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# ELF FARM SUPPLIES MUSHROOM SUBSTRATE FACILITY

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Annual Environmental Management Review

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PREPARED BY CSTS PTY LTD



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## Executive Summary

As part of its conditions of compliance to the Department of Planning and Environment's project approval 08\_255 MOD 1(2016), Elf Farm Supplies is required to produce an 'Annual Environmental Management Review' report of the environmental performance of its project and operations.

The purpose of this document is to comply with Condition 3 of Schedule 5 of project approval No 08\_255. MOD 1. Which states as follows:

*"By the end of September 2016, and annually thereafter, unless otherwise agreed by the Secretary, the Proponent shall review the environmental performance of the Project to the satisfaction of the Secretary. This review must*

- (a) describe the operations that were carried out during the reporting period;*
- (b) analyse the monitoring results and complaints records of the Project during the reporting period, which includes a comparison of these results against the:*
  - i. relevant statutory requirements, limits or performance measures/ criteria;*
  - ii. monitoring results of previous years; and*
  - iii. relevant predictions in the EA;*
- (c) identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;*
- (d) identify any trends in the monitoring data over the life of the Project;*
- (e) describe what measure(s) will be implemented during the next reporting period to improve the environmental performance of the Project."*

This report covers the 12-month period between September 2016 and August 2017. It is set out to assess compliance with items (a) to (e) of Condition 3; Schedule 5 as well as review the overall environmental performance of approval 08\_255 MOD 1 project works and operations at the mushroom substrate plant at Mulgrave operated by Elf Farm Supplies for the stipulated period.



## Table of Contents

<b>Executive Summary</b> .....	<b>ii</b>
<b>1. Introduction</b> .....	<b>2</b>
1.1. Background .....	2
1.2. Review Scope .....	2
<b>2. Operations Overview</b> .....	<b>4</b>
Raw Materials Storage and Preparation Shed .....	4
Bale Wetting and Stable Bedding Preparation Stage.....	5
Pre-Wet Shed .....	5
Phase 1 Working Hall & Bunkers .....	5
Phase 2/3 Building .....	6
Phase 2 Process Stages.....	6
Phase 3 Process Stages.....	6
Bioscrubber System.....	7
<b>3. Statutory and Regulatory Requirements</b> .....	<b>7</b>
Penalty Notices.....	7
Licence Variation .....	7
<b>3.1. Project Approval 08_255 Conditions</b> .....	<b>8</b>
<b>4. Monitoring Results Analysis</b> .....	<b>10</b>
<b>4.1. Noise Monitoring Analysis</b> .....	<b>12</b>
2 <sup>nd</sup> September 2016 Monitoring Report.....	12
14 October 2016 Monitoring Report.....	12
29th November 2016 Monitoring Report.....	12
26th May 2017 Monitoring Report.....	13
<b>4.2. Noise Monitoring results and Environmental Assessment Comparison</b> .....	<b>13</b>
<b>4.3. Odour Monitoring Analysis</b> .....	<b>16</b>
26-31 October 2016 Odour Monitoring .....	17
03-08 May 2017 Odour Monitoring .....	18
<b>4.4. Odour Monitoring Results and Environmental Assessment Comparison</b> .....	<b>19</b>
<b>4.5. Energy Efficiency Monitoring Analysis</b> .....	<b>20</b>
<b>5. Trends in Monitoring Data</b> .....	<b>21</b>
<b>5.1. Noise Data Trend Analysis</b> .....	<b>21</b>
<b>5.2. Odour Data Trend Analysis</b> .....	<b>22</b>



5.3.	<b>Energy Data Trend Analysis</b> .....	<b>24</b>
	Electricity Use Trend Analysis .....	24
	Gas Consumption Trend Analysis .....	25
<b>6.</b>	<b>Complaints Records Analysis</b> .....	<b>27</b>
6.1.	Trends – complaints data .....	27
6.2.	Comparing data from the previous year .....	27
6.3.	Actions taken to address complaints .....	27
<b>7.</b>	<b>Non-compliances</b> .....	<b>30</b>
7.1.	Summary of Non-compliances.....	30
7.2.	Non- Compliance Analysis.....	31
7.3.	Corrective Actions .....	32
<b>8.</b>	<b>Independent audits summary</b> .....	<b>33</b>
8.1.	IEA recommendation .....	33
<b>9.</b>	<b>Community</b> .....	<b>34</b>
<b>10.</b>	<b>General Environmental Performance Review</b> .....	<b>36</b>
	General Conditions Licences and Approval .....	36
	Waste Minimisation.....	36
	Leachate Control & Containment .....	36
	Air Quality and Dust.....	36
	Noise.....	36
	Energy Efficiency .....	37
	Annual Returns and Annual Waste Summary .....	37
	Stormwater and Erosion and Sediment Control .....	37
	Flora and Fauna .....	37
<b>11.</b>	<b>Action Items from Previous Annual Review</b> .....	<b>38</b>
11.1.	Action Required from Department or other agencies from previous review ...	38
<b>12.</b>	<b>Forecast and Proposed Environmental Improvements</b> .....	<b>39</b>
12.1.	Next Annual Review .....	39



## List of Tables

Table A	Compliance Conditions and Relevant Sections .....	3
Table B	Non-compliances .....	8
Table C	Environmental Assessment Noise Assessment Locations .....	13
Table D	EA Construction Noise Goal and Prediction Levels .....	14
Table E	Operational Noise Goal and Prediction Levels .....	14
Table F	Noise Monitoring and EA Predictions Comparison .....	15
Table G	Odour Emission Concentration Results Oct 2016 .....	17
Table H	Odour Emission Concentration Results May 2017 .....	18
Table I	Environmental Assessment Testing for Bio-scrubber.....	19
Table J	Existing and Predicted Odour Emissions .....	19
Table K	Existing and Predicted Electricity Consumption.....	20
Table L	Noise limits and EA estimates .....	22
Table M	Sampling Exercise Odour Comparison .....	23
Table N	Annual Electricity Consumption Data Comparison .....	24
Table O	Annual Gas Consumption Data Comparison .....	26
Table P	Number of complaints and enquires by reporting period.....	27
Table Q	Complaint Data Analysis.....	28
Table R	Non-compliances .....	31
Table S	Corrective actions .....	32
Table T	Community engagement activities (September 2016 to August 2017) .....	34
Figure 1	Complaints Chart.....	29
Figure 2	Lodged Complaints .....	29
Figure 3	Time of Complaint comparison .....	29
Figure 4	Frequent Location comparison.....	29



## Appendix

[Appendix A Environmental Protection Licence No: 6229.](#)

[Appendix B Consolidated Project approval 08 055 MOD 1.](#)

[Appendix C Monitoring Reports.](#)

[Appendix D Annual Returns and Waste Summary.](#)

## Abbreviations

AEMR – Annual Environmental Review Report.

EA – Environmental Assessment.

EPA – Environmental Protection Authority.

EPL – Environmental Protection Licence.

EFS – Elf Farm supplies.

IEA – Independent Environmental Audit.

SEMA – Stephenson Environmental Management Australia.

ORLA – Odour Research Laboratories Australia.

MOER – Mass Odour Emission Rate.



## 1. Introduction

### 1.1. Background

Elf Farm Supplies Pty Ltd (EFS) was established at Mulgrave in 1981 and are a family owned Australian Company. Today, Elf Farm Supplies is one of the leading mushroom substrate (compost) producers in Australia. The largest agricultural enterprise in the Hawkesbury and the only substrate supplier in the Sydney region. Our products are supplied throughout Australia and are integral to the success of the Australian Mushroom Industry.

Modification approval granted on the 14<sup>th</sup> of March 2016 primarily involves upgrades to the odour management system. The works will be principally associated with the replacement of the existing Pre-Wet processing phase and enhancement of the odour management system (utilising a biofilter).

The approved modification includes;

- Replacement of existing method of odour management used,
- Installation of an emissions treatment plant and ancillary works,
- retrofitting of existing phases 2 and 3 buildings,
- converting the existing Pre-Wet shed for bale-wetting and stale bedding operations.

### 1.2. Review Scope

This Annual Environmental Management Review (AEMR) report has been prepared pursuant to Condition 3 of Schedule 5 of Project Approval MP 08\_0255 MOD 1. This AEMR covers the period from 1 September 2016 to 31 August 2017

Table A lists the requirements of this condition and indicates where each has been addressed in this AEMR report.



