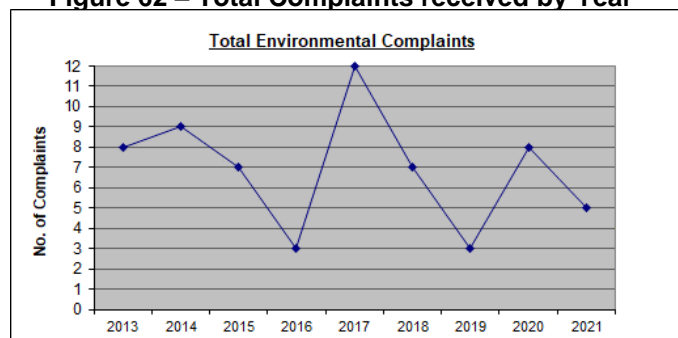
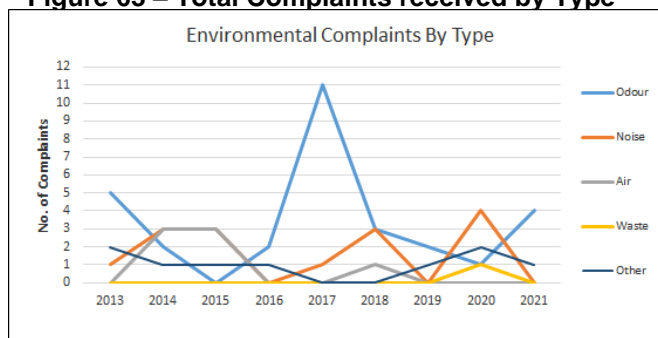


Figure 63 – Total Complaints received by Type



7.2 COMMUNITY RELATIONS

During the reporting period Shoalhaven Starches contributed significantly to the local community. Table 16 lists the local community organisations that received contributions from Shoalhaven Starches in the 2021 reporting year.

Table 16 - Community Funding Recipients

| ORGANISATION / INDIVIDUAL / CHARITY | REMARKS |
|--|--|
| PCYC Breakfast Club: <ul style="list-style-type: none"> - Bomaderry High School - Bomaderry Public School - North Nowra Public - Nowra High School - Nowra Public School - Nowra East Public School - Shoalhaven High School | Ongoing sponsorship through cash donation to the School Breakfast Club |
| Nowra Athletics Club | Donation |
| Shoalhaven Emergency Service Awards | Sponsorship |
| Empower Me Creative Care Packages | Donation |
| Bomaderry High School | Donation for new school mini vans |
| Mayors Giving Box Campaign | Donation which is distributed to local charities in the Shoalhaven |
| Shoalhaven Goes Gold - Shoalhaven Cancer Care Centre and The Kids Cancer | Sponsorship |

Due to the COVID-19 pandemic, there was limited opportunity participate in direct community engagement activities during the year.

Two Shoalhaven Starches Community Newsletters, October 2020 (edition 6) and March 2021 (edition 7), were prepared and distributed by mail to approximately 30,000 homes in the Bomaderry/Nowra region. The newsletter outlines the activities and projects ongoing at the Shoalhaven Starches site and has also been widely distributed electronically, and is listed online through our website and social media channels. A copy of the newsletters can be found at: <https://www.manildra.com.au/shoalhaven-starches-newsletter>.

Manildra Group's The Cultivator Magazine Spring 2020 edition (September 2020) and Autumn 2021 edition (May 2021) were released in hard copy and electronically. The electronic version of the magazine is sent to over 5,000 stakeholders including joint ventures, producers, customers, staff, industry bodies and subscribers. A copy of the magazine can be found at: <https://www.manildra.com.au/the-cultivator/>

8. INDEPENDENT ENVIRONMENTAL AUDIT

An independent environmental audit was conducted in the 2019 reporting year (April 2019) against the sites consolidated Development Consent 06_0228. Of the 167 development consent conditions audited, 15 non-compliances were identified which represent 91% compliance with Consent conditions during the 3-year audit period. A summary of the audit findings is shown in Table 17 below.

