1. Introduction

This updated Odour Management Plan (OMP) has been prepared by SLR Consulting Pty Ltd (SLR) in accordance with Condition B12 of Development Consent SSD-9394 for Baiada Oakburn Integrated Poultry Processing Facility (the PPF).

This OMP is associated with the existing Facility which consists of a protein recovery plant (PRP) and forms part of the Operational Environmental Management Plan (OEMP).

It is envisaged that this OMP will be later updated to include the proposed live bird (poultry) processing plant (PPP) that together with the PRP, will form the PPF.

1.1. PRP Operations

Raw product consisting of offal, feathers, blood and carcases is brought to site in sealed trucks and tipped into raw material bins. The bins are then hydraulically closed and sealed. Raw product is rendered using steam, drying, and grinding to produce finished products, meal and tallow. Meal is stored in sealed bins inside the facility, and tallow in sealed tanks at the rear of the facility. The finished products are loaded to trucks for removal from site. Air is drawn from the raw materials bins and rendering plant and ducted to a bio-filter to reduce odours before being released to the environment.

2. Purpose

To ensure that possible odour emitting sources and site operation activities are managed in a manner that will minimise the impact at receptors.

3. Scope

All site processing activities that generate odour emissions.

4. Objectives

The objectives of the OMP are to:

- Set out responsibilities of Facility staff and contractors.
- Identify the potential sources of odour on the site.
- Identify off-site sensitive receptors with the potential to be impacted by odours from the Facility.
- Assess the risk of off-site odour impacts from the Facility.
- Determine the appropriate mitigation and management measures needed to control the risks.
- Establish key performance indicators
- Establish an appropriate monitoring method and schedule
- Determine appropriate responses and contingency measures when issues arise.
- Formalise the procedure for handling odour complaints.

5. References / Records

REF NO.	DOCUMENT TITLE	DOCUMENT NO.
1	Environment and Sustainability Policy	BAI-POL-011-NAT
2	All relevant Development Approvals and Associated EIS and SEE	
3	Protection of Environment Act 1997	
4	Environment Protection Licence 7566	
5	Oakburn EMS Hub	LOCATED ON OAKBURN SERVER
6	Environmental Incidents and Complaints	EMS-F-007-NAT EMS-STD-009-NAT
7	Baiada Poultry Proposed Poultry Processing Facility Odour Impact Assessment (January 2019)	

6. Definitions

TERM	DESCRIPTION
Bio-Filter	Pollution control technique using a bioreactor containing living material to capture and biologically degrade pollutants and odour.
SBR	Sequencing Batch Reactor: A process where activated sludge is used to reduce organic matter within the effluent.
WWTP	Waste water Treatment plant.

7. Responsibilities

POSITION	RESPONSIBILITIES
Site Manager	Supplying suitable resources, coordinating, facilitating and implementing this OMP.
Production Manager/Supervisors	Implementing and complying with this procedure in their relevant work areas.
All Staff	Complying with this procedure in their relevant work areas
Contractors	Providing a service in line with this procedure in their relevant work areas.

8. Potential Sources of Odour

Potential sources of odour on the site include:

- delivery area (mainly serviced by bio-filter before release to air)
- rendering plant (serviced by bio-filter before release to air)
- finished product storage, handling/dispatch
- bio-filter
- waste material
- wastewater treatment (covered anaerobic lagoons (CAL))
- to a lesser degree, diesel vehicle exhaust fumes.

9. Location and Nearby Sensitive Receptors

The land surrounding the Facility is rural, generally flat and includes facilities performing beef processing, lamb processing, poultry farming and flour milling (Figure 1).

The nearest sensitive receptors include Oakburn Park Raceway and dwellings along Wallamore Road and Bowlers Lane. Nearby is Tamworth Regional Livestock Exchange (TRLX), Tamworth Regional Airport and a cemetery-crematorium. Approximately 2.5 km east is Westdale Wastewater Treatment Plant.

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Project Number:	610.30360
Location:	Tamworth, NSW
Other Information:	
Projection:	GDA1994 MGA Zone 56
Date:	11/05/2021