Table A Compliance Conditions and Relevant Sections

Condition Requirements	Relevant Section
<i>(a) describe the operations that were carried out during the reporting period;</i>	Section 2.
<i>(b) analyse the monitoring results and complaints records of the Project during the reporting period, which includes a comparison of these results against the: i. relevant statutory requirements, limits or performance measures/ criteria; ii. monitoring results of previous years; and iii. relevant predictions in the EA;</i>	Sections 4, 6, and 9.
<i>(c) identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;</i>	Sections 3, 7, and 8.
<i>(d) identify any trends in the monitoring data over the life of the Project;</i>	Section 5.
<i>(e) describe what measure(s) will be implemented during the next reporting period to improve the environmental performance of the Project.”</i>	Sections 12.



## 2. Operations Overview

### Existing Operation

EFS's operations involve a complex and dynamic process that varies both spatially and temporally. The end product of the process is a mushroom substrate used for mushroom cultivation.

The facility produces mushroom substrate by utilising a five-stage composting process. An overview of the process is as follows:

- 1. Raw Materials Preparation:** This involves combining all necessary ingredients which includes stable beddings, poultry manure, wet straw bales, etc. ready for transport to the Pre-Wet Shed. The straw bales are prepared through the bale wetting process which involves gradually adding water and pulsing fresh air through the straw bales to keep the material aerobic. Similarly, the stable bedding material undergoes wetting and fresh air is pulsed through to keep the material aerobic;
- 2. Pre-Wetting:** the straw bales and other ingredients are blended in the Pre-Wet Shed and re-blended a number of times whilst recycled water is continuously added;
- 3. Phase 1:** the material is processed in bunkers where temperature, oxygen and moisture conditions are controlled and regulated;
- 4. Phase 2:** material is transferred to clean tunnels where it is pasteurised and peak heated to remove any weed, moulds or pests before spawning; and
- 5. Phase 3:** mushroom spawn is added and grown through the substrate for a minimum of two weeks prior to mushroom farm delivery.

Detailed information of the mushroom plant operations process and production are presented thus;

### Raw Materials Storage and Preparation Shed

The raw materials storage shed area consists of several bay areas that store dry additive products including poultry manure, cotton seed, gypsum and other seasonal organic nitrogen sources. The ingredients are weighed and mixed together in calculated ratios in an enclosed area.

The mixing is carried out by the "Kuhn" mixing machine. Once mixed, the material is conveyed by a front-end loader to the Pre-Wet Shed where it is placed on top of the straw bales ready for bale breaking by the 'Thilot' blending machine. The mixing of the raw materials is referred to as the preparation of the 'brew' which is a blend of the above ingredients. The frequency and duration of this process is approximately eight hours per week.



## Bale Wetting and Stable Bedding Preparation Stage

The bale wetting stage involves the wetting of straw bales with process water (comprising predominately of water from the nearby creek) for several days (currently four days per week).

The stable bedding area is located in the north-eastern corner of the Pre-Wet Building. The stable bedding material is wetted prior to transfer to the Pre-Wet Shed and is placed on top of the brew “rick” as the final layer before the bale breaking process.

## Pre-Wet Shed

After bale wetting, the wetted bales are transported by front-end loader into the Pre-Wet Shed and manually de-stringed. Whilst inside the Pre-Wet Shed, the construction of a rick is undertaken. The process for constructing a rick involves the breaking of bales and placement of brew and wetted stable bedding material. This essentially forms the construction of a three-layered rick which is, on average, 90 metres long, 2- 3 metres wide and 6 metres high. Once the construction of a rick is complete, a Thilot blending machine is passed over each rick to mix and break all three layers of material. This process is known as bale breaking. Once the bale breaking process is complete, air is pulsed through each rick via a proprietary in-floor aeration system. Currently, three ricks are typical constructed in the Pre-Wet Shed.

The initial low temperature stage of the mushroom composting process occurs in the Pre-Wet Shed. Building ventilation air from the Pre-Wet Shed is currently collected by four ducts, each with in-duct axial fans, and conveyed to the ‘Bioscrubber System’ through the Phase 1 Bunkers for treatment before discharge via a tall stack (known as the Bioscrubber Stack).

## Phase 1 Working Hall & Bunkers

The material transferred from the Pre-Wet Shed is placed into a hopper mixer in the Phase 1 building. Material in the hopper mixer is conveyed into designated aerated bunkers via an enclosed inclined overhead conveyor, located external to the Phase 1 building. The material is deposited into the bunkers where the aeration rate and temperature are tightly controlled. Material in each filled bunker is removed, deposited back into the hopper mixer and returned to an available bunker, to continue the Phase 1 process. Once the Phase 1 process cycle is complete, material is transferred to the Phase 2/3 building via the Phase 1 to Phase 2 transfer conveyor located outside in the North-Western corner area of the Phase 1 building. Ventilation air from the Pre-Wet Shed is passed through the Phase 1 bunkers with the subsequent exhaust air emissions from the bunkers treated by the existing Bioscrubber System before discharge via the Bioscrubber Stack.



## Phase 2/3 Building

The existing Phase 2/3 building consists of a working hall area and a total of twenty-two tunnels. Once the Phase 1 process is complete, material is loaded into a second hopper mixer in the Phase 1 building and outgoing material placed onto a conveyor (known as the Phase 1 to Phase 2 Cross Conveyor) to the Phase 2/3 building. Once material arrives at the Phase 2/3 building, a series of conveyors transfer the material into a dedicated tunnel. During this process, the tunnel is fully vented for up to two hours until filling is complete. The exhaust air during this process stage is discharged via dedicated roof stacks on the current Phase 2/3 building and is known as Tunnel Venting.

Material in the tunnels are kept constantly under aerobic conditions. This is achieved via an extensive airflow channel network. The quality of airflow is controlled by the 'Programmable Logic Controller (PLC) Supervisory' which determines the volumes of recirculated air, makeup of air and discharged air. The exhaust air is discharged via exhaust roof stacks that exist parallel to the tunnel venting exhaust roof stacks (i.e. the southern section of the Phase 2/3 building). Make-up air is drawn through filters in the Phase 2/3 Fan Room. Each tunnel has dedicated exhaust roof stacks and is capable of processing material through all Phase 2/3 stages.

The Phase 2/3 building is kept under a slight positive pressure for quarantine reasons and tunnel conditions are monitored, automated and controlled via a PLC System. The Phase 2/3 process operations consist of several process stages with all stages automatically controlled by the PLC system.

## Phase 2 Process Stages

The Phase 2 process cycle consists of the following stages:

- Tunnel Filling;
- Levelling;
- Warm-up Pasteurisation;
- Pasteurisation;
- and
- Conditioning.

Once the Phase 2 process stages are complete, the process will then enter into Phase 3.

## Phase 3 Process Stages

The Phase 3 process cycle is characterised by the addition of mushroom spawn and consists of the following stages:

- Spawn Run 1;
- Spawn Run 2; and
- Cool-down (spawn/ship-out).



Once the Phase 3 stages are complete, the fully processed product is shipped out either as a bulk product or packaged in twenty-kilogram blocks.

### Bioscrubber System

The existing Bioscrubber System services the Pre-wet and Phase 1 process operations only. Phase 2 and 3 exhaust air emissions are currently discharged untreated via roof stacks.

## 3. Statutory and Regulatory Requirements

This section of the annual review report gives an overview of environmental non-compliances for the project as relates to relevant regulatory and statutory requirements as displayed in Table B. There are no non-compliances related to the environmental protection licence No: 6229.

The assessment criteria and condition requirements are derived from

- ❖ Assessment of compliance with Project approval 08\_255 MOD1 (2016).

### Penalty Notices

#### **Penalty Notice issued by NSW Environmental Protection Authority**

There were no penalty notices issued to EFS by the EPA this review period.

#### **Penalty Notice issued by NSW Department of Planning and Environment**

**30 September 2016** – Two penalty notices were issued to EFS for breaches relating to the carrying out development not in accordance with Schedule 2, Condition 2 of the Approval 08\_0255 in regard to events that occurred on 12<sup>th</sup> November 2014 and 18<sup>th</sup> February 2015 respectively.

