



# **Shoalhaven Starches Pty Ltd**

## **Expansion Development Consent 06\_0228**

### **Annual Environmental Management Report 2020**

COMMERCIAL IN CONFIDENCE

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**Document Control**

<b>Revision No.</b>	<b>Date</b>	<b>Prepared By</b>	<b>Authorised By</b>	<b>Comments</b>
Original	30-10-2020	J. Studdert	M. Leung	Submitted to NSW Department Planning, Industry & Environment (DPIE) on 30-10-2020.
<b>Annual Environmental Management Report (AEMR) 2020</b>				
Name of operation			Shoalhaven Starches Pty Ltd	
Application No.			06_0228	
Annual Review start date			1st July 2019	
Annual Review end date			30 <sup>th</sup> June 2020	
Reporting officer			John Studdert	
Reporting officer title			Quality Assurance & Environmental Coordinator	
Date			30 <sup>th</sup> October 2020	

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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 167 conditions of consent, 3 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**

<b>Schedule Condition</b>	<b>Condition Description (summary)</b>	<b>Details</b>	<b>Section in Annual Review</b>
Sch. 2 Cond. 8C	Building Certificates	Building Certificates not obtained by the end of July 2018.	9.1.1
Sch.3 Cond. 6C	Quarterly Odour Monitoring	Quarter 4 monitoring was not performed on the DDG exhaust stack.	9.1.2
Sch. 3 Cond. 9	Emission Limits – Boiler Stacks	Combined Boiler 5 & 6 stack (Point 35) and Boiler 4 stack (Point 42) exceeded the % opacity EPL limit.	9.1.3

## 2. INTRODUCTION

The Annual Environmental Management Report 2020 (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 & 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:	<b>Section in report</b>
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
(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
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 7

### 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 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 issued by the NSW Department of Planning on the 28<sup>th</sup> January 2009. The Development Consent consolidated all previous consents for the site into the one consolidated Development Consent 06\_0228.

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

A number applications to modify (MODs) the Consent and the associated environmental assessments (EA) have been approved by the DPIE. Table 3 lists the site's current consents and licences.

**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
Licence Number	Description	Version Date
883	Environment Protection Licence 883	23-10-2018

### 4. OPERATIONS SUMMARY

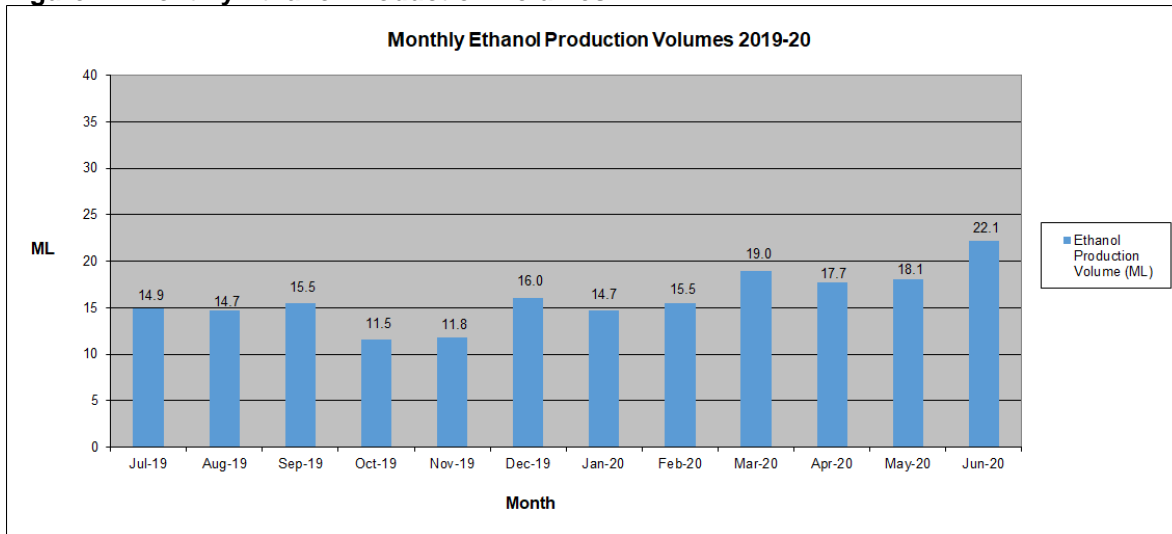
#### 4.1 LIMITS ON CONSENT

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

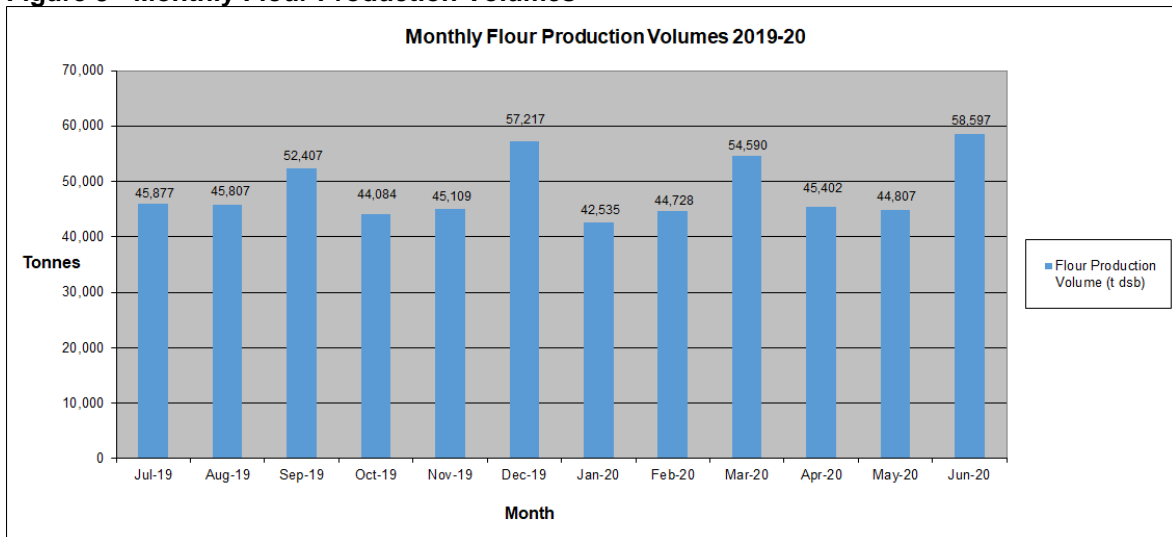
- (1) The Applicant must not produce on site:
  - a) more than 1,112,800 tonnes of industrial grade flour per year; and
  - b) more than 300 million litres of ethanol per year

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 2020 are shown in Figure 2 and Figure 3.

**Figure 2 - Monthly Ethanol Production Volumes**

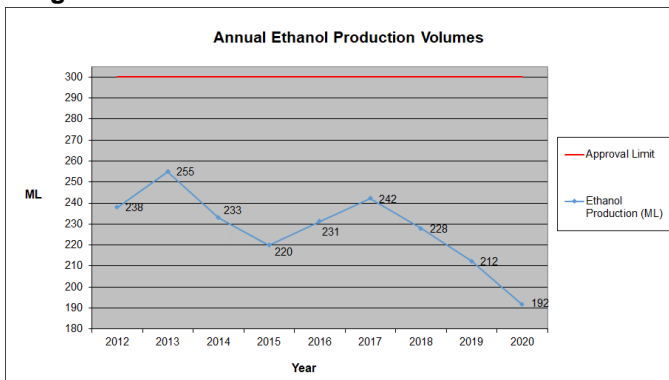


**Figure 3 - Monthly Flour Production Volumes**

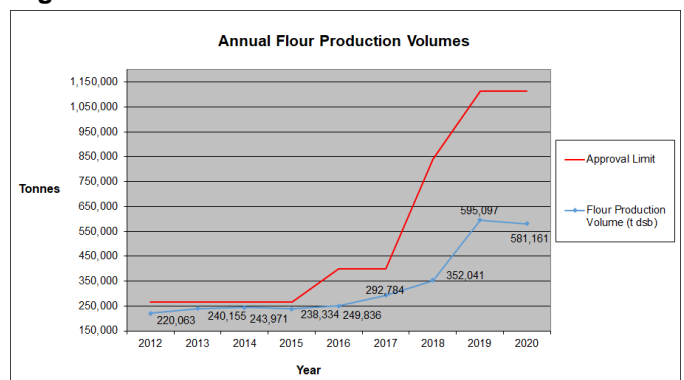


A comparison of annual production levels from previous years against the approved production volumes are shown in Figure 4 and Figure 5 (production consent limits have been updated to include the latest MOD 16 Consent).

**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 have been 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:

- Re-commencement of the final stages of construction of the approved evaporators associated with MOD 12, which was previously on hold. It is anticipated commissioning will occur towards the end of 2020.
- Commissioning and operation of the carbon dioxide (CO<sub>2</sub>) plant adjacent to the former Dairy Farmers site now owned by the Manildra Group approved under MOD 15.

The project, which is operated by Supagas, takes CO<sub>2</sub> from the Shoalhaven Starches operations and then processes this gas to food grade quality for the food and beverage market. CO<sub>2</sub> is taken directly from Shoalhaven Starches operations, reducing emissions by up to 100 tonnes per day when the plant is fully operational.

- Commissioning and operation of Dried Distillers Grain (DDG) Dryer No.4, approved under the original development Consent 06\_0228 and modified by the MOD 11 approval.
- Preparation and submission of modification (MOD 17) application to undertake the following minor amendments to the Development which will be facilitated through a Section 4.55(1A) modification:
  - Increase the building footprint of Product Dryer Building (PDB) and Specialty Products Building (SPB) previously approved under MOD 16.
  - The provision of additional bulk chemical storage to the south of the PDB and SPB buildings.
  - Demolition of part of the existing Maintenance Office and Stores to facilitate the extension of the PDB and SPB buildings to the west.
  - Repurposing the remaining part of the Maintenance building to provide staff amenities and Plant Operation Control Rooms.
  - To facilitate internal truck movements associated with the amendments to the SPB, existing car parking (48 spaces) currently located to the north and west of the Maintenance building will be relocated to an existing approved car parking located on the north side of Bolong Road.
  - Extension of the sifter room that is situated on top of the interim packing plant.
  - Installation of a Product Dryer (No. 9) within the footprint of the SPB.



- Relocate the approved location of the baghouse associated with No. 5 Starch Dryer from the western side of this building to the northern (Bolong Road) elevation of this building.
  - Install a service lift adjacent to the western wall of the No. 5 Starch Dryer to enable ongoing access for Shoalhaven Starches personnel to the floors within the building.
  - Modify the pipework that has been approved extending from the Shoalhaven Starches factory site located on the southern side of Bolong Road to the approved Packing Plant that is to be constructed on the northern side of Bolong Road. Under the current Project Approval this service pipework was to be provided entirely underground. This Modification Application seeks to elevate a portion of the pipework above ground level within the Packing Plant site on the northern side of Bolong Road.
  - To alter the fuel source for Boilers Nos. 2 and 4 from solely coal, to include a blend of woodchips and coal. In this regard it should be noted that woodchips were previously used as a fuel source in Boiler 2 prior to its conversion to solely coal as part of MOD 13.
- Preparation and submission of modification (MOD 18) application to undertake the following amendments to the Development which will be facilitated through a Section 4.55(1A) modification:
    - relocation of approved, but not yet built, gas fired boiler to be adjacent to ISO container storage area to the south east of the site to better service the existing distillery.
    - extension of existing gantry and associated steam pipework between gas fired boiler and distillery for steam supply.
    - installation of an additional two storage tanks to store the hand sanitizer alcohol.
    - repurposing of existing de-fatting building for the manufacturing of up to 1.5 ML/yr of hand sanitiser products.

## 5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REPORT

Follow-up actions from the previous AEMR 2019 submitted to the DPIE on the 31<sup>st</sup> October 2019 are outlined in the DPIE's letter dated 14<sup>th</sup> November 2019. The DPIE review letter considered that the 2019 annual report generally satisfied Condition 3 of the Consent.

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 16 Consent.

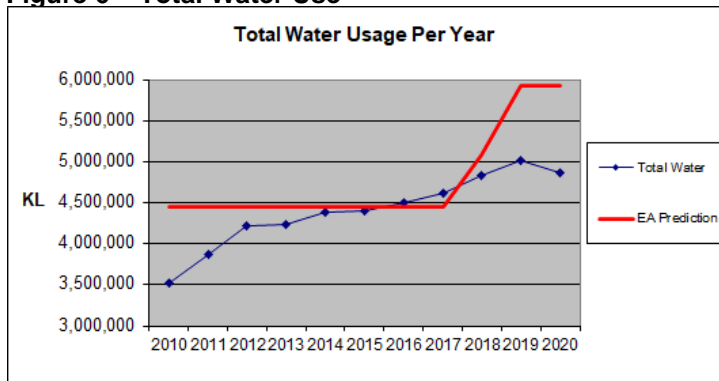
## 6.1 WATER USE

### 6.1.1 Total Water

Figure 6 shows total water use on site which includes purchased Council water and recycled reverse osmosis (RO) water. Total water use has decreased slightly by 3% in 2020.

Water use will vary depending on the flour throughput and the types of finished products manufactured based on market demand, with each product having different water usage requirements.

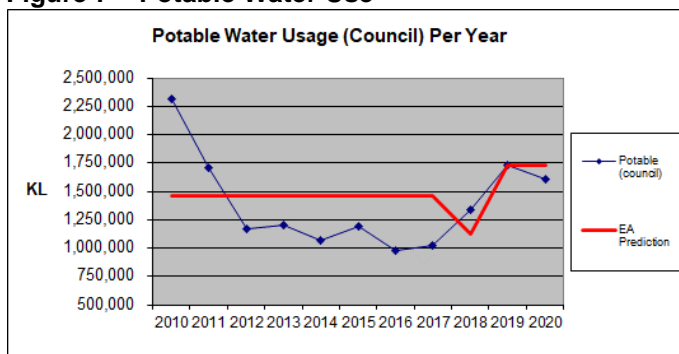
**Figure 6 – Total Water Use**



### 6.1.2 Potable Water

Figure 7 shows potable water (council) use has decreased by 7% in 2020. It is anticipated the demand for potable water use will decrease significantly in the next reporting year as water savings from operation of the MVR evaporators commence, with up to water savings of 2,400 KL per day once the plant is fully operational.

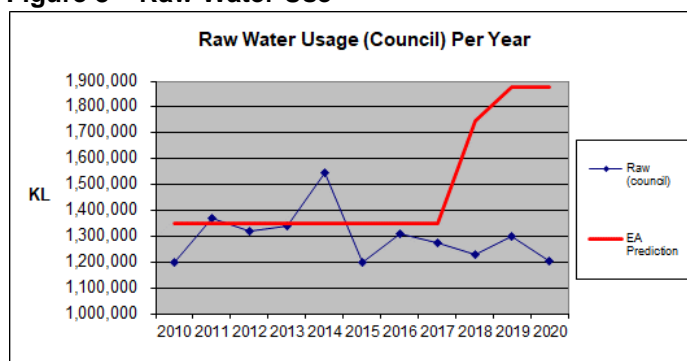
**Figure 7 – Potable Water Use**



### 6.1.3 Raw Water

Figure 8 shows raw water use has decreased by 7.5% in 2020. Raw water is used in cooling towers and feedwater for the boilers.

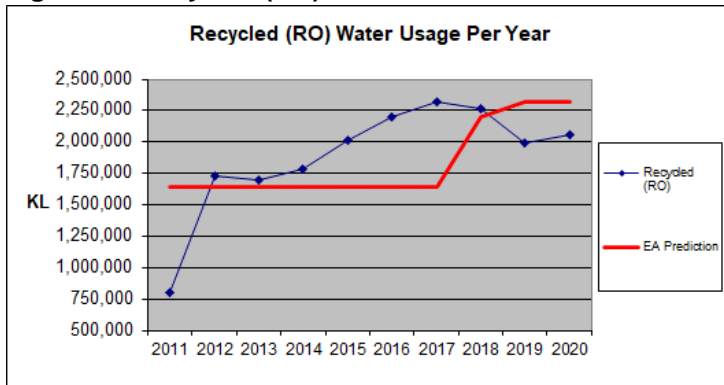
**Figure 8 – Raw Water Use**



#### 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 increased by 3% in 2020.

**Figure 9 – Recycled (RO) Water Use**



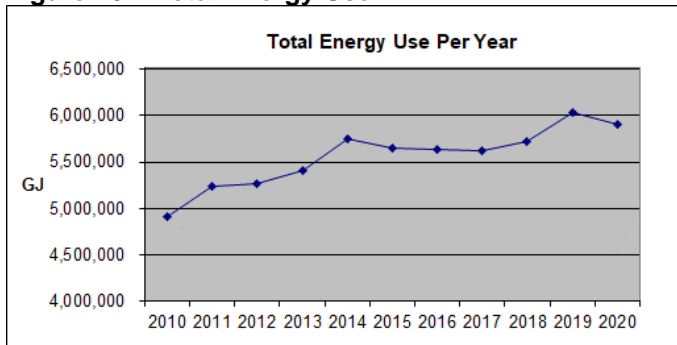
Water use on site is continually monitored and actions implemented to improve water efficiency during the production process. Installation of the wastewater treatment plant and increased RO capacity has reduced our potable water usage since it was installed in 2010-11 (refer to Figure 7).

