



**Shoalhaven Starches Pty Ltd**  
**Expansion Development Consent 06\_0228**  
**Annual Environmental Management Report 2019**

**Document Control**

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<b>Annual Environmental Management Report (AEMR) 2019</b>				
Name of operation			Shoalhaven Starches Pty Ltd	
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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**

Schedule Condition	Condition Description (summary)	Details	Section in Annual Review
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 1 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) % opacity exceeded EPL limit.	9.1.3

## 2. INTRODUCTION

The Annual Environmental Management Report 2019 (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 (DPE). The format of the report has been prepared in accordance with the Annual Review Guideline, published by the NSW Government in October 2015.

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

**Table 2 Annual Report Requirements**

By the end of October each year, or other timing as may be agreed by the Secretary, the Applicant shall review the environmental performance of the Development to the satisfaction of the Secretary. This review must:	Section in report
a) be submitted to the Secretary by the end of October each year;	-
b) describe the development that was carried out over the previous 12 month period, and the development that is proposed to be carried out over the next year;	4.3 and 10
c) include a summary of monthly production levels over the year;	4.1
d) include a comprehensive review of the monitoring results and complaints records of the Development over the previous year, which includes a comparison of these results against:	6 and 7
(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 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 ha of land used for fodder crops, pasture and cattle grazing.

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. Table 3 lists the site's current consents and licences.

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.

**Table 3 Development Consent and Licences**

<b>Consent Number</b>	<b>Description</b>	<b>Date Issued</b>
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
<b>Licence Number</b>	<b>Description</b>	<b>Version Date</b>
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 Proponent 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 2019 are shown in Figure 2 and Figure 3.

**Figure 2 - Monthly Ethanol Production Volumes**

CONFIDENTIAL – INFORMATION REMOVED

**Figure 3 - Monthly Flour Production Volumes**

CONFIDENTIAL – INFORMATION REMOVED

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 MOD 16 Consent).

**Figure 4 Annual Ethanol Production Volumes**

**Figure 5 Annual Flour Production Volumes**

CONFIDENTIAL – INFORMATION REMOVED

## 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 Project**

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:

- Operation of the new Flour Mill B (MOD 10) commenced. The project has resulted in an increase to the approved flour production at the factory from 400,000 tpa to 842,400 tpa. This project has further offset the flour transported to site from the Manildra Group flour mills located in western NSW. The project modification involved:
  - construction of a new flour mill adjacent to the existing flour mill, covering an area of 400 square meters and approximately 40 meters high, and
  - construction of four new grain silos 28m high contained within a new building adjacent to the new flour mill.
- Construction of the beverage grade ethanol distillery (MOD 12) and associated infrastructure to increase the proportion of beverage grade ethanol produced on site (total ethanol production at the factory would not exceed the approved 300 ML/yr) has been completed and operations commenced.
- Construction of the approved evaporators associated with MOD 12 has commenced but has not been completed as the project is currently on hold.
- Works associated with the conversion of boilers (MOD 13) has been completed and operations commenced.
- The Carbon Dioxide Plant (MOD 15) was approved on the 7<sup>th</sup> August 2018. This project involves the construction of a 100 tonnes per day CO<sub>2</sub> plant, operated by a third party (SupaGas), which will capture waste gas from Shoalhaven Starches fermenter tanks at the factory. The waste CO<sub>2</sub> gas is purified, converted to a liquid and transported off-site to food and hospitality markets for use in carbonated drinks. Construction of the CO<sub>2</sub> plant has commenced and is expected to undergo commissioning towards the end of 2019.
- The modification application (MOD 16) was approved on the 18<sup>th</sup> June 2019 which involves the construction of various plant and equipment including but not limited to a new gluten dryer, specialty starch processing facility, new Flour Mill C within the existing Flour Mill B building, co-generation plant, new boiler and an increase in flour production on site.

## 5. ACTIONS REQUIRED FROM PREVIOUS ANNUAL REPORT

Follow-up actions from the previous AEMR 2018 submitted to the DPE on the 31<sup>st</sup> October 2018 are outlined in the DPE's letter dated 29<sup>th</sup> November 2018. The DPE review letter considered the 2018 report to generally satisfy Condition 3 of the Consent.

The DPE letter noted that Shoalhaven Starches failed to notify the Department of the incident on 14 December 2017 regarding an overflow of thin stillage resulting in a small loss of containment from the premises and notes that the matter will be investigated separately by the Department.

As a result of this investigation, the Department issued Shoalhaven Starches with a Warning Letter for failing to comply with Schedule 4, Condition 2A of the Consent.

Lastly, the DPE 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.

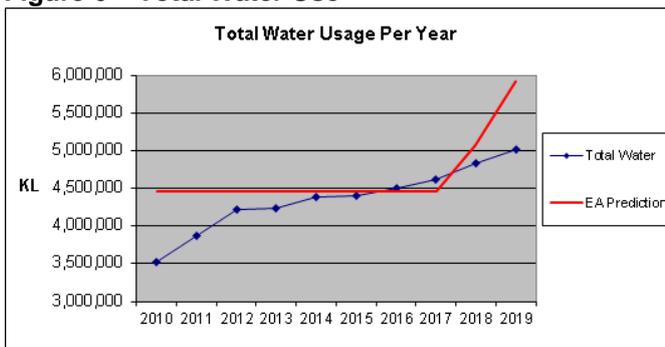
### 6.1 WATER USE

#### 6.1.1 Total Water

Figure 6 shows total water use has increased by 4% in 2019. Total water use has increased due to increased flour production on site via the new Flour Mill B (MOD 10) and less recycled reverse osmosis (RO) water use.

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

**Figure 6 – Total Water Use**

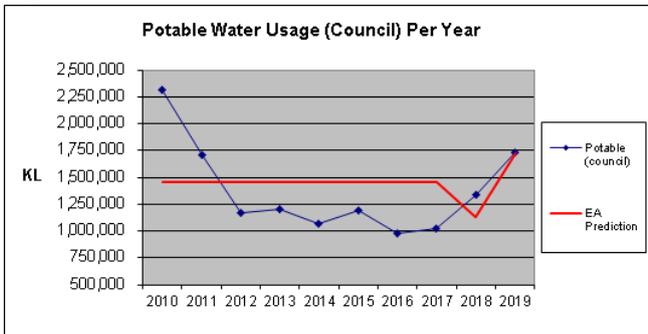


### 6.1.2 Potable Water

Figure 7 shows potable water (council) use has increased by 30% in 2019. The increase is due to less recycled (RO) water produced and increases in water use associated with beverage grade ethanol production (MOD 12).

The predicted potable water use was decreased the previous year as a result of water savings associated with the water recovery evaporator plant (MOD 12) which is partially constructed but is currently on hold.

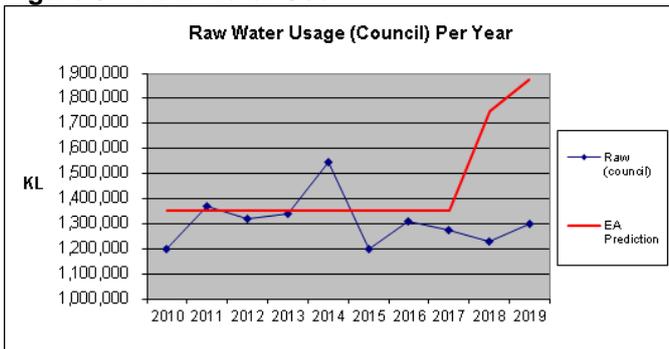
**Figure 7 – Potable Water Use**



### 6.1.3 Raw Water

Figure 8 shows raw water use has increased by 6% in 2019. Raw water is used in cooling towers and feedwater for the boilers.

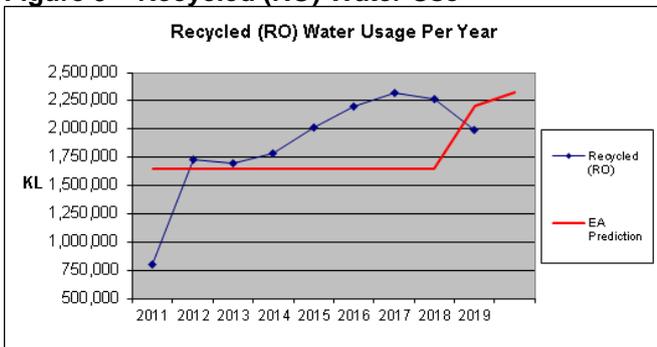
**Figure 8 – Raw Water Use**



### 6.1.4 Recycled Water

Treated water from the company's reverse osmosis (RO) plant is re-used back in the factory operations. Figure 9 shows recycled water use has decreased by 12% in 2019.

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



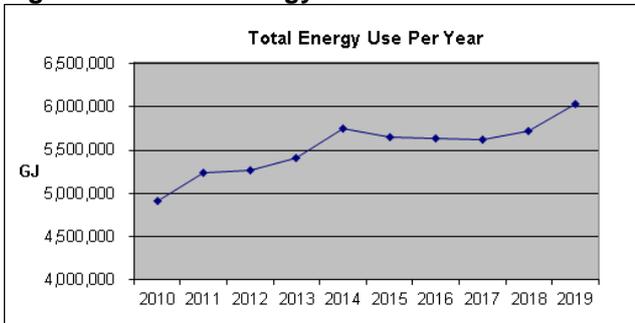
Water use on site is continually monitored and actions implemented to improve water efficiency during the production process. Installation of the waste water treatment plant and increased RO capacity has reduced our potable water usage since it was installed in 2010 (refer to Figure 7).

## 6.2 ENERGY USE

### 6.2.1 Total Energy

Figure 10 shows total on-site energy use (which includes coal, natural gas, biogas, woodchip and electricity) has increased by 5.3% in 2019. 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.

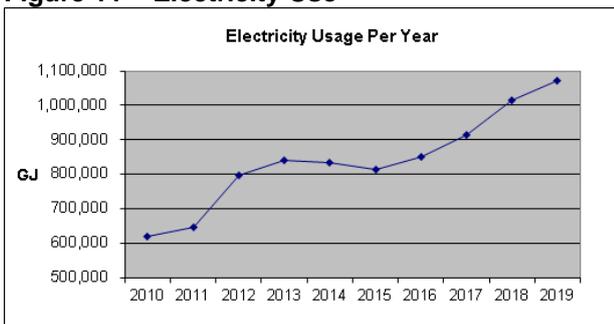
Figure 10 – Total Energy Use



### 6.2.2 Electricity

Figure 11 shows electricity use has increased by 5.7% in 2019. The increase is due to additional plant & equipment installed associated with the increased flour production on site as part of the new Flour Mill B (MOD 10) and beverage grade ethanol plant (MOD 12).

Figure 11 – Electricity Use



## 6.3 WASTE

### 6.3.1 Liquid Waste

Figure 12 shows total factory waste water volumes to the waste water treatment plant (WWTP) has slightly increased by 1.8% in 2019.

Figure 12 – Annual Liquid Waste Volumes to WWTP

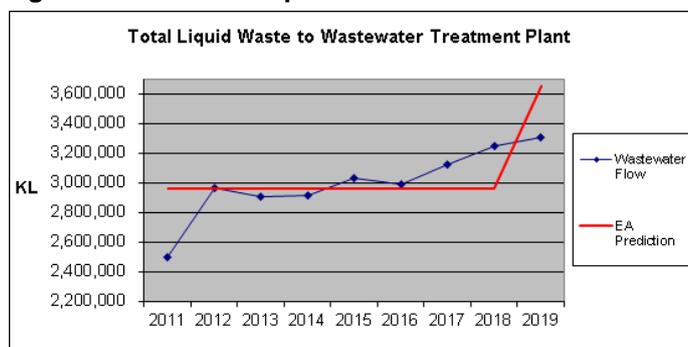
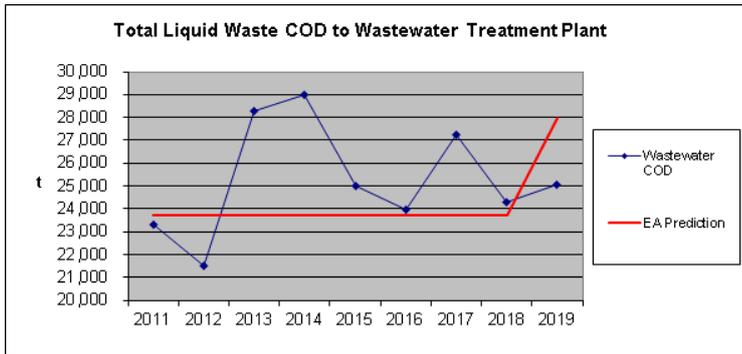


Figure 13 shows total waste water chemical oxygen demand (COD) load to the WWTP has increased slightly increased by 3% in 2019. The COD volumes will vary due to errors in measurement uncertainty associated

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**



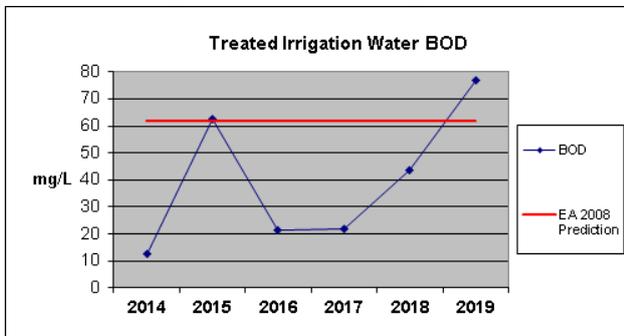
The WWTP continues to operate effectively as shown by the treated irrigation water quality monitoring results shown in the following section.