### Licence Variation

On the 23<sup>rd</sup> of September 2016 the EPA issued a variation on the EPL licence. Condition U3:1 imposed a reduced phase 1 weekly production tonnage it states thus

*“By 4 November 2016 the Licensee shall restrict the production of mushroom substrate material at the Premises to below 1400 tonnes/week until such time as the works approved at 08\_255 MOD1 are completed and operational.”*

3.1. Project Approval 08\_255 Conditions

Table B Non-compliances

Relevant Approval - 08_0255 MOD1	Condition	Condition Description	Compliance Status	Comments
<b>1. Administrative Conditions.</b>				
	<b>2. Terms of Approval</b>	The Proponent shall carry out the Project generally in accordance with the: (a) EA; (b) statement of commitments (see Appendix 1); (c) site layout plans and drawings in the EA; and (d) MOD 1.	<b>Non-compliant.</b>	Automatically triggered by any other noncompliance with the approval. No corrective action required.
<b>3. Specific Environmental Conditions – Substrate Plant Site.</b>				
	<b>20. Hours of Work.</b>	The Proponent shall comply with the operating hours in Table 3 at the Substrate Plant site, unless otherwise agreed to in writing by the Secretary.	<b>Non-compliant.</b>	There were 3 instances of working outside construction hours. Refer to Section 7. Corrective actions from the non-compliance investigation have since been implemented.
	<b>24. Lighting</b>	The Proponent shall ensure that all external lighting associated with the Substrate Plant site: (a) does not create a nuisance to surrounding properties or roadways; and (b) complies with AS 4282(INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting.	<b>Non-compliant.</b>	There were 2 lighting related complaints on 25/07/2017 and 29/08/2017. Investigations confirm EFS likely cause. Where applicable, corrective actions from investigation have been implemented.
<b>5. ENVIRONMENTAL MANAGEMENT and REPORTING.</b>				
	<b>4. Revision of Plans &amp; Programs.</b>	the Proponent shall review, and if necessary revise the plans and programs required under this approval to the satisfaction of the Secretary.	<b>Non-compliant.</b>	The Independent Environmental Audit noted documents that needed review. Documents highlighted for review and revision have been reviewed or revised.

Compliance status key for Table B

Risk level	Colour code	Description
High	Non-compliant.	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence.
Medium	Non-compliant.	Non-compliance with: <ul style="list-style-type: none"> <li>• potential for serious environmental consequences, but is unlikely to occur; or</li> <li>• potential for moderate environmental consequences, but is likely to occur.</li> </ul>
Low	Non-compliant.	Non-compliance with: <ul style="list-style-type: none"> <li>• potential for moderate environmental consequences, but is unlikely to occur; or</li> <li>• potential for low environmental consequences, but is likely to occur.</li> </ul>
Administrative non-compliance	Non-compliant.	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions).

#### 4. Monitoring Results Analysis

Parts of the project approval conditions and relevant statutory requirements require monitoring programs for certain environmental aspects and impacts. The items for which monitoring is required include;

- ❖ Noise.
- ❖ Odour.
- ❖ Energy efficiency.

During this annual review reporting period, a total of 7 ‘monitoring exercises’ were conducted. These include,

- ❖ 4 noise monitoring exercises as per EPL 6229 - *Noise limits L4.1 Noise generated at the premises must not exceed the LAeq (15 minutes) noise limits presented in the table below:*

Location	Day	Evening	Night
Most effected	44	44	39

Project Approval 08\_255 Schedule 3; Condition 18 – Construction noise criteria  
*“The Proponent shall ensure that the construction noise generated at the Substrate Plant site does not exceed the criteria in Table below”* Construction Noise impact assessment criteria dB(A)

Receiver Location	Day
<b>R1 – 46 Mulgrave Road, Mulgrave</b>	52
<b>R2 – Mulgrave Industrial area</b>	65
<b>R3 – 2 Railway Road, Mulgrave</b>	52
<b>R4 – 126 Mulgrave Road, Mulgrave</b>	52
<b>R5 – Chisholm Place, South Windsor</b>	51

And

Project Approval 08\_255 Schedule 3; Condition 19 – Operational noise criteria  
*“The Proponent shall ensure that the operational noise generated by the Substrate Plant site does not exceed the criteria”* Table below



Operational Noise impact assessment criteria dB(A)

Receiver Location	Day/Evening	Night
R1 – 46 Mulgrave Road, Mulgrave	43	43
R2 – Mulgrave Industrial area	42	42
R3 – 2 Railway Road, Mulgrave	42	37
R4 – 126 Mulgrave Road, Mulgrave	44	41
R5 – Chisholm Place, South Windsor	44	42

❖ 2 odour monitoring exercises as per EPL6229 - L2.3 Air Concentration Limits

Pollutant	Units of measure	100 percentile concentration limit
Odour	odour units per second	55400

❖ 1 Energy efficiency monitoring which constitutes a part of this AEMR as well and is discussed in [section 4.5](#).



## 4.1. Noise Monitoring Analysis

### 2<sup>nd</sup> September 2016 Monitoring Report

The report for this monitoring exercise indicate preliminary construction works from the EFS's substrate plant were inaudible at all reference receiver locations and would be at least 10dB below the background noise levels.

The results of site attended measurements confirmed that LAeq,15min noise levels from construction activities satisfied the project noise goals in accordance with Schedule 3 - Condition 18 of Project Approval No. 08\_0255. The results also indicate compliance with Schedule 3 - Condition 19 of the project approval. (Refer to Appendix C).

### 14 October 2016 Monitoring Report

It was observed that construction noise from the works associated with the Substrate Plant was inaudible at all measurement locations, except for R5.

At measurement location R5, noise from the concrete vibrator was audible when operational. Noise from reverse alarms was also audible at times at this location. However, due to the influence of background noise, construction noise could not be accurately measured.

The site attended measurements on Thursday 13 October 2016 confirmed that LAeq,15min noise levels from construction activities associated with Elf Farm Supplies Pty Ltd satisfied the project noise goals in accordance with Schedule 3 -Condition 18 of Project Approval No. 08\_0255.

Compliance with R5 at Schedule 3 - Condition 19 could not be deduced from the results in the report due to how the data was presented. However, noise data result from the other locations infers compliance with operational noise requirements (Refer to Appendix C).

### 29th November 2016 Monitoring Report

Construction noise from the upgrade works associated with the Substrate Plant were not audible at measurement locations R1, R2 and R3. Construction activities associated with the use of metal working hand tools and grinder were audible at measurement location R4. Whilst bobcat, front end loader and roller were occasionally audible at measurement location R5.

The results of site attended measurements confirmed that LAeq,15min noise levels from construction activities associated with the 08\_255MOD 1 construction works at the Substrate Plant satisfied the project noise goals in accordance with Schedule 3 -Condition 18 of Project Approval No. 08\_0255.

Results also infer compliance with operational noise requirements of Schedule 3 -Condition 18 of Project Approval No. 08\_0255 (Refer to Appendix C).

## 26th May 2017 Monitoring Report

This monitoring exercise noted the instantaneous maximum noise levels (SPL) from the use of concrete agitators may approach or marginally exceed the noise limit at R5 (Chisholm Place), however this noise source is present for no more than five (5) minutes in any fifteen (15) minute assessment period and hence LAeq,15min noise level is up to 5dB lower than the measured SPL. Accordingly, although these activities are clearly audible at Chisholm Place and resulted in generation of a noise complaint, the construction noise levels comply with noise limits for construction activities.

The results of site attended measurements confirmed that LAeq,15min noise levels from construction activities at the Substrate Plant satisfied the project noise goals in accordance with Schedule 3 -Condition 18 and 19 of Project Approval No. 08\_0255 (Refer to Appendix C).

### 4.2. Noise Monitoring results and Environmental Assessment Comparison

This section analyses comparison between the noise monitoring results and the environmental assessments (EA) noise assessment goals and predictions.

In the environmental assessment report, noise predictions and noise assessment goals (LAeq,15min) were determined for five key assessment locations recreated in the table below.

Table C Environmental Assessment Noise Assessment Locations

Reference	Description	Location
R1*	46 Mulgrave Road,	North
R2*	Mulgrave Industrial Area	EAST
R3*	2 Railway Road, Mulgrave	South-East
R4*	126 Mulgrave Road, Mulgrave	South-East
R5*	Chisholm Place, South Windsor	West

\*Noise monitoring locations

For the construction noise modelling, nine work scenarios were modelled representing various activities during the three stages of development at the substrate plant facility. The assessment noise modelling results showed that the recommended construction noise goals would generally be satisfied at the reference assessment locations.

