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APPENDIX 6

Air Quality Management Plan

TUAKAU PROTEINS LIMITED

**AIR QUALITY MANAGEMENT
PLAN**

Draft (Version 1)

December 2017 **xxx TPL logo to be added**

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- Appendix 2: Key Check Points
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1. INTRODUCTION

1.1 OBJECTIVE

The objective of this Air Quality Management Plan (AQMP) is to ensure that any adverse environmental effects associated with the discharge of contaminants into the air from the Tuakau Proteins Limited (TPL) site at Lapwood Road, near Tuakau (Figure 1), are kept to the minimum practicable, and that the conditions of TPL's air discharge consent are complied with. These potential effects are:

- Odour effects
- Dust

The Resource Consent that the site operates under states that the consent holder shall at all times manage the relevant activities in accordance with the current AQMP. A copy of the Resource Consent is contained in Appendix A. [Note: at the time of writing this draft AQMP, the resource consent for discharge to air had yet to be granted. This draft AQMP will need to be amended once the consent conditions for this new consent are confirmed.]

The outcome sought from this AQMP is to ensure effective management of air quality through having a clear and regularly updated plan which integrates good environmental practice into the activities at the plant. It specifies the frequency, timing, location and method of monitoring to demonstrate that the plant is operating in accordance with best practice and in line with the consent conditions at all times.

This Plan does not address Occupational Safety and Health (OSH) matters.



Figure 1: Location Plan. TPL site boundaries are shown in red.

1.2 HOW TO USE THIS MANAGEMENT PLAN

The AQMP needs to be read in full. Where there is an arrowed bullet point:

➤ like this,

this is a direction or check-point that must be followed.

A summary table of the key check points is contained in Appendix B. A copy of this table is to be displayed in the main office at the TPL site.

1.3 RESPONSIBILITIES

The key person responsible for the implementation of this AQMP and the day-to-day management of the plant is the Site Manager (currently as at December 2017 Mr Stephen Dahlenburg).

TPL as the consent holder, has a general responsibility to implement all consent conditions, and to abide by this management plan.

Whilst the Site Manager has overall responsibility for odour management at the site, all personnel involved in the rendering plant operations have a responsibility to report any accidental discharge, mechanical failure or other circumstances as soon as practicable to

the Site Manager who will then notify Waikato Regional Council (WRC) as required by the resource consent.

- The Site Manager is to ensure that every person working at the site is made aware of the requirements of this Management Plan that are relevant to their jobs, and to make sure these requirements are adhered to.
- All personnel shall notify the Site Manager of any accidental discharge, mechanical failure or other circumstances that may result in odour emissions beyond the site. **xxx**
Stephen do any other personnel with responsibilities need to be identified here?

1.4 REVIEW OF MANAGEMENT PLAN

- This AQMP must be reviewed and updated whenever there are any significant changes to the site processes or odour management systems, or every two years, whichever occurs sooner. The updated Plan must be submitted to WRC for certification, as specified in the air discharge consent.

2. AIR QUALITY MANAGEMENT AT TUAKAU PROTEINS SITE

2.1 GENERAL DESCRIPTION

TPL is a contract renderer that processes meat by-product materials from a variety of licensed meat processing sources. Raw material is mainly bovine, chicken and ovine, with some pork, equine and fish material also being processed at times. Raw materials from licensed meat works, wholesale and retail butcheries, other retail outlets and home killing are accepted for processing. In line with the current consent conditions, minimal (less than 2.5 %) quantities of fallen stock are accepted.

A plan of the site is contained in Appendix C.

2.2 RAW MATERIAL QUALITY

TPL only accepts for processing raw materials and other animal by-products from animals (including fish) that have been slaughtered or otherwise deliberately or accidentally killed, with the exception of the less than 2.5% consent condition relating to fallen stock.

- TPL will ensure that the conditions of resource consent relating to raw material quality are complied with.

2.3 EXTRACTION SYSTEM

The vacuum that is maintained within the point source extraction ducts (near to the point of connection to equipment) is a very good indicator of whether there is sufficient extraction / containment of fugitive process odour emissions.

- For LTR1, LTR2b and HT (shown in the site plan in Appendix C), the permanent measurement points for vacuum checks are located on ducts connecting to the: Pre-cooker (LTR and 2b only); Press; and Decanter (LTR1 and 2b only).
- Periodic (monthly) monitoring of vacuums within the point source extraction ducts shall be carried and compared to a target of 100 Pascal (Pa) gauge to ensure there is sufficient extraction and containment of fugitive process odour emissions.
- Visual inspection of extraction points shall be carried out daily, and if excessive steamy discharges are present, then investigation and remedial actions must be carried out immediately.
- Extraction vacuums are to be measured following the installation of the new dryer and the rearrangement of LTR1, and subsequent to the new cooling tower being installed, by mid 2018. Vacuum monitoring and visual observations are to be carried out when the plant is operating near capacity to ensure that actual process emissions can be contained.
- Following the rearrangement of any ducting/process equipment, vacuum checks must be completed to ensure that the rearranged extraction system is operating effectively.