### 6.3.2 Treated Irrigation Water

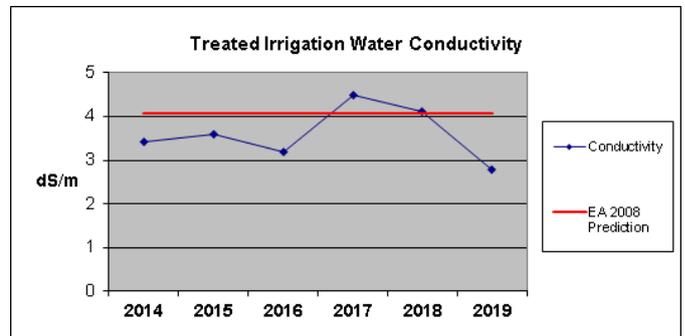
The waste water treatment plant (WWTP) continues to perform well since it was installed and began operating in 2011. Surplus treated water that is not passed through the aerobic Membrane Bio-reactor (MBR) and RO process for factory re-use is stored in ponds for irrigation on the sites Environmental Farm.

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).

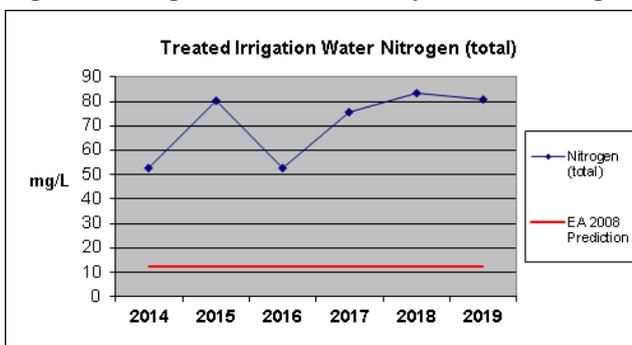
**Figure 14 Irrigation Water Quality – BOD**



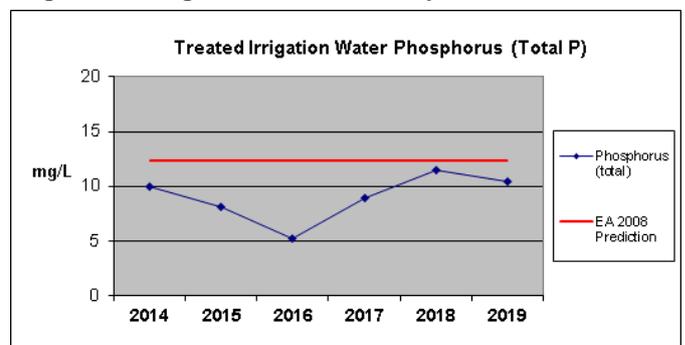
**Figure 15 Irrigation Water Quality - Conductivity**



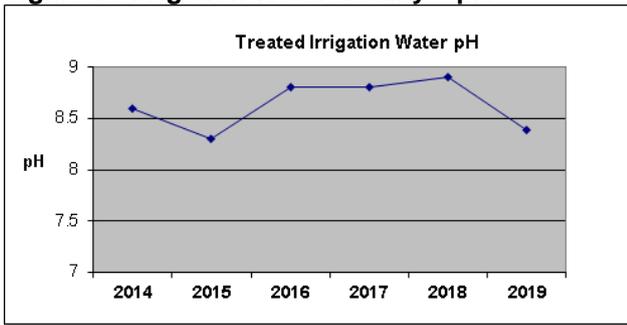
**Figure 16 Irrigation Water Quality – Total Nitrogen**



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



**Figure 18 Irrigation Water Quality – pH**

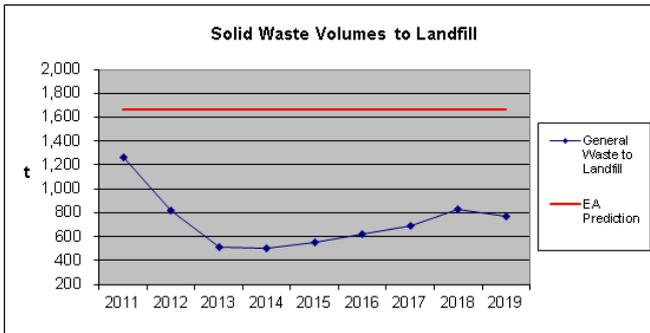


The 2019 results show the conductivity and total phosphorus (P) are below predicted levels in the EA and the Biological Oxygen Demand (BOD) slightly above predicted EA levels. Total nitrogen (N) levels are above the EA prediction, however the uptake of nitrogen for pasture growth outstrips supply from the waste water 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 7.2% in 2019. Whilst recycling of waste continues on site, solid waste is expected to increase as further expansion projects are completed in the next few years.

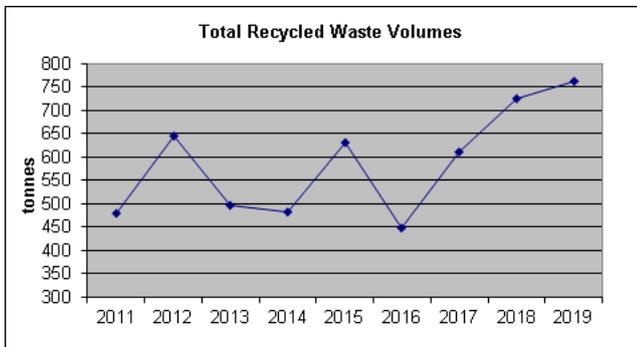
**Figure 19 – Annual Solid Waste Volumes to Landfill**



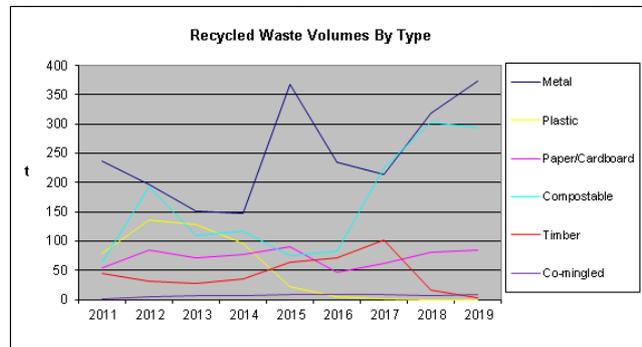
### 6.3.4 Waste Recycling

Figure 20 shows total waste recycled has increased 5.1% in 2019 and Figure 21 shows the annual recycled volumes by type.

**Figure 20 – Annual Recycled Waste Volumes**



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



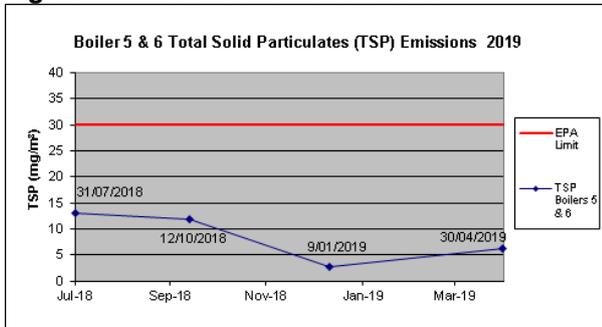
## 6.4 AIR EMISSIONS

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

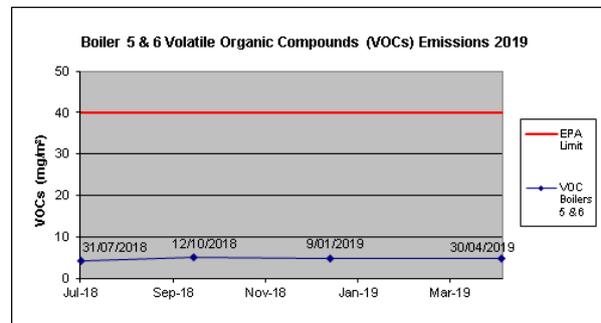
### 6.4.1 Boilers 5 and 6 Monitoring Results

Quarterly air emission testing results from the combined Boilers No. 5 and 6 stack required by the EPL (Monitoring Point 35) in 2019 are all within EPL limits, as shown in Figures 22 – 25.

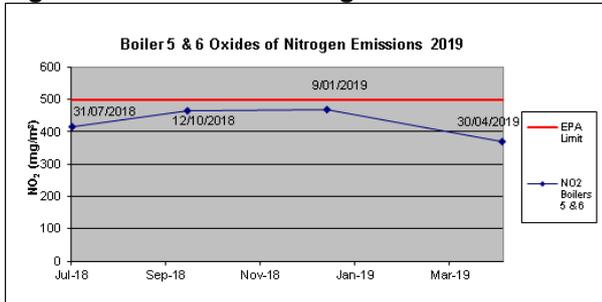
**Figure 22 - Total Solid Particulates**



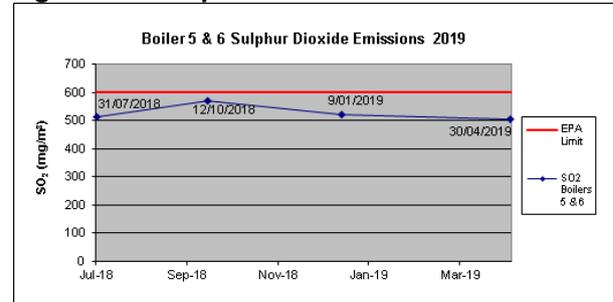
**Figure 23 – Volatile Organic Compounds (VOCs)**



**Figure 24 - Oxides of Nitrogen**

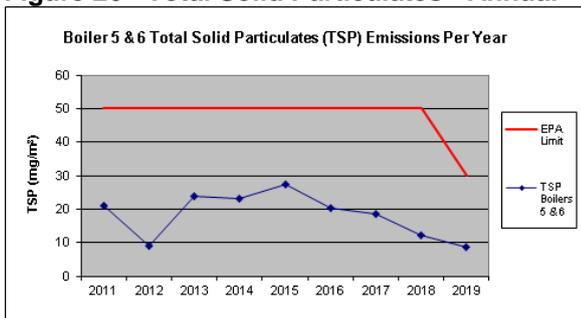


**Figure 25 – Sulphur Dioxide**

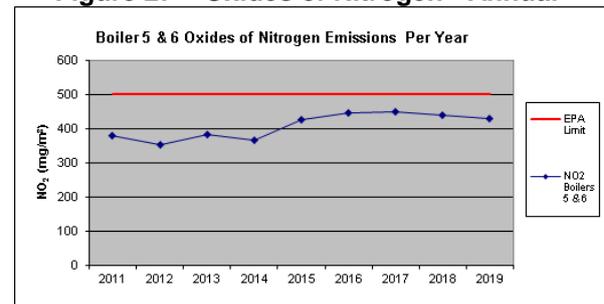


Figures 26 to 29 provide a comparison of average annual air emissions monitoring results from previous years. The results show the pollutants tested are all below EPL limits and are relatively steady. The decline in sulphur dioxide is likely the result of reduced sulphur level in the boiler feedstock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

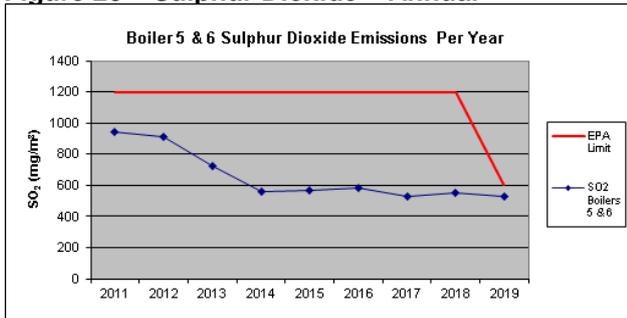
**Figure 26 - Total Solid Particulates - Annual**



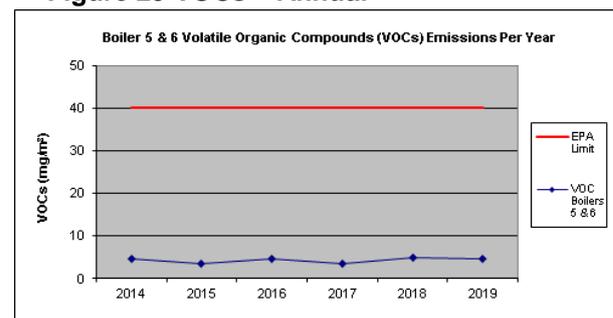
**Figure 27 – Oxides of Nitrogen - Annual**



**Figure 28 – Sulphur Dioxide – Annual**



**Figure 29 VOCs – Annual**



### 6.4.2 Boiler 2 Monitoring Results

Annual air emission testing required by the EPL for Boiler No. 2 (EPL Monitoring Point 45) was not completed during the reporting year due to the boiler not operating on the days of scheduled testing due to the boiler being on stand-by duty and maintenance work. Boiler 2 was then shut-down and refurbishment works completed in accordance with the conversion of boilers MOD 13 Consent.

Post-commissioning monitoring of Boiler 2 (condition 9B) was completed in July 2019 which demonstrated compliance with EPL emission concentration limits. Results will be reported in next year's annual report.

### 6.4.3 Boiler 4 Monitoring Results

The MOD 13 Consent for Boiler 4 (EPL Monitoring Point 42) conversion works was completed during the reporting year, and the post-commissioning monitoring of Boiler 4 was conducted in March 2019 (representing Quarter 4 of the 2018-19 reporting year) which demonstrated compliance with EPL emission concentration limits as shown in **Table 5** below.