The main noise goal exceedances noted in the environmental assessment are associated with dozer and compactor use during filling activities represented in Scenario 1 of the report. For other construction scenarios, a number of noise goal exceedances at residential

receiver locations were identified these were associated with concrete works specifically in Scenarios 2 and 5.

Tables D and E below show the environmental assessment noise goals and predictions for both construction and operations noise levels.

**Table D EA Construction Noise Goal and Prediction Levels**

Reference Location	Description	Assessment LAeq,15min Goal (Day)	Predicted LAeq,15min Sound Pressure Level	Compliance
R1	46 Mulgrave Road, Mulgrave	47	35	√
R2	Mulgrave Industrial Area	65-70	36	√
R3	2 Railway Road, Mulgrave	47	35	√ x
R4	126 Mulgrave Road, Mulgrave	47	38	√ x
R5	Chisholm Place, South Windsor	46	36	√ x

*Note x – reference locations where noise goal exceedance is expected based on construction scenarios.  
√- Compliance expected.*

**Table E Operational Noise Goal and Prediction Levels**

Reference Location	Description	Assessment LAeq,15min Goal (Day)	Predicted LAeq,15min Sound Pressure Level	Compliance
R1	46 Mulgrave Road, Mulgrave	47	35	√
R2	Mulgrave Industrial Area	65-70	36	√
R3	2 Railway Road, Mulgrave	47	35	√
R4	126 Mulgrave Road, Mulgrave	47	38	√
R5	Chisholm Place, South Windsor	46	36	√

*Note - √- Compliance expected.*

As displayed in Table F below aggregate noise monitoring results indicate noise levels are below both the noise assessment goals and predicted noise levels for each category (construction and operation).

The result is consistent with the environmental assessment which predicted complete compliance with operational noise assessment goals and predictions. It should be noted however, regarding compliance with construction noise assessment goals and prediction three of the nine scenarios assessed in the environmental assessment for R5-*Chilsom Place, South Windsor* and R3- *2 Railway Road, Mulgrave* were expected to display noise goal exceedances, whilst noise goal exceedance was expected in one scenario at R4-126 Mulgrave Road, Mulgrave.

In conclusion, review of the noise monitoring exercise measurements and comparison with noise assessment goals and predictions of the environmental assessment indicate overall noise compliance.

Table F Noise Monitoring and EA Predictions Comparison

Location	Noise Assessment Goal LAeq,15min		Predicted Noise Level LAeq,15min		Noise Monitoring LAeq,15min			
	Construction Goal	Operational Goal	Construction Level	Operational Level	Sept 2016	Oct 2016	Nov 2016	May 2017
<b>R1</b>	52	47	50	35	<38	Minimal (inaudible, below background noise level)	<32	<37
<b>R2</b>	65	65-70	56	36	<46	Minimal (inaudible, below background noise level)	<40	<42
<b>R3</b>	52	47	56	35	<43	Minimal (inaudible, below background noise level)	<38	<36
<b>R4</b>	52	47	60	38	<40	Minimal (inaudible, below background noise level)	<44	<43
<b>R5</b>	51	46	55	36	<38	<48 (observed during lulls in ambient sound)	<40	<46

Note: Due to the use of nine possible scenarios in assessing predicted construction sound levels in the EA, the highest predicted sound level at each location from all nine scenarios was selected as representative for that location.

Day time operational noise levels were selected as noise monitoring occurred in day time.

### 4.3. Odour Monitoring Analysis

This section details the results of the bi-annual odour monitoring exercises conducted in compliance with conditions L2 and M2 of the EPL No:6229. These state as follows respectively;

*“L2 concentrations limits*

*L2.1 For each monitoring/discharge point or utilisation area specified in the table\’s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.”*

Pollutant	Units of measure	100 percentile concentration limit
<b>Odour</b>	Odour units per second	55400

*“M2 Requirement to monitor concentration of pollutants discharge*

*M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns”*

*M2.2 Air Monitoring Requirements*

Pollutant	Units of measure	Frequency	Sampling Method
Odour	odour units per second	Special Frequency 1	OM-7
Temperature	Kelvin	Special Frequency 1	TM-2
Velocity	metres per second	Special Frequency 1	TM-2
Volumetric flowrate	cubic metres per second	Special Frequency 1	TM-2

*M2.3 For the purposes of the table above ‘Special Frequency 1’ means ‘six monthly’.”*



## 26-31 October 2016 Odour Monitoring

This odour emission survey was conducted over a typical composting cycle. The measured stack Mass Odour Emission Rate (MOER's) for the monitoring period were in the range of 31,000 ou.m<sup>3</sup>/s to 43,000 ou.m<sup>3</sup>/s. The average MOER for the spring 2016 composting cycle, which was considered to be typical, was 36,000 ou.m<sup>3</sup>/s. Therefore, these MOER's comply with the EPA/OEH EPL No. 6229 Licence Criteria of 55,400 ou.m<sup>3</sup>/s Rolling Annual Average. Data results from the monitoring exercise are displayed in Table G.

Table G Odour Emission Concentration Results Oct 2016

Day of Week	Wednesday	Thursday	Friday	Sunday	Monday
Date	26/10/2016	27/10/2016	28/10/2016	30/10/2016	31/10/2016
Time Sample Taken (hours)	13:52	03:00	03:13	08:35	03:11
SEMA Sample No.	725834	725835	725837	725838	725839
ORLA Sample No.	4590	4591	4594	4596	4597
Concentration (ou)	1,800	2,000	2,400	2,000	2,200
Stack Velocity (m/s)	15.4	15.0	15.9	14.1	14.7
MOER (ou.m <sup>3</sup> /s)	31,000	34,000	43,000	33,000	37,000

Key:

ou = odour unit

m/s = metres per second

MOER = Mass Odour Emission Rate

ou.m<sup>3</sup>/s = odour unit volumes per second



### 03-08 May 2017 Odour Monitoring

This odour emission survey was also conducted over a typical composting cycle. The measured stack MOER's for the monitoring period were in the range of 27,000 ou.m3/s to 48,000 ou.m3/s. The average MOER for the autumn 2017 composting cycle, which was considered to be typical, was 40,000 ou.m3/s. Therefore, these MOER's comply with the EPA EPL No. 6229 Licence Criteria of 55,400 ou.m3/s Rolling Annual Average. Data results from the monitoring exercise are displayed in Table H.

Table H Odour Emission Concentration Results May 2017

Day of Week	Wednesday	Thursday	Friday	Sunday	Monday
Date	03/05/2017	04/05/2017	05/05/2017	07/05/2017	08/05/2017
<b>Time Sample Taken (hours)</b>	13:55	03:00	03:19	16:01	03:05
<b>SEMA Sample No.</b>	726212	726213	726214	726215	726216
<b>ORLA Sample No.</b>	4712	4713	4714	4715	4716
<b>Concentration (ou)</b>	2,900	2,400	2,900	1,700	2,200
<b>Stack Velocity (m/s)</b>	14.4	14.7	15.1	14.6	15.0
<b>MOER (ou.m3/s)</b>	48,000	39,000	48,000	27,000	38,000

Key:

ou = odour unit

m/s = metres per second

MOER = Mass Odour Emission Rate

ou.m3/s = odour unit volumes per second

#### 4.4. Odour Monitoring Results and Environmental Assessment Comparison

The environmental assessment predicted emissions would be within the existing licence limit at all times for existing production rates.

The data and estimates in Table I below derived from the environmental assessment indicate bio-scrubber stack odour testing result for phase 1 will be well below the emissions limit of 55,400 odour units per second annual rolling average contained in the licence.

Table J below confirms this assessment, though on aggregate the average 1000tpw MOER for the two monitoring results are higher than was recorded in the environmental assessment.