## 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 decreased by 2% in 2020. Energy use will vary depending on the types of finished products manufactured based on market demand, with each product having different energy intensities associated with its production.

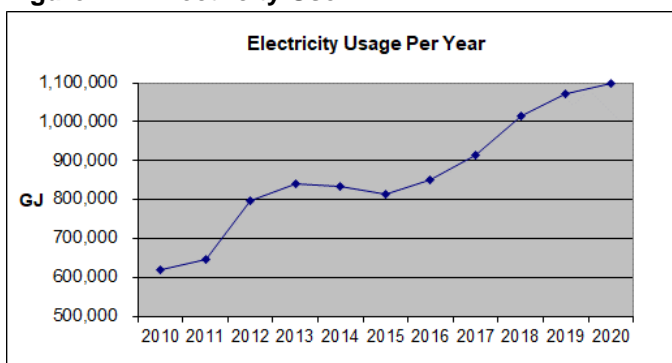
**Figure 10 – Total Energy Use**



### 6.2.2 Electricity

Figure 11 shows a slight increase in electricity use of 2.4% in 2020.

**Figure 11 – Electricity Use**



## 6.3 WASTE

### 6.3.1 Liquid Waste

Figure 12 shows total factory wastewater volumes to the wastewater treatment plant (WWTP) has increased by 10% in 2020. It is anticipated wastewater volumes will decrease during the next reporting period due to the operation of the MVR evaporators which will recover and re-use process water that would otherwise be sent to the site's WWTP.

**Figure 12 – Annual Liquid Waste Volumes to WWTP**

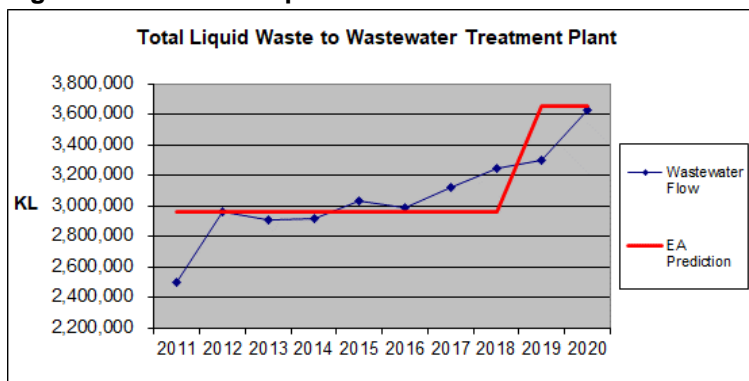
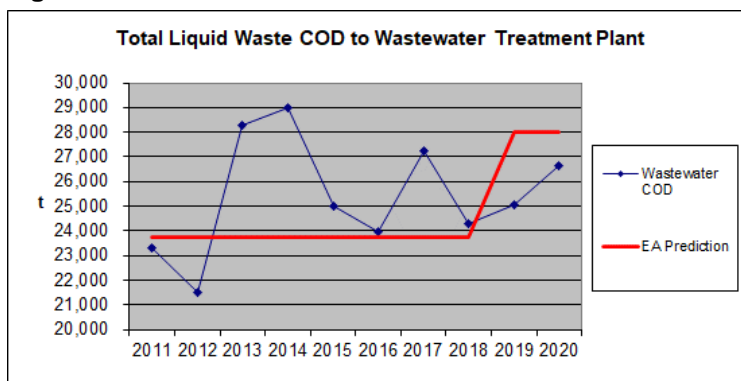


Figure 13 shows total wastewater chemical oxygen demand (COD) load to the WWTP has increased by 6% in 2020. The COD volumes will vary due to errors in measurement uncertainty associated with continuous COD measurements and fluctuations in the strength and volume of the wastewater generated from the factory.

**Figure 13 – Annual Total COD to WWTP**



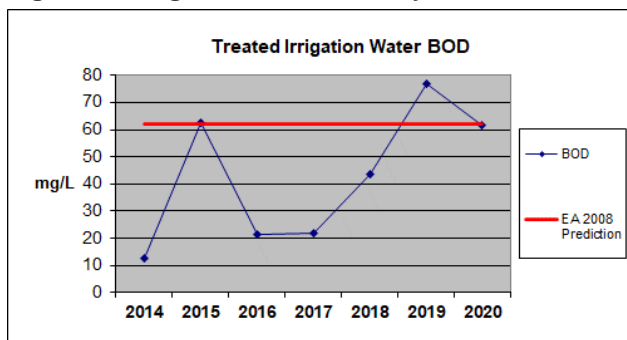
The WWTP continues to operate effectively as shown by the treated irrigation water quality monitoring results shown in the following section.

### 6.3.2 Treated Irrigation Water

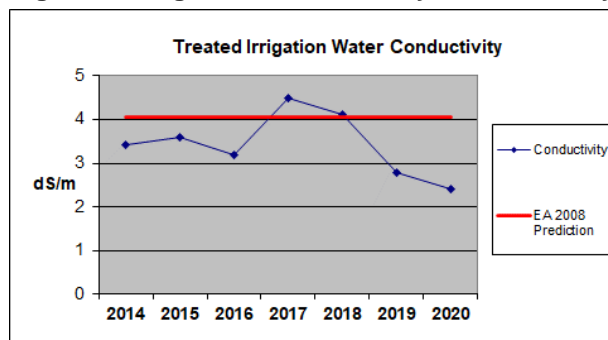
The wastewater treatment plant (WWTP) continues to perform well since it was installed and began operating in 2011. Surplus treated water that is not passed through the aerobic Membrane Bio-reactor (MBR) and RO process for factory re-use is stored in ponds for irrigation on the sites Environmental Farm.

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).

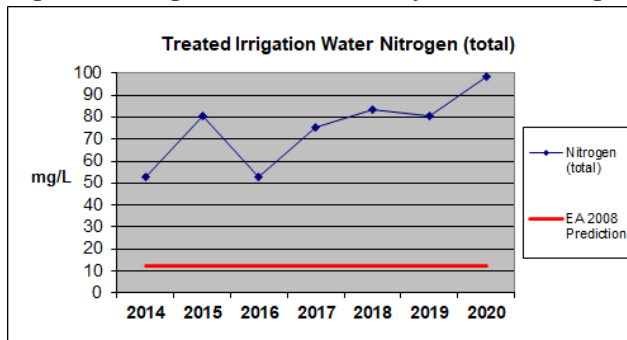
**Figure 14 Irrigation Water Quality – BOD**



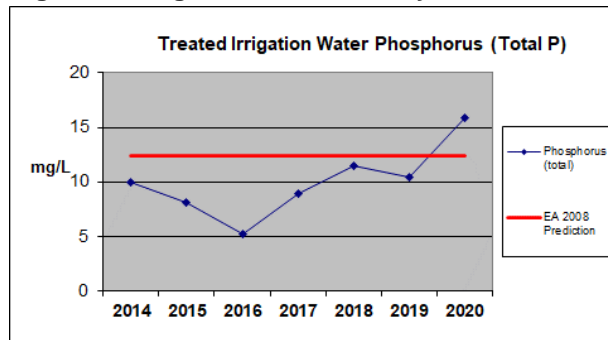
**Figure 15 Irrigation Water Quality - Conductivity**



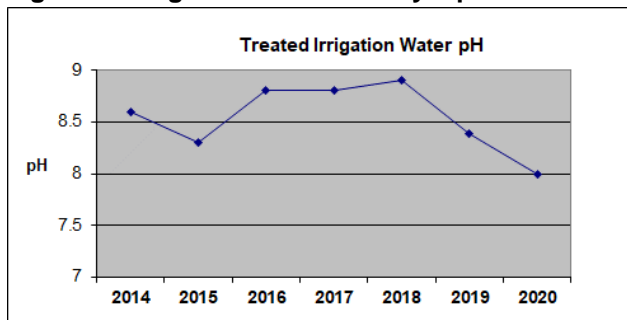
**Figure 16 Irrigation Water Quality – Total Nitrogen**



**Figure 17 Irrigation Water Quality – Total P**



**Figure 18 Irrigation Water Quality – pH**

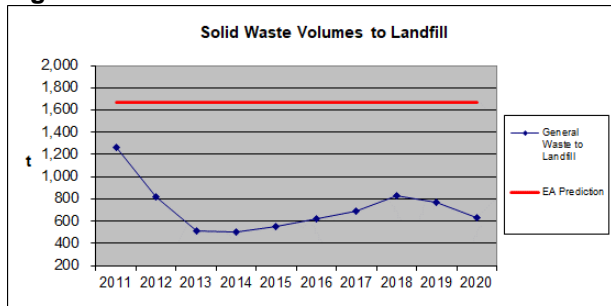


The 2020 results show the conductivity and biological oxygen demand (BOD) are below predicted levels in the EA and the total phosphorus slightly above predicted EA levels. Total nitrogen (N) levels are above the EA prediction, however the uptake of nitrogen for pasture growth outstrips supply from the wastewater N (fertiliser is added to supplement nitrogen deficiency). The pH results remain relatively steady (no predictions in the EA).

### 6.3.3 Solid Waste

Figure 19 shows solid waste to landfill has decreased by 17% in 2020. Whilst recycling of waste continues on-site, solid waste is expected to increase as further expansion projects are completed in the next few years.

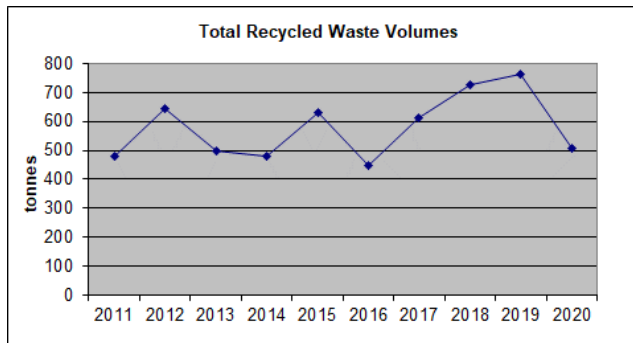
**Figure 19 – Annual Solid Waste Volumes to Landfill**



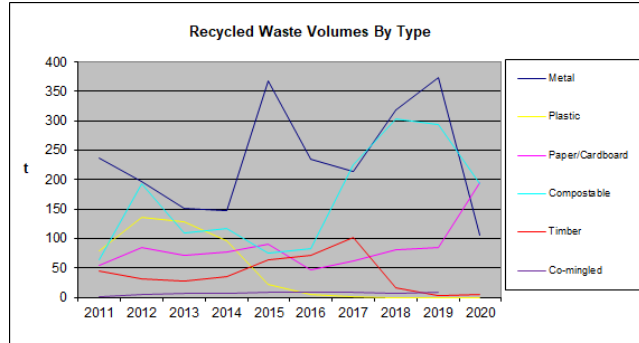
### 6.3.4 Waste Recycling

Figure 20 shows total waste recycled has decreased 34% in 2020 and Figure 21 shows the annual recycled volumes by type.

**Figure 20 – Annual Recycled Waste Volumes**



**Figure 21 – Annual Recycled Waste Volumes by Type**



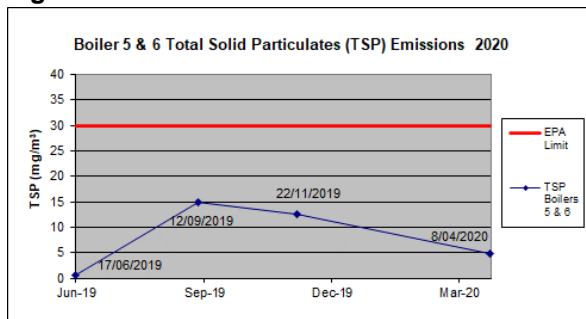
## 6.4 AIR EMISSIONS

The emission testing results of the Boiler stacks, as required by condition 9 of the Consent and the site's EPL, are all in compliance with the limits in the EPL, as discussed in the following sections.

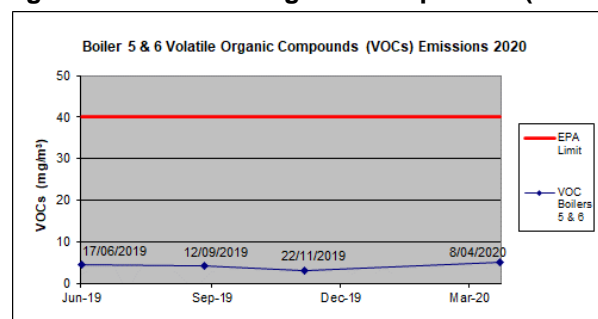
### 6.4.1 Boilers 5 and 6 Monitoring Results

Quarterly air emission testing results from the combined Boilers No. 5 and 6 stack required by the EPL (Monitoring Point 35) in 2020 are all within EPL limits, as shown in Figures 22 – 25.

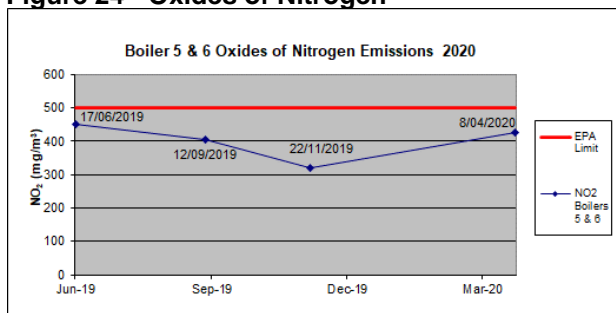
**Figure 22 - Total Solid Particulates**



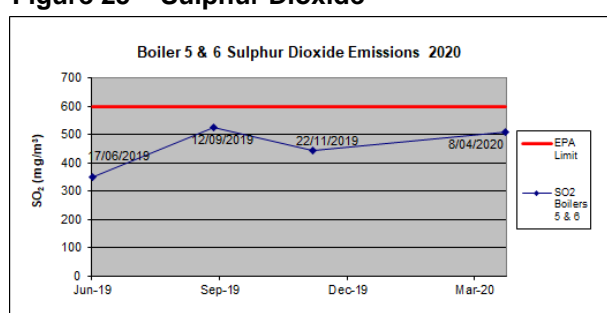
**Figure 23 – Volatile Organic Compounds (VOCs)**



**Figure 24 - Oxides of Nitrogen**

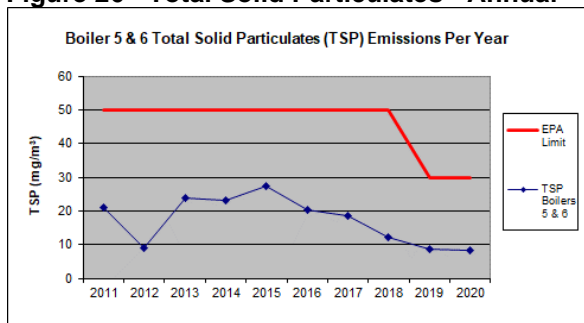


**Figure 25 – Sulphur Dioxide**

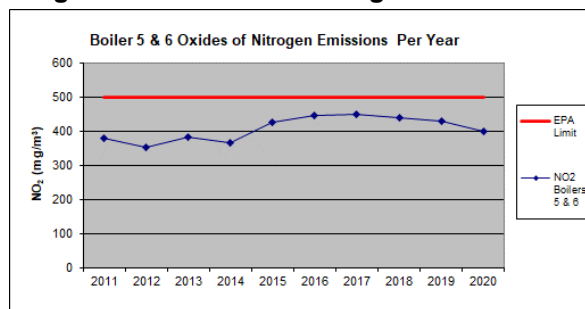


Figures 26 to 29 provide a comparison of average annual air emissions monitoring results from previous years. The results show the pollutants tested are all below EPL limits and are relatively steady. The decline in sulphur dioxide is likely the result of reduced sulphur level in the boiler feedstock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