**Table 5 – Boiler 4 Quarterly Emission Testing**

Sample Date	Results Obtained	Pollutant	Units	Results	100 percentile limit	Exceedances	Explanatory Note
28-Mar-19	18-Apr-19	Total Solid Particulate Matter	mg / m <sup>3</sup>	22	30	nil	
		Sulphur Dioxide (SO <sub>2</sub> )	mg / m <sup>3</sup>	465	600	nil	
		Oxides of Nitrogen (as NO <sub>2</sub> )	mg / m <sup>3</sup>	468	500	nil	
		Volatile Organic Compounds (as n-propane equivalent)	mg / m <sup>3</sup>	<3.9	40	nil	
		Cadmium	mg / m <sup>3</sup>	<0.00016	0.2	nil	
		Mercury	mg / m <sup>3</sup>	0.0018	0.2	nil	
		Metals Type 1 and Type 2 in aggregate	mg / m <sup>3</sup>	0.058	1	nil	

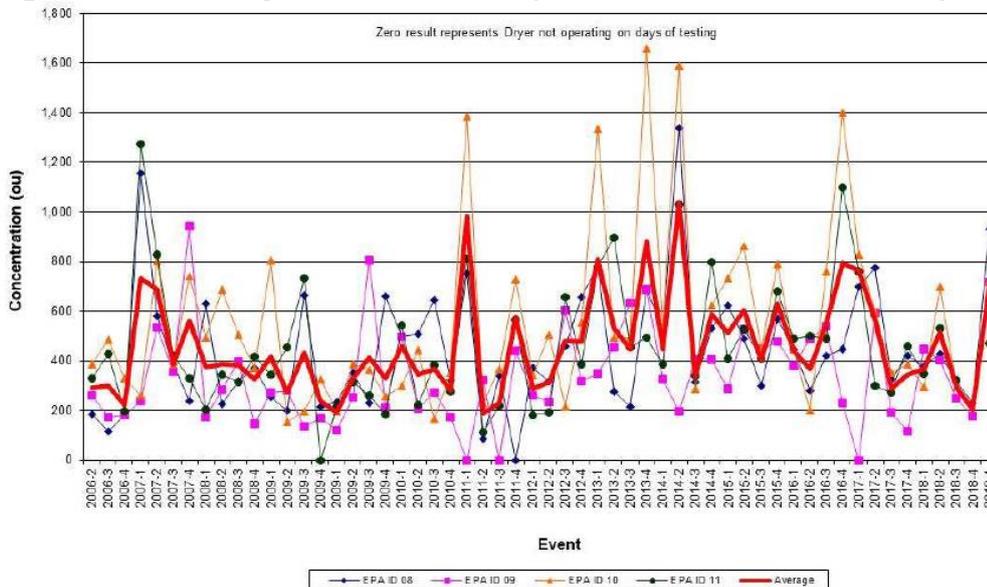
## 6.5 ODOUR

### 6.5.1 Quarterly Odour Monitoring

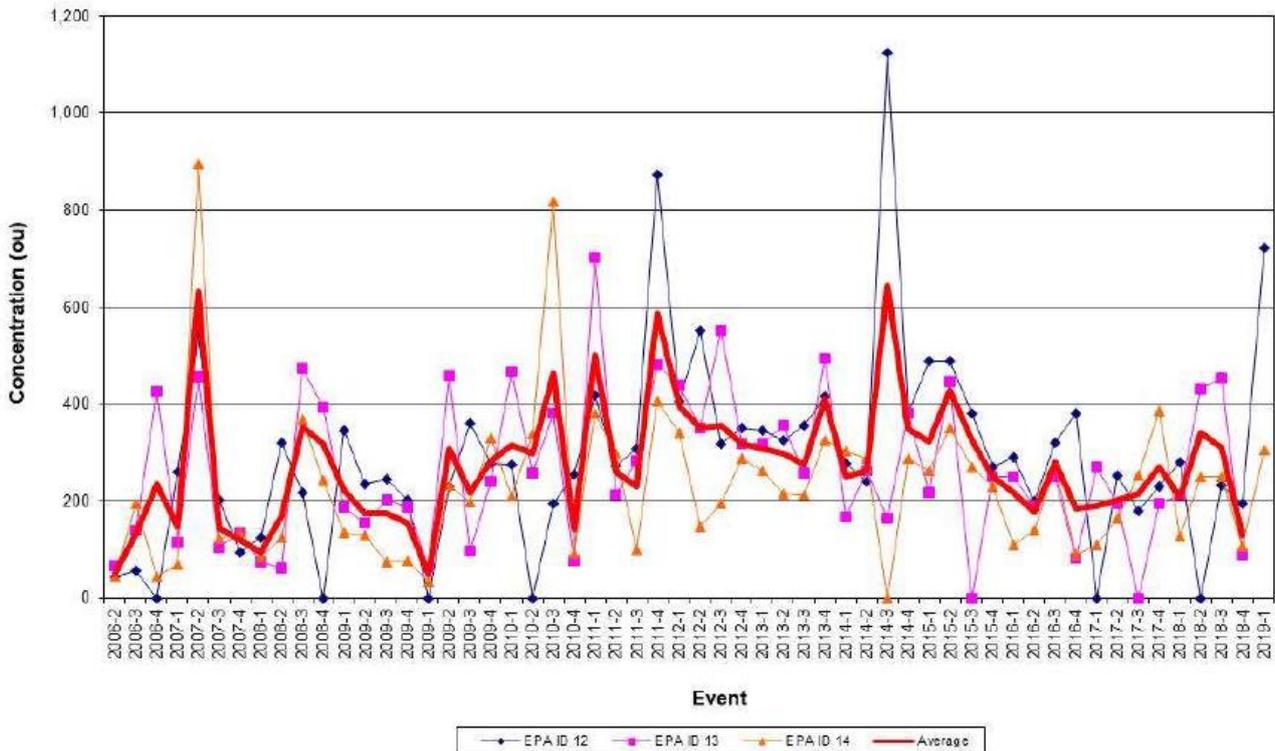
Quarterly odour monitoring has been completed in accordance with the site's EPL. There are no specific odour limits (or EA predictions) for the EPL monitoring point sources. Figures 30 to 37 show the historical quarterly odour results up to and including the 2019 reporting year (the labelling 2018-2 refers to Quarter 2 2018-19, 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 30 and 31 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 at least 50%. Based on this, the long term odour trends for the starch and gluten dryers remain relatively steady.

**Figure 30 - Gluten Dryers No's. 1, 2, 3 & 4 (EPL Point No.s 8, 9, 10 & 11 respectively)**



**Figure 31 - Starch Dryers No's. 1, 3 & 4 (EPL Point No's. 12, 13 & 14 respectively)**



Significant variations in Fermenter odour shown in Figure 32 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 32 - Fermenter's (EPL Point No. 44)**

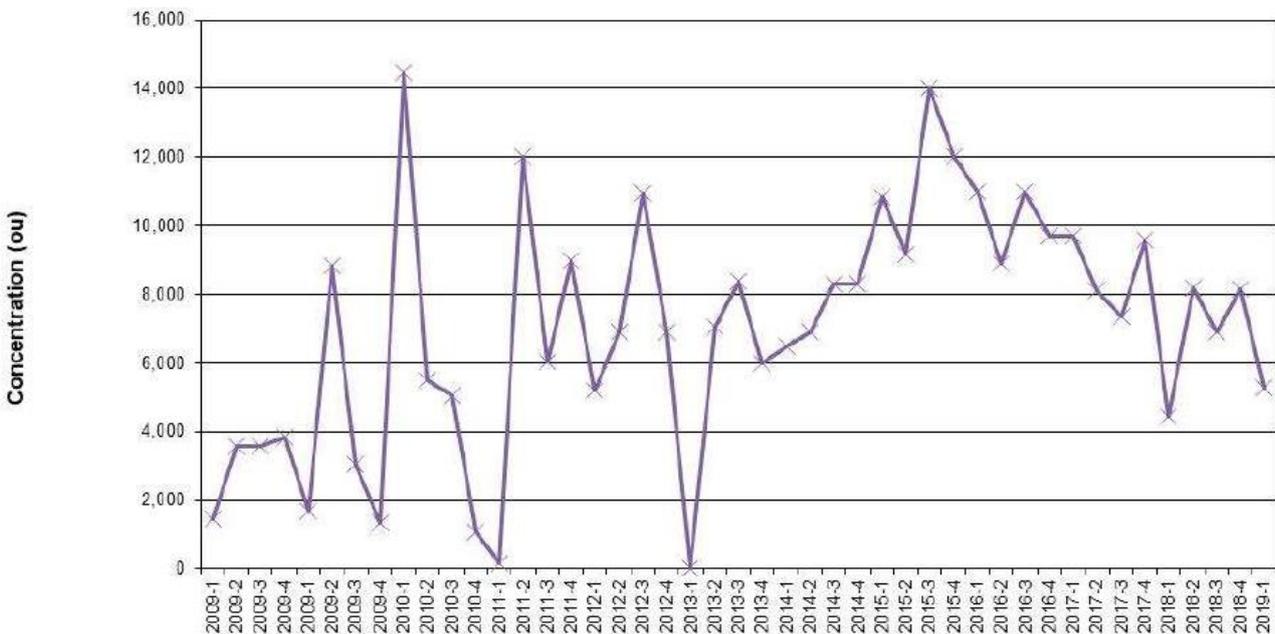
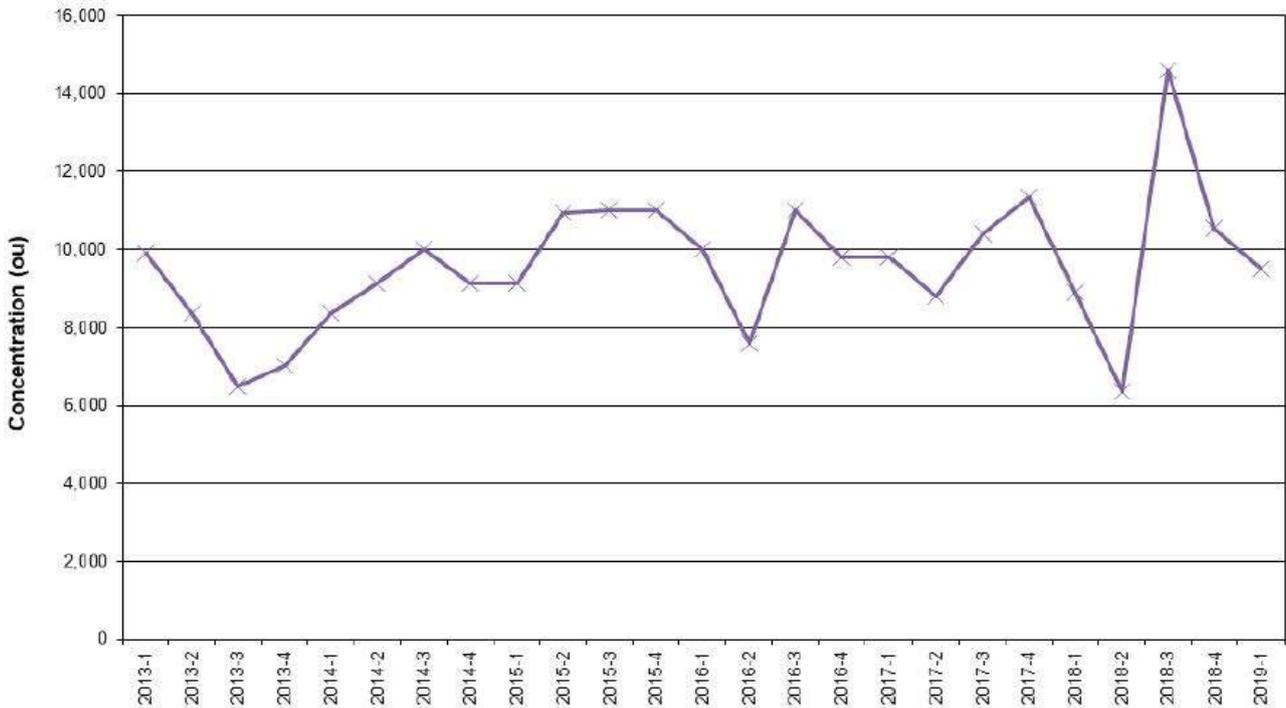


Figure 33 shows the odour emissions from the carbon dioxide (CO<sub>2</sub>) scrubber are relatively stable. The CO<sub>2</sub> scrubber takes air emissions from the fermenters through a water scrubber to strip out residual ethanol. The CO<sub>2</sub> outlet odour testing was added to the EPL on 8th November 2013.

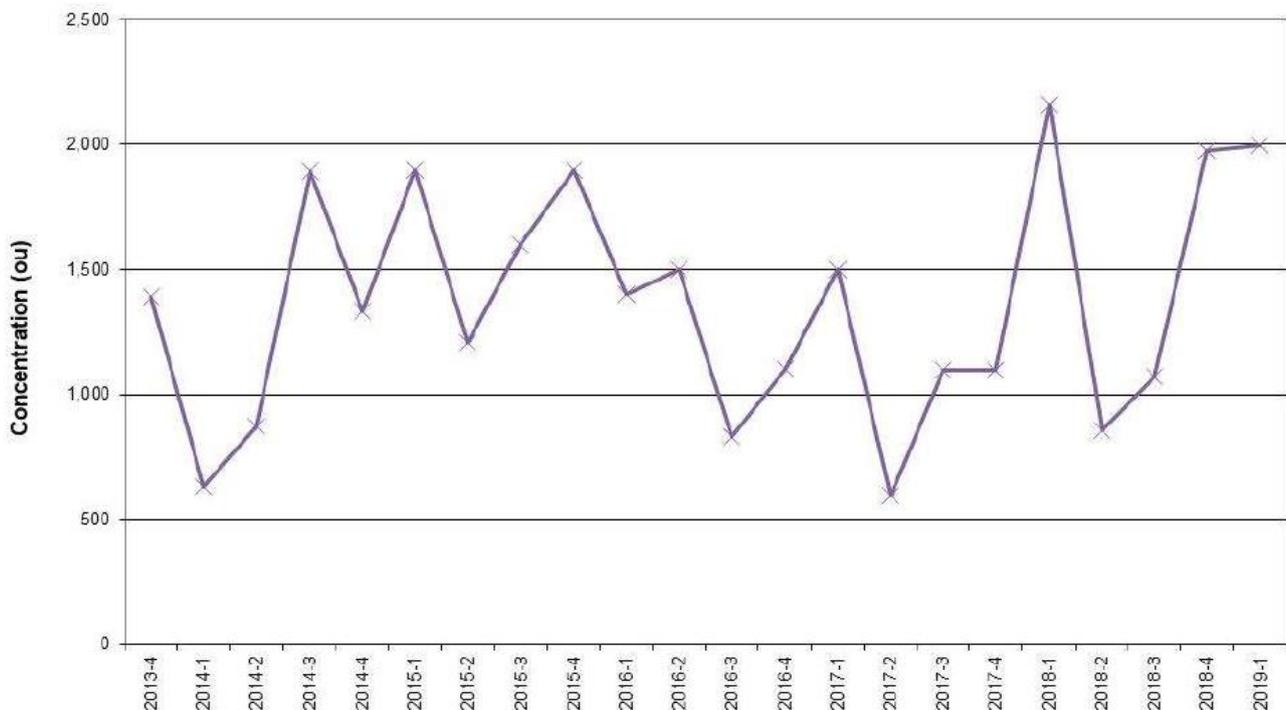
**Figure 33 - Carbon Dioxide Scrubber (EPL Point No. 16)**



Figures 34 and 35 shows odour emission results from the Boiler 5 & 6 (EPL Point 35) stack and Boiler 4 (EPL Point 42) stack 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.