Table I Environmental Assessment Testing for Bio-scrubber

Date	Average material amount loaded in Phase 1 tunnels (tonnes)	Equivalent product material in Phase 1 tunnels (tonnes)	Average odour Concentrations (ou)	Average odour emission rate (ou.m <sup>3</sup> /s)
14th Mar to 20th Mar 2007	1360	1046	1271	19447
28th Sept to 2nd Oct 2009	2309	1775	1847	29640
11th Oct to 15th Oct 2010	1611	1239	1627	27438
Estimated bioscrubber stack emission 1	1300	1000	-	19200

Table J Existing and Predicted Odour Emissions

UNITS	Estimated 1000 tpw	Oct 2016 Estimate for 1000 tpw	May 2017 Estimate for 1000tpw
<b>Concentration (ou)</b>	-	2100	2400
<b>Stack Velocity (m/s)</b>	-	15.0	14.8
<b>MOER (ou.m<sup>3</sup>/s)</b>	19200	27692	28715



#### 4.5. Energy Efficiency Monitoring Analysis

Electricity bills are reviewed monthly and gas bills quarterly. Total energy consumption data is compiled annually and reviewed against production data as per energy efficiency plan to confirm that energy efficiency is being maintained or improved.

At first glance, current data analysis would indicate a decline in electricity energy efficiency as shown in Table K below. Data sets in Table K show energy use per tonne increase year on year as well as a 27.7% per tonne increase in electricity use for 2017 financial year compared to the figure for the environmental assessment.

However, reduced annual phase 1 tonnage production was a result of licence variation imposed by the EPA which limited phase 1 substrate production to 1400 tonnes per week.

The reduced tonnage production of phase 1, did not impact transfer rate to Phase 2/3 which is where the bulk of the electricity consumption occurs. This is because though phase 1 tonnage was reduced the tonnage transferred to Phase 2/3 remained consistent.

Consequently, the reduction in tonnage in phase 1 does not translate to a proportional reduction in tonnage in phase 2/3 and by extension electricity consumption.

Table K Existing and Predicted Electricity Consumption

Annual Electricity Consumption Summary						
Month	Environmental Assessment		Energy for Financial Year 2017		Energy for Financial Year 2016	
	Usage (MWh)	Production (Tonnes)	Usage (MWh)	Production (Tonnes)	Usage (MWh)	Production (Tonnes)
<b>Total</b>	3000	52000	5342.6	72504	5324.9	78,110
<b>Electricity consumption rate (kWh/tonne)</b>	57.7kWh/t		73.7kWh/t		68.2Kwh/t	



## 5. Trends in Monitoring Data

### 5.1. Noise Data Trend Analysis

Overall, all noise results are well below imposed construction and operational noise limits.

Locations R4 and R5 registered modest upticks in sound levels, with R5 showing a progressive increase in sounds levels. This is to be expected however, as R5 is the closest location to most of the construction works and the most densely populated assessment location.

Three of the nine scenarios explored in the environmental assessment also indicated the potential for increased sound levels at these locations.

Conversely Location R3, displayed a steady decrease in noise levels. This could be attributed to the location being further away from the site than R2 and R4, as such its more impacted by ambient noise than by the construction noise.

Locations R1 and R2 show an overall drop in noise levels from the first noise testing of 2<sup>nd</sup> September 2016, however there was a slight uptick in noise levels between noise readings of November 2016 and May 2017.

When current readings are expressed as a percentage of construction noise limits, data indicates noise level are below 85% of maximum allowable levels at all monitoring locations.

R1 = 71%

R2 = 64.6%

R3 = 69%

R4 = 82.69%

R5 = 75.41%

Further assessment will be conducted to explore ways of reducing the trending increase in noise levels observed at locations R4 and R5. Refer to Table L for data.

Table L Noise limits and EA estimates

Location	Construction Noise Limit LAeq,15min	Sept 2016 Estimated Construction Noise Contribution LAeq,15min	Oct 2016 Estimated Construction Noise Contribution LAeq,15min	Nov 2016 Estimated Construction Noise Contribution LAeq,15min	May 2017 Estimated Construction Noise Contribution LAeq,15min
<b>R1</b>	<52	<38	Minimal (inaudible, below background noise level)	<32	<37
<b>R2</b>	<65	<46	Minimal (inaudible, below background noise level)	<40	<42
<b>R3</b>	<52	<43	Minimal (inaudible, below background noise level)	<38	<36
<b>R4</b>	<52	<40	Minimal (inaudible, below background noise level)	<44	<43
<b>R5</b>	<61	<38	<48 (observed during lulls in ambient sound)	<40	<46

## 5.2. Odour Data Trend Analysis

Odour unit concentrations displayed a slight daily increase in daily measurements between the two analysed reporting periods. The average for the most recent data period i.e. May



2017 is 2420 ou compared to an average of 2080ou for the October 2016 measurements representing a 16% increase in average daily odour readings.

The annualised rolling average for Mass Odour Emission Rate (MOER) showed an 11% increase for results between both sampling exercises. However, the most recent (May 2017) result indicate annualised rolling average MOER is below the permitted licence allowance by 28%.

Stack velocity remained constant over both monitoring periods.

The average MOER for the autumn 2017 composting cycle, which was considered to be typical, was 40,000 ou.m3/s while the average MOER for the spring 2016 composting cycle, which was considered to be typical, was 36,000 ou.m3/s.

This implies a 4000 ou.m3/s increase in MOER. There was an increase in average weekly Phase 1 substrate production of 60tpw between the October 2016 monitoring exercise and the May 2017 monitoring exercise representing a 3.57% increase in average weekly production. However, the rolling annual MOER recorded an annualised percentage increase of 11%.

It is plausible the 3.57% increase in substrate weekly tonnage production resulted in an annualised MOER of 11%, however, there could also be other extraneous factors such as climatic season of the year having an impact.

Table M shows a comparison of the data between the two monitoring periods for odour concentrations, stack velocity and MOER.

Table M Sampling Exercise Odour Comparison

UNIT	Oct 2016	May 2017
<b>Concentration (ou)</b>	2080	2420
<b>Stack Velocity (m/s)</b>	15.0	14.8
<b>MOER (ou.m3/s)</b>	36000	40000

Key

ou = odour unit

m/s = metres per second

MOER = Mass Odour Emission Rate

ou.m3/s = odour unit volumes per second

### 5.3. Energy Data Trend Analysis

#### Electricity Use Trend Analysis

The average production rate for mushroom substrate (phase 1 as per licence) 2017 financial year is 1394 tonnes per week. Total electricity consumption for the financial year is 5 342 567 KWH. Averaged out on a weekly bases electricity is consumed at a rate of 102742 Kwh, this itemised per tonnage equates to 73.7 Kwh. Compared to the electricity consumption per tonnage last year there was an 8.2% increase in electricity consumption. The cause of this increase has been explored in section 4.5 above. Refer to Table N below.

Table N Annual Electricity Consumption Data Comparison

Electrical Energy Consumption Annual Summary						
Month	Energy for Financial Year 2018		Energy for Financial Year 2017		Energy for Financial Year 2016	
	Usage (MWh)	Production (Tonnes)	Usage (MWh)	Production (Tonnes)	Usage (MWh)	Production (Tonnes)
<b>July</b>	424.5	6905	410.3	5962	434.3	6,055
<b>August</b>	429.1	5524	393.6	7391	430.6	7,547
<b>September</b>			392	5834	429.7	6,068
<b>October</b>			416.3	6731	474.7	6,041
<b>November</b>			415.7	4858	432.0	7,238
<b>December</b>			474.9	5528	457.6	6,096
<b>January</b>			525.9	6947	488.3	6,067
<b>February</b>			480.2	5581	459.1	7,563
<b>March</b>			512.4	5583	473.1	5,990
<b>April</b>			442.7	5590	431.9	5,935
<b>May</b>			452.5	6971	407.9	7,508
<b>June</b>			426.1	5528	405.7	6,002
<b>Total</b>			<b>5342.6</b>	<b>72504</b>	<b>5324.9</b>	<b>78,110</b>
<b>Energy consumption rate (kWh/tonne)</b>	<b>NA</b>		<b>73.7Kwh</b>		<b>68.2Kwh</b>	



## Gas Consumption Trend Analysis

Total substrate production for the periods under comparison were 77861 tonnes and 71580 tonnes for September 2015 – August 2016 and September 2016 – August 2017 respectively.

Total gas use was 1606.5 GJ (2017) compared to the same period in 2016 which recorded 1805.9GJ, this represents a 199.4 GJ decrease. Representing a 11.04% reduction in gas consumption.

On a per tonnage basis, gas consumption this 2017 period stands at 22.44 kj/tonne compared to 23.19 kj/tonne for the same period last year (2016). (See Table O).