Table 17 - Summary of 2019 Audit Findings

| Schedule | Compliant | Non-compliant | Not triggered | Total |
|--|------------|---------------|---------------|------------|
| 2 - Administrative Conditions | 16 | 4 | 8 | 28 |
| 3 - Specific Environmental Conditions | 92 | 9 | 28 | 129 |
| 4 - Environmental Management, Reporting & Auditing | 8 | 2 | 0 | 10 |
| Total | 116 | 15 | 36 | 167 |

Table 18 provides the current status of the remaining non-compliances raised during the 2019 audit. Of the 15 non-compliances raised, 2 remain in progress.

The next independent environmental audit is due in April 2022.

Table 18 - Action Plan to address non-compliances received in the 2019 Independent Environmental Audit (update 2021)

| NC No. | Sched | Cond | Requirement | Finding | Recommendation | Shoalhaven Starches Response | Timeframe | Status |
|--------|-------|------|--|---|---|--|-----------|---|
| NC1 | 2 | 2 | The Proponent shall carry out the project generally in accordance with the: a) EA and associated site plans (see Appendix 2); b) amended modification proposal MP 06_0228 MOD 1 et al. | The Proponent was issued a PIN for non-compliance with this condition. Notwithstanding additional non-compliances found during the audit for other specific conditions, the auditor considers the Proponent to have carried out the project generally in accordance with the requirements listed. | Consider developing a document that briefly describes each MOD and a summary of the approved works for distribution to key / relevant staff to minimise the risk of unapproved works being carried out on site. | Application submitted by SS to DPIE on 1 st November 2016 to 'regularise' the storage of coal and woodchip stockpiles at the SS factory site and Environmental Farm. DPIE approval received on 1 st September 2017 (MOD 11) Each project modification approval is distributed to the relevant staff. | | Complete. |
| NC2 | 2 | 8B | Within three (3) months of the date of approval of MP 06_0228 MOD 5, the Proponent shall: a) obtain and provide copies to the Secretary of all necessary building certificate(s) from Council for any structures proposed as part of MP 06_0228 MOD 5 that have been constructed or partially constructed prior to the approval of MP 06_0228 MOD 5; and b) ensure that all new structures, and any alterations or additions to existing structures, are constructed in accordance with the relevant requirements of the Building Code of Australia. | Building certificate not yet obtained | Ensure all approval requirements are captured, tracked and assigned a responsibility in the compliance management system | Council building inspection on 9-10-18 and subsequent Council email dated 22-10-18 identifying two issues to be addressed. Additional works by SS to address issues completed in April 2019. Re-inspection by PCA due 8-7-2019. Council to approve once PCA re-issues building compliance certificate. The issue is being tracked in the Environmental Management System (EMS) | Sep-19 | Complete. Building Certificate BC16/1003 issued 29-8-19 |
| NC3 | 2 | 8C | By the end of July 2018, the Proponent shall provide copies | Building certificate applications were | Ensure all approval requirements are | SS to follow-up with Council on building inspections. | Dec-21 | In progress. |