Baiada Pty Ltd

Oakburn
Odour Management Plan

Site Location

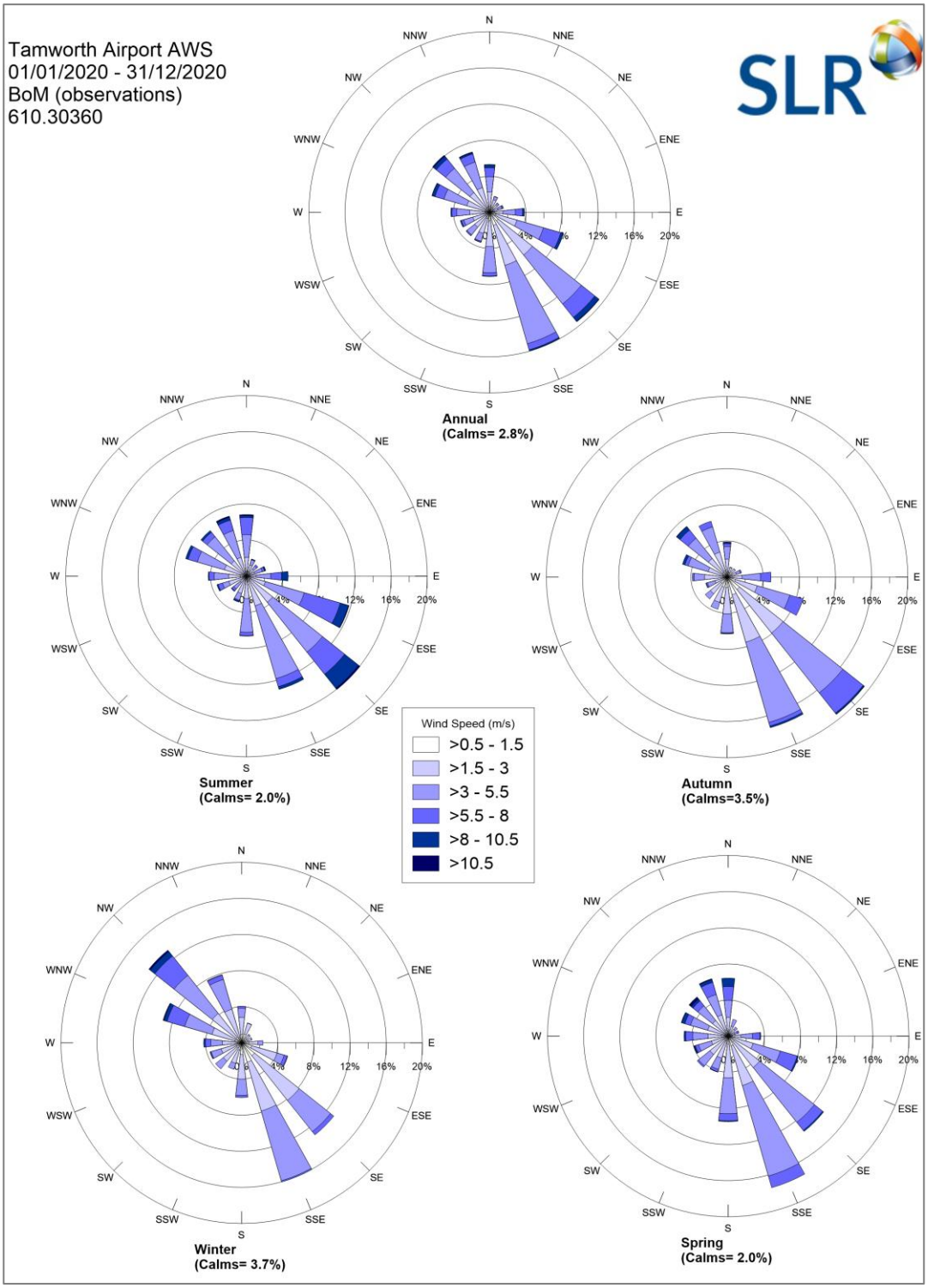
10. Wind Conditions

When assessing potential odour impacts, the meteorological conditions of interest are the proportion of low wind speeds and occurrence of stable atmospheric conditions. This is because these conditions result in reduced dilution of emissions. The greatest risk of poor odour dispersal, and therefore odour impacts, tends to occur on cool calm nights when the temperature inversions block vertical dispersion. Odour impacts are also very dependent on wind direction and wind speed relative to a sensitive receptor location. When wind is blowing in the direction of sensitive receptors the impacts will be greater.

The nearest available meteorological monitoring station operated by the Bureau of Meteorology (BOM) is the Tamworth Airport automatic weather station (AWS) (station number 055325), located approximately 2 km south of the Facility.

Annual and seasonal wind roses for Tamworth Airport (2020) are provided in Figure 2 indicating the prevailing wind directions. In general, wind conditions will likely disperse any odour emissions to the northwest, towards Oakburn Park Raceway or to the southeast towards the TRLX.

Figure 2


Tamworth Airport AWS
01/01/2020 - 31/12/2020
BoM (observations)
610.30360
SLR
Annual
(Calms= 2.8%)
Summer
(Calms= 2.0%)
Autumn
(Calms=3.5%)
Winter
(Calms= 3.7%)
Spring
(Calms= 2.0%)
Wind Speed (m/s)
>0.5 - 1.5
>1.5 - 3
>3 - 5.5
>5.5 - 8
>8 - 10.5
>10.5