Table O Annual Gas Consumption Data Comparison

Gas Consumption Annual Summary: 2016 – 2017							
Review Period (Sept 2016 – Aug 2017)				Review Period (Sept 2015 - Aug 2016)			
Billing Period	Usage (GJ)	Bill days	Production (Tonnes)	Billing Period	Usage (GJ)	Bill days	Production (Tonnes)
September 2016 - November 2016	461.9	90	17423	September 2015 - November 2015	464.3	91	19347
December 2016 - February 2017	487.8	91	18056	December 2015 - February 2016	472.5	90	19726
March 2017 - May 2017	257.5	90	18144	March 2016 - May 2016	391.7	90	19433
June 2017 – August 2017	399.3	91	17957	June 2016 - August 2016	477.4	91	19355
<b>Total Gas consumption (GJ)/</b>	1606.5 GJ			1805.9 GJ			
<b>Total production Tonnes</b>	71580 tonnes			77861 tonnes			
<b>Total Gas consumption rate (kJ/tonne)</b>	22.44 kJ/tonne (0.02244 GJ/tonne)			23.19 kJ/tonne (0.02319 GJ/tonne)			

Note – Figures are rounded to nearest decimals



## 6. Complaints Records Analysis

### 6.1. Trends – complaints data

Complaints peaked in May 2017 (11) and September 2016 (10) and remained relatively stable across the remaining months. On average, six complaints or enquires were received each month. The lowest number of complaints was in June 2017 (2). Enquires were only received in six out of the twelve months.

### 6.2. Comparing data from the previous year

Compared to the same reporting period last year, there was a 17% increase in complaints and enquires this year (Table P). The breakdown of complaint and enquiry type has remained relatively the same. There were slightly less odour complaints this reporting year but a higher number of complaints / enquires in all other categories. Comparatively more complaints were lodged with the EPA this reporting year, compared to the previous year.

Table P Number of complaints and enquires by reporting period

Reporting period	Number of enquires and complaints
1 September 2015 to 31 August 2016	59
1 September 2016 to 31 August 2017	69

### 6.3. Actions taken to address complaints

Investigations limited to desktop due to timing of reports received. Desktop investigations were conducted in accordance with complaints procedure.

Elf Farm Supplies is in the process of constructing MOD1 to fully enclose the operations and install the new emissions plant.

Table Q Complaint Data Analysis

Complaints Period	Number of Complaints	Number of Wind Direction - Confirmed	Number of Wind Direction - Uncertain	Number of No-Location of Complaint Given	Mushroom Substrate Process		
					Complaints when undertaking Transfer	Complaints when Blending Phase 1	Complaints when Blending PW
Sept-Dec '12	2	1	1	1	n/a	n/a	n/a
2013	109	43	46	22	22	13	39
2014	68	30	30	9	9	13	17
2015	125	74	32	8	14	44	22
Jan-Sept '16	35	20	15	-	9	22	8
Sept 16 - Oct 17	53	10	21	4	28	12	19
<b>Totals</b>	<b>392</b>	<b>178</b>	<b>145</b>	<b>44</b>	<b>82</b>	<b>104</b>	<b>105</b>

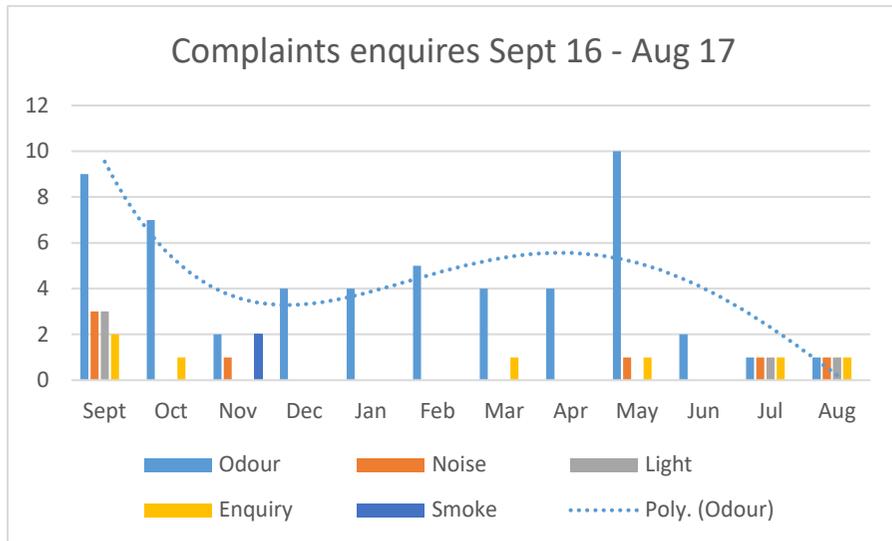


Figure 1 Complaints Chart

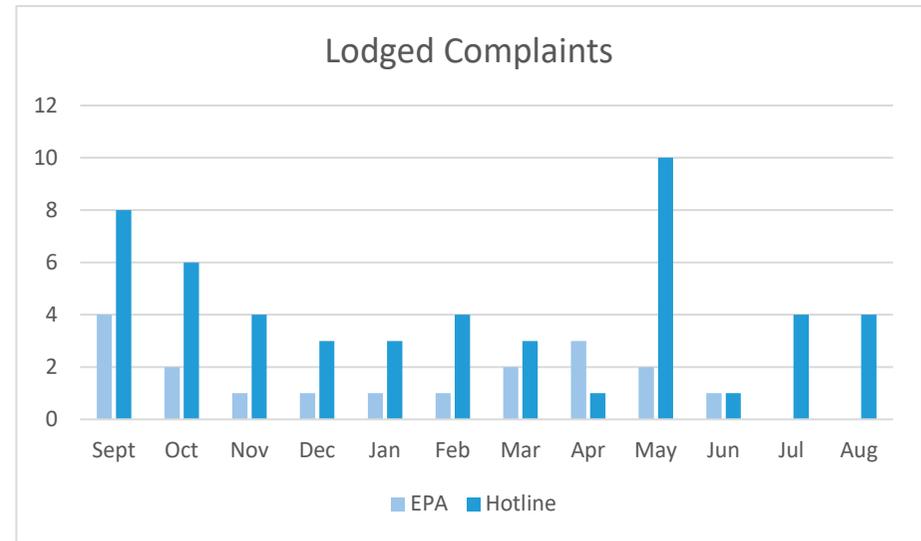


Figure 2 Lodged Complaints

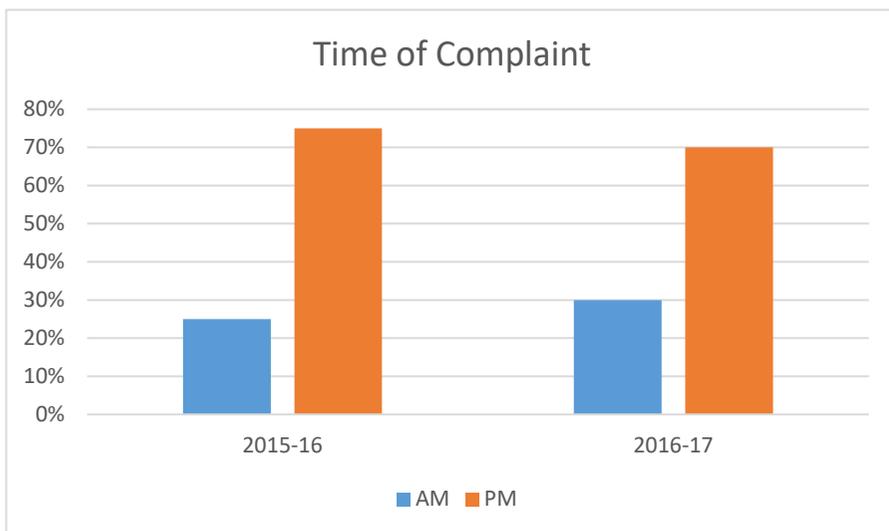
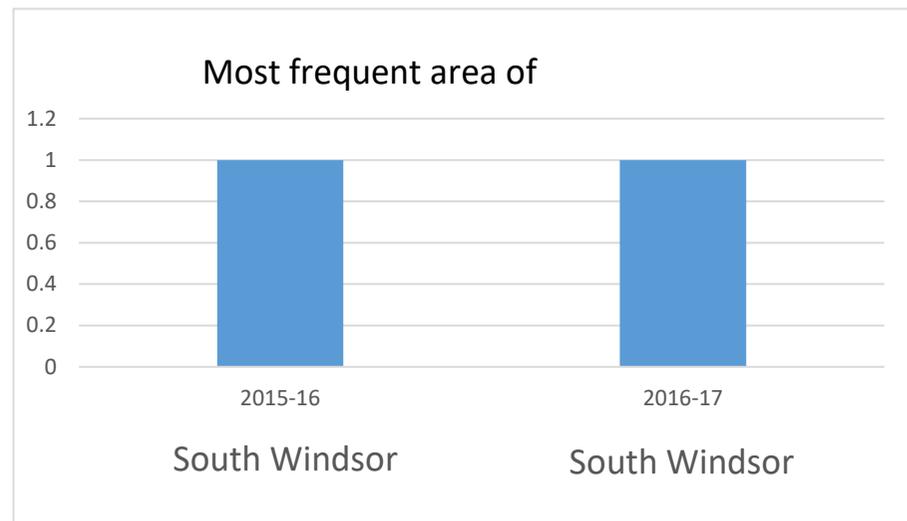


Figure 3 Time of Complaint comparison



29 Figure 4 Frequent Location comparison

## 7. Non-compliances

This section addresses the non-compliances that occurred in the year under review as required by subclause(c) of condition 3; schedule 5.