**Figure 34 - Combined Boiler 5 & 6 Stack (EPL Point No. 35)**



**Figure 35 - Boiler 4 (EPL Point No. 42)**

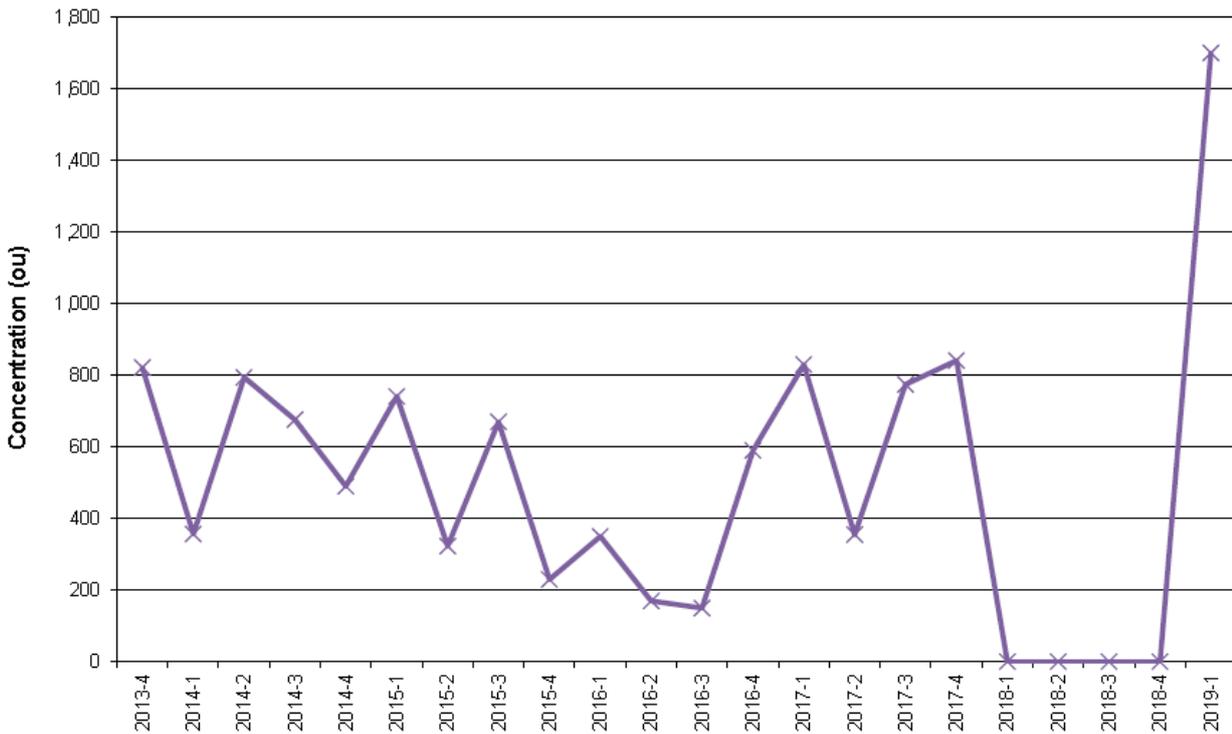


Figure 36 shows the odour results for the biofilter inlet (blue) and biofilter outlet (pink). The biofilter's capture and treat DDG odours from the DDG Evaporator plant. The biofilter outlet results are an average of the two biofilter's A and B. The results show the biofilters continue to operate effectively in reducing odour emissions from the site.

**Figure 36 - Biofilter Inlet & Biofilter Outlet A & B (EPL Point No's. 39, 40 & 41)**

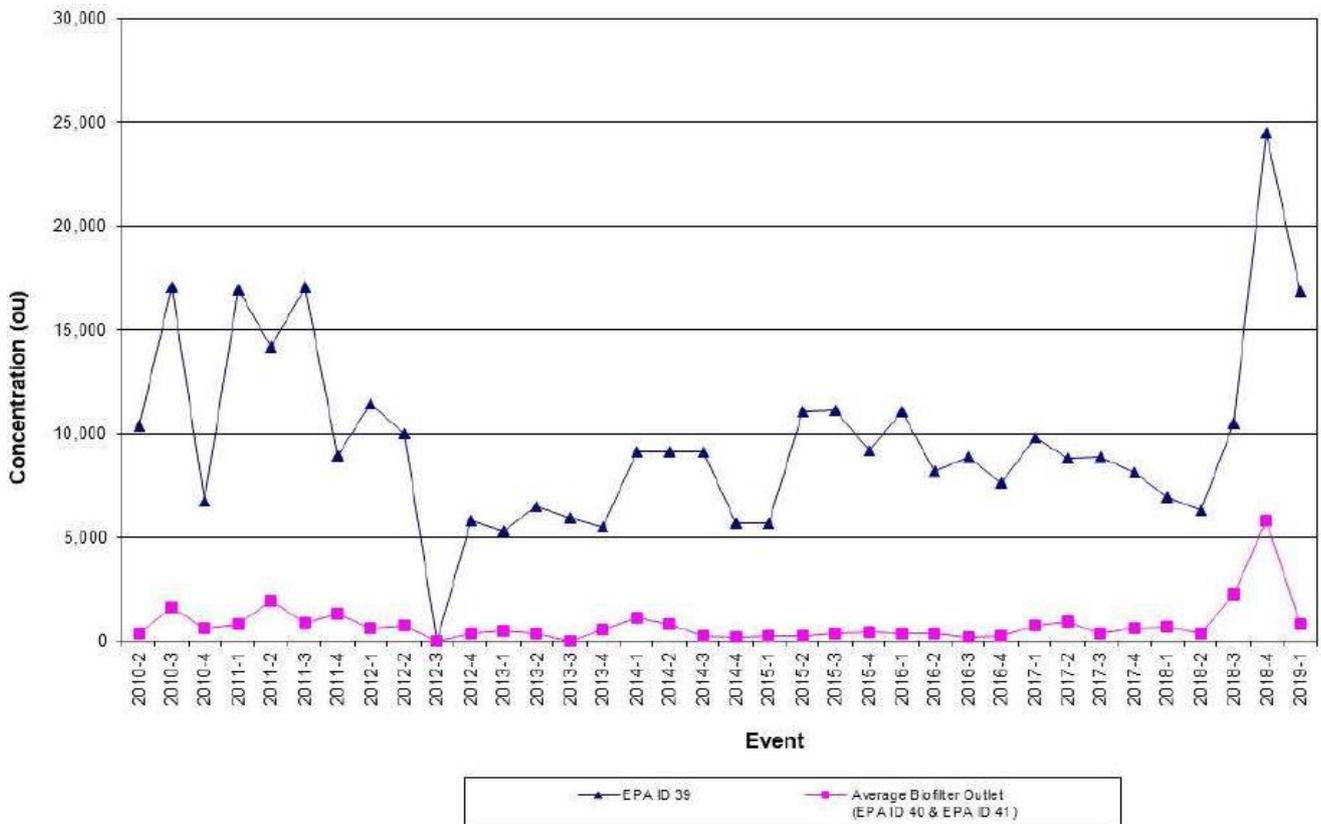
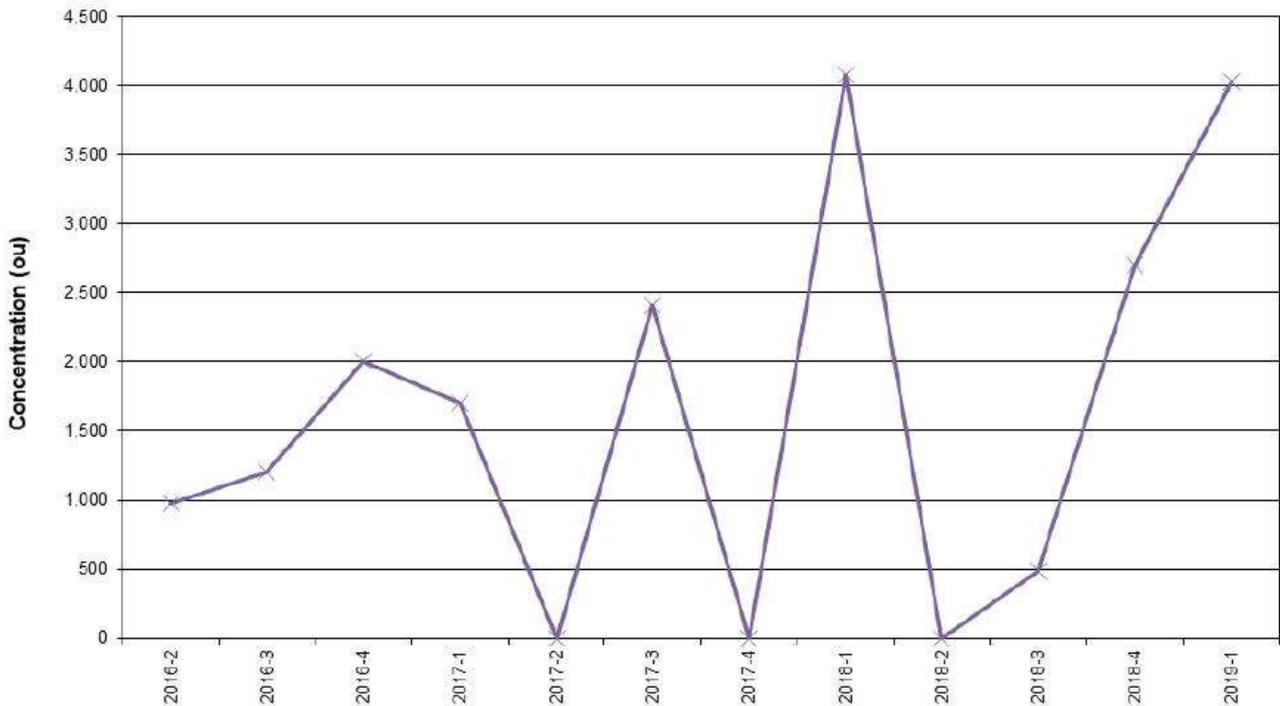


Figure 37 shows the odour results from the DDG Pellet Plant stack which was added to the EPL on 18<sup>th</sup> December 2015.

**Figure 37 – DDG Pellet Plant (EPL Point No. 46)**



### 6.5.2 Annual Odour Monitoring

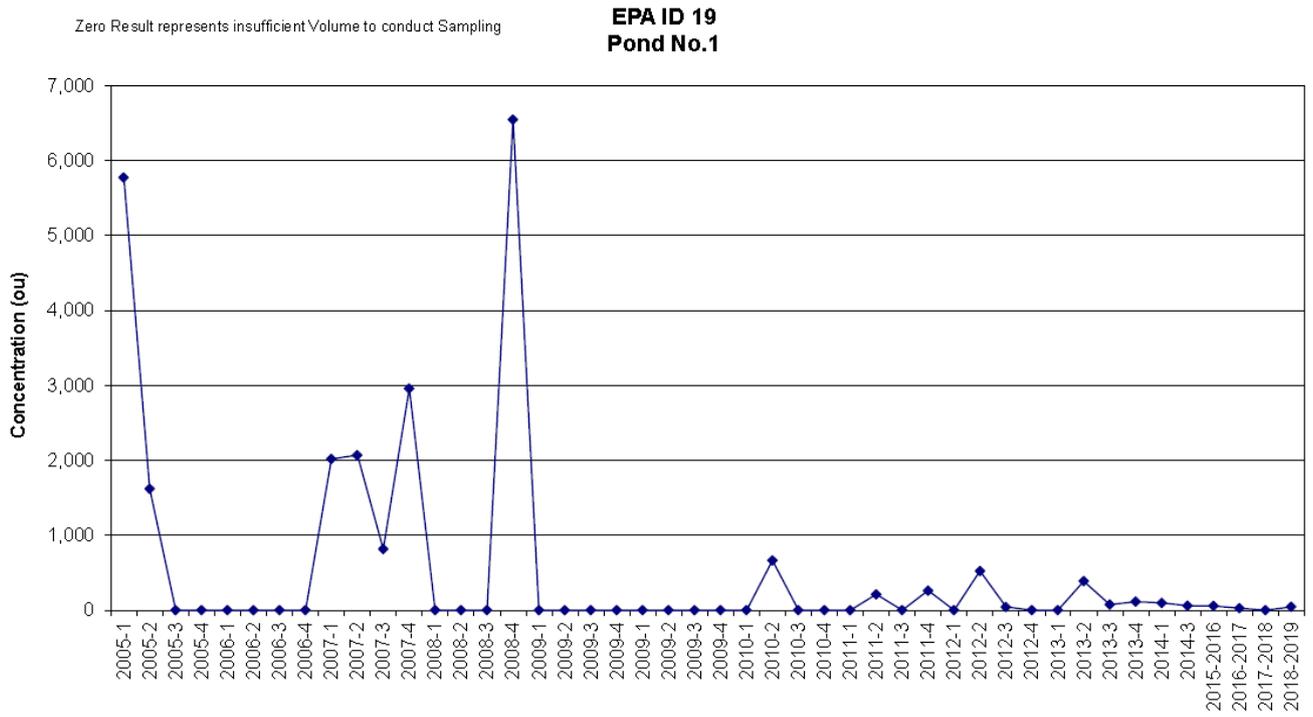
The following figures 38 to 43 show the annual odour monitoring results from the sites Environmental Farm. In 2015 the EPL frequency for odour monitoring at the Environmental Farm was reduced from quarterly to yearly as a result of a significant reduction in odour emissions due to the installation of 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.