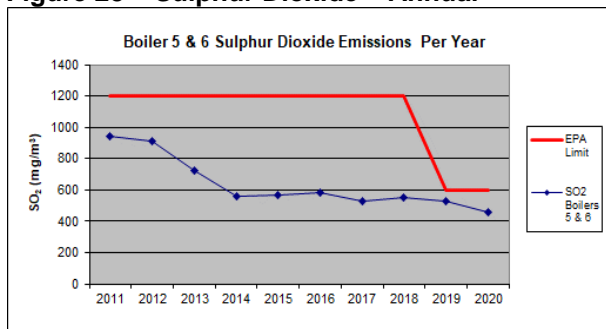
**Figure 26 - Total Solid Particulates - Annual**



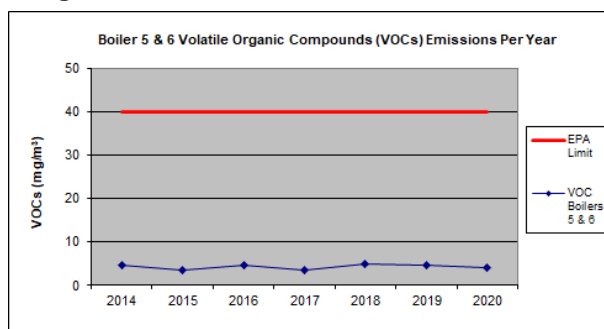
**Figure 27 – Oxides of Nitrogen - Annual**



**Figure 28 – Sulphur Dioxide – Annual**



**Figure 29 VOCs – Annual**

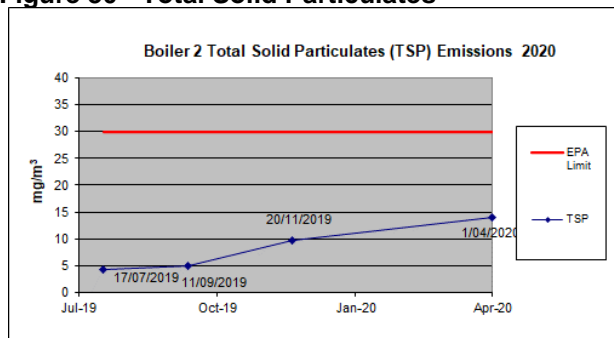


#### 6.4.2 Boiler 2 Monitoring Results

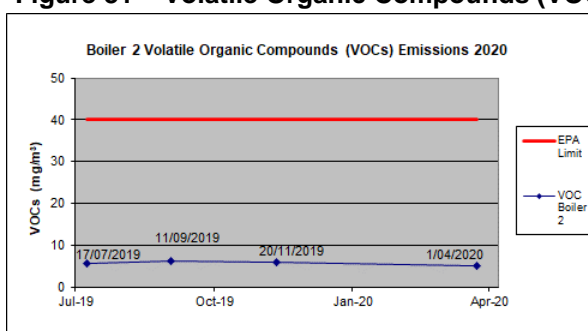
Quarterly air emission testing required by the EPL for Boiler No. 2 (EPL Monitoring Point 45) since refurbishment works was completed in accordance with the conversion of boilers MOD 13 Consent is shown in Figures 30 to 33.

Post-commissioning monitoring of Boiler 2 (condition 9B) was completed in July 2019 which demonstrated compliance with EPL emission concentration limits, as shown below.

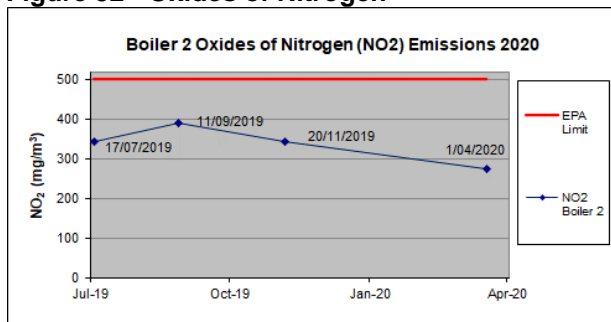
**Figure 30 - Total Solid Particulates**



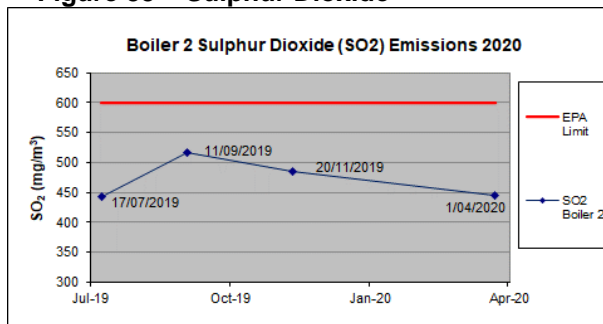
**Figure 31 – Volatile Organic Compounds (VOCs)**



**Figure 32 - Oxides of Nitrogen**



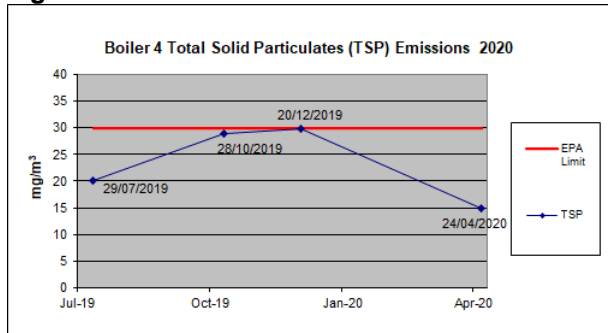
**Figure 33 – Sulphur Dioxide**



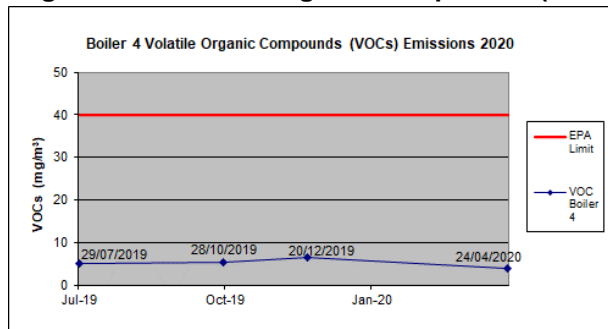
### 6.4.3 Boiler 4 Monitoring Results

Quarterly air emission testing results required by the EPL for the Boiler 4 stack (Monitoring Point 42) in 2020 are all within EPL limits, as shown in Figures 34 to 37.

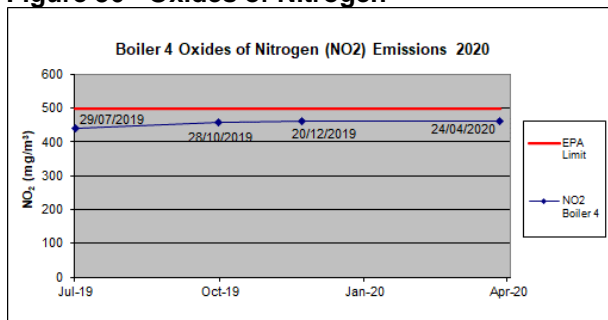
**Figure 34 - Total Solid Particulates**



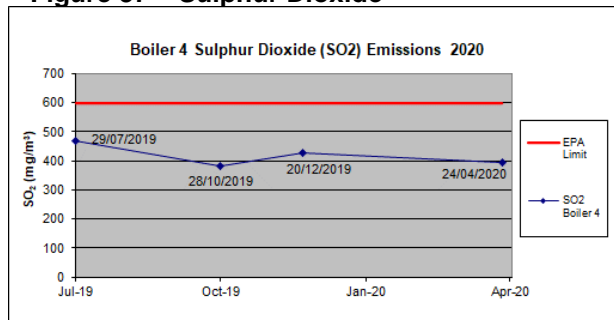
**Figure 35 – Volatile Organic Compounds (VOCs)**



**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. 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 2020 reporting year (the labelling 2019-2 refers to Quarter 2 2019-20, noting the EPL end of year reporting period is 30<sup>th</sup> 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)

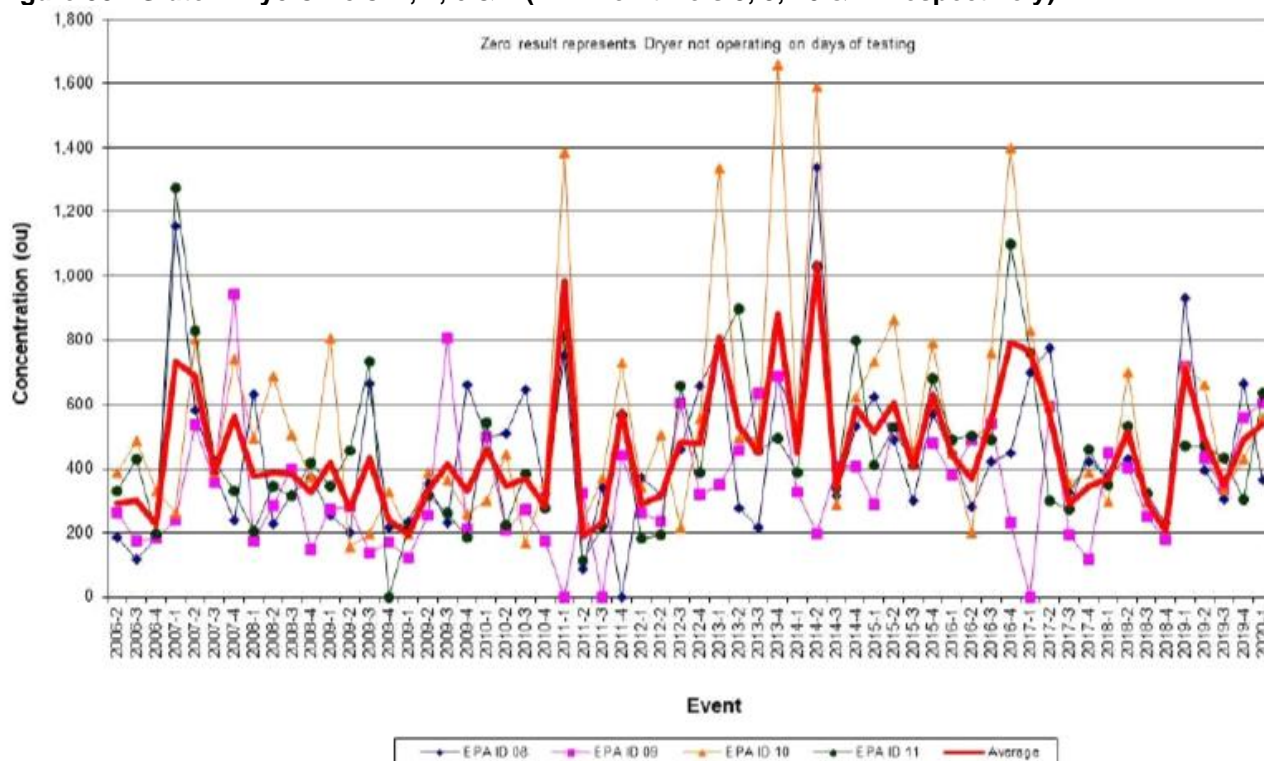
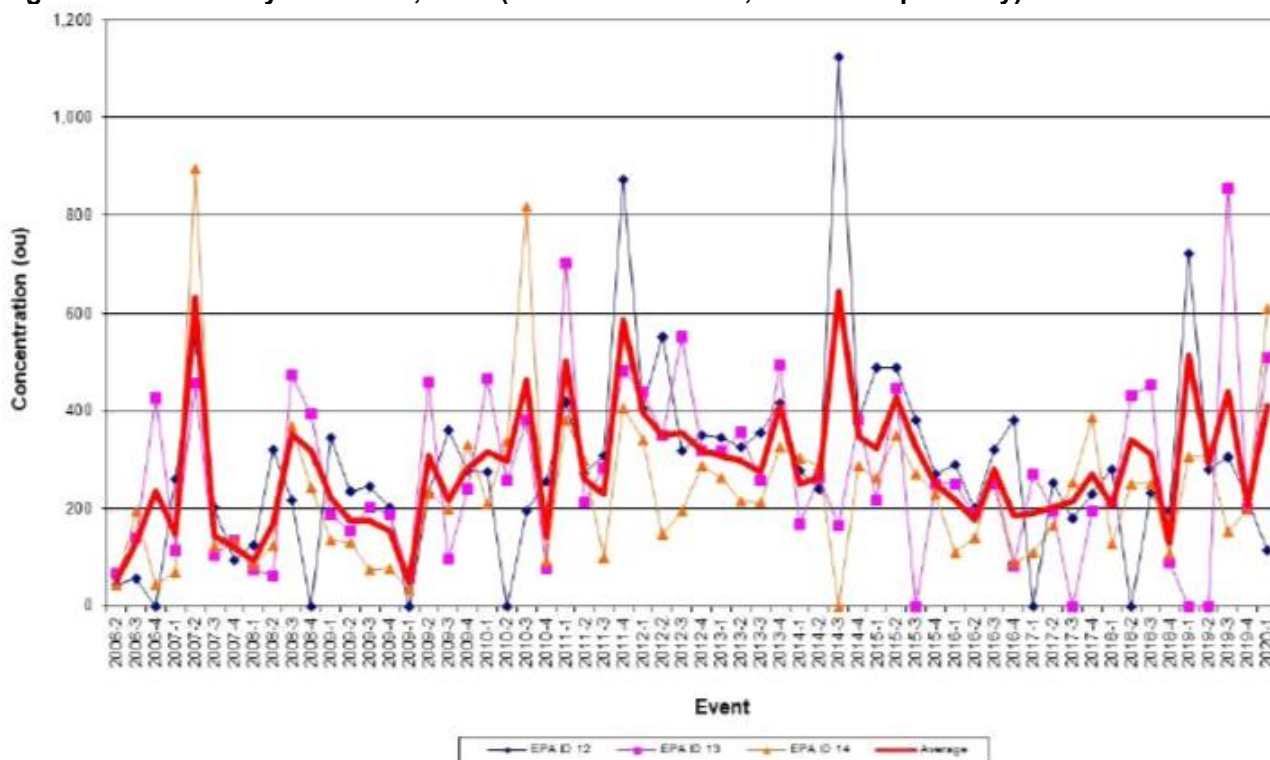
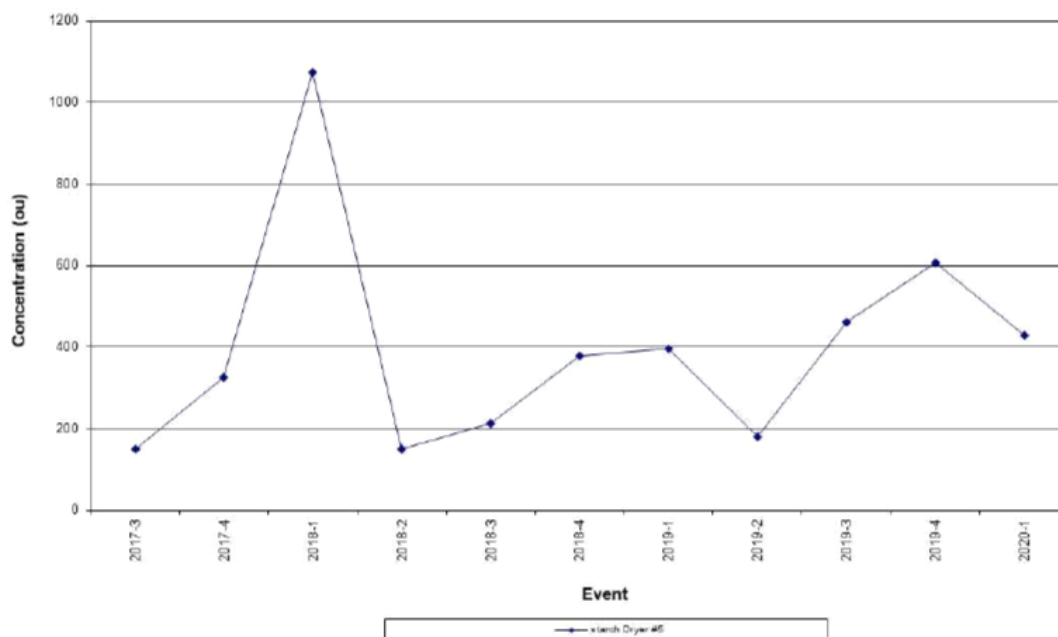


Figure 39 - Starch Dryers No's. 1, 3 & 4 (EPL Point No's. 12, 13 & 14 respectively)