*“Identify any non-compliance during the reporting period, and describe what actions were (or are being) taken to ensure compliance;”*

### 7.1. Summary of Non-compliances

A total of 4 incidents of non-compliance were recorded for this annual review year, 3 were construction related, and 1 was in relation to an administrative condition of the approval.

The 3 non-compliances for construction activities were for working outside construction work hours, specifically, ‘Schedule 3; Condition 20 - Hours of Work’.

It states as follows:

*“The Proponent shall comply with the operating hours in Table 3 at the Substrate Plant site, unless otherwise agreed to in writing by the Secretary.”*

*Operating Hours*

Activity	Day	Time
Construction	Monday – Friday	7:00am to 6:00pm
	Saturday	8:00am to 1:00pm
	Sunday and Public Holidays	Nil
Operation	All days	Any time

The 1 non-compliance related to an administrative condition of the approval specifically Schedule 2: Condition 2(d);

*“2. The Proponent shall carry out the Project generally in accordance with the:  
(d) MOD 1.”*

This non-compliance is automatically triggered by any other non-compliance. As such corrective actions for the triggering non-compliance automatically addresses this non-compliance.

Table R below gives a summary of the non-compliances and the relevant statutory requirements.



## 7.2. Non- Compliance Analysis

Table R Non-compliances

Approval/Licence	Noncompliance Number (NCN)	Schedule	Condition	Requirement
Project approval 08_0255 MOD 1.	NCN 1	Schedule 3	Condition 20 – Hours of Work.	Construction hours.
Project approval 08_0255 MOD 1.	NCN 2	Schedule 2	Condition 2(c) Terms of approval.	The Proponent shall carry out the Project generally in accordance with the: (d) MOD 1.
Project approval 08_0255 MOD 1.	NCN 3	Schedule 3	Condition 20 – Hours of Work.	Construction hours.
Project approval 08_0255 MOD 1.	NCN 4	Schedule 3	Condition 20 – Hours of Work.	Construction hours.

### 7.3. Corrective Actions

Table S details the non-compliances recorded for the annual review year and the respective corrective actions recommended.

Table S Corrective actions

Date	NCN	Non-Compliance	Details of Non-compliance	Corrective Actions
7/09/2016	1	Hours of Work	Construction work outside of stipulated constructions hours. Work lasted till 8pm. 2 hours past stipulated construction stoppage time of 6pm (weekdays). <b>Cause:</b> Trailing of special mix concrete that cured slower than anticipated.	When doing larger pours/afternoon pours concrete accelerant may be used.
7/09/2016	2	Terms of approval.	<b>Cause:</b> Caused by other non-compliances as relates to requirement to carry out works in general accordance with project approval MOD 1.	Constant diligence to avoid triggering non-compliances.
30/11/2016	3	Hours of Work	Construction work outside of stipulated constructions hours. Construction works lasted 2 hours and 50 minutes past stipulated construction time. <b>Cause:</b> Four-hour delay in concrete delivery and rainfall later in the day.	Cause of incident is extraneous factors which resulted in a 4-hour delay to delivery of concrete for pouring and thus a 2 hour 50 min extension in construction works. It is anticipated that situations such as this would arise again in the future, consequently the most feasible corrective actions would be reactive rather than proactive. As a result, the Department of Planning and Environment Should be contacted and a workable solution that allows for working outside construction hours in special circumstances need to be sought.
21/07/2017	4	Hours of Work	Construction work outside of stipulated constructions hours. Construction works lasted 4 hours and 45 minutes past stipulated construction time. <b>Cause:</b> Delay in concrete delivery and winter conditions.	Cause of incident is extraneous factors which are not within the management purview of EFS. Discussions were taken up with the supplier about our working hours requirements.
25/07/2017	5	Lighting	Construction work, 21/07/2017, outside of stipulated constructions hours. Construction works lasted 4 hours and 45 minutes past stipulated construction time which required lighting to complete task. <b>Cause:</b> Delay in concrete delivery and winter conditions.	All efforts were made to avoid lighting being directed to residential area. This was demonstrated as the complaint was for only a 30 minute timeframe over the 4 hours and 45 mins of work. Discussions were taken up with the supplier about our working hours requirements.
29/08/2017	6	Lighting	Delivery of shipping container.	Port operations dictate time slots for transport companies to pickup containers. All efforts are made by drivers to keep lights to a minimum, which includes switching off headlights once positioned. Future Containers were unloaded in different area of the site.

Note: NCN – Non-compliance number

## 8. Independent audits summary

One audit exercise was conducted during the reporting period, this was the Independent Environmental Audit (IEA) which was completed as per schedule 5; Condition 3A of project approval 08\_055 MOD1.

The Independent Environmental Audit (IEA) was carried out between September 2016 and March 2017.

The IEA deemed all non-compliances were of a low risk.

### 8.1. IEA recommendation

The recommendations from the independent audit are itemised thus;

- ❖ Ensure that the review of all plans and programs required under this development consent is undertaken as soon as possible.
- ❖ Elf Farm Supplies website should be reviewed as the auditor found it difficult to find information, it did not appear to be in logical locations.
- ❖ Also recommend including dates of entry for construction updates, to allow verification of when the updates occurred.
- ❖ Suggest having the 'Complaints Procedure' under 'Environmental Reporting' instead of 'Document Archive' on the website.

These recommendations have since been completed.

## 9. Community

A number of engagement activities and feedback opportunities have been provided during the reporting year, and these have been extensively promoted to the local community and registered parties.

The below table identifies the community engagement activities that have been delivered by Straight Talk, an independent community engagement consultancy, on behalf of EFS between 1 September 2016 to 31 August 2017.

Table T Community engagement activities (September 2016 to August 2017)

Community engagement activities	Frequency	Promotion
Community Liaison Committee	One meeting	<ul style="list-style-type: none"> <li>Via committee member email list</li> <li>Committee meeting notes published on committee website</li> </ul>
Complaints and enquires line (email and phone)	Throughout	<ul style="list-style-type: none"> <li>Hawkesbury Gazette (X2)*</li> <li>Hawkesbury Courier (X2)*</li> <li>Hawkesbury District Independent (X2)*</li> <li>E-newsletter (X5)</li> <li>Website</li> <li>CLC meetings (X1)</li> </ul>
Website	Throughout	<ul style="list-style-type: none"> <li>Hawkesbury Courier advertisement (X6)</li> <li>Hawkesbury Gazette advertisement (X6)</li> <li>Hawkesbury District Independent (X5)</li> <li>E-newsletter (X4)</li> </ul>
Four Community Information Sessions (three-hours per session)	Quarterly	<ul style="list-style-type: none"> <li>Hawkesbury Gazette (X6)</li> <li>Hawkesbury Courier (X6)</li> <li>The Hawkesbury District Independent (X5)</li> <li>E-newsletter (X4)</li> <li>Website</li> <li>Invitations sent to the project mail list (X3)</li> </ul>
Construction Update E - newsletters	Five E-newsletters	<ul style="list-style-type: none"> <li>Hawkesbury Courier advertisement (X2)</li> <li>Hawkesbury Gazette advertisement (X2)</li> <li>Hawkesbury District Independent (X2)</li> <li>E-newsletter (X4)</li> <li>Website</li> </ul>

\*The combined circulation of the Hawkesbury Courier, Hawkesbury Gazette and Hawkesbury District Independent per edition is approximately 47,000 copies.