| NC No. | Sched | Cond | Requirement | Finding | Recommendation | Shoalhaven Starches Response | Timeframe | Status |
|--------|-------|------|---|---|---|--|-----------|---|
| | | | of building certificates, where required, to demonstrate compliance with the BCA for the alterations to structures and additional structures listed in Table A. If an item in Table A does not require a building certificate in accordance with the BCA, the Proponent shall provide written evidence, to the satisfaction of the Secretary. | submitted in June 2018, however inspections and certificates have not been issued. | captured, tracked and assigned a responsibility in the compliance management system | The issue is being tracked in the Environmental Management System (EMS) | | |
| NC4 | 2 | 11 | The Proponent shall ensure that all plant and equipment used on the site is: a) maintained in a proper and efficient condition; and b) operated in a proper and efficient manner. | The requirements of the condition are generally being met; however, the Proponent was issued a fine by the NSW EPA during the audit period that resulted from activities not being carried out in a competent manner. | Appropriate corrective actions (including responses to the incident accepted by the EPA) have already been put in place. No further recommendation is considered necessary. | No further action required. | | Complete |
| NC5 | 3 | 9 | The Proponent shall ensure the emissions from boiler stacks 2, 4 and combined boiler stack 5 and 6 comply with the limits in the EPL. | One exceedance of the EPL opacity limit was recorded during the audit period. | Appropriate corrective actions (including preventative maintenance) have already been put in place. No further recommendation is considered necessary. | No further action required. | | Complete |
| NC6 | 3 | 12 | The Proponent shall ensure that noise from the project does not exceed the noise limits in Table 2. | On one occasion the noise for the plant marginally exceeded the current EPL limit. | Installed new silencer and low noise fan on Gluten Dryer No.2. No further recommendation is considered necessary. | No further action required. | | Complete |
| NC7 | 3 | 17 | The Proponent shall store all chemicals, fuels and oils used on site in appropriately bunded areas, with impervious flooring and sufficient capacity to | The Proponent has not yet completed a review of the hazardous substance storage depots as recommended in the | The auditor notes that a consultant has been engaged to undertake the review of the hazardous substance storage depots | The review has commenced by a Dangerous Goods consultant. Checklists have been prepared detailing requirements of the | Dec-19 | Complete. Report & recommendations issued Mar-20. |

| NC No. | Sched | Cond | Requirement | Finding | Recommendation | Shoalhaven Starches Response | Timeframe | Status |
|--------|-------|------|--|---|--|---|-----------|---|
| | | | contain 110% of the largest container stored within the bund. These bunds shall be designed and installed in accordance with the requirements of all relevant Australian Standards, and/or DECC's Storing and Handling Liquids: Environmental Protection manual. | 2016 audit. | and it is scheduled to be completed by December 2019. No further recommendation is considered necessary. | relevant Australian Standards. | | |
| NC8 | 3 | 22D | Stormwater controls were not implemented within 3 months of the date of the approval. | Stormwater controls were not implemented within 3 months of the date of the approval. | Ensure all approval requirements are captured, tracked and assigned a responsibility in the compliance management system | Stormwater controls were completed in August 2018. Compliance conditions are tracked in the 'Project Status' spreadsheet for each modification. | | Complete |
| NC9 | 3 | 22E | Prior to the commencement of construction of MOD 12, the Proponent shall re-instate the table drain on the southern side of Bolong Road to the east of the distillery access. The works shall be completed to the satisfaction of Council. | MOD 12 construction commenced prior to re-instating the table drain. | Ensure all approval requirements are captured, tracked and assigned a responsibility in the compliance management system | Construction of the table drain has commenced as part of the road works required under condition 27A. Estimated date of completion is the end of September 2019. | Sep-19 | Complete Oct-19. Council approval 28-11-19. WAE drawing submitted to Council 19-12-19. |
| NC10 | 3 | 26 | The Proponent shall prepare a Flood Mitigation and Management Plan for the project to the satisfaction of the Secretary. This plan must: a) be prepared in consultation with Council and be submitted to the Secretary for approval within 12 months of this approval; b) include: baseline data on local and regional flooding and the | The flood marker required by the Plan had not been installed. | The auditor notes that the Proponent receives an early flood warning from the SES when the level in the Shoalhaven River near the Nowra Bridge reaches a rising level of 1.3m AHD and responsibility for receiving SES and Flood Watch warnings has been assigned to the WHS Manager. Accordingly, | The flood marker has been ordered and will be installed as per the flood plan. | Sep-19 | Complete. Flood marker installed Oct-19. |