2.4 AIR EXTRACTION COOLING / PRE-TREATMENT

The purpose of the cooling/pre-treatment system is to ensure that the extracted air streams delivered to the biofilter inlet airflow is maintained at temperature and condition that protects the media of the biofilter and allows effective treatment. There are no consent conditions recommended related to the cooling and pre-treatment system. Instead, the effectiveness of the cooling system is determined via consent limits on the inlet biofilter temperatures.

Ensuring that the Waste Heat Evaporator (WHE) extracts and cools dryer exhaust effectively is one of the most important aspects of the low temperature rendering plant (LTRP) odour control system. To this end the following three WHE operational parameters are important to control and monitor:

- Evaporator vacuum pump draft (kPa);
- Stickwater level within the evaporator (% of maximum);
- Final stick water concentration (solids %).

There are also other operational parameters whose values and trends provide operators with useful information regarding the stability of WHE operation and warning of abnormal conditions. These parameters are also continuously monitored and displayed on the SCADA system.

- Cooling water and air flow temperatures are to be continually monitored as a measure of cooling tower performance

- Regular maintenance of the shell and tube heat exchangers and packed towers is to be scheduled and carried out

2.5 TREATMENT/BIOFILTRATION

The consent has limits on biofilter inlet conditions. Analysis of pH and moisture is also to be included as part of biofilter management.

The biofilter operating parameters and monitoring are provided in Table 1 below.

Table 1: Biofilter Operating Parameters and Monitoring

Component	Guideline values	Method and frequency	Location
Manifold connections to conveyors, bins and process equipment.	-100 Pa gauge (-10 mm WG)	Handheld differential pressure measurement (or vacuum gauge) Annual	Within the connection duct and between its damper valve and connection to the equipment or conveyor. Via installed Ø10 mm access port and plug
Biofilter Inlet Duct			
Inlet flow	<u>Biofilter 1:</u> 69,300 m ³ /h <u>Biofilter 2:</u> 16,800 m ³ /h	Pitot tube* (access via 2 x Ø50 mm sampling ports at 90° from each other) Annual	Straight section of inlet duct between fan and biofilter beds (maximise distances from pipe bends).
Back pressure	<150 mm water gauge	Installed U-tube manometer Weekly	Biofilter inlet duct
Temperature	< 35 °C for > 95 % of the time < 40 °C for > 99 % of the time Maximum: 45°C	Continuous temperature probe Continuous	Inlet duct to the biofilters [#]
Biofilter Media			

Component	Guideline values	Method and frequency	Location
Back pressure	<50 mm water gauge	Installed U-tube manometer Monthly	Biofilter stone layer
Air loading rate	35 m ³ _{air} /hr per m ³ _{media}	From annual flow data Annual	Inlet flow (as above) divided by the total volume of media
pH	pH 5 or higher (top 2/3 layer)	Soil pH ## 3-Monthly	Anywhere within each quadrant of the bed and at two depths including 200 mm and 400 mm (8 samples per biofilter)
Moisture content	50 wt. % to 65 wt. %	Oven drying at 100°C Annually	As above
Media microbial density counts	>10 ⁴ cfu/g	Aerobic Plate Count @ 35 °C Annual	As above

Component	Guideline values	Method and frequency	Location
Media composition & size distribution	<u>Graded bark:</u> 10 – 25 mm (0.9 m for Biofilter 1 and 0.6 m for biofilter 2) <u>Coarse bark base:</u> 25 - 75 mm (0.2 m for both) <u>Topsoil:</u> Max. 10 vol.%	Mass-size distribution of Bark: oven dried, sieved using a Fritsch analysette 3 at 2 mm amplitude 5 minutes. Biannually (2 Years)	As above
Organic carbon:nitrogen ratio	50:1	Landcare, Method 114 Biannually (2 Years)	As above
Media depth	<u>Biofilter 1:</u> 0.9 m graded bark / soil & 0.2 m coarse bark <u>Biofilter 2:</u> 0.7 m graded bark/soil & 0.1 m coarse bark	Four core samples down to washed river gravel layer Biannually (2 Years)	Anywhere within each quadrant of the bed

- TPL will ensure that the conditions of resource consent relating to limits on biofilter inlet conditions are complied with.
- The Biofilter Operating Parameters and Monitoring are to be referred to as general guidance when monitoring the Biofilter.

2.6 DUST

Onsite management is key to minimising dust effects.

- Spray water on dry days as required to dampen down the unsealed yard area close to the site's entrance.
- Limit vehicle speeds to 20 km/h on the site during dry conditions. It should be noted that this is a secondary measure to the use of water on the yard for dust suppression.

Following the weighbridge upgrade, by mid 2018 TPL will concrete seal the access road from the end of Lapwood Road to the weighbridge near the site entrance, which will help in further reducing dust levels near the site entrance.