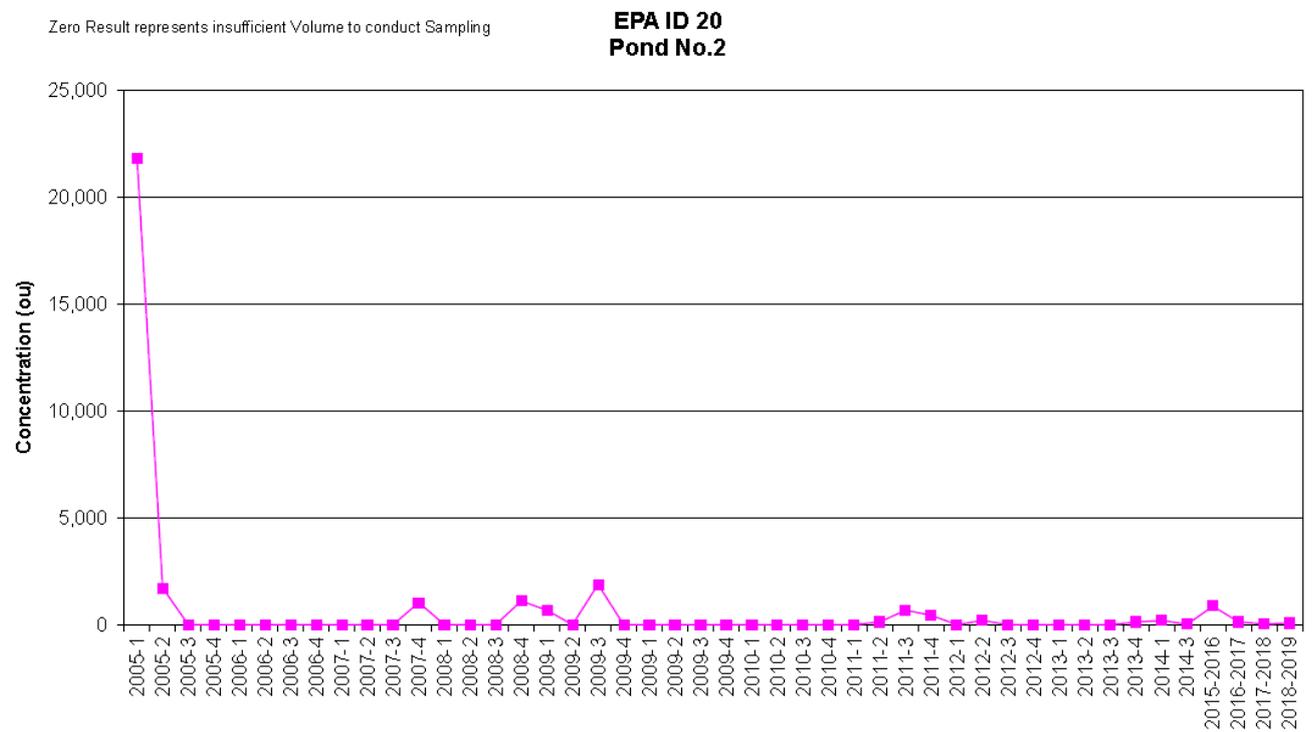
The Sulphur Oxidation (SO) basin, as shown in Figure 43, is an aerated pond which receives treated water from the anaerobic treatment system prior to entering the MBR and RO systems. All water passing through the MBR-RO system is returned back to the factory for re-use. Surplus water from the SO pond is sent to the storage ponds for irrigation.

Note the EPL reporting year is from 1<sup>st</sup> May 2018 to 30<sup>th</sup> April 2019, with the 2018-19 result tested in Quarter 4, in February/March 2019.

**Figure 38 - Pond No. 1 (EPL Point No. 19)**



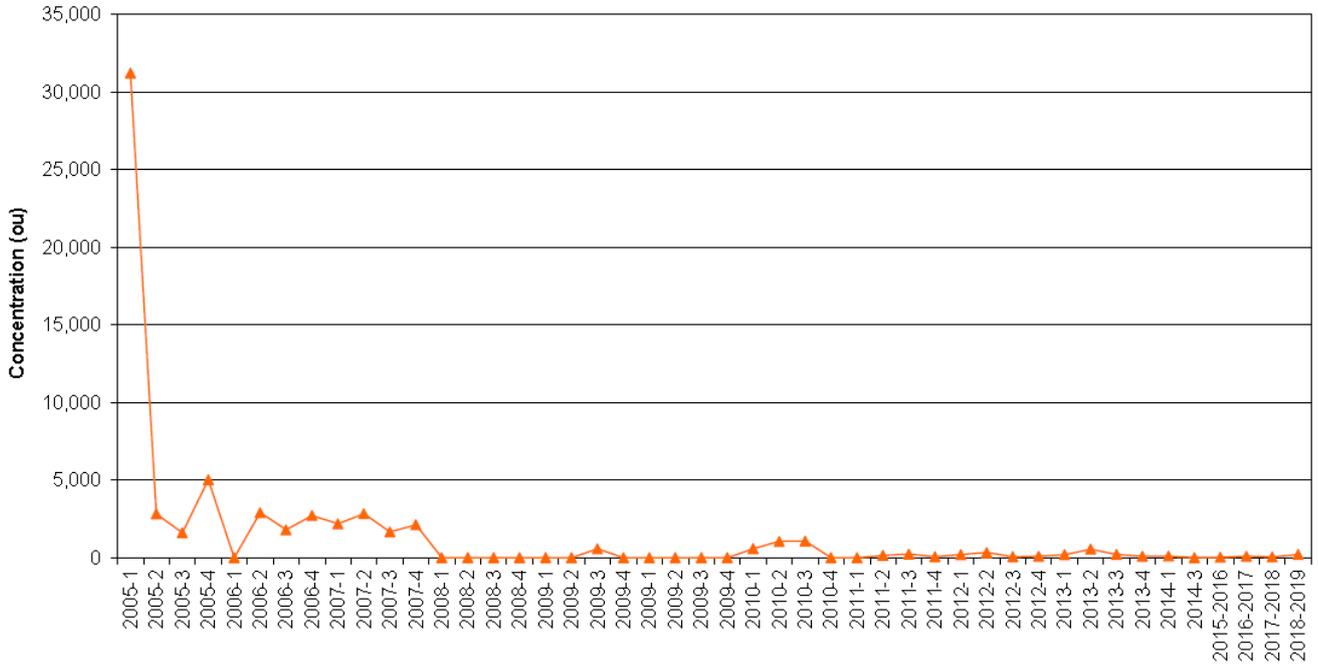
**Figure 39 - Pond No. 2 (EPL Point No. 20)**



**Figure 40 - Pond No. 3 (EPL Point No. 21)**

Zero Result represents insufficient Volume to conduct Sampling

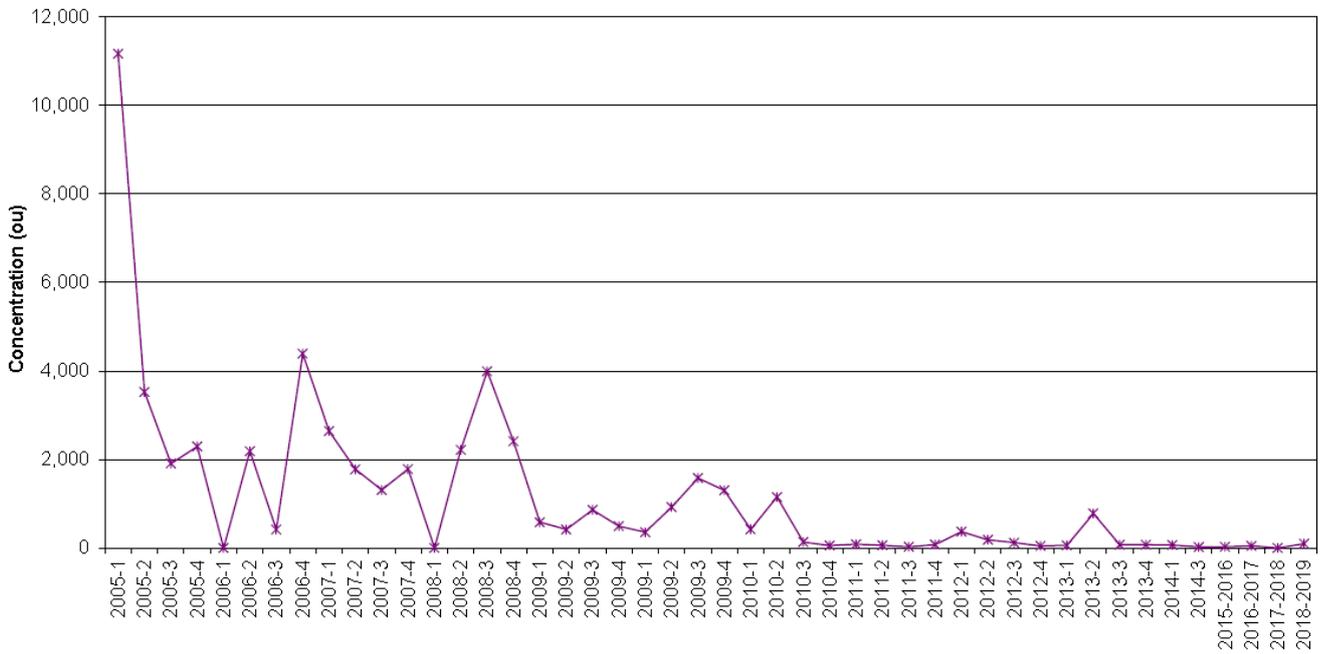
**EPA ID 21  
Pond No.3**



**Figure 41 - Pond No. 5 (EPL Point No. 23)**

Zero Result represents insufficient Volume to conduct Sampling

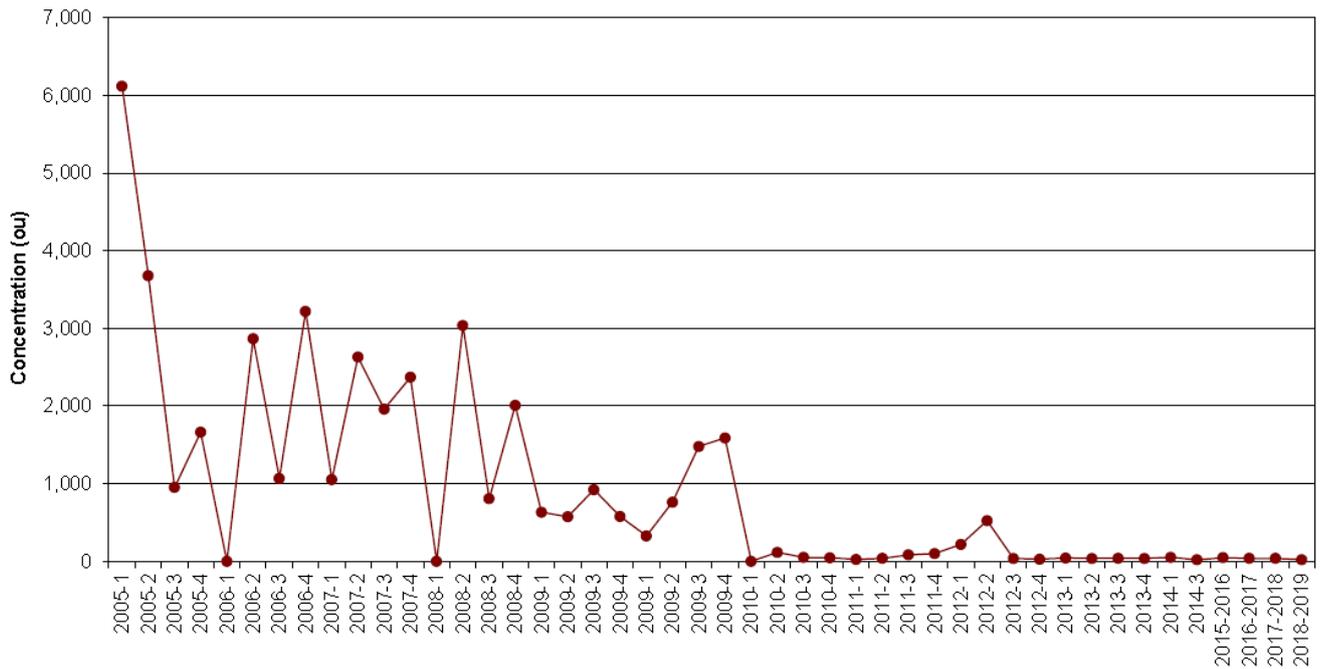
**EPA ID 23  
Pond No.5**



**Figure 42 - Pond No. 6 (EPL Point No. 24)**

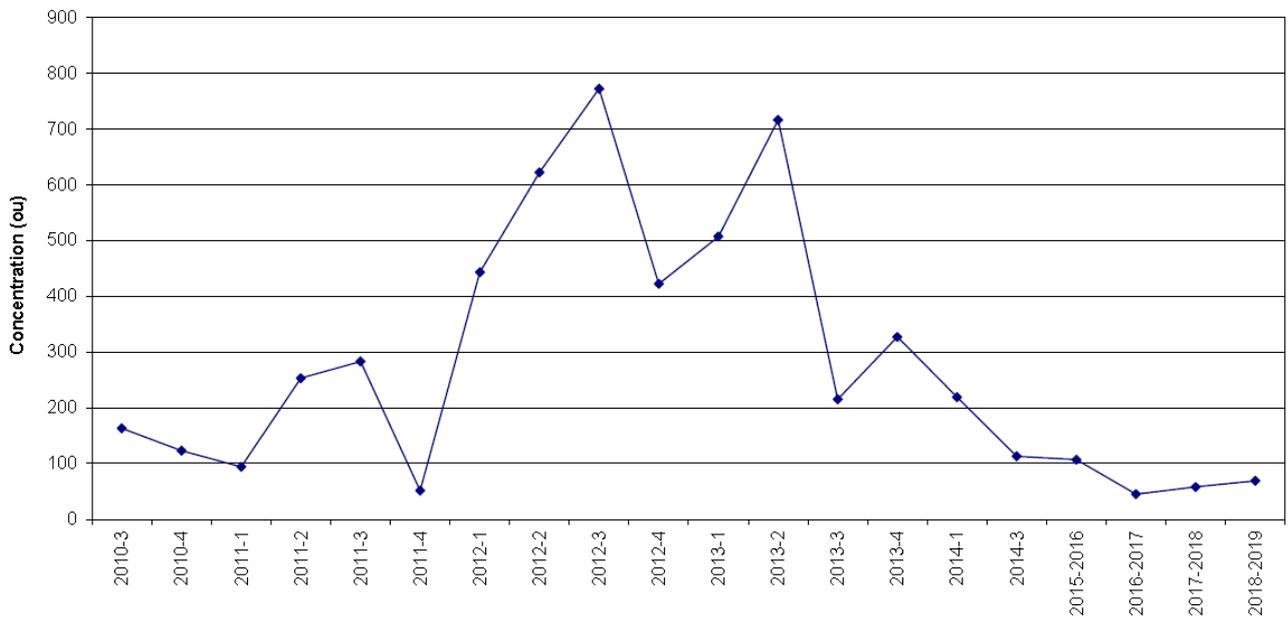
Zero Result represents insufficient Volume to conduct Sampling