| NC No. | Sched | Cond | Requirement | Finding | Recommendation | Shoalhaven Starches Response | Timeframe | Status |
|--------|-------|------|---|---|---|---|-----------|--|
| | | | predicted flood impacts of the project; details of all reasonable and feasible measures that would be implemented to minimise on-site and off-site flooding; procedures for the monitoring, assessment and compensation of any flood impacts caused by the project; a program for contribution toward the ALERT Flood Warning System operated by Council and the Bureau of Meteorology; and procedures for collaboration and coordination with the paper mill with respect to flood emergency planning. | | the auditor recommends that the Proponent either installs the marker, or reconsiders, in consultation with Council, whether this management measure is necessary as part of the overall flood warning system. | | | |
| NC11 | 3 | 27A | Prior to the commencement of operation of any part of MOD 12, or no later than 31 March 2018, the Proponent shall complete the road and parking works in accordance with the plans approved by Council, as described in Condition 27. The Proponent shall submit works-as-executed plans to Council one month after the completion of the works, or no later than 30 April 2018. Note: The works-as-executed plans shall show the completed works compared to the approved plans. | The works have not been carried out in the agreed time. | Ensure all approval requirements are captured, tracked and assigned a responsibility in the compliance management system | Works are underway. SS to prepare updated status of road works including estimated dates of completion and submit to the DPIE. | Sep-19 | Complete. Works complete and final WAE plans submitted to Council Feb-20. Additional line marking as requested by Council complete Aug-20. |
| NC12 | 3 | 27B | No later than 31 May 2018, the Proponent shall provide written | The works have not been carried out in the agreed | Ensure all approval requirements are | To be completed once works under condition 27A have been | Oct-19 | In progress. |

| NC No. | Sched | Cond | Requirement | Finding | Recommendation | Shoalhaven Starches Response | Timeframe | Status |
|--------|-------|------|---|---|--|--|-----------|---|
| | | | evidence to the Secretary of Council's acceptance of the works-as-executed plans and Council's acceptance of care and maintenance responsibilities for the section of Bolong Road from Railway Street to the Dairy Farmers site access. | time. | captured, tracked and assigned a responsibility in the compliance management system | completed. | | The last of the works have been completed and the WAE plans were submitted to Council on 26-5-2021. Council to issue acceptance/approvals. |
| NC13 | 3 | 43 | The Proponent shall prepare and implement a Vegetation Management Plan for the project to the satisfaction of the Secretary. This plan must: a) be prepared in consultation with DWE and Council and be submitted to the Secretary for approval within 6 months of this approval; b) be prepared in accordance with DWE's Guidelines for Controlled Activities – Vegetation Management Plans; and c) include: • a Landscape Plan for the project, which identifies screen plantings to minimise visual impacts; • detailed plans and procedures to: - restore and maintain the waterways and riparian zones of Shoalhaven River, Bomaderry Creek, Abernethy's Creek and Broughton Creek on the site; - manage weeds in the vicinity of the riparian zones; | The plan was not submitted within the required timeframe. | Ensure all approval requirements are captured, tracked and assigned a responsibility in the compliance management system | The updated plan was submitted to the DPIE on 1 st May 2019 and approved by DPIE on 15 th May 2019. The plan is tracked in the EMS. | | Complete |

| NC No. | Sched | Cond | Requirement | Finding | Recommendation | Shoalhaven Starches Response | Timeframe | Status |
|--------|-------|------|---|---|--|--|-----------|-----------------|
| | | | <ul style="list-style-type: none"> - integrate works into the proposed landscaping for the rest of the site; - manage impacts on fauna; and - monitor the performance of the proposed restoration works. | | | | | |
| NC14 | 4 | 2A | The Proponent shall notify the Secretary and any other relevant agencies of any incident or potential incident with actual or potential significant off-site impacts on people or the biophysical environment associated with the facility immediately after the Proponent becomes aware of the incident. | On one occasion an incident was not reported to Planning | Ensure all notification requirements are assigned a responsibility and appropriate systems are in place to trigger them when an incident occurs. | <p>Incident (on 14-12-2017) reported to the EPA was not submitted to the Secretary. This was self-reported by SS as a non-compliance in the Annual Report 2018 and a subsequent warning letter issued by the DPIE on 29-11-18.</p> <p>No further action taken.</p> | | Complete |
| NC15 | 4 | 2B | Within 7 days of the date of this incident, the Proponent shall provide the Secretary and any relevant agencies with a detailed report on the incident. | On one occasion an incident was not reported to Planning within 7 days. | Ensure all notification requirements are assigned a responsibility and appropriate systems are in place to trigger them when an incident occurs. | As above. | | Complete |