2.7 ODOUR CONTROL

It is inevitable that some odour will be generated by the activities at the site. This is to be kept to the minimum practicable, mainly by adhering to the measures described above.

- TPL will ensure that the conditions of resource consent relating to odour control shall be complied with as follows:
 - In the event of an odour event, TPL will provide a written report to WRC within five days of being notified of this requirement by WRC;
 - TPL will provide at monthly intervals a monitoring report which summarises the flare operation, pressures of the biogas under the Pond 2 cover and data for the biofilters;
 - TPL will provide a written report by 1 June each year on compliance with the resource consent;
 - TPL will maintain a complaints register recording all odour complaints received;
 - TPL will hold a Community Liaison meeting biannually with interested members of the community who live within 1 km of the site;
 - After the rearrangement of the LTR1 process line, or within two years of the commencement of the consent, TPL will engage a suitably qualified and experienced person to conduct a review of the point source system.

3. CONTINGENCY MEASURES

In the event of plant break down, TPL has contacts with engineering services to ensure that broken plant is fixed as soon as practicable. **xxx Stephen can you please provide details here? e.g. a list of contractors used, their contact details etc.**

A key contingency measure is the backup processing equipment and the ability of the site to process material through either of the LT lines or the HT line. During a period of plant breakdown or maintenance, therefore, it is likely that activities will continue to operate. It is expected that most routine maintenance and repairs can be completed in a timely manner that will not result in odours being released from the plant. The site has identified critical spares required for the plant and biofilter and these are to be held on site.

- Key spare equipment for biofilter fans and cooling towers is to be kept available onsite;
- In the event TPL is unable to process material in a sufficiently fresh (or stabilised) state, contingency contractual arrangements are maintained with **xxx Stephen can you please add details here?** to enable the material to be processed off site;

- In accordance with the consent, TPL will notify WRC as soon as practicable and as a minimum requirement within 24 hours, of any accidental discharge, mechanical failure or other circumstances which has resulted in or is likely to result in a breach of the consent conditions, phone: 0800 800 401;
- TPL provides and maintains a 24-hour hotline to enable complainants to contact the consent holder at any time.

APPENDIX A: RESOURCE CONSENT

**APPENDIX B: SUMMARY ACTION LIST FOR SITE
MANAGEMENT**

Frequency	Item	Relevant Section in AQMP
Continually	Ensure that the conditions of resource consent relating to raw material quality are complied with.	2.2
Continually	Monitor the air extraction cooling/pre-treatment continuously (temperature (Biofilter Inlet Duct))	2.4, Table 1
Continually	Maintain a complaints register and a 24-hour hotline	2.7
Daily	Visual inspection of extraction points	2.3
Weekly	Monitor Back pressure (Biofilter Inlet Duct)	Table 1
Monthly	Monitoring of vacuums within the point source extraction ducts shall be carried and compared to a target of 100 Pascal	2.3
Monthly	Monitor Back pressure (Biofilter Media)	Table 1
Monthly	Monitoring report which summarises the flare operation, pressures of the biogas under the Pond 2 cover and data for the biofilters	2.7
3-monthly	Monitor pH (Biofilter Media)	Table 1
Annually	Monitor Manifold connections to conveyors, bins and process equipment.	Table 1
Annually	Monitor Inlet flow (Biofilter Inlet Duct)	Table 1
Annually	Monitor Air loading rate (Biofilter Media)	Table 1
Annually	Monitor Moisture content (Biofilter Media)	Table 1
Annually	Monitor Media microbial density counts (Biofilter Media)	Table 1
Annually	Provide a written report to WRC by 1 June each year on compliance with the resource consent.	2.7

Frequency	Item	Relevant Section in AQMP
2-yearly	Review Air Quality Management Plan and submit revised Plan to WRC	1.4
2-yearly	Monitor Media composition & size distribution (Biofilter Media)	Table 1
2-yearly	Monitor Organic carbon:nitrogen ratio (Biofilter media)	Table 1
2-yearly	Media depth (Biofilter media)	Table 1
2-yearly	Hold a Community Liaison meeting in line with consent condition	2.7
When new staff are employed	Ensure new staff are made aware of their responsibilities under the AQMP.	1.3
After the rearrangement of the LTR1 process line, or within two years of the commencement of the consent	Conduct a review of the point source extraction system, consistent with consent conditions.	2.7
During dry conditions	Spray water on the unsealed yard area close to the site's entrance. Limit vehicle speeds to 20 km/hr.	2.6
In the event of odour notified by WRC	Provide a written report consistent with consent conditions.	2.7
In the event of accidental discharge, mechanical	TPL will notify WRC as soon as practicable and as a minimum 24 hours in accordance with the consent conditions.	2.7

Frequency	Item	Relevant Section in AQMP
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failure or other
circumstances

APPENDIX C: SITE PLAN