\*\*Web analytics captured from 13 November 2016.



EFS established a Community Liaison Committee (CLC) to facilitate and support effective communication between EFS and the Mulgrave area community.

Through two-way communication the CLC discussed community issues and concerns in relation to the operation of EFS. The CLC played a role in monitoring and reviewing the performance of the facility, in terms of its impact on the surrounding community.

The CLC, assisted EFS to establish a constructive relationship with the community and develop a collaborative approach to discussing and addressing issues of concern that impact on the community, related to the operation of the mushroom compost facility.

The final CLC meeting took place on Wednesday 23 November 2016.

The CLC website is still available and provides information about the CLC as well as records of past meeting agendas and meeting notes from each quarterly CLC meeting these can be accessed at <http://www.elffarmssupplies.com.au/elfclc/>.

Further to this, information and reports relating to complaints/feedback received by EFS through its complaint/feedback line are also uploaded monthly to the EFS website ([www.elffarmssupplies.com.au](http://www.elffarmssupplies.com.au)).

Elf Farm Supplies continues to hold a series of public information sessions on the upgrade of its Mulgrave facility. The information sessions provide the community with an opportunity to learn more about the project and to talk with members of the project team.



## 10. General Environmental Performance Review

During this annual review reporting period (September 2016 – August 2017) EFS has continued undertaking measures to improve best practise environmental management standards were possible. To this end, various initiatives have been undertaken with regards to the existing plant operations and processes and project construction works. Specifically, the handling of raw and product materials during the mushroom substrate process. Though much of the current initiative to control fugitive odour emissions is aimed to be achieved through infrastructure modifications in accordance with current undertaking.

### General Conditions Licences and Approval

EFS continued endeavouring to achieve complete compliance with statutory and regulatory conditions. This goal was achieved this review period as relates to the EPL No:6229, however there is opportunity for improvement for compliance with conditions of project approval 08\_055 MOD 1.

### Waste Minimisation

EFS continues to improve on its construction and operations process to ensure all materials are utilised in their entirety. There is a recycling program in place to recycle and reuse waste construction materials from the project works. Current operations do not leave any excess compost on site as these are packaged and forwarded to landscaping companies for use.

### Leachate Control & Containment

In accordance with EPA Licence 6229 Condition O4.5; *the licensee must “De-Sludge the leachate collection pit (if sludge is present) at least fortnightly and keep a record”.*

A copy of the register is kept on-site at all times. This de-sludge register was also audited as part of the Independent environmental audit and found to be compliant.

### Air Quality and Dust

Access roads are sealed, with significant parts gravelled, as most of the construction activities conducted in the review period were structural not civil there were no issues with air quality or dust control. There were no dust complaints during the reporting period.

There was no visible dust was observed leaving the site during routine site inspections.

### Noise

There were six noise complaints lodged this reporting period. Though all noise monitoring data indicate compliance with noise assessment criteria limits, there were instances where works extended beyond approved work hours and noise complaint was received. Working within approved work hours is a performance indicator for noise, as such, there is room for improvement in this instance.

To ensure continued best practice performance for this environmental aspect efforts will continue to be made to undertake construction activities in accordance with AS 2436:1981, *Guide to Noise Control on Construction, Maintenance and Demolition Sites*, with all equipment demonstrating compliance with the noise levels recommended in the standard.

these efforts will include;



- ❖ Selecting plant and equipment based on acoustic performance where practicable;
- ❖ Reduce operating speeds where practical and switching off idle plant;
- ❖ Arranging for trucks to travel in a forward direction throughout the site and minimise reversing or manoeuvring where possible;
- ❖ Confining construction work to hours approved in condition 20 of the approval;
- ❖ Review the use of mobile plant reversing sirens and alter work practices where practical, or replace with broad band or level varying alarms;
- ❖ When concrete pours are taking place, locate concrete trucks and pumps in a manner that will maximise screening to residential properties to the south and west;
- ❖ Where practicable scheduling the noisiest activities to occur during parts of the day when ambient noise levels are higher;
- ❖ Continued implementation of site noise and vibration minimisation as part of induction and toolbox for all staff and contractors.

### Energy Efficiency

EFS continues to explore means of improving its energy efficiency and further reducing its ecological footprint. Options being considered include implementing energy saving equipment and operational processes where viable.

### Annual Returns and Annual Waste Summary

The Annual Return and annual waste summary for 2017 have been lodged in accordance with the NSW EPA requirements. There were no non-compliance incidents that resulted in a Penalty Notice or referrals for this review period. Refer to Section 7.2 Table R of Non-Compliance also see Appendix D – annual returns and waste summary.

### Stormwater and Erosion and Sediment Control

Efforts were made to minimise stormwater discharge impacts. Erosion and consequent sediment deposition efforts include extensive use of bioretention and sediment basins and dams.

Performance indicators include;

- ❖ No visible evidence of sediment or turbid water escaping the work sites.;
- ❖ No bare patches of ground following restoration works;
- and
- ❖ Temporary structures are to be removed when they are no longer required.

These indicators were adequately satisfied, as evidenced from routine site inspections.

### Flora and Fauna

As per the recommendations of the Flora and Flora impact assessment of the environmental assessment.

- ❖ Tree removal was avoided wherever possible and tree planting was actively conducted where feasible for example with the tree corridor. Currently, there are no further clearing or civil works ongoing or required.
- ❖ There was no machinery incursion or works in remnant woodlands areas.



- ❖ There was no stormwater discharge or sediment deposition in remnant woodland areas.
- ❖ Plans are being considered to plant more local native species at the eastern (road frontage) end of the property and as screen plants around the site.
- ❖ Suppression of weeds on the construction site and protect existing landscape planting that is to be retained.

There was no disturbance to vegetation beyond fill areas, other than normal maintenance and weed removal. There is also no evidence of significant weed outbreak in the landscaped areas affected by construction work. Indicating overall compliance with the key performance indicators for this environmental aspect.

## 11. Action Items from Previous Annual Review

Proposed action items from the last AEMR were mostly related to measures to further ensure the minimisation of odour emissions from the EFS substrate facility the proposed measures include:

- Continue with the installation of plastic strips or similar along the northern section of the Raw Materials Storage Shed; *This has since been completed in December 2016.*
- Install plastic strips or similar in the upper section of the doorways at both the north-eastern and south-eastern corner of the Prewet building; *All plastic sheeting has been completed and repaired.*
- Continue cladding and sheeting repair works to the southern and eastern wall and 1 metre section (eastern) roofing of the Phase 1 building; *Phase 1 building is sealed and all damages are repaired as soon as possible (usually within 24 hours). No outstanding works required as at compilation of this annual review report.*
- Phase 1 to Phase 2 Building Transfer Conveyor - Install/enclose Phase 1 Transfer Conveyor transfer point located next to the Phase 1 building northern wall. This should be carried out in a manner that attenuates fugitive odour emissions from this area. *These works have since been completed*

### 11.1. Action Required from Department or other agencies from previous review

No Actions provided from previous annual review.



## 12. Forecast and Proposed Environmental Improvements

Construction works continue to progress to significantly improve the control, capture and treatment of process odours in accordance with project approval 08\_0255 MOD 1.

The modifications and engineering upgrades are already underway and slated to be completed by March 2018.

It is expected that all construction works would be completed by the next annual review reporting period. This would imply the possibility of limited monitoring data from the new operational biofilter systems. It would also have an impact on what monitoring data is collected and how it is collected.

Proposed measures to improve environment performance over the next review period include;

- ❖ Ensuring all project submission and re-submission requirements are entered into a compliance tracking system to ensure they are followed through on in the prescribed timeframes.
- ❖ (Consideration) of possible transition from the Environmental Management Strategy procedure to an ISO 14001 compliant Environmental Management System.

### 12.1. Next Annual Review

The next annual review is due a year from this report date that is by the end of September 2017 as per the requirements in Condition 3 Schedule 5 of project approval No 08\_255.



# Appendix A

Environmental Protection Licence No: 6229



## Appendix B

Consolidated Project Approval 08\_055 MOD1



# Appendix C

## Monitoring Reports



## Appendix D

### Annual Returns and Waste Summary