**EPA ID 24  
Pond No.6**



**Figure 43 - Sulphur Oxidation Basin (EPL Point No. 25)**

**EPA ID 25  
Sulphur Oxidation Pond**



### 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 the Project Consent. The 2019 independent odour audit was conducted in September 2019 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 2019 and the previous year 2018 are shown in Figures 44 and 45 respectively.

A comparison between Figures 44 and 45 shows a slight extension in the 20OU contour plot along the River (south east) towards Nowra from 2018 to 2019. The odour increase is mainly due to an increased odour contribution from the Biofilter's situated at ground level in the south east corner of the factory site.

Figure 44 shows 2 contour plots for comparison as follows:

1. Red = All odour sources at current ethanol production levels (223 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 44 - Odour Modelling Contour Plot 2019**

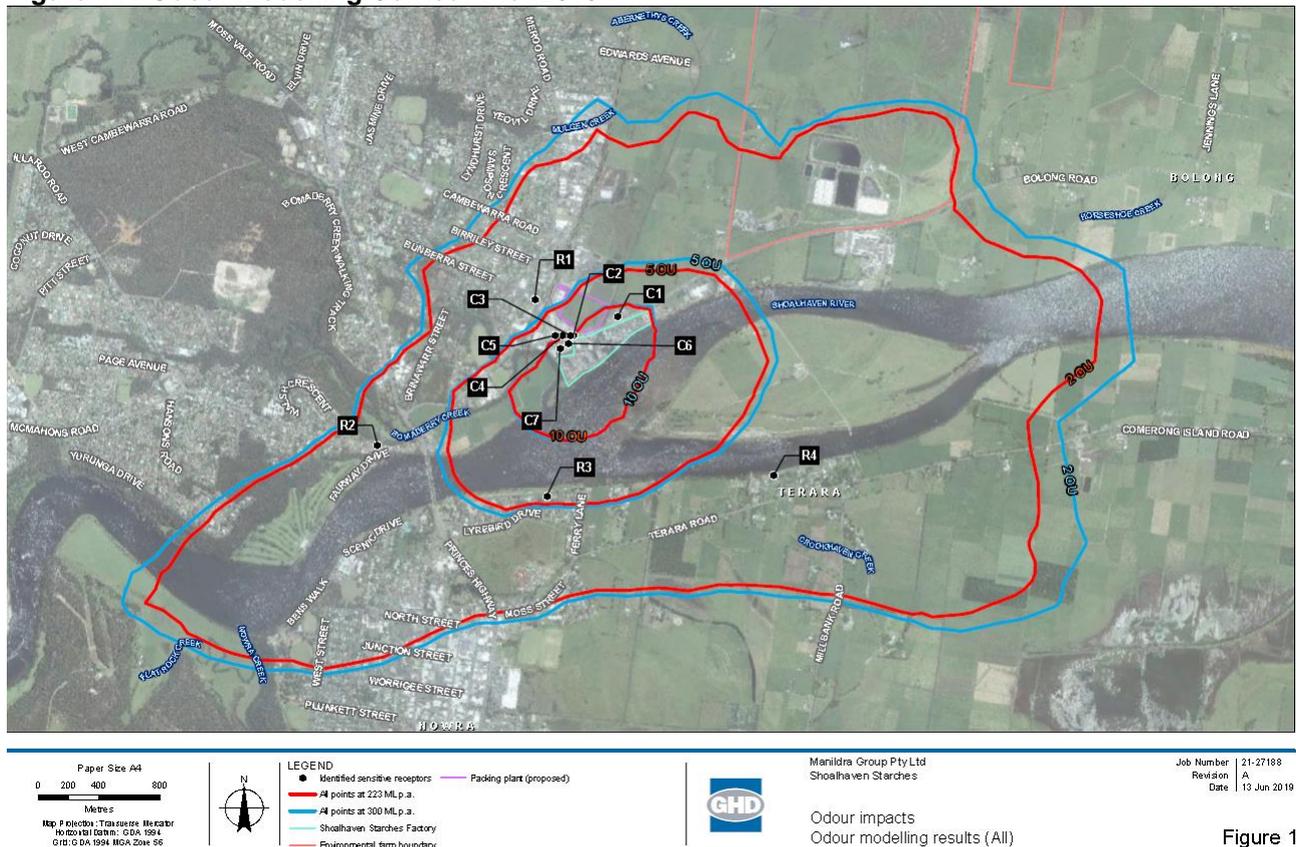


Figure 1

**Figure 45 - Odour Modelling Contour Plot 2018**



Paper Size A4  
 0 110 220 440 660 880  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1984  
 Grid: GDA 1984 MGA 20k 98



**LEGEND**  
 Identified sensitive receptors  
 Shoalhaven Starches Factory  
 Environmental farm boundary  
 Packing plant (proposed)  
 All points at 300 ML.p.a.  
 All points at 223 ML.p.a.



Manildra Group Pty Ltd  
 Shoalhaven Starches

Job Number | 21-27198  
 Revision | A  
 Date | 07 Jun 2018

Odour impacts  
 Odour modelling results (All)

**Figure 1**

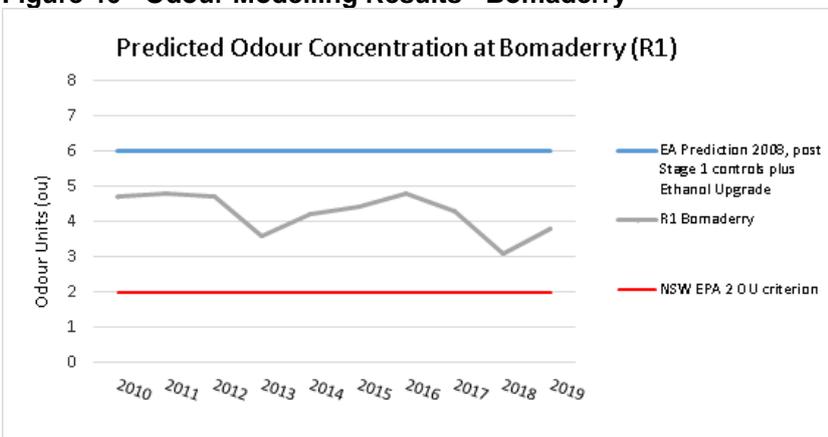
Figures 46 to 48 show the odour unit concentrations at the nearest residential receptors against predictions in the EA (blue line) and NSW EPA guidelines (red line).

Predicted odour concentrations at all 4 receptors are shown to exceed the NSW EPA 20U criterion however all predicted odour concentrations are below the odour concentrations approved in the 2008 EA (when rounded), as shown in Table 6 and Figures 46 to 48.

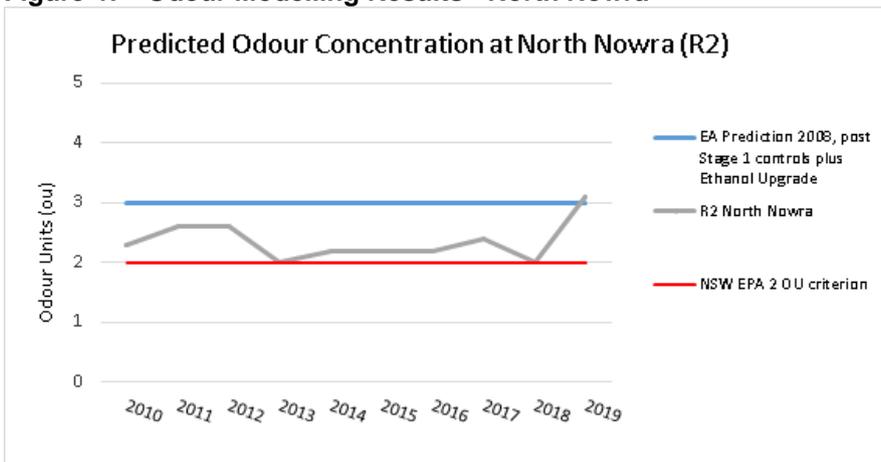
**Table 6 Annual odour modelling predicted odour concentrations**

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

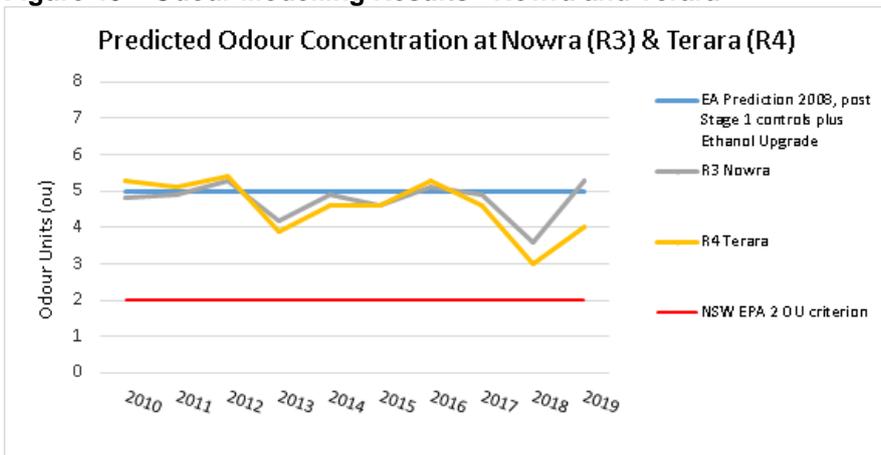
**Figure 46 - Odour Modelling Results - Bomaderry**



**Figure 47 - Odour Modelling Results - North Nowra**



**Figure 48 – 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 2019 odour audit and Shoalhaven Starches response to the audit recommendations are shown in Table 7 and Table 8, which has been submitted to the DPE and EPA.

**Table 7 - 2019 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 1 monitoring was not performed on the DDG exhaust stack.	The DDG exhaust stack was not tested during Quarter 1 as the sample point was inaccessible due to safety issues caused by very high winds present on the days of testing.  Odour sources within the DDG Pellet Plant (Pellet Cooler) directed to the stack was tested in lieu of stack testing.	-	Complete.  No further action required.

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

Audit Reference	Audit Report Recommendations	Shoalhaven Starches (SS) Response	Timeframe	Status
2018-19-IOA-A	As identified at Section 2.4 and stated in the Biofilter Capacity and Condition Assessment report #22 (June 2019), the reason for the high inlet odour loading into the biofilters (173 000 OU) should be investigated.	Investigation has revealed issues with the odour recovery scrubber may have contributed to high inlet odour loading into the Biofilters. These issues have been rectified and the last 3 quarters of odour testing have revealed odour treatment efficiency of > 90%. Additional scrubber cooling water to be trialled and tested during the next quarterly odour monitoring.	Dec-19	Ongoing
2018-19-IOA-B	As identified at Section 2.4, Section 2.9.3 and stated in the Biofilter Capacity and Condition Assessment report #22 (June 2019), 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 de facto odour concentration standard. The last 3 quarters of odour testing have revealed odour treatment efficiency of > 90%.	-	Ongoing
2018-19-IOA-C	As identified at Section 2.4 and stated in the Biofilter Capacity and Condition Assessment report #22 (June 2019), the frequency of biofilter assessments is not a Condition of Consent, but it is recommended that justification in the reduction in frequency from biannual to annual should be provided.	The six monthly assessment due around December 2018 was missed however the frequency will remain at biannual. The next assessment is due in December 2019.	Dec-19	Incomplete
2018-19-IOA-D	As identified in Section 2.9.3, there are identified a number of reporting inconsistencies between data presented in the Q3 and Q4 reports. It is recommended that this is resolved.	Shoalhaven Starches to follow-up with the testing consultant to rectify the reporting inconsistencies.	Dec-19	Incomplete
2018-19-IOA-E	As identified in Section 2.9.4, there appears to be an overall increase in odour emissions from a number of sources, as compared to the corresponding data presented in the 2017-18 odour audit report. Section 2.5 identifies a general reduction in production rates between the two reporting periods. It is recommended that the	For the odour sources listed in section 2.9.4 (Tables 12 & 13) there are only 4 to 5 odour sources that are scalable to ethanol production rates. The other odour sources are independent of ethanol production rates i.e. Starch & Gluten Dryers, where emissions will vary due to factors such as the numbers of dryers operating and variation in production conditions on the days of testing.	-	Complete

	reason for the general increase in odour emission against reducing production rates is explored.	Annual EPA odour modelling is used to monitor odour emissions. No further action required.		
2018-19-IOA-F	As identified in Section 2.11, the resolution of the sampling plane non-conformity with AS 4323.1 at No 3 Gluten Dryer should be provided and rectified where feasible.	Gluten Dryer #3 investigation revealed a vertical plate inside the ductwork. It is not feasible to remove the plate or relocate the sampling points. Testing consultant advised they are able to locate the probe to reproduce consistent flow measurements and additional sample points are used in compliance with AS4323.1. No further action required.	-	Complete