9. INCIDENTS AND NON-COMPLIANCES

9.1 NON-COMPLIANCES

During the reporting period, 2 non-compliances were identified against the conditions of the Consent. Details of the non-compliances are as follows:

9.1.1 Quarterly Odour & Air Quality Monitoring (Sch. 3, Cond. 6A-6D & 9)

- Quarter 4 odour and boiler emission monitoring was not performed in accordance with the Environment Protection Licence (EPL) requirements.
- The monitoring was not completed due to the unavailability of the air quality testing consultant.
- The EPA were notified by phone and follow-up email sent on 7-5-2021.
- Quarter 1 air monitoring for the 2021-22 reporting year was completed in June & July 2021.
- No further action taken.

9.1.2 Emission Limits – Boiler Stacks (Sch. 3, Cond. 9)

- Boiler 4 stack (Point 42) exceeded the total solid particles (TSP) EPL limit during Quarter 1 testing.
- Details of the non-compliances were reported in Shoalhaven Starches EPL 2020-21 Annual Return to the NSW EPA.
- The cause of the non-compliance was due to holes in the boiler baghouse filter socks.
- The baghouse filter socks were replaced and follow-up testing during Quarter 2 show TSP results were found to be in compliance with the EPL limits (refer to section 6.4.3)

N.B. The above non-compliances exclude the non-compliances raised in the 2019 Independent Environmental Audit which are discussed in Table 18.

9.2 INCIDENTS

There were two reportable incidents which occurred during the reporting period. The details are as follows:

Incident 25-9-2020:

- On Friday 25th September 2020 at approximately 6:00 am an overflow of process liquid from a Fermenter resulted in a small amount of process liquid depositing onto the Bolong Rd footpath and kerbside guttering.
- The incident was caused by excessive foaming of the Fermenter, most likely caused by higher levels of soluble protein in the process liquid.
- The incident was immediately reported to the EPA, DPIE and other relevant authorities and a detailed incident report submitted within 7 days.
- Measures have been taken to prevent or mitigate against a recurrence of such an event including a reduction in the fill level setpoint of the fermenters and increased anti-foam dosage.
- No process liquid entered the waterway and there was no evidence of environmental harm caused by the incident.
- No further action taken.

Incident 7-12-2020:

- On Monday 7th December 2020 at approximately 6:00 am process liquid containing starch was observed escaping the premises resulting in a discharge of process liquid containing starch to Abernathy's Creek.
- The incident was initially caused by the failure of a transfer pipeline (a cracked weld joint) connected to the starch filtrate tank (a tank of process liquid containing starch).

The process liquid escaping from the pipeline failure was substantially contained within the tank bund wall and pumped back to the factory, however a small amount of process liquid from the pipeline failure sprayed out over the tank bund wall flowing into a secondary containment bund (which contains a sump pump) adjacent to Abernathy's Creek. The sump pump in this secondary

containment bund began to automatically transfer the process liquid back to the factory however a small amount of process liquid escaped from this sump into Abernathy's Creek.

- The incident was immediately reported to the EPA, DPIE and other relevant authorities and a detailed incident report submitted within 7 days.
- Measures have been taken to prevent or mitigate against a recurrence of such an event including pipework repairs and regular inspections, increasing the bund wall height around the starch filtrate tank and diverting the tank bund contents overflow to the existing site drainage system to contain any potential spills in this area.
- There was no evidence of harm or potential harm to the environment caused by the event.
- An Official Caution letter dated 7-5-2021 was issued by the EPA to Shoalhaven Starches in relation to this incident.

9.3 LEGAL COMPLIANCE

There have been no penalty notices or legal proceedings received by the company from the NSW EPA or DPIE during the reporting period.