**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)**

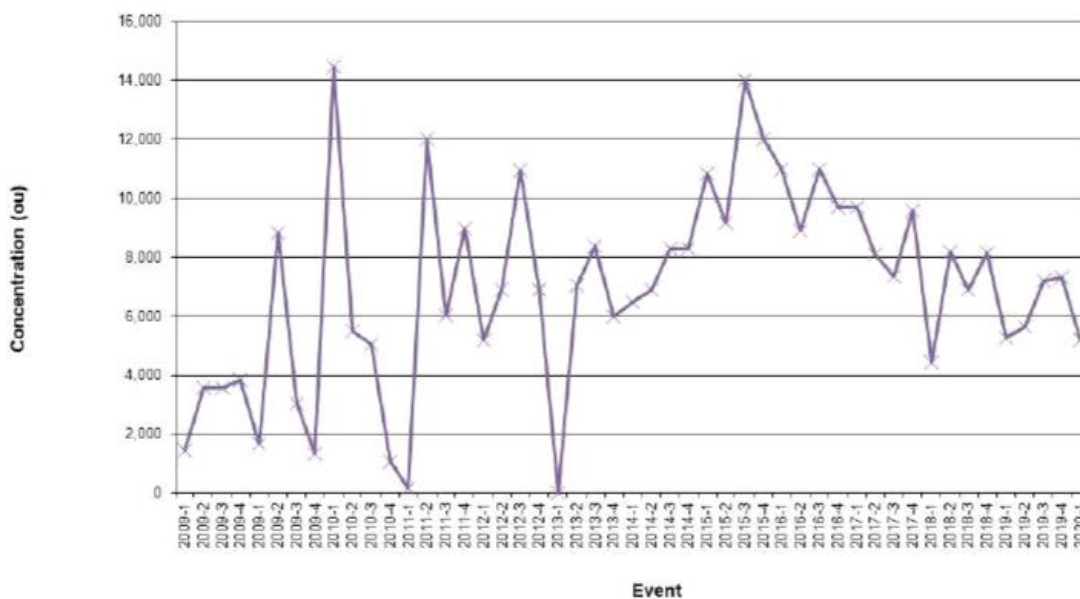
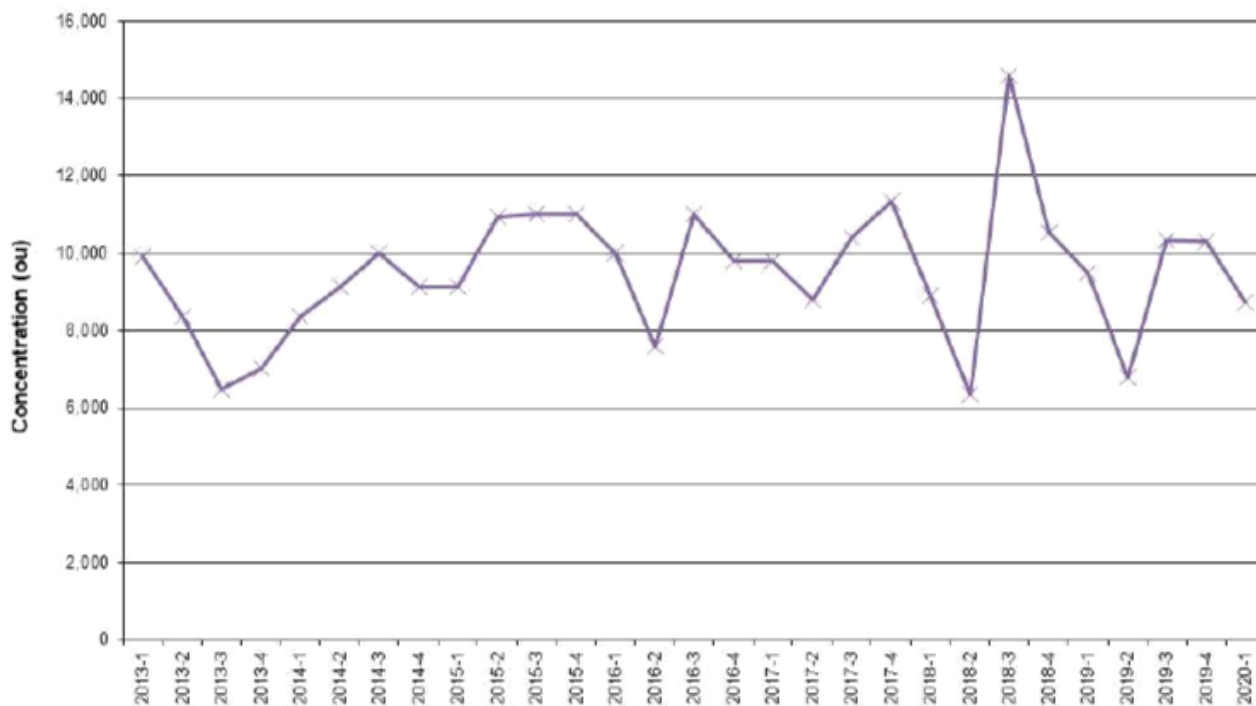


Figure 42 shows the odour emissions from the carbon dioxide (CO<sub>2</sub>) scrubber are relatively stable. The CO<sub>2</sub> scrubber takes air emissions from the fermenters through a water scrubber to strip out residual ethanol. The CO<sub>2</sub> outlet odour testing was added to the EPL on 8th November 2013.

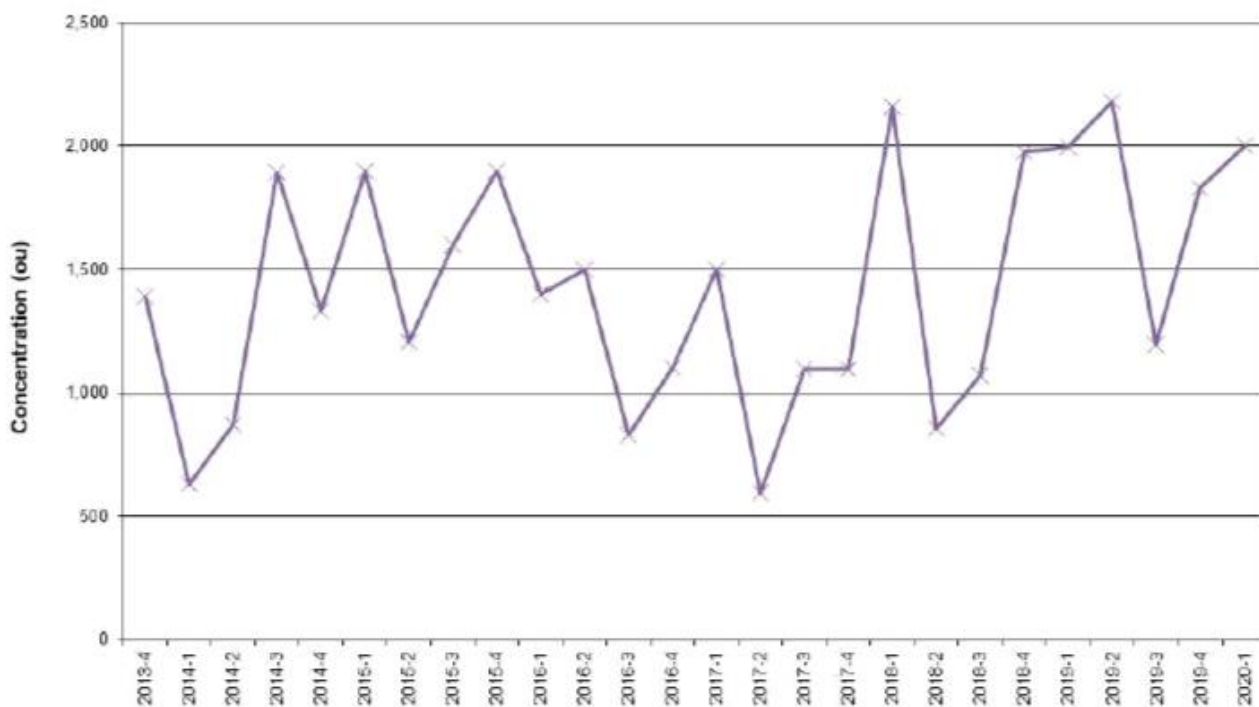
**Figure 42 - Carbon Dioxide Scrubber (EPL Point No. 16)**



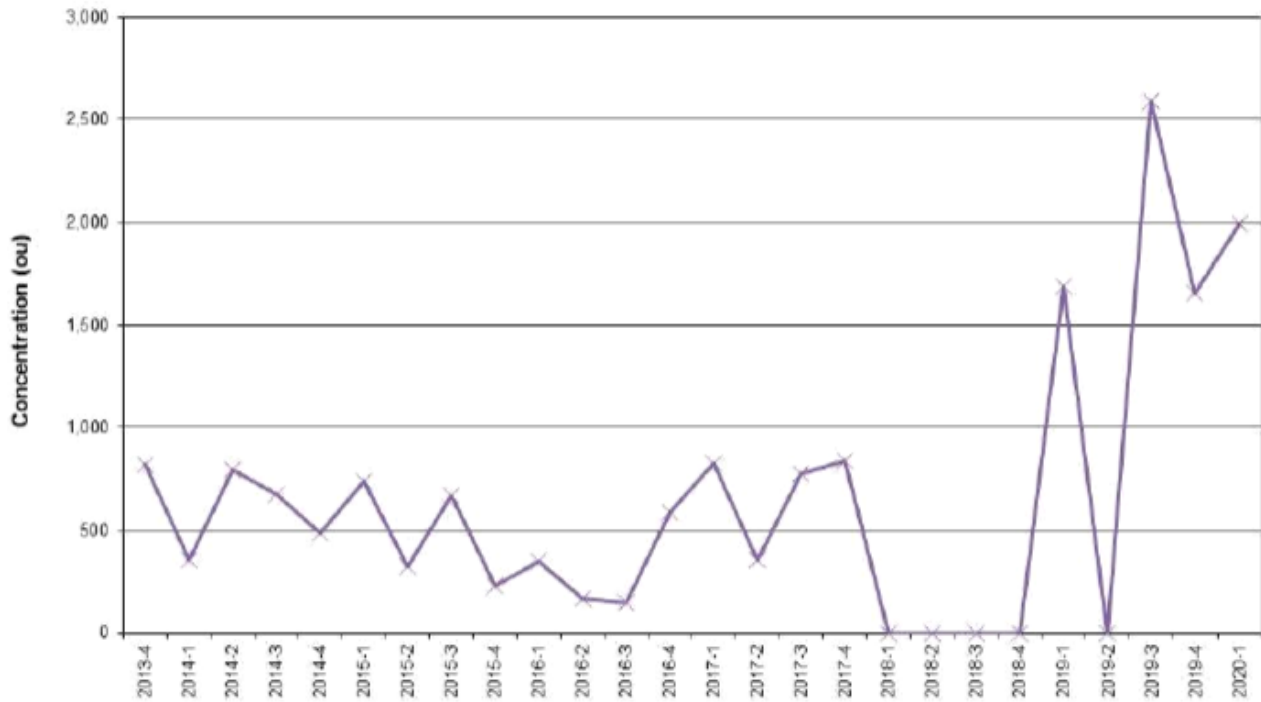
Figures 43 to 45 show odour emission results from Boiler 5 & 6 stack (EPL Point 35), Boiler 4 stack (EPL Point 42) and Boiler 2 stack (EPL Point 45) respectively. Odours are captured from the Dried Distillers Grain (DDG) process and directed to the boilers air intake to reduce odours via boiler combustion.

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)**

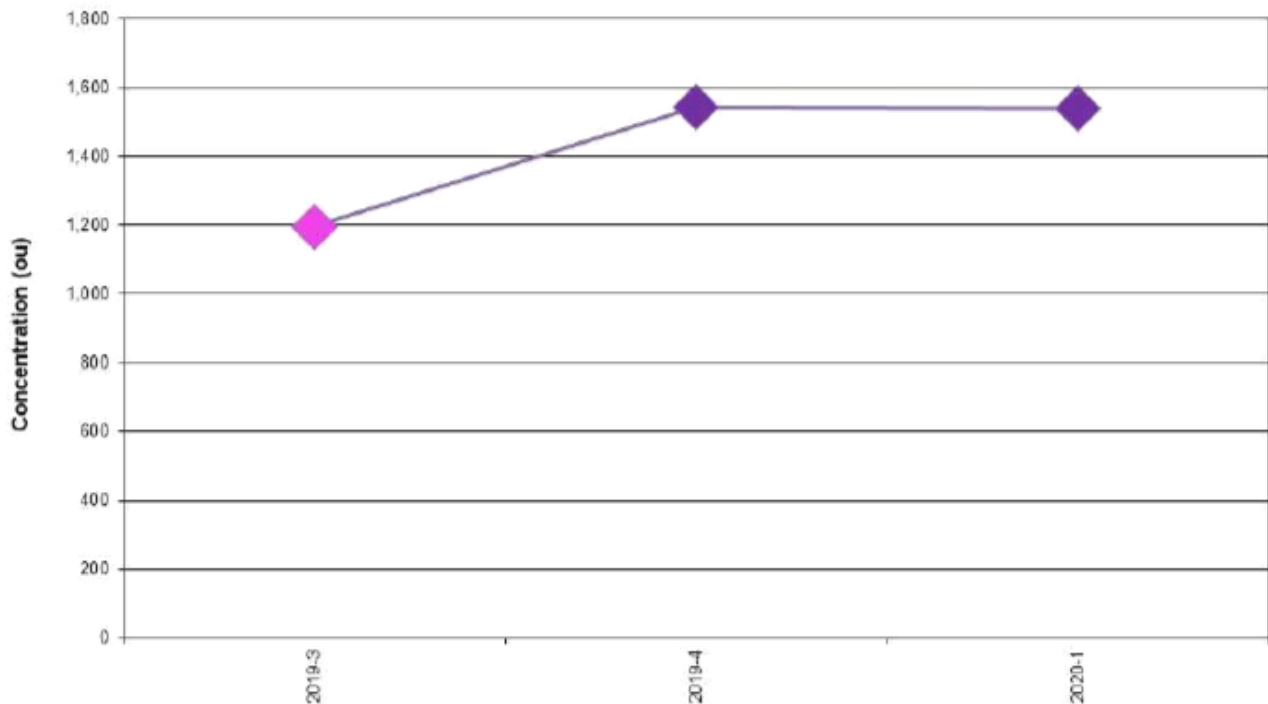


Figure 46 shows the odour results for the biofilter inlet (blue) and biofilter outlet (pink). The biofilter's capture and treat DDG odours from the DDG Evaporator plant. The biofilter outlet results are an average of the two biofilter's A and B. The results show the biofilters continue to operate effectively in reducing odour emissions from the site.