## 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 49.

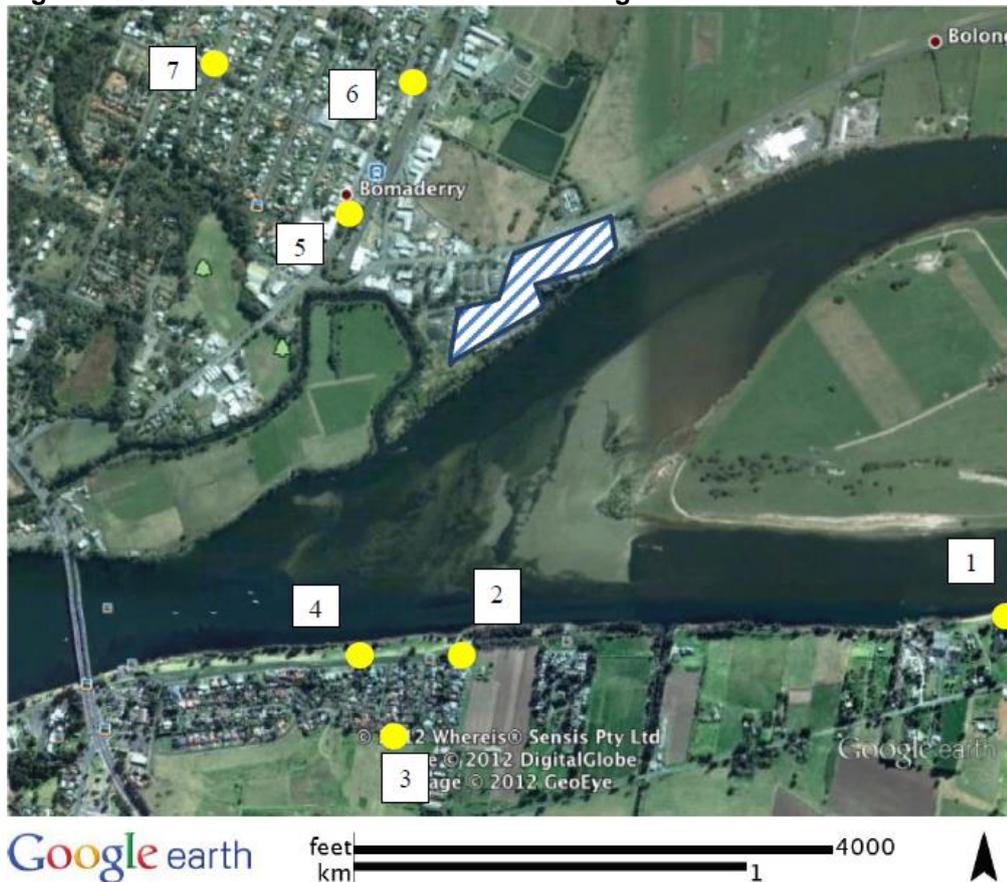
**Table 9 Site Noise Limits**

Location	Day/Evening/Night LA <sub>eq</sub> (15 minute) dB(A)	Night LA <sub>1</sub> (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>R2 – Pig (Burruga) Island</u>	<u>40</u>	-
<u>R3 – 39 Hanigans Lane Bomaderry</u>	<u>40</u>	-
<u>R4 – 1 Bryant Street Terara</u>	<u>40</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 49 Shoalhaven Starches Noise Monitoring Locations**



Six monthly noise monitoring results for August 2018 and February 2019 were found to be 100% compliant with the EPL noise limits as shown in Tables 10 and 11 respectively.

**Table 10 – August 2018 Noise Monitoring Results**

Location	Date	Measurement Period	Measured levels dB(A) LA <sub>eq</sub>	100 percentile limit	Exceedance (yes/no)
1	23/08/2018	15 min	<37	38	no
2	23/08/2018	15 min	38	38	no
3	23/08/2018	15 min	<23	38	no
4	23/08/2018	15 min	37	38	no
5	23/08/2018	15 min	<41	42	no
6	23/08/2018	15 min	<40	42	no
7	23/08/2018	15 min	36	40	no

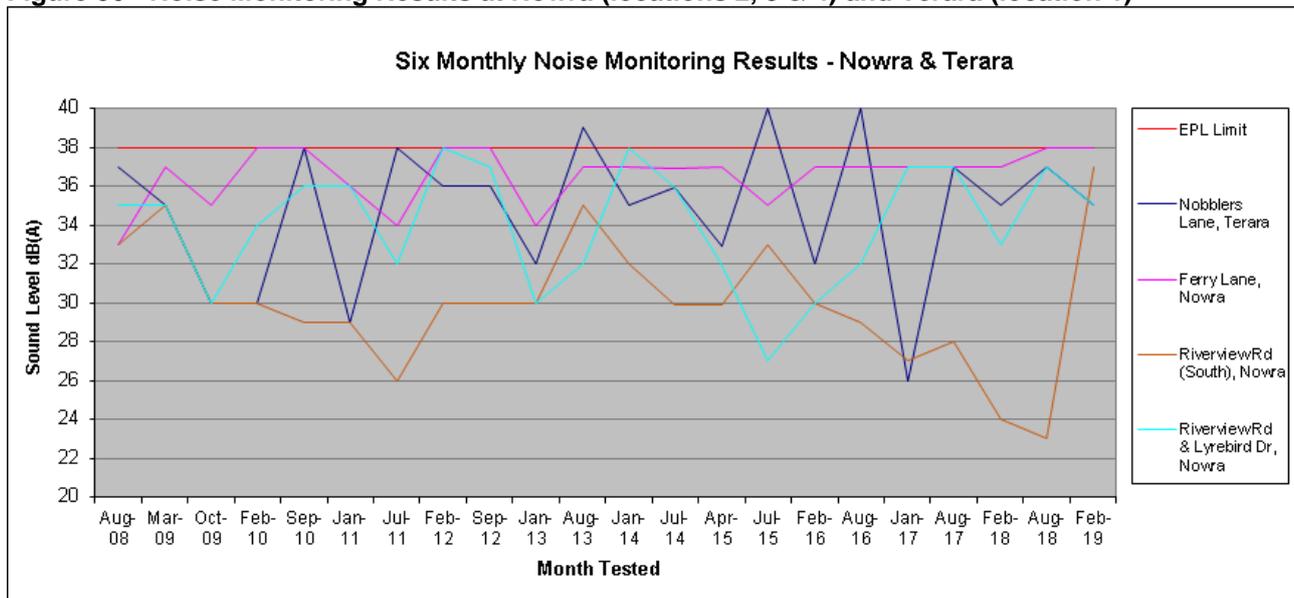
**Table 11 – February 2019 Noise Monitoring Results**

Location	Date	Measurement Period	Measured levels dB(A) LA <sub>eq</sub>	100 percentile limit	Exceedance (yes/no)
1	7/02/2019	15 min	<35	38	no
2	7/02/2019	15 min	<38	38	no
3	7/02/2019	15 min	<37	38	no
4	7/02/2019	15 min	35	38	no
5	7/02/2019	15 min	<41	42	no
6	7/02/2019	15 min	<40	42	no
7	7/02/2019	15 min	<39	40	no

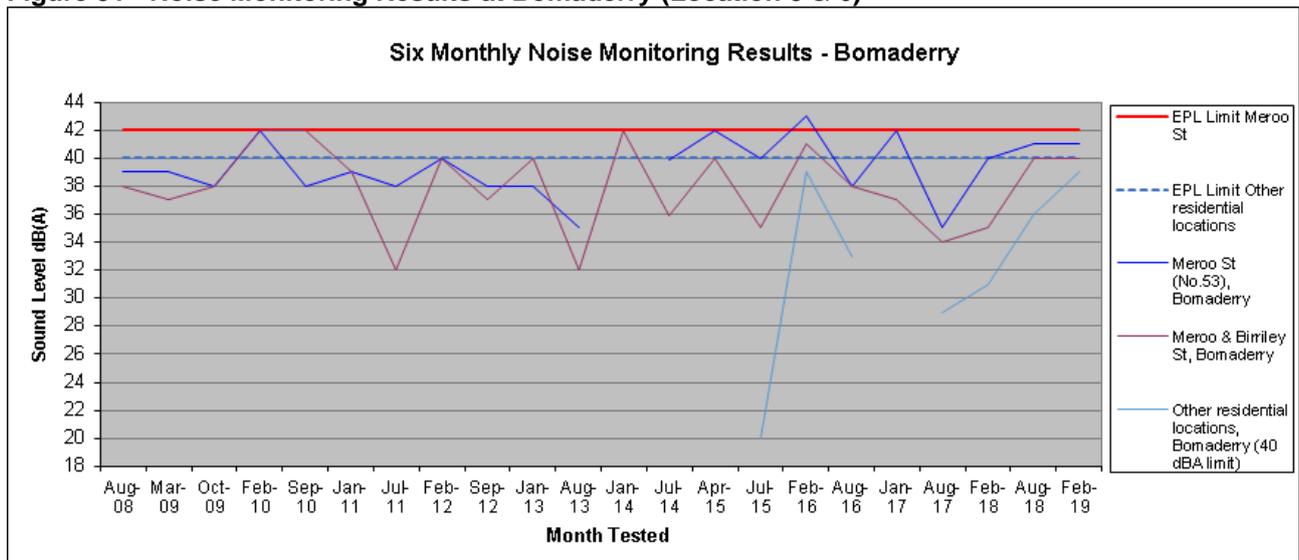
Note the noise limit descriptor has been changed from LA<sub>10</sub> to LA<sub>eq</sub> as per the site's EPL variation on 20-6-18 however the noise limits remain the same.

Historical six monthly noise monitoring results are shown in Figures 50 and 51.

**Figure 50 - Noise Monitoring Results at Nowra (locations 2, 3 & 4) and Terara (location 1)**



**Figure 51 - 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 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)

No noise validation monitoring, as required by condition 14N of the Consent, was conducted during the reporting year.

## 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 are sampled from representative locations within the approved irrigation area (Point 43) at the sites Environmental Farm.

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

**Table 13 - Annual Soil Monitoring Results**

Parameter	Units	2014	2015	2016	2017	2018	2019
Cation Exchange Capacity	cmol(+)/kg soil	40.77	39.6	38.0	41	39.3	33.7
Electrical Conductivity	dS/m	1.52	0.55	1.0	1.1	0.8	1
Exchangeable sodium percentage	%	2.9	6	2.2	4.2	3.4	3.6
Nitrate	mg/kg	69	15.88	71.9	60	63.2	97.1
Nitrogen (total)	mg/kg	7.6	8217	6992	7311	7668	0.6
Organic Carbon	mg/kg	91	8351	4887	8705	6172	5.2
pH	pH	7.3	8.01	7.3	7.4	7.3	7.4
Phosphorus (total)	mg/kg	2.8	446	236	107	241	167.4

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. 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 DPE on the 15<sup>th</sup> May 2019. The DPE approval letter requested an update to Table 5 in the LVMP by the end of December 2019. Council also provided the following comments which were received after the LVMP was finalised and approved:

*Council recommends that the plan be updated to reflect the works already completed within each area by updating the management zone (i.e. Zone A, B or C) along with new proposed actions and implementation schedule to achieve the objectives of each zone.*

*Council also notes that bank stabilisation works have not been effective in some locations along the Shoalhaven River with large sections of bank being eroded by the river. An adaptive management strategy may be required in these locations and discussed in annual reports submitted to DPE.*

An update to Table 5 in the LVMP is shown in Table 14 below. Council's comments will be addressed in the next revision of the LVMP and the next Annual Report.

Updates to Table 14 are shown in red which have completed during the reporting year which includes completion of landscape screen planting in front of the CO<sub>2</sub> Plant (MOD 15) and commencement of lantana removal along Abernethy's Creek.

**Table 14 - LVMP Summary of Actions**

ASPECT / FORESHORE	MANAGEMENT ZONE	AREA	ACTIONS	IMPLEMENTATION SCHEDULE	STATUS	REFERENCE
<b>Phase 1</b>						
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	On completion of construction works at flour mill	Complete	Figure 4
			Complete revegetation of revetment IAW landscaping plan (Appendix B)			
			Plant fast growing Casuarina glauca at rear of revetment			
		Confluence Shoalhaven River and Bomaderry Creek to 10m behind the bank	Plant Eucalyptus and Melaleuca canopy species, and Lomandra as a groundcover at rear of revetment		Complete	Figure 4
			Slash and spray Kikuyu grass			
			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 ericifolia 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)			
<b>Phase 2</b>						
Shoalhaven River	Zone B	Dense area of Acacia mearnsii	Clear 10m x 10m plots and replant with other canopy species at 2m spacing	Commence by December 2019	Complete	Figure 4
			Remove acacia seedlings and monitor success of plantings			
		Grassy area behind crib shed	Whipper-snip and spray Kikuyu grass		Incomplete	
			Plant toe with water line species			
	Plant canopy and midstorey species at top of bank					
	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		
		Unzoned	Between crib shed and revetment	Suppress African Boxthorn and Blackberry	Complete	
				Geotechnical assessment of bank stability to assess potential of removing Coral trees from bank	Coral trees are to remain	
Bomaderry Creek	Zone B	Upstream and downstream embankment	Remove Lantana using mosaic approach	Complete	Figure 5	
			Eradicate African boxthorn and Blackberry			
			Frill privet			
Abernethy's Creek	Zone B	Eastern bank, north of Bolong Rd 1	Remove Lantana using mosaic approach	To be completed when once Packing Plant is constructed.	Incomplete (Packing Plant Not Constructed)	Figure 6
			Assist natural regeneration, or supplementary plantings			
		Both banks, south of Bolong Rd to electrical easement	Spray weeds on embankments	Commence by December 2019.	Commenced.	
			Dense plantings of groundcover species			
		Both banks, south of electrical	Suppress Privet and spray other weeds	Estimate 2 - 3 years to complete	Commenced.	
			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 Plant suitable upper bank canopy and midstorey species		Complete	
<b>Phase 3 Additional Landscaping Works 2011 - 2019</b>						
ASPECT / FORESHORE	PA 06_0228 Consent	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	Commenced	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

*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 3 environmental complaints were received in 2019, compared to 7 received in 2018. Total complaints received by year and by type are shown in Figures 52 and 53 respectively.