One Official Caution letter dated 7-5-2021 was issued by the EPA to Shoalhaven Starches in relation to the discharge incident which occurred on the 7-12-2020 (refer to section 9.2)

10. ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following activities planned for the next reporting period include:

- Construction and commissioning of projects associated with the MOD 16 Consent which includes:
 - Specialty Products Building (SPB) and associated equipment for production of specialised products such as cationic starch.
 - Product Dryer No.9, to be installed within the SPB, to initially dry gluten, and which may be converted to a starch dryer once Gluten Dryer No.8 is installed.
 - Commencement of construction of Gluten Dryer 8.
- Projects associated with the MOD 18 Consent that are anticipated to be completed in the next reporting year which includes:
 - Gas-fired Boiler 8 to ensure a stable supply of steam to the distillery necessary to enable production of the higher grade hand sanitiser grade ethanol.
 - Ethanol Storage Tanks to store higher grades of ethanol.
- Construction of an additional beverage grade ethanol distillery and associated beverage grade ethanol storage tanks approved under MOD 19.
- Preparation and submission of modification (MOD 21) application involving modifications to the approved Packing Plant and other works which includes:
 - amendments to the approved Packing Plant on the northern side of Bolong Road to accommodate the different packaging requirements for this increased range of specialised products.
 - The installation of a waste water buffer tank adjacent to the existing waste water tank located within the vicinity of the water treatment plant and waste water storage ponds located on the Environmental Farm;
 - The installation of an Ethanol Nitrogen Generator and storage vessels within the Shoalhaven Starches factory site;
 - The installation of an Indirect Cooking plant within the Shoalhaven Starches factory site
 - The installation of an additional two fermentation tanks within the eastern part of the site.

- Commencement of civil works and stage 1 building works for the approved Packing Plant on the northern side of Bolong Rd.
- Preparation and submission of modification (MOD 23) application involving modifications to the approved Gas Fired Cogeneration Plant which will include:
 - New gas fired cogeneration plant, consisting of two natural gas turbines that will generate an anticipated power output each of 30 MW, providing a total power to the site of 60 MW.
 - The waste heat from each of the gas turbine exhausts will be used to generate 11 barg steam in two 110 t/hr heat recovery steam boilers. The boilers will be fired with natural gas and will be able to operate at full output when the turbine is offline for maintenance.
 - The proposed new gas fired co-generation plant will replace the gas fired co-generation plant approved under the original Project Approval as well as the coal fired co-generation plant approved under Mod 16.
- Preparation and submission of modification (MOD 25) application which will include:
 - construction of an additional Gluten Dryer building (GD 10) immediately to the west of the approved Specialty Product Building that is presently under construction. An additional Starch Dryer building (SD 6) is also proposed to be erected adjacent and to the north of the to the proposed Gluten Dryer building.
 - The additional dryer capacity associated with this Modification Application will enable the overall amount of flour that is able to be processed at the site to be increased from the current approved 25, 400 tonnes per week up to 33, 000 tonnes per week.
 - The increase in flour processing at the site, and the resulting increase in starch produced, will have the potential (if the excess starch is unable to be dried and sold) to increase ethanol production from the current approved 300 ML per annum to 450 ML per annum. It is envisaged that the existing distillery will have sufficient capacity to accommodate this increase in production and no changes are proposed to the ethanol distillery.
 - installation of an additional Mechanical Vapour Recompression (MVR) Evaporator (and sub-station) to be located adjacent to the existing MVR Evaporators to the east of the factory.

 These Evaporators reduce liquid in the feed to the Ethanol Plant thereby reducing the amount of liquid that is required to be heated to evaporate the ethanol in the distillery. This provides energy and water efficiency benefits for the Ethanol Plant operations as well as reducing the amount of waste waters that are required to be treated and managed. The additional MVR Evaporator is required to accommodate the anticipated increase in ethanol production arising for this proposal.
- Preparation and submission of modification (MOD 26) application for the proposed extension to the DDG Pellet Mill to enable an increase in production of DDG Pellets. The modification will include the following:
 - Extension to existing DDG Pellet Mill building including additional exhaust stack.
 - Installation of an additional third DDG Pellet Press line, DDG packer line and packer silos which would be housed within an extension to the existing Pellet Mill building.
 - Additional DDG Pellet storage silos.