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

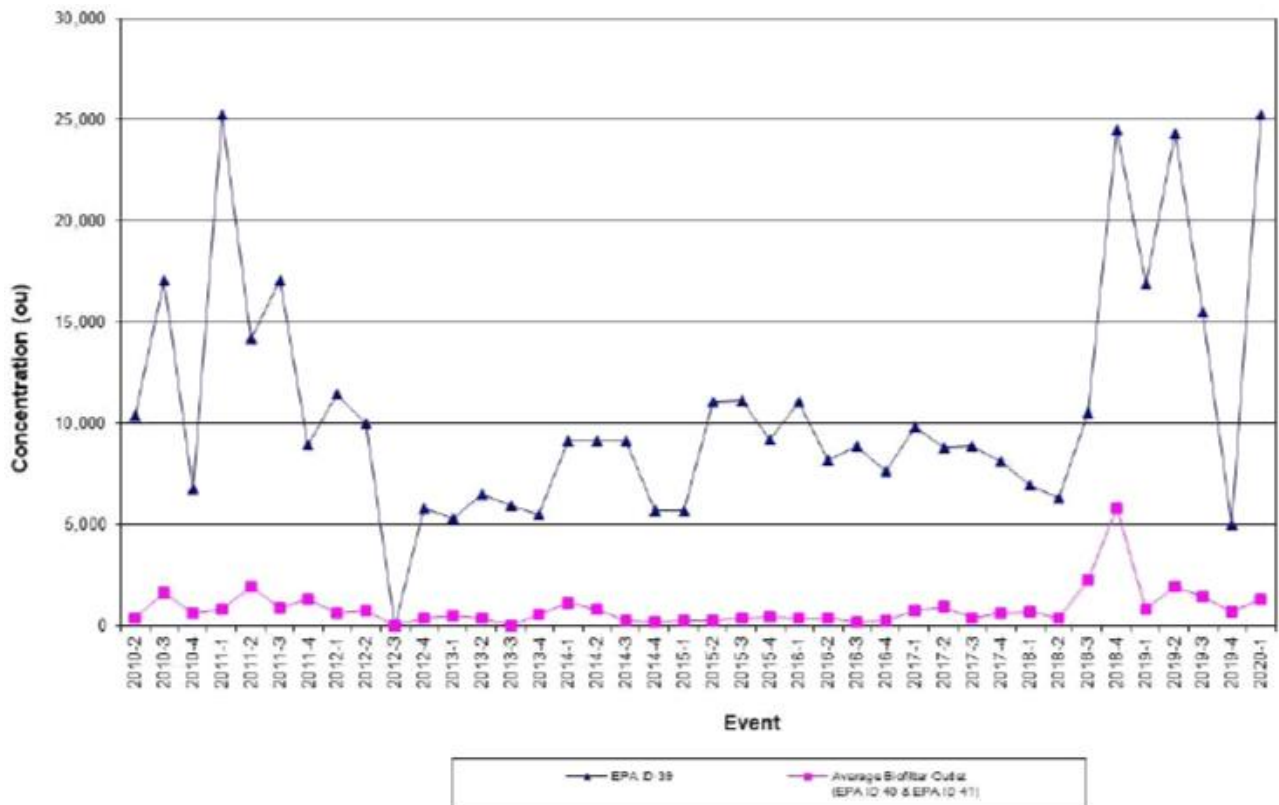
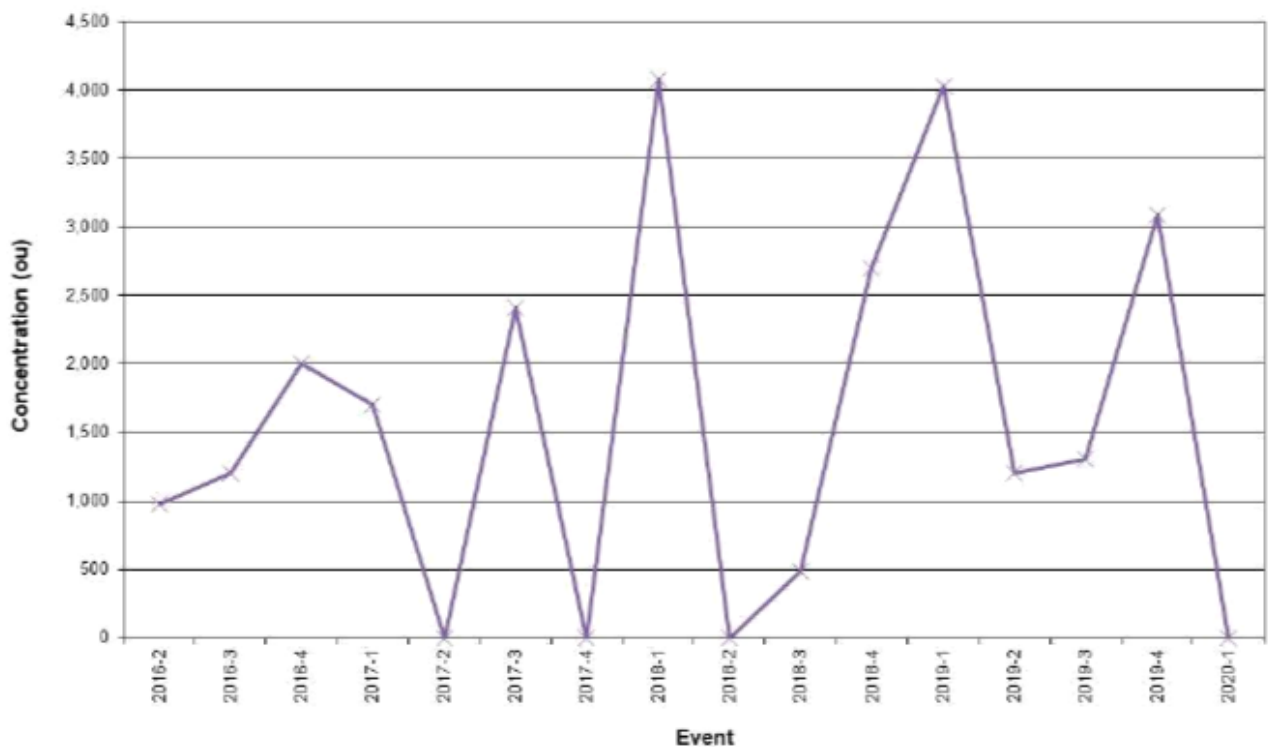


Figure 47 shows the odour results from the DDG Pellet Plant stack which was added to the EPL on 18<sup>th</sup> December 2015.

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



## 6.5.2 Annual Odour Monitoring

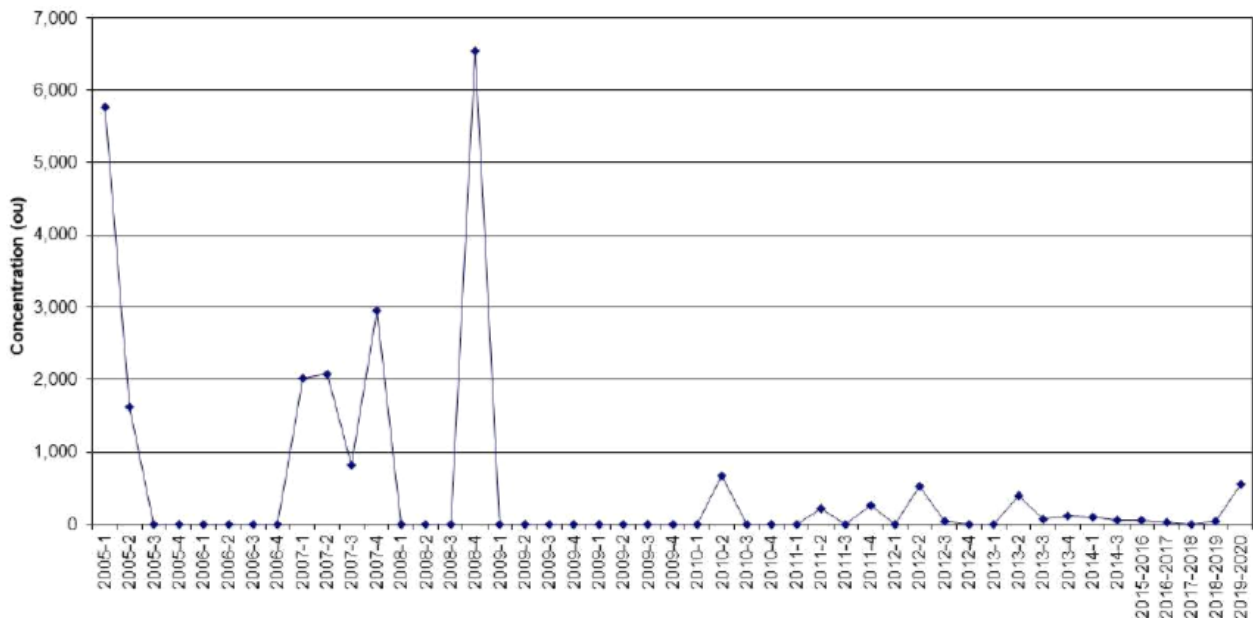
The following Figures 48 to 53 show the annual odour monitoring results from the sites Environmental Farm. In 2015 the EPL frequency for odour monitoring at the Environmental Farm was reduced from quarterly to yearly as a result of a significant reduction in odour emissions due to the installation of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

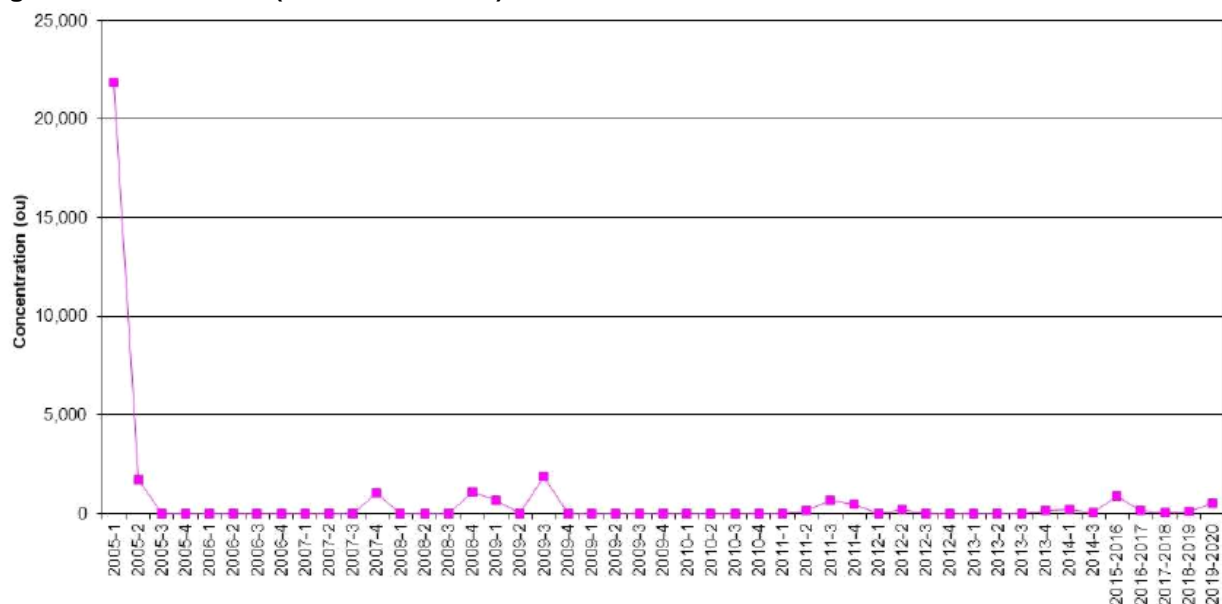
The Sulphur Oxidation (SO) basin, as shown in Figure 53, is an aerated pond which receives treated water from the anaerobic treatment system prior to entering the MBR and RO systems. All water passing through the MBR-RO system is returned to the factory for re-use. Surplus water from the SO pond is sent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

Note the EPL reporting year is from 1<sup>st</sup> May 2019 to 30<sup>th</sup> April 2020, with the 2019-20 result tested in February/March 2020 (Quarter 4).

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

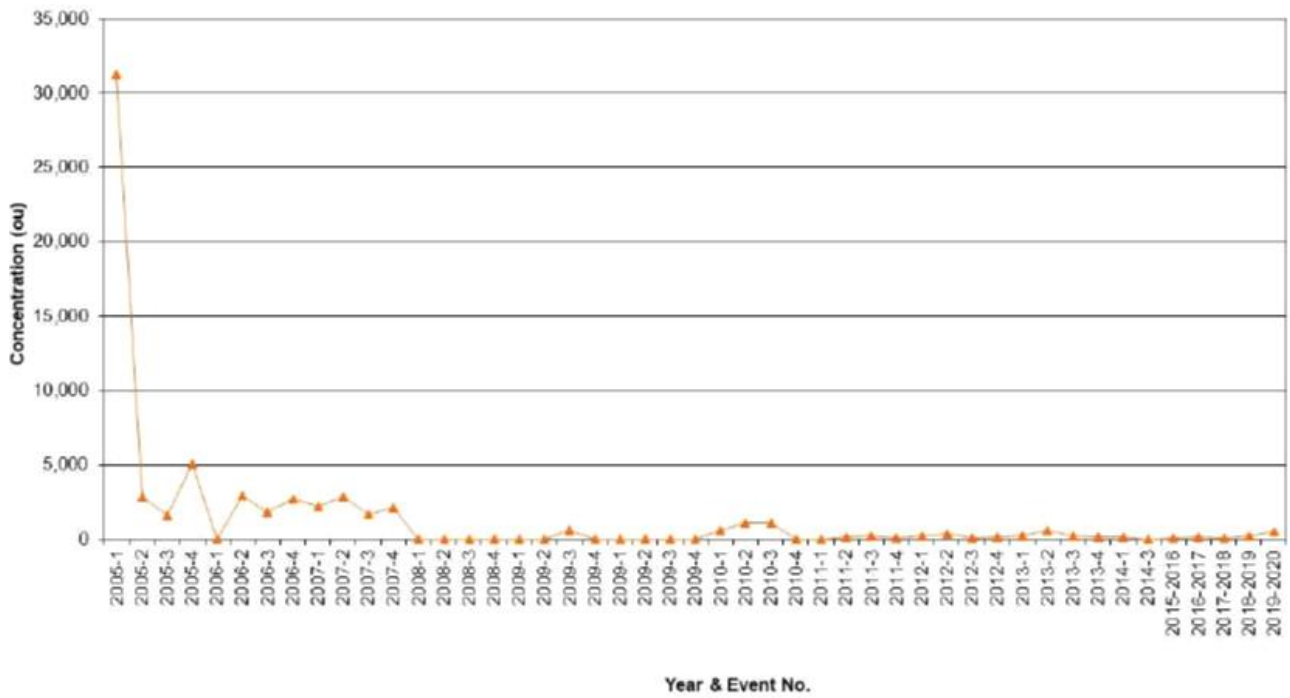


**Figure 49 - Pond No. 2 (EPL Point No. 20)**

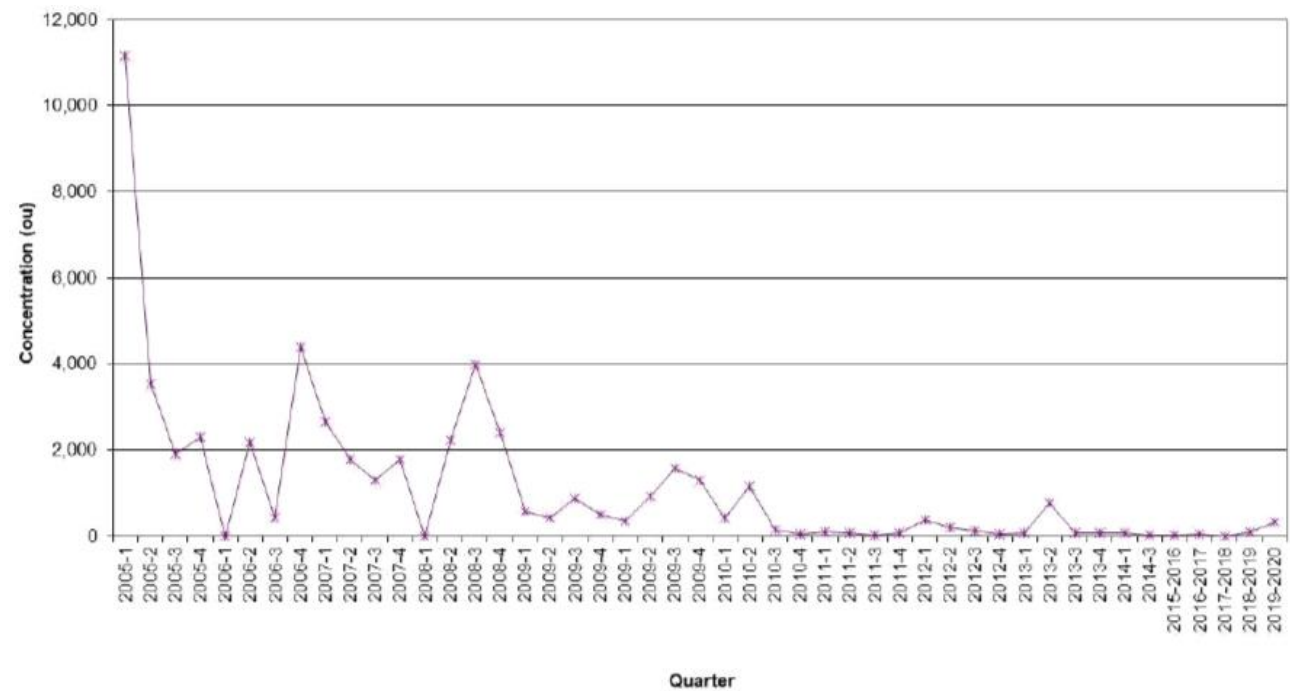




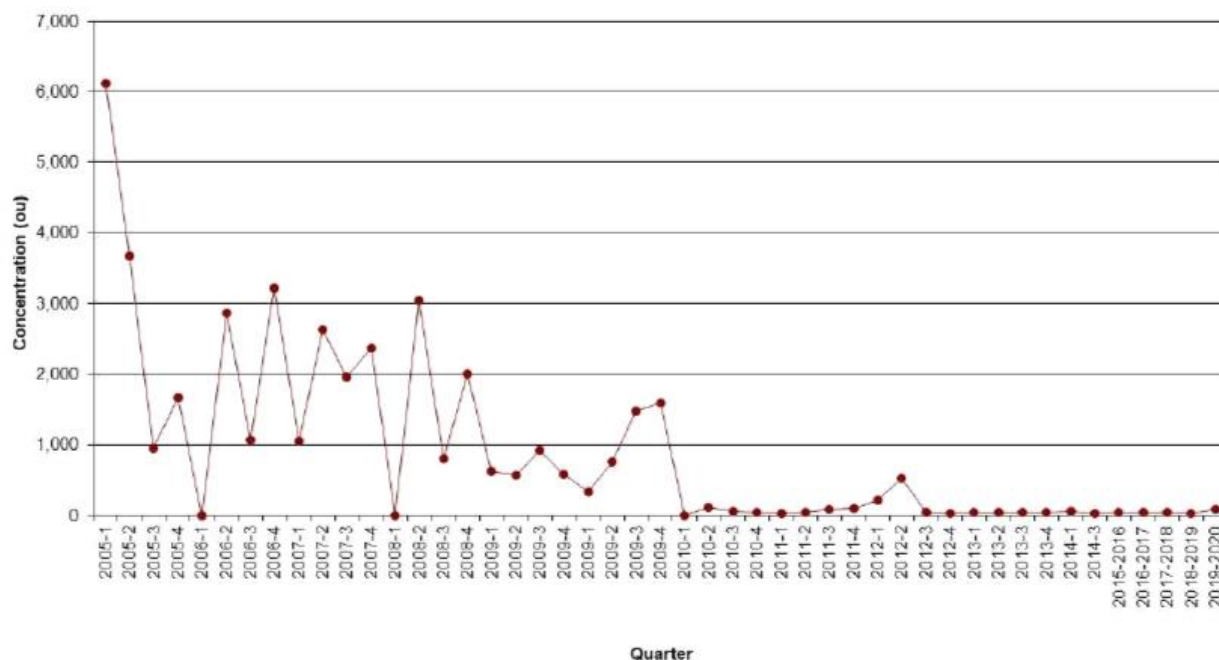
**Figure 50 - Pond No. 3 (EPL Point No. 21)**