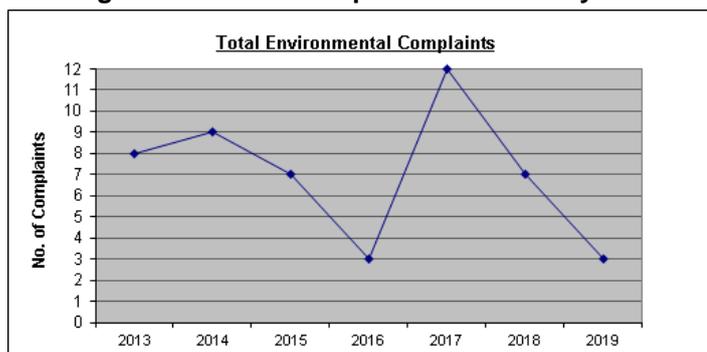
Table 15 details the types of complaints received during the year and the actions taken to address the complaint.

**Table 15 - Summary of Complaints 2019**

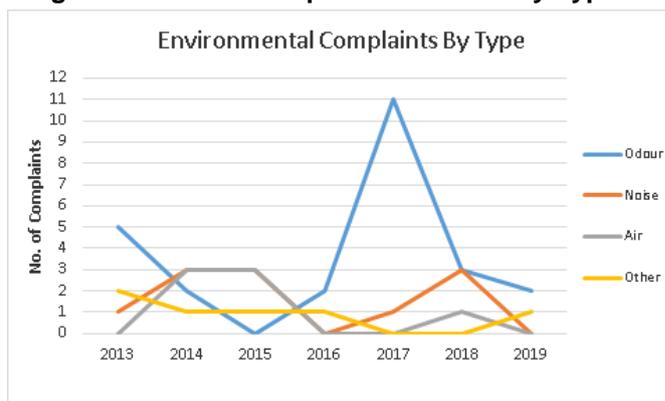
Date and Time	Location	Issue	Action Taken
10-8-2018 10:28	Bomaderry	Rail Crossing	Complaint received in relation to traffic delays due to train movements across Bolong Rd. The complainant was contacted and provided with a copy of the weekly train arrival and departure schedule. No further response was received by the complainant, no further action taken.
2-10-2018 14:08	Bomaderry	Odour	Complaint received that Manildra ponds are emitting an offensive odour. Investigation revealed likely cause is not Shoalhaven Starches but a nearby sewage treatment plant which had spread biosolids on their land. EPA advised of the findings, no further action taken.
20-12-2018 16:07	Bomaderry	Odour	Complaint received of an unusual 'gassy' odour. Investigation in the vicinity of the complainant revealed a 'rotting/garbage' smell which was unlikely to be coming from Shoalhaven Starches. EPA advised of the findings, no further action taken.

Note: complaints received are aligned with the EPL reporting year from 1<sup>st</sup> May 2018 to 30<sup>th</sup> April 2019.

**Figure 52 – Total Complaints received by Year**



**Figure 53 – 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 2019 reporting year.

**Table 16 - Community Funding Recipients**

<b>ORGANISATION / INDIVIDUAL / CHARITY</b>	<b>REMARKS</b>
Berry Quilting Retreat	Sponsorship for Textile Art Prize
Nowra Legacy Group	Donation for Legacy Week
Nowra Youth Centre	Repairs to Pool Table at Nowra Youth Centre
PCYC	Sponsorship for School Breakfast Club's
Lions Club Bomaderry	Sponsorship for 2018 Carols in the Park
North Nowra Bomaderry Netball Club	Sponsorship provided under E10 Marketing inclusion
Rebels Netball Club	Sponsorship for 2019 Netball Season
Nowra Golf Club 2019 Manildra Cup	Sponsorship for 2019 Manildra Cup
Berry Junior Rugby League Football Club	Sponsorship for 2019 Rugby Season
PCYC	Donation for School Breakfast Club
South Coast Leadership Forum	Sponsorship for 2019 Leadership Forum

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

- On-going sponsorship and attendance at local school Breakfast Club program (North Nowra Public School and PCYC)
- Guest speaker at local community group U3A Shoalhaven meeting which presented details on Shoalhaven Starches operations and new product developments.
- Active member of Shoalhaven Business Leadership Forum.
- Shoalhaven City Council Mayor and Councillors Information Day & Shoalhaven Starches site tour.
- On-going sponsorship of local community sporting, theatre and art clubs, charity events and school fetes.
- Two Shoalhaven Starches Community Newsletters, November 2018 (edition 2) and March 2019 (edition 3), were prepared and distributed by mail to the 2540 and 2541 post code area plus Terara, Bolong, Meroo Meadow and Back Forest. The newsletter outlines the activities and projects ongoing at the Shoalhaven Starches site, it is distributed to between 8,000 -10,000 locals 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 Autumn 2019 edition (April 2019) was 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 April 2019 against the sites consolidated Project Consent 06\_0228 conditions of consent. Of the 167 project 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 are shown in Table 17 below.

**Table 17 - Summary of 2019 Audit Findings**

<b>Schedule</b>	<b>Compliant</b>	<b>Non-compliant</b>	<b>Not triggered</b>	<b>Total</b>
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>

The audit frequency is every 3 years, with the previous audit conducted in April 2016 in which 10 non-compliances were identified. All non-compliances from the 2016 audit were closed out except for 2 non-compliances (related to a Council Building Certificate application and chemical storage) which have been carried into the 2019 audit non-compliances.

Table 18 shows the action plan to address the non-compliances received during the 2019 audit. Currently 8 of the 15 non-compliances have been closed out. The next independent environmental audit is due in 2022.

**Table 18 - Action Plan to address non-compliances received in the 2019 Independent Environmental Audit**

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 DPE on 1 <sup>st</sup> November 2016 to 'regularise' the storage of coal and woodchip stockpiles at the SS factory site and Environmental Farm.  DPE consent received on 1 <sup>st</sup> September 2017 (MOD 11)  Each project modification consent is distributed to the relevant staff.		Complete
NC2	2	8B	Within three (3) months of the date of consent 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 consent 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 consent 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	In progress
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 alterations to structures and additional structures listed in Table A. If an item in Table A does not require a building certificate in	Building certificate applications were submitted in June 2018, however inspections and certificates have not been issued.	Ensure all consent requirements are captured, tracked and assigned a responsibility in the compliance management system	SS to follow-up with Council on building inspections.  The issue is being tracked in the Environmental Management System (EMS)	Jul-19	Incomplete

NC No.	Sched	Cond	Requirement	Finding	Recommendation	Shoalhaven Starches Response	Timeframe	Status
			accordance with the BCA, the Proponent shall provide written evidence, to the satisfaction of the Secretary.					
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 requirements of all relevant Australian Standards, and/or DECC's Storing and Handling Liquids: Environmental Protection manual.	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 considered necessary.	The review has commenced by a Dangerous Goods consultant.  Checklists have been prepared detailing requirements of the relevant Australian Standards.	Dec-19	Commenced

NC No.	Sched	Cond	Requirement	Finding	Recommendation	Shoalhaven Starches Response	Timeframe	Status
NC8	3	22D	Stormwater controls were not implemented within 3 months of the date of the consent.	Stormwater controls were not implemented within 3 months of the date of the consent.	Ensure all consent 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 consent 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	Commenced
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 consent within 12 months of this consent; 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; 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	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, whether this management measure is necessary as part of the overall flood warning system.	The flood marker has been ordered and will be installed as per the flood plan.	Sep-19	Incomplete

NC No.	Sched	Cond	Requirement	Finding	Recommendation	Shoalhaven Starches Response	Timeframe	Status
			coordination with the paper mill with respect to flood emergency planning.					
NC11	3	27A	<p>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.</p> <p>Note: The works-as-executed plans shall show the completed works compared to the approved plans.</p>	The works have not been carried out in the agreed time.	Ensure all consent requirements are captured, tracked and assigned a responsibility in the compliance management system	<p>Works are underway.</p> <p>SS to prepare updated status of road works including estimated dates of completion and submit to the DPE.</p>	Sep-19	Commenced
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 Railway Street to the Dairy Farmers site access.	The works have not been carried out in the agreed time.	Ensure all consent 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	Incomplete
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> <p>a) be prepared in consultation with DWE and Council and be submitted to the Secretary for consent within 6 months of this consent;</p> <p>b) be prepared in accordance with DWE's Guidelines for Controlled Activities – Vegetation Management Plans; and</p>	The plan was not submitted within the required timeframe.	Ensure all consent requirements are captured, tracked and assigned a responsibility in the compliance management system	<p>The updated plan was submitted to the DPE on 1<sup>st</sup> May 2019 and approved by DPE on 15<sup>th</sup> May 2019.</p> <p>The plan is tracked in the EMS.</p>		Complete

NC No.	Sched	Cond	Requirement	Finding	Recommendation	Shoalhaven Starches Response	Timeframe	Status
			<p>c) include:</p> <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>					
NC14	4	2A	The Proponent shall notify the Secretary and any other relevant agencies of any incident or potential significant off-site impacts on people or the biophysical environment associated with the facility immediately after the Proponent becomes aware of the incident.	On one occasion an incident was not reported to Planning	Ensure all notification requirements are assigned a responsibility and appropriate systems are in place to trigger them when an incident occurs.	<p>Incident (on 14-12-2017) reported to the EPA was not submitted to the Secretary. This was self-reported by SS as a non-compliance in the Annual Report 2018 and a subsequent warning letter issued by the DPE on 29-11-18.</p> <p>No further action taken.</p>		Complete
NC15	4	2B	Within 7 days of the date of this incident, the Proponent shall provide the Secretary and any relevant agencies with a detailed report on the incident.	On one occasion an incident was not reported to Planning within 7 days.	Ensure all notification requirements are assigned a responsibility and appropriate systems are in place to trigger them when an incident occurs.	As above.		Complete

## **9. INCIDENTS AND NON-COMPLIANCES**

### **9.1 NON-COMPLIANCES**

During the reporting period, 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.
- Shoalhaven Starches will follow-up with Council on the status of these applications.

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

- Quarter 1 monitoring was not performed on the DDG exhaust stack.
- The monitoring was not completed as the sample point was inaccessible due to safety issues caused by very high winds present on the days of testing (a boom-lift is required to access the stack)
- Odour sources within the DDG Pellet Plant (Pellet Cooler) directed to the stack was tested in lieu of stack testing during Quarter 1.
- 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) exceeded the EPL limit of 20% three times during the reporting year.
- The exceedances appeared to be caused by a high Boiler 6 load (Boiler 5 was off-line) and spiking of the opacity meter which then returned to normal.
- Details of the non-compliance was reported in Shoalhaven Starches EPL 2018-19 Annual Return to the NSW EPA.
- No further action taken.

### **9.2 INCIDENTS**

There was one reportable incident which occurred during the reporting period. The details are as follows:

#### **Incident Report 25-10-2018:**

- On Thursday 25<sup>th</sup> October 2018 at approximately 9:00 am process water from the Dried Distillers Grain (DDG) Plant was observed escaping the premises, resulting in a discharge of process water to Abernethy's Creek.
- The incident was caused by a failure of a sump pump (broken drive belt) which caused the internal floor drains to fill with process water.
- The incident was immediately reported to the EPA and DPE 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 which include sealing of floor drains and additional bunding installed.
- There was no visible evidence of environmental harm caused by the event.
- No further response received by the EPA or follow-up actions required.

### 9.3 LEGAL COMPLIANCE

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

One official Warning Letter from the DPE was received by Shoalhaven Starches on the 28<sup>th</sup> November 2018.

The Warning Letter was issued for failing to comply with Schedule 4, Condition 2A of the Consent by failing to “notify the Secretary 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”, as identified in Shoalhaven Starches Annual Report 2018, for the reporting period from 1 July 2017 to 30 June 2018, submitted for the Secretary’s consideration, as required under Schedule 4, Condition 3 of the Consent.

The incident was immediately reported to the EPA however it was not reported to the DPE as required under the Consent. Shoalhaven Starches has put systems in place to prevent this from occurring again.

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

The following activities planned for the next reporting period include:

- 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 Shoalhaven Starches Project Consent 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> will be taken directly from Shoalhaven Starches operations reducing emissions from their operations by up to 100 tonnes per day when the plant is fully operational. This will provide greenhouse gas emission benefits.

- Projects associated with the MOD 16 Consent are anticipated to commence this reporting year, subject to changes in the drought conditions and associated costs and availability of wheat in NSW.
- Shoalhaven Starches will be seeking to modify their Development Consent to undertake the following minor amendments to the Development which will be facilitated through a Section 4.55(1A) modification:
  - To modify the location of the baghouse for the No. 5 Starch Dryer.
  - To install a ‘services lift’ to the outside of the existing staircase adjacent to the No. 5 Starches Dryer Building to allow on-going access for personnel and customers to the floors within the building.
  - To modify the service conduit extending from the Shoalhaven Starches factory site on the southern side of Bolong Road to the proposed Packing Plant (MOD 9) on the northern side of Bolong Road by elevating a section of the conduit above ground level.