11. APPENDIX A – NOISE VALIDATION REPORT SUPAGAS CO2 PLANT MOD 15



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Supagas Pty Ltd
C/- Shoalhaven Starches Pty Ltd
PO Box 123
Nowra NSW 2541

Reference: 1708012e-l2.docx

Attention: Mr John Studdert & Mr Ben Vocale
Telephone: 02 4423 8200
Email:

20 April, 2021

Dear John,

SHOALHAVEN STARCHES - PROPOSED MODIFICATION TO ETHANOL DISTILLERY NOISE VALIDATION REPORT

Shoalhaven Starches Pty Ltd and Supagas Pty Ltd has constructed a Carbon Dioxide (CO₂) plant on land adjacent to the former Dairy Farmers Site at 220 Bolong Road, Bomaderry.

The CO₂ plant takes carbon dioxide from the Shoalhaven Starches Site and then processes this to food grade quality for the food and beverage market.

At the time of the initial application, Harwood Acoustics prepared an Environmental Noise Impact Assessment report, reference 1708012E-R, dated 16/01/2018 (the NIA). Subsequent to this a Noise Verification Report was prepared, reference 1708012E-L dated February 2019.

It is a condition of the modified approval, Condition 14N, that a Noise Validation assessment is undertaken once the plant is operational.

This report provides that the Noise Validation Assessment and I am pleased to offer the following comments.



Environmental
Acoustics

Occupational
Acoustics

Architectural
Acoustics

Transportation
Acoustics



1.0 MODIFIED APPROVAL CONDITIONS

The modification to the minister's approval for application MP 06_0228 MOD 12 states:-

"Design Noise Validation

14N. Within 12 months of the operation of each modification described in Schedule 2, Condition 2, the Applicant shall undertake noise validation monitoring to confirm noise emission from the modified site complies with the noise limits in Condition 12. The results of the noise validation monitoring shall be included in the Annual Report required by schedule 4, Condition 3. If the results of the monitoring show any exceedance of the noise limits in Condition 12, the Proponent shall investigate and implement all reasonable and feasible noise mitigation measures to achieve compliance."

2.0 SITE DESCRIPTION AND RECEPTOR LOCATIONS

The former Dairy Farmers site, now owned by Shoalhaven Starches is located at 220 Bolong Road, Bomaderry, NSW on the southern side of Bolong Road across the Shoalhaven River from Terara and Nowra.

The area surrounding the Site is a mix of industrial and residential premises with vacant land, owned by the Manildra Group, to the north.

The nearest residential receptor locations to the proposal are as follows:-

- Location 1 – Nobblers Lane, Terara approximately 1400 metres to the south east,
- Location 2 – Riverview Road, Nowra approximately 1600 metres to the south west,
- Location 3 – Meroo Street, Bomaderry approximately 1100 metres to the north west,
- Location 4 – Coomea Street, Bomaderry approximately 1080 metres to the north west,

Locations are listed in keeping with the order shown in Environment Protection Licence number 883, as detailed in Section 3.1 of this report.

The Supagas site, surrounding area and receptor locations are shown in Figure 1.



Figure 1. Location Plan – Shoalhaven Starches, Bomaderry, NSW

(source: Google Maps ©)

3.0 NOISE DESIGN GOALS

At the time of the preparation of the NIA, the following noise design goals were established for this proposal:-

Operational Phase (Environment Protection Licence noise limits less 10 dB) -

- 28 dBA ($L_{10, 15 \text{ minute}}$) at locations in Terara on the south side of the Shoalhaven River,
- 28 dBA ($L_{10, 15 \text{ minute}}$) at locations in Nowra on the south side of the Shoalhaven River,
- 32 dBA ($L_{10, 15 \text{ minute}}$) at locations in Meroo Street, Bomaderry,
- 30 dBA ($L_{10, 15 \text{ minute}}$) at other locations in Bomaderry.

These noise design goals were established to ensure that the overall level of noise emission from the operation of the entire Shoalhaven Starches facility is within the Noise Limits set by Environment Protection Licence 883 at all receptors identified in Figure 1.

4.0 COMPLIANCE NOISE MEASUREMENTS

The author visited the Site on Thursday 9 April 2021 to undertake a noise survey.