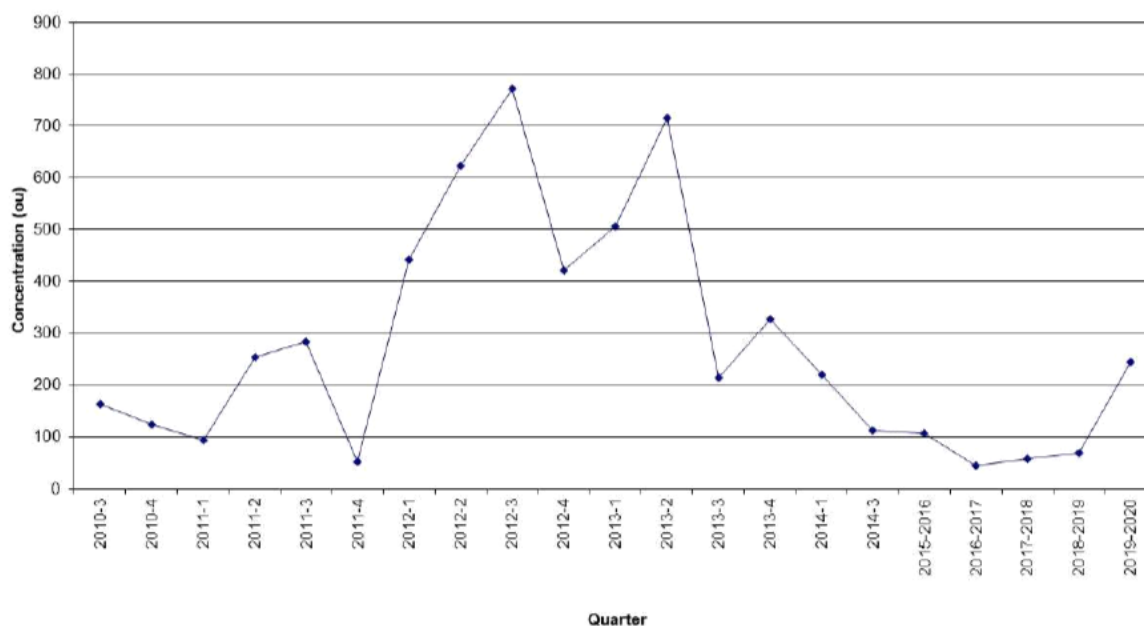
**Figure 51 - Pond No. 5 (EPL Point No. 23)**



**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 Development Consent. The 2020 independent odour audit was conducted in August 2020 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 2020 and the previous year 2019 are shown in Figures 54 and 55 respectively.

A comparison between Figures 54 and 55 shows a slight extension in the 20OU contour plot around the Farm storage dams, north east of the factory, from 2019 to 2020. This increase is due to an increased odour concentration due to very low dam levels and no rainfall creating some stagnant water in some of the dams during testing.

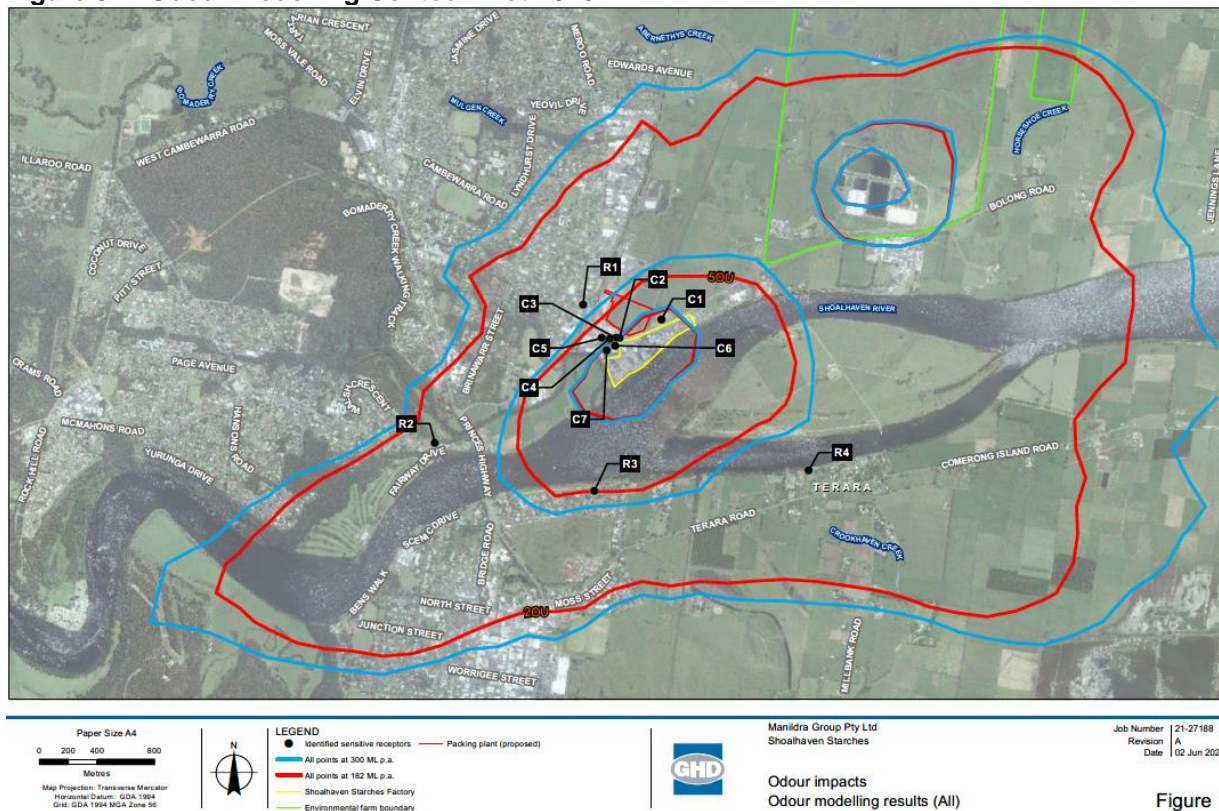


The figures below show 2 contour plots for comparison as follows:

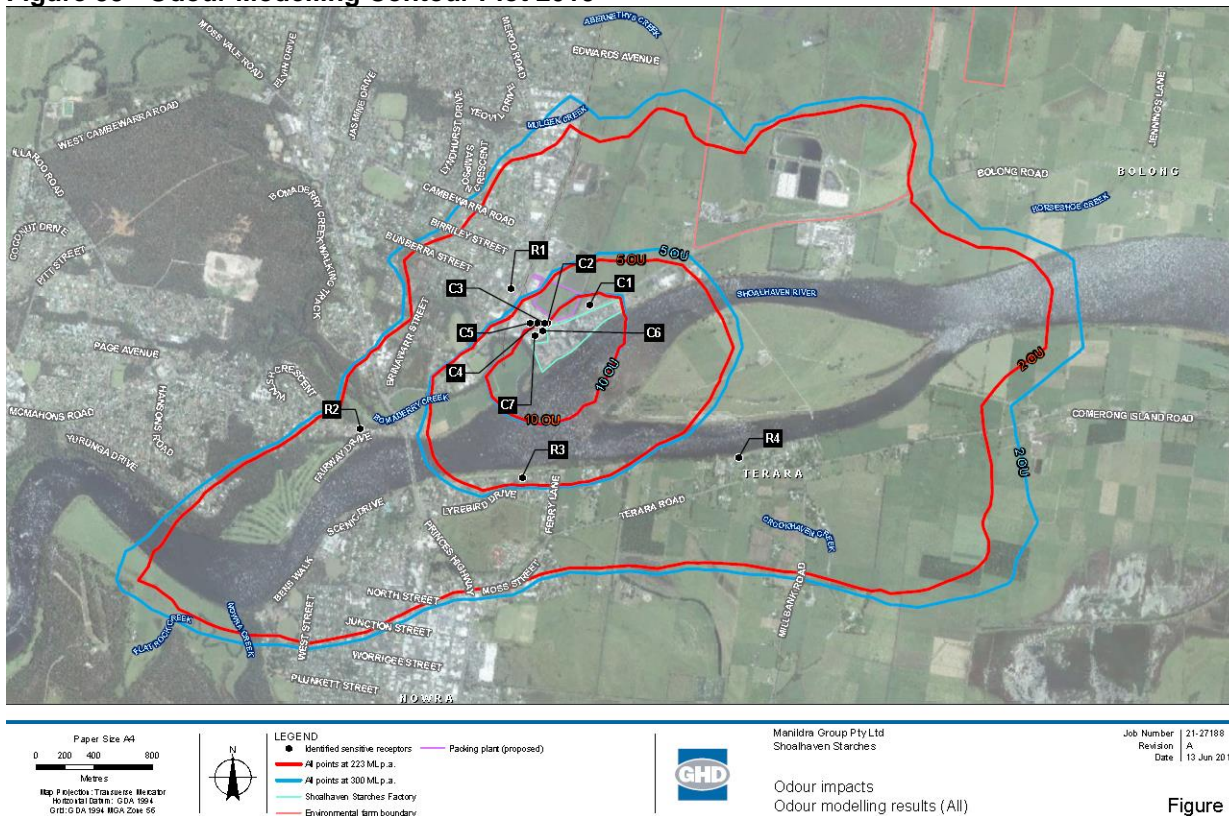
1. Red = All odour sources at current ethanol production levels (182 ML pa)\*
2. Blue = All odour sources scaled to approved ethanol production limit (300 ML pa)

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

**Figure 54 - Odour Modelling Contour Plot 2020**



**Figure 55 - Odour Modelling Contour Plot 2019**



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).

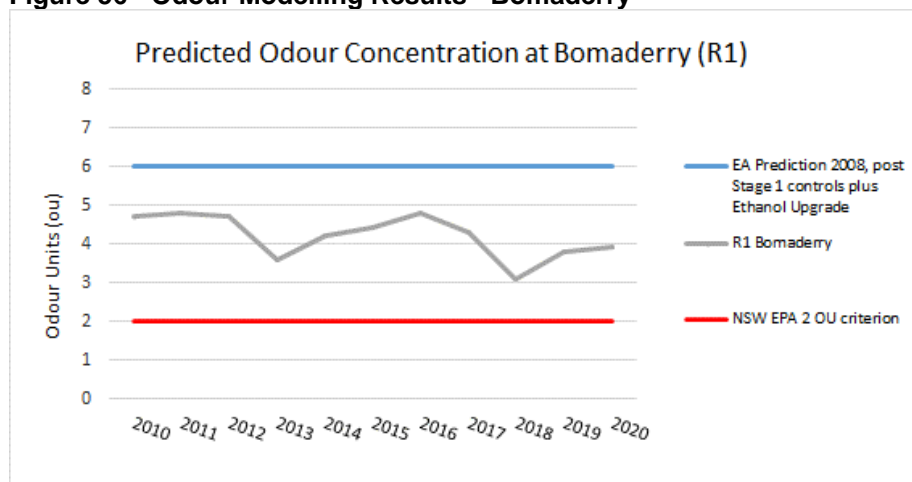
Predicted odour concentrations at all 4 receptors are shown to exceed the NSW EPA 2OU criterion however all predicted odour concentrations are at or below the odour concentrations approved in the 2008 EA (when rounded), as shown in Table 6 and Figures 56 to 58.

**Table 6 Annual odour modelling predicted odour concentrations**

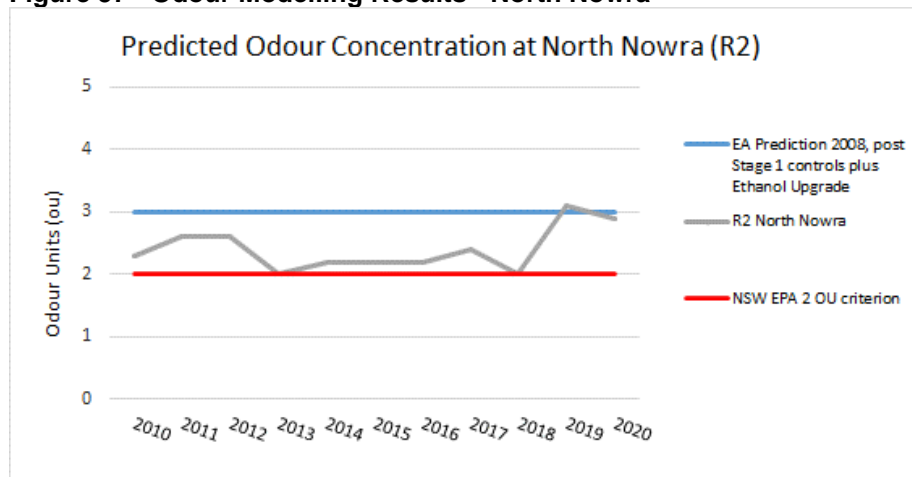
Receptor Location	EA 2008 Approval	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
R1 Bomaderry	6	4.7	4.8	4.7	3.6	4.2	4.4	4.8	4.3	3.1	3.8	3.9
R2 North Nowra	3	2.3	2.6	2.6	2	2.2	2.2	2.2	2.4	2.0	3.1	2.9
R3 Nowra	5	4.8	4.9	5.3	4.2	4.9	4.6	5.1	4.9	3.6	5.3	5.0
R4 Terara	5	5.3	5.1	5.4	3.9	4.6	4.6	5.3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

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

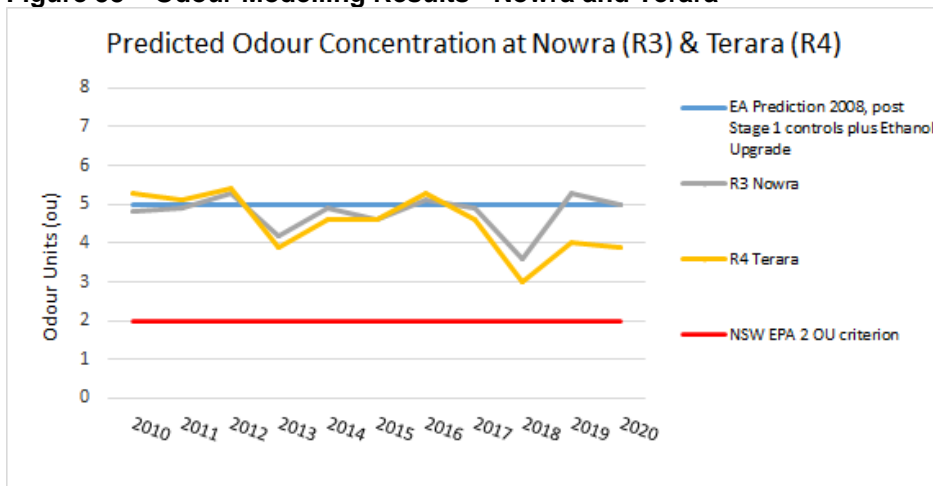
**Figure 56 - Odour Modelling Results - Bomaderry**



**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 recommendations from the 2020 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 - 2020 Independent Odour Audit Non-compliances**

Cond. No.	Requirements	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	The quarterly odour monitoring reports are discussed in Section 2.9, and attached as Appendix D to this audit report. Section 2.9.1 details the "process conditions" during each monitoring campaign, including which processes were not available for testing. It is noted that the Quarter 4 monitoring was not performed on the DDG exhaust stack.	The DDG exhaust stack was not tested during Quarter 4 as the 140FT boom-lift was not available to access the sample point on the nominated days of testing.	-	Complete. No further action required.