Given the significant distances to each receptor location from the Supagas site is not possible to directly measure the level of noise emission from the operation of the Supagas plant at any of the distant receptor locations.

A series of attended noise measurements were therefore taken at various locations around the Supagas plant during the noise survey. The measured noise levels taken on all four sides of the plant at distances including up close to the plant and around the perimeter of the Site.

Example photographs are shown in Figure 2 below.



Figure 2. Photographs Showing Example Measurement Locations

Some examples of the measured levels are shown in Table 1 below.

The measured noise levels have then been used to predict the level of noise emission at each of the distant receptor locations, as shown in Table 2.

An assessment of the modifying factor corrections is provided in Section 3.

The instrumentation used during the noise survey is shown in Appendix A.

Table 1 Measured Noise Levels – CO₂ Plant (distance to centre of plant)

| Description | Measured Noise Level $L_{eq, 15 \text{ minute}}$ (dBA) at Various Locations |
|--------------------------------------|--|
| 7 metres from northern compressor | 70 |
| Southern perimeter (circa 25 metres) | 61 |
| Western perimeter (circa 30 metres) | 59 |
| Eastern perimeter (circa 17 metres) | 62 |

The measured noise levels have been used to predict noise levels at distant receptor locations based on the equation:-

$$L_{eq2} = L_{eq1} - 20 \log_{10} (r_2/r_1) - A$$

Where:

- L_{eq1} is the measured sound pressure level at distance r_1 ;
- r_2 is the distance to the receptor,
- A is the attenuation that occurs during the propagation from source to receiver.

With respect to additional attenuation during propagation, in this instance consideration is given to ground absorption up to a maximum 5 dB at receptors R1, R3 and R4 only. No consideration is given to additional attenuation due to intervening structures.

Table 2 below shows the predicted noise levels at each of the receptor locations from the operation of the Supagas plant.

Table 2 Predicted Noise Levels at Receptor Locations – CO₂ Plant

| Description | Predicted Noise Level $L_{10, 15 \text{ minute}}$ (dBA) at Receptor Location | | | |
|---|---|------------|------------|------------|
| | Location 1 | Location 2 | Location 3 | Location 4 |
| Design Noise Goal ($L_{10, 15 \text{ minute}}$) | 28 | 28 | 32 | 30 |
| CO ₂ Plant | 21 | 25 | 23 | 23 |
| Complies | Yes | Yes | Yes | Yes |

It can be seen from the measured and predicted noise levels that the level of noise emission from the Supagas plant is below the noise design goals at all receptor locations.

A review of the measured noise levels shows that there are no characteristics requiring modifying factor adjustment in any direction.

4.0 CONCLUSION

A noise validation assessment for plant and equipment associated with Supagas plant and equipment operating at the former Dairy Farmers Site at 220 Bolong Road, Bomaderry has been undertaken.

Noise measurements show that the level of noise emission from the operation of the plant and equipment is within the design noise goals at all residential receptor locations. Noise design goals have been established to ensure ongoing compliance with the noise limits set by Environment Protection Licence 883.

Please do not hesitate to contact the undersigned should you require any further information or clarification.

Yours faithfully

Matthew Harwood, MAAS
Principal Acoustical Consultant

Attachments:-

Appendix A – Noise Survey Instrumentation

| | |
|-------------------------------------|-------------------|
| Noise Survey Instrumentation | Appendix A |
|-------------------------------------|-------------------|

The instrumentation used during the noise surveys consisted of the following:-

| Description | Model No. | Serial No. |
|-------------------------------|-----------|------------|
| SVANTEK Sound Level Meter | 957 | 15395 |
| Svantek Acoustical Calibrator | SV 34A | 58762 |

The sound level meters conform to Australian Standard AS IEC 61672.1-2004: 'Electroacoustics - Sound level meters – Specifications' as Class 1 precision sound level meters.

The calibration of the meters was checked before and after the measurement periods. No significant system drift occurred over the measurement periods.

The sound level meter and calibrators have been checked, adjusted and aligned to conform to the factory specifications and issued with conformance certificates as required by the regulations.