**Table 8 - 2019 Independent Odour Audit Recommendations**

Audit Reference	Audit Report Recommendations	Shoalhaven Starches (SS) Response	Timeframe	Status
2019-20-IOA-A	As identified at Section 2.4 and Section 2.9, and as stated in the Biofilter Capacity and Condition Assessment report #23, the biofilters are not achieving the de facto 500 OU standard. This should be flagged for ongoing observation and remedial action as required.	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 defacto odour concentration standard. Over the 4 quarters the odour removal efficiency of Biofilter A is 93% and Biofilter B 88%. The Biofilter B media was replaced in September 2020.	-	Complete. No further action required.
2019-20-IOA-B	As identified in Section 2.9.3 and Table 10, there are identified a number of reporting inconsistencies between data presented in the quarterly reports.	Shoalhaven Starches to follow-up with the testing consultant to rectify the reporting inconsistencies.	Dec-20	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.

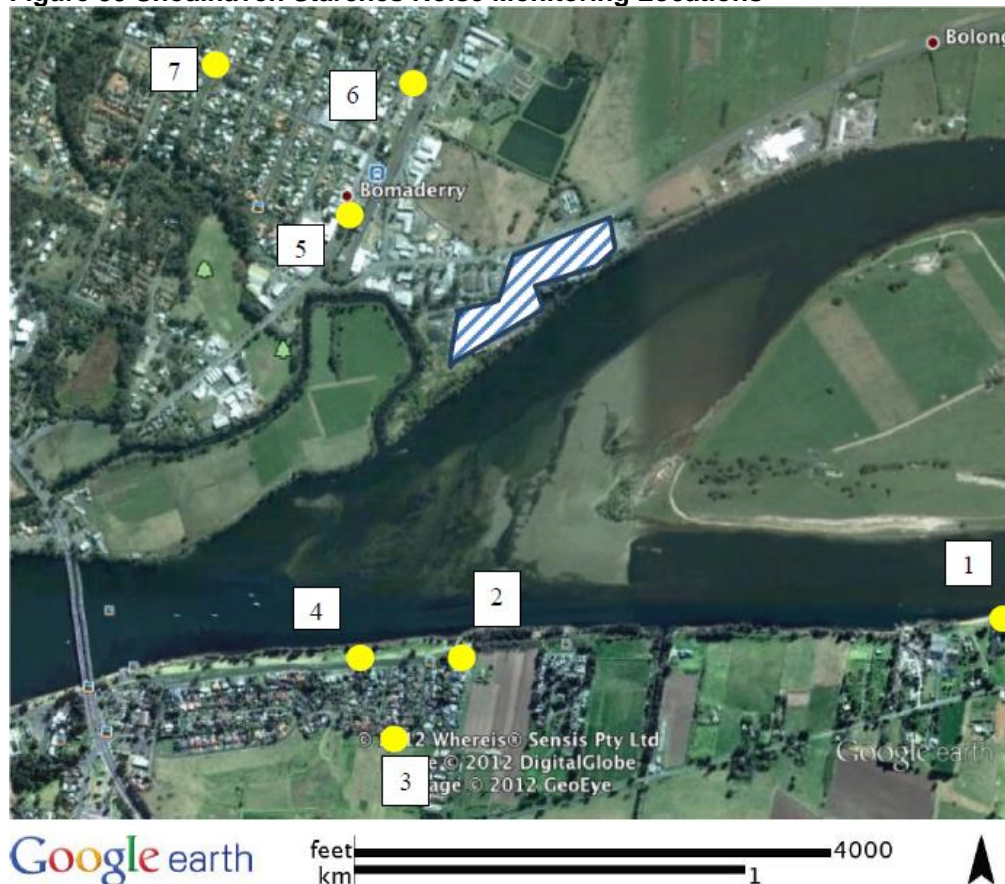
**Table 9 Site Noise Limits**

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 - Meroo 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 Meroo 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 August 2019 and January 2020 were found to be 100% compliant with the EPL noise limits as shown in Tables 10 and 11 respectively.

**Table 10 – August 2019 Noise Monitoring Results**

Location	Date	Measurement Period	Measured levels dB(A) LA <sub>eq</sub>	100 percentile limit	Exceedance (yes/no)
1	13/08/2019	15 min	<37	38	no
2	14/08/2019	15 min	<38	38	no
3	14/08/2019	15 min	<26	38	no
4	14/08/2019	15 min	<35	38	no
5	14/08/2019	15 min	<40	42	no
6	14/08/2019	15 min	<39	42	no
7	14/08/2019	15 min	<34	40	no

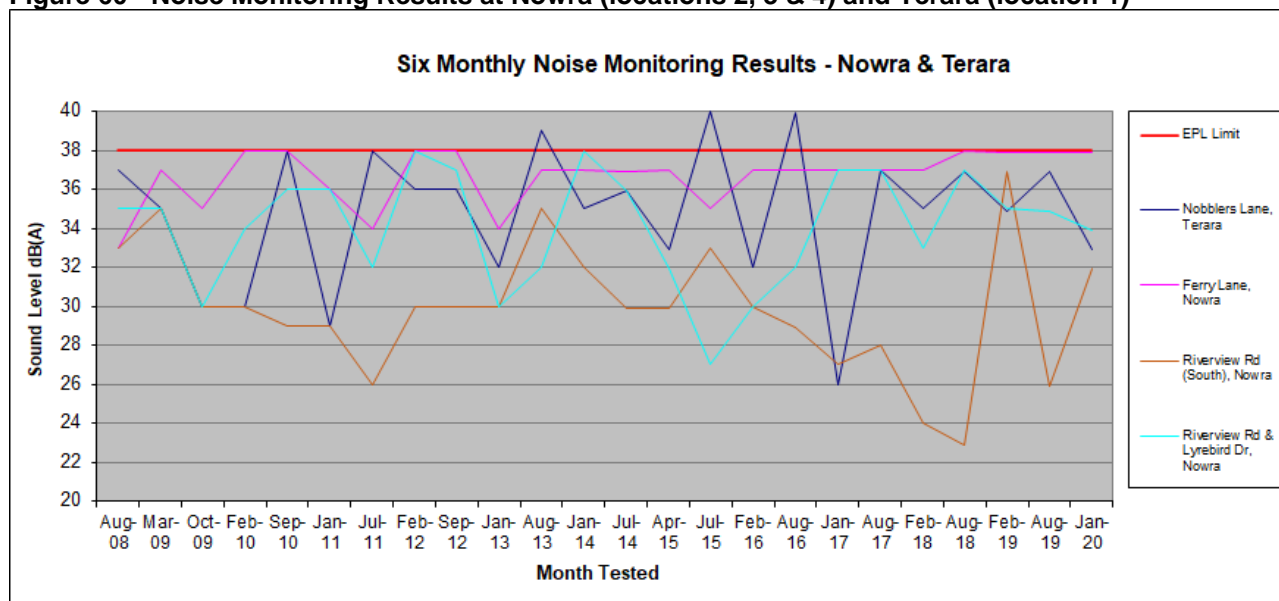
**Table 11 – January 2020 Noise Monitoring Results**

Location	Date	Measurement Period	Measured levels dB(A) LA <sub>eq</sub>	100 percentile limit	Exceedance (yes/no)
1	30/01/2020	15 min	<33	38	no
2	30/01/2020	15 min	<38	38	no
3	30/01/2020	15 min	<32	38	no
4	30/01/2020	15 min	<34	38	no
5	30/01/2020	15 min	<42	42	no
6	30/01/2020	15 min	<40	42	no
7	30/01/2020	15 min	<40	40	no

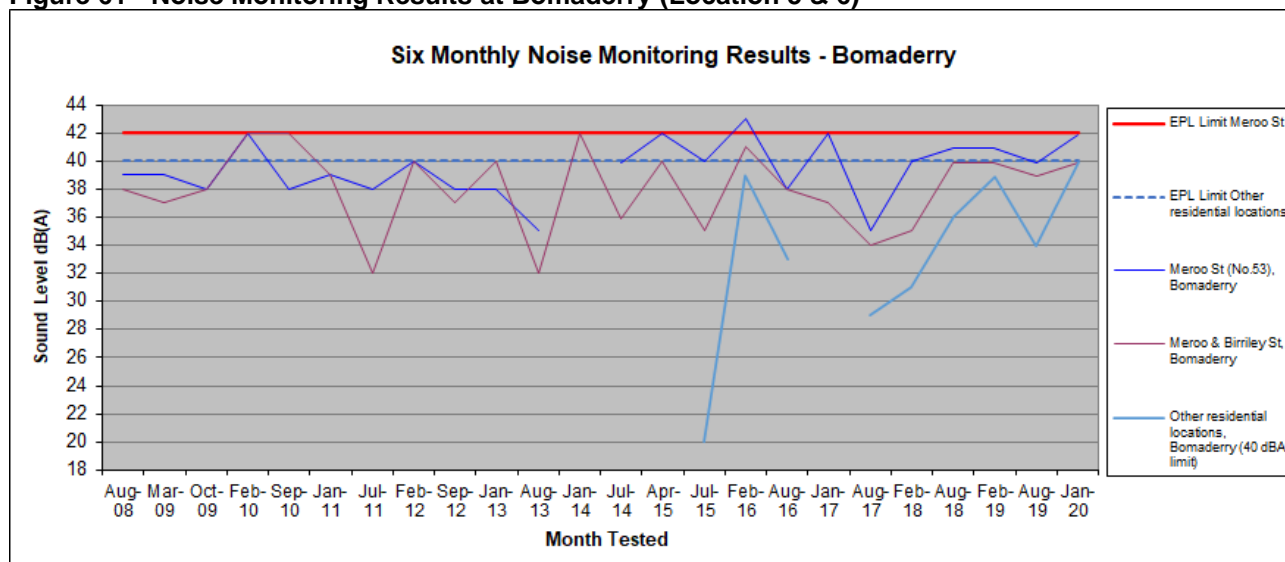
Note the noise limit descriptor has been changed from LA<sub>10</sub> to LA<sub>eq</sub> as per the site's EPL variation on 20-6-18 however the noise limits remain the same.

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 as shown in Table 12 below.

**Table 12 – Paper Mill Site Noise Monitoring Results**

Location	Contribution	Noise Limit
R1 - 390 Bolong Rd, Bomaderry	22	40
R2 - Pig Island	19	40
R3 - 39 Hannigans Ln, Bomaderry	19	40
R4 - 1 Bryant St, Terara	15	40

Note: Calculated Leq (15 min) Sound Level Contributions dB(A)

### 6.6.1 Noise Validation

Noise validation monitoring, as required by condition 14N of the Consent, was conducted during the reporting year for the Beverage Grade Ethanol Plant MOD 12. A copy of the noise validation report is attached in Appendix A.

The report concludes noise measurements show 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 report.

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

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 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

An update to Shoalhaven Starches Landscape & Vegetation Management Plan (LVMP) was completed during the reporting year and was approved by the DPIE on the 15<sup>th</sup> April 2020. Council also provided the following comments which were incorporated into the final LVMP:

Council recommends that notes be added to Table 5 and Appendix G of the submitted Plan (Revision No. 1.0.E, dated 02/03/2020) including:

- *Revegetation and maintenance works will be conducted according to Shoalhaven Starches Ethanol Plant Landscape and Vegetation Management Plan by Coffey Environments (dated 2009);*
- *Revegetation works will include planting species chosen from those recommended for canopy, midstorey and groundcover from Attachment A of the Plan by Coffey Environments (dated 2009);*
- *Revegetation and weed control works would be conducted by a qualified restoration contractor.*

Updates (shown in red) to Table 5 in the LVMP are shown in Table 14 below. Actions which have been completed during the reporting year includes 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.



**Table 14 - LVMP Summary of Actions Update 2020**

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 <sup>1</sup>	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 <sup>1</sup>	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 December 2019	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 <sup>1</sup>	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	Commence by December 2019.	In progress	
			Dense plantings of groundcover species			
		Both banks, south of electrical	Suppress Privet and spray other weeds	Estimate 2 - 3 years to complete	In progress	
			Plant eastern bank with selection of midstorey species			

		easement to outflow <sup>2</sup>				
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 <sub>1</sub>	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 (estimate August 2019)	Complete	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 (estimate Dec 2021)	Incomplete	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 8 environmental complaints were received in 2020, compared to 3 received in 2019. Total complaints received by year and by type are shown in Figures 62 and 63 respectively.

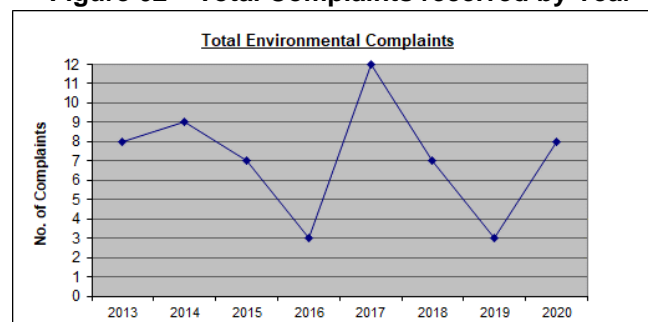
Table 15 details the types of complaints received during the year and the actions taken to address the complaint.

**Table 15 - Summary of Complaints 2020**

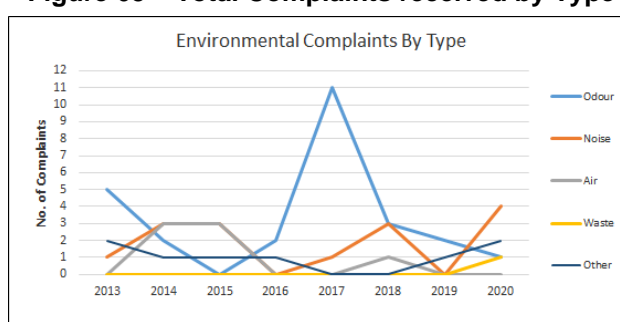
Date and Time	Location	Issue	Action Taken
27-5-19 14:33	Bomaderry	Heavy Vehicle Activity	Complaint received via Council's Traffic Unit in relation to heavy vehicle activity during the night along Merroo Rd Bomaderry. Shoalhaven Starches transport companies were instructed that all heavy vehicle movements travelling to & from the site during the night-time period must only use the Bolong Rd and Princes Hwy route. Signs also erected on Shoalhaven Starches site entry and exit gates. Council advised of these actions.
14-6-2019 13:00	Back Forest	Odour	Complaint received that Manildra Farm is emitting an offensive odour. Investigation did not reveal any likely causes. No further action taken.
29-10-209 12:20	Bomaderry	Lights	Complaint received of flashing light from Farm irrigators operating at night. The lights were covered up and night-time irrigation activities minimised in this area where possible.
15-11-2019	Bomaderry	Waste	Complaint received via EPA of fill containing asbestos located on Shoalhaven Starches premises. The stockpile is being managed correctly (adequately capped and clearance certificate issued); details submitted to the EPA. No further action taken.
24-3-2020 15:28	Bomaderry	Noise	Complaint received via EPA from nearby resident of train idling noise at the Shoalhaven Starches premises. Train was immediately shut down once notified. Discussed issue with the complainant who appeared satisfied with the actions.
4-4-2020 14:09	Bomaderry	Noise	High pitched 'machine reversing' noise. The issue was rectified, and the complainant notified of the cause and the actions taken to rectify the issue.
17-4-2020 10:37	Bomaderry	Noise	Complaint received via EPA of general increase in noise from the premises. Latest noise monitoring reports were in compliance with the site's noise limits and the reports submitted to the EPA as requested. No further action taken.
24-4-2020	Bomaderry	Noise & Air	Same complainant as above complaint of increase in noise from the premises, and secondary complaint regarding air quality. Cause unknown. Advised complainant that investigations are continuing.

Note: complaints received are aligned with the EPL reporting year from 1<sup>st</sup> May 2019 to 30<sup>th</sup> April 2020.

**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 2020 reporting year.

**Table 16 - Community Funding Recipients**

ORGANISATION / INDIVIDUAL / CHARITY	REMARKS
Shoalhaven Business Chamber	Sponsorship of Business Awards
One Red Thread Textile Art Exhibition	Sponsorship of Textile Art Prize
Fire and Rescue NSW Fire Championships	Sponsorship of Championships
The Ultimate Soccer World Cup	Sponsorship of Soccer World Cup Denzel Atkinson specifically uniforms
Shoalhaven Anti-Poverty	Sponsorship of Anti-Poverty Week
Nowra High School	Donation towards Presentation Night
Nowra Legacy Group	Donation to Legacy Week
Shoalhaven River Festival	Donation to River Festival
PCYC Breakfast Club	Yearly donation for school breakfast club
North Nowra Bomaderry Netball	Sponsorship of 2020 season
Berry Shoalhaven Heads Junior Rugby League Football Club	Sponsorship for 2020 season
City of Shoalhaven Eisteddfod Inc.	Donation for prize money
Shoalhaven District Memorial Hospital	Donation
Shoalhaven Goes Gold - Shoalhaven Cancer Care Centre and The Kids Cancer	Sponsorship

Shoalhaven Starches participated in a number of community engagement activities during the year which included:

- On-going sponsorship and attendance of the local Schools Breakfast Club program
- Various guest speaker roles at local community groups including U3A Shoalhaven and Probus meetings, and the Teacher to Industry Tour organised by Shoalhaven City Council, which presented details on Shoalhaven Starches operations and new product developments.
- Active member of Shoalhaven Business Leadership Forum.
- At Shoalhaven District Memorial Hospital, Manildra Foundation recently contributed a Phillips monitor for the Paediatric Bay in the Emergency Department, to improve patient care and clinical performance.
- Donation of critically required hand sanitiser product to local schools, government institutions, health industries, community centres and other not-for-profits organisations in the region.
- Continued support of FoodBank Australia through the donation of flour and sugar as part of their Collaborative Program, contributing to more than 5 million serves of pasta annually for those Australians experiencing hardship.
- Breast Cancer Network Australia:
  - 55 Hours of Giving Campaign - matched every dollar raised in 55 hours - \$120, 000
  - Pink Bun Campaign - Donated 3 bags of baker's flour to every Bakers Delight franchise to bake the pink buns - 100% of proceeds go to the BCNA.
- Two Shoalhaven Starches Community Newsletters, September 2019 (edition 4) and April 2020 (edition 5), were prepared and distributed by mail to approximately 30,000 homes in the 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 2019 edition (September 2019) and Autumn 2020 edition (April 2020) 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 previous 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
<b>Total</b>	<b>116</b>	<b>15</b>	<b>36</b>	<b>167</b>

Table 18 provides an update on the status of the remaining non-compliances raised during the 2019 audit. Of the 15 non-compliances raised, 2 remain incomplete.

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 2020)**

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 <sup>st</sup> November 2016 to 'regularise' the storage of coal and woodchip stockpiles at the SS factory site and Environmental Farm.  DPIE approval received on 1 <sup>st</sup> 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 of building certificates, where required, to demonstrate compliance with the BCA for the	Building certificate applications were submitted in June 2018, however inspections and certificates have not been	Ensure all approval requirements are captured, tracked and assigned a responsibility in the compliance management	SS to follow-up with Council on building inspections.  The issue is being tracked in the Environmental Management	Jul-19	In progress.



NC No.	Sched	Cond	Requirement	Finding	Recommendation	Shoalhaven Starches Response	Timeframe	Status
			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.	issued.	system	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 contain 110% of the largest container stored within the bund. These bunds shall be designed and installed in accordance with the	The Proponent has not yet completed a review of the hazardous substance storage depots as recommended in the 2016 audit.	The auditor notes that a consultant has been engaged to undertake the review of the hazardous substance storage depots and it is scheduled to be completed by December 2019. No further recommendation is	The review has commenced by a Dangerous Goods consultant.  Checklists have been prepared detailing requirements of the relevant Australian Standards.	Dec-19	Complete. Report & recommendations issued Mar-20.

NC No.	Sched	Cond	Requirement	Finding	Recommendation	Shoalhaven Starches Response	Timeframe	Status
			requirements of all relevant Australian Standards, and/or DECC's Storing and Handling Liquids: Environmental Protection manual.		considered necessary.			
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 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;	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 auditor recommends that the Proponent either installs the marker, or reconsiders, in consultation with Council,	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
			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.		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 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	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	To be completed once works under condition 27A have been completed.	Oct-19	In progress.  Council to issue approvals.

NC No.	Sched	Cond	Requirement	Finding	Recommendation	Shoalhaven Starches Response	Timeframe	Status
			Railway Street to the Dairy Farmers site access.					
NC13	3	43	<p>The Proponent shall prepare and implement a Vegetation Management Plan for the project to the satisfaction of the Secretary. This plan must:</p> <ul style="list-style-type: none"> <li>a) be prepared in consultation with DWE and Council and be submitted to the Secretary for approval within 6 months of this approval;</li> <li>b) be prepared in accordance with DWE's Guidelines for Controlled Activities – Vegetation Management Plans; and</li> <li>c) include: <ul style="list-style-type: none"> <li>• a Landscape Plan for the project, which identifies screen plantings to minimise visual impacts;</li> <li>• detailed plans and procedures to: <ul style="list-style-type: none"> <li>- restore and maintain the waterways and riparian zones of Shoalhaven River, Bomaderry Creek, Abernethy's Creek and Broughton Creek on the site;</li> <li>- manage weeds in the vicinity of the riparian zones;</li> <li>- integrate works into the proposed landscaping for the rest of the site;</li> <li>- manage impacts on fauna; and</li> <li>- monitor the performance of the proposed restoration works.</li> </ul> </li> </ul> </li> </ul>	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	<p>The updated plan was submitted to the DPIE on 1<sup>st</sup> May 2019 and approved by DPIE on 15<sup>th</sup> May 2019.</p> <p>The plan is tracked in the EMS.</p>		Complete
NC14	4	2A	The Proponent shall notify the Secretary and any other relevant	On one occasion an incident was not reported	Ensure all notification requirements are assigned	Incident (on 14-12-2017) reported to the EPA was not		Complete

NC No.	Sched	Cond	Requirement	Finding	Recommendation	Shoalhaven Starches Response	Timeframe	Status
			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.	to Planning	a responsibility and appropriate systems are in place to trigger them when an incident occurs.	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.  No further action taken.		
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, 3 non-compliances were identified against the conditions of the Consent. Details of the non-compliances are as follows:

#### **9.1.1 Building Certificates for Alterations & Additions to Structures (Sch. 2, Cond. 8C)**

- Building certificates were not obtained by the end of July 2018 for structures as identified in Table A of the Consent.
- All building certificates applications, where required, have been submitted to Council, however Council inspections and certificates have not been issued.
- Council have reviewed the applications and have issued a detailed list of further documentation requirements.
- Shoalhaven starches are currently preparing the required information.

#### **9.1.2 Quarterly Odour Monitoring – DDG Pellet Plant Stack (Sch. 3, Cond. 6C)**

- Quarter 4 monitoring was not performed on the DDG exhaust stack.
- The monitoring was not completed as the 140ft straight boom-lift was not available to access the sample point on the nominated days of testing.
- Odour monitoring of the DDG Pellet Stack was completed for the remaining 3 quarters.
- No further action taken.

#### **9.1.3 Emission Limits – Boiler Stacks (Sch. 3, Cond. 9)**

- Continuous % opacity monitoring of the Combined Boiler 5 & 6 stack (Point 35) and Boiler 4 (Point 42) exceeded the EPL limit of 20% four and 13 times respectively during the reporting year.
- The exceedances appeared to be caused by Boiler 6 blocked, baghouse issues and spiking of the opacity meter which then returned to normal.
- Details of the non-compliances were reported in Shoalhaven Starches EPL 2019-20 Annual Return to the NSW EPA.
- No further action taken.

### **9.2 INCIDENTS**

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

#### **Incident Report 23-7-2019:**

- On Tuesday 23<sup>rd</sup> July 2019 at approximately 3:00 pm dilute liquid starch from Starch Dryer No.5 building was observed escaping the premises, resulting in a small discharge of dilute liquid starch to Abernethy's Creek via a stormwater drain.
- The incident was caused by a blocked drain inside the building resulting in dilute liquid starch filling the bund and overflowing outside the building.
- 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 installation of a valve on the stormwater drain to contain any potential spills in this area.
- There was no visible or other evidence of environmental harm caused by the event.
- No further response received by the EPA or follow-up actions required.

#### **Incident Report 16-10-2019:**

- On Wednesday 16<sup>th</sup> October 2019 at approximately 11:00 am clear liquid was observed escaping out of the ground on a Manildra owned paddock.

- Further investigation revealed the liquid to be factory process water (clear condensate) leaking from an underground pipeline which transfers the condensate to the Shoalhaven Starches Environmental Farm Wastewater Treatment Plant (WWTP).
- The incident was caused by a split in the underground pipeline caused by a suspected pipe defect (flat spot)
- The incident was immediately reported to the EPA, DPIE and other relevant authorities and a detailed incident report submitted within 7 days.
- The faulty section of pipe has been replaced.
- Pasture regrowth in the affected area has been observed over several months indicating no long-term impacts to the paddock has occurred as a result of the incident.
- Investigation was completed by the EPA and response letter dated 30-10-2019 advised the EPA will not be taking any further action regarding the 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.

## 10. ACTIVITIES TO BE COMPLETED IN THE NEXT REPORTING PERIOD

The following activities planned for the next reporting period include:

- Projects associated with the MOD 16 Consent which are anticipated to commence construction in the next 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.
  - Flour Mill C 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.
- Projects associated with the MOD 18 Consent are anticipated to commence construction 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 the hand sanitiser grade ethanol.
  - Re-purpose of the 'defatting' building for the production of hand sanitiser products.
- Commissioning and operation 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 will be re-used with the factory processes.
- The use of woodchip to replace approximately 4,400 tonnes per annum of coal in the boilers, subject to the approval of MOD 17.



## 11. APPENDIX A – Noise Validation Report Beverage Grade Ethanol MOD 12



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Manildra Group  
Shoalhaven Starches Pty Ltd  
PO Box 123  
Nowra NSW 2541

Reference: 1608003e-l

Attention: Mr John Studdert  
Telephone: 02 4423 8200  
Email: john.studdert@manildra.com.au

23 October, 2019

Dear John,

### **SHOALHAVEN STARCHES - PROPOSED MODIFICATION TO ETHANOL DISTILLERY NOISE VALIDATION REPORT**

Shoalhaven Starches has recently received a modified approval MP06\_0228 MOD 12 from the Minister for Planning for the modification of their existing distillation plant to enable an increase in beverage grade ethanol production at their existing facility on Bolong Road, Bomaderry, NSW.

At the time of the modification application Harwood Acoustics prepared an Environmental Noise Impact Assessment to accompany the application, reference 1608003E-R, dated 16/11/2016 (the NIA). The NIA assessed noise emission from all noise sources associated with the proposed modification and provided recommendations to reduce the level of noise.

This is to ensure ongoing compliance with the noise limits set in Environment Protection Licence 883 from the overall operation of the facility.

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

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



Environmental  
Acoustics

Occupational  
Acoustics

Architectural  
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Transportation  
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## 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 proponent 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 RECOMMENDED NOISE CONTROLS

This section shows the noise control recommendations that formed part of the original NIA to ensure that the level of noise emission from the operation of the modification achieved the noise design goals at all receptor locations.

### Sound Level Design Goals

#### Cooling Towers

*The cooling towers should have an individual sound power level of ( $L_w$ ) **87 dBA** each (assumes six (6) will be installed).*

#### Evaporators

*The plant and equipment associated with the evaporators should not exceed a combined sound power level ( $L_w$ ) of **90 dBA**.*

*This equates to a sound pressure level of 73 dBA when measured at a distance of 3 metres from the evaporators for all noise producing components of the evaporators combined.*

#### Beverage Grade Ethanol Plant

*The plant and equipment associated with the beverage grade ethanol plant should not exceed a combined sound power level ( $L_w$ ) of **90 dBA**.*

*This equates to a sound pressure level of 73 dBA when measured at a distance of 3 metres from the plant for all noise producing components combined.*

In addition to the recommended maximum allowable noise levels in the noise control recommendations, the use of mobile plant formed part of the overall noise predictions in the NIA and these included specifically:-

- 32 tonne forklift movements with an  $L_{10, 15 \text{ minute}}$  sound power level of **104 dBA**.

## 3.0 VISUAL INSPECTION AND NOISE MEASUREMENTS

The author visited the Site to inspect the plant and equipment associated with the modification and to undertake noise validation measurements on Wednesday 2 and Wednesday 9 October 2019.

Site inspections confirmed the location and type of all noise sources associated with the modification now it has been installed and is operational. This is with the exception of the evaporators which have partially been constructed but the project is now on hold.

An attended noise survey was carried out on Wednesday 2 October and noise measurements were taken at varying distances from each item of plant and equipment to establish typical sound power levels of each item, and to consequently determine compliance with the noise control recommendations (design sound levels) shown in Section 2 above.

It was not practicable to directly measure the level of noise emission from new plant installed at the new distillation columns due to the extraneous level of noise emission from nearby existing ethanol plant and equipment. Noise measurements were therefore taken at varying distances from, and in close proximity to, the new ethanol plant whilst it was in operation. On Wednesday 9 October 2019, the plant associated with the modification was switched off for routine maintenance. The noise measurements were then repeated at the same locations whilst the new plant was not operational. The contribution of noise emission from the new plant to the initial noise measurements has then been calculated by assessing the difference between the measured noise levels.

The measured and calculated level of noise emission from the noise producing items of plant and equipment associated with modification 12 have been used to establish sound power levels for each item of plant and equipment as shown in Table 1 below. Instrumentation used during the noise surveys is shown in the attached Appendix A.

**Table 1 L<sub>10</sub> Sound Power Levels – Plant and Equipment Mod 12**

Plant or Equipment	Measured and Calculated Sound Power Level (L <sub>10</sub> , 15 minute)	Maximum Allowable Sound Power Level from Original NIA (L <sub>10</sub> , 15 minute)	Complies
Cooling towers (each)	85 – 87	87	Yes
Beverage Grade Plant Motors	<90*	90	Yes
32 Tonne Forklift in container storage area	100 – 102	104	Yes

\* Calculated contribution of beverage grade plant motors was below 73 dBA (L<sub>10</sub>, 15minute) at 3 metres, which satisfies the requirement of a total sound power level of 90 dBA. In any event the level of noise emission from the new plant did not contribute to the overall level of noise emission from the existing ethanol distillery measured at various distances from the plant, for example, on the footpath adjacent to Bolong Road, which is therefore acceptable.

#### 4.0 SIX MONTHLY NOISE COMPLIANCE TESTING

Section 3 above shows that the measured and calculated levels of noise emission from the individual items of plant and equipment associated with Mod 12 are at or below the design noise levels established in the NIA.

It is not possible to measure the level of noise emission from the Mod 12 plant alone at the remote residential receptor locations in Bomaderry, Terara and Nowra.



However, Shoalhaven Starches are required to have six monthly Environmental Noise Compliance Monitoring to be conducted in January and July (or as near as is practicable, weather permitting).

Noise compliance testing was carried out by The Acoustic Group Pty Ltd (TAG) on two occasions since the beverage grade ethanol modification plant has been operational, as follows:-

- Tuesday 13 and Wednesday 14 August 2019, Report reference 49.3849.R85:MCC, dated 19/08/2019, and
- Thursday 7 and Friday 8 February 2019, Report reference 49.3849.R83:MCC dated 13/02/19.

Full details of the noise monitoring methodology and results can be seen in the TAG Reports. Both assessments concluded that the contribution of noise from the overall operation of Shoalhaven Starches complex at each of the relevant residential receptor locations in Nowra, Bomaderry and Terara, was within the noise limits set by Environment Protection Licence 883. It is reported that the during the 'Acoustic Compliance Monitoring' on both occasions, the beverage grade ethanol distillery and associated plant and equipment was fully operational. The level of noise emission from the plant and equipment associated with the Mod 12 is within noise design goals and is therefore acceptable.

#### 4.0 CONCLUSION

A noise validation assessment for plant and equipment associated with Mod 12 (modification to the ethanol distillery) at Shoalhaven Starches existing facility on Bolong Road, Bomaderry, NSW has been undertaken.

Noise measurements show 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. 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
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The instrumentation used during the noise surveys consisted of the following:-

Description	Model No.	Serial No.
SVANTEK Sound Level Meter	957	15395
SVANTEK Sound Level Meter	971	74362
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.