11. Odour Risk Assessment

SOURCE	DESCRIPTION	MITIGATION AND MANAGEMENT	ODOUR RISK RATING
Raw product delivery	Raw product (viscera, feathers, heads, feet, bones, skin and blood) is to site in trucks and tipped into raw material bins. Raw product is potentially odorous.	**Mitigation:** Raw product is brought to site in sealed trucks and tipped into raw material bins which are then hydraulically closed and sealed. Air is drawn from the raw material bins and ducted to the bio-filters. Fresh raw product is not particularly odorous therefore there is a focus on maintaining processing of fresh product (refer **Product receival management** below). **Spill management:** In the unusual event that raw product is spilt outside of the raw materials receival area the spill is to be attended to immediately by following the National Spill Response procedure and an Incident Report completed. **Product receival management:** Material for processing must be received in a fresh state as this will assist the quality of product as well as reducing risk for odours to occur. The condition of the product received is documented. For any reason the processing plant is aware of an issue affecting the freshness of the product to be delivered, they must contact Oakburn Site Manager to discuss options of accepting material or disposing to landfill. **Breakdown management:** In the event of a breakdown or issue which causes the plant to cease production, product will be transported to an alternate rendering facility. Landfill is also an option which would require notification to Tamworth Regional Council.	Low

		Farm elevated mortality management: Where conditions have caused a large number of mortalities at the farms, every effort is made to communicate this to Oakburn and ensure that such material arrives as fresh as possible at the site.	
Rendering plant	Raw product is cooked and dried and then milled to produce Poultry Meal, Feather Meal and Blood Meal. Poultry Tallow is produced as part of the process. The raw product and processing is potentially odorous.	**Mitigation:** Point source extraction on the processing equipment is passed through ducting to the Bio-Filters. Steam from the process plant machinery is directed to the condensers / evaporators. The non-condensable gases are ducted to the Bio-Filters. The condensate is directed to the wet wells, which are ducted to the biofilters. **Fugitive odour management:** Drains should be kept covered within the processing area and rubber matting is to be placed over all liquid drainage areas and wet wells outside the plant to further prevent stray odours from escaping. **Breakdown and incident management:** Breakdowns have the potential to exacerbate raw material decomposition and cause odour. Any such event which has the potential to cause odour impacts MUST be communicated to Environmental Management and/or Senior Management. In the event of a breakdown causing raw material to be captured within the raw material bins, a waste contractor such as Transpacific will be contacted to remove and dispose of decomposed material.	Low

		Any incident which causes an odour issue should be reported as per the Environmental Incidents & Complaints Handling & Recording System	
Finished product storage, handling and dispatch	Finished product is stored in the facility and in external tanks at the rear of the Facility. It is dispatched to customers in bulk vehicles, tankers or bulker bags.	**Engineering mitigation:** Meal is stored in sealed bins inside the facility and tallow is stored in sealed external bunded tanks at the rear of the facility. **Product handling management:** All meal loading is performed inside the enclosed Dry Area Load out bays and any spillage will be captured for reprocess, disposal or within the grates in the area leading to the liquid trade waste system. Trucks will be correctly secured before leaving the load out area. No odour is expected from the finished goods areas, however the load out doors are to be kept closed at all times when the area is not being utilised.	Low
Bio-filter	Air drawn from various PRP processes are ducted to the bio-filter before being released to air.	**Operational management:** Pressure readings are to be monitored as this is an indication of when the media needs replacing due to decomposition. Bio-filter operation is monitored and checks documented daily. A dripper system on a timer is used to moisten the media. Bio-filter leachate water is gravity fed into the West Wells for treating through the Waste Water treatment system.	Medium

		Breakdown/maintenance management: Processing Bio-Filters have three cells, each capable of being isolated for maintenance or medium replacement when required. WWTP biofilter will be maintained during down times in the system.	
Waste material storage	Organic waste material is likely to emit odour, especially as it decomposes.	**Mitigation:** All waste, (apart from that generated from the WWTP plant) is stored indoors. Washing and sanitising the general waste bins is only done inside the plant and run off is captured by the trade waste system. Regular and timely removal of waste from site will reduce the risk of waste becoming odorous.	Low
Wastewater treatment		**Mitigation:** All tanks (Wet Wells, Balance, Sludge, Anoxic, Condensate & Discharge) associated with the holding and transferring of waste water are contained (other than the SBR) and alarmed. **SBR management:** Checks for quality and odour are documented on the Wastewater Treatment Monitoring form, although the SBR is not considered a significant source of odour emission. The weekly site audit also checks and records any issues with odour. The SBR sludge is belted to a bin at the back of the WWTP for regular transporting to landfill by a Contractor. The integrity of these bins are checked through the Weekly Site Audit with any issues to be reported to and acted upon immediately by the Waste transport contractor.	Low
Stormwater	Sitting water may become odorous.	**Management:** Swales and the retention basin are checked during the weekly site audit for pooling, or stagnant water and any odours recorded. Any odour observed will be reported	Low

		immediately in accordance with Environmental Incidents and Complaints Handling and Recording System.	
Delivery and dispatch trucks	Diesel exhaust fumes have the potential to be odorous.	The sulfur content of diesel fuel sold in Australia is sufficiently low that odour associated with diesel truck exhaust emissions is considered relatively insignificant.	Very Low

12. Management of the Bio-Filters

Non condensable gases from the evaporation system are ducted into one of two open-bed up-flow designed Bio-Filters, with Bio-Filter No.1 servicing the high temperature side and Bio-Filter No.2 servicing the low temperature side of the facility. A 3rd Biofilter has been added to the WWTP to service all tanks and the processing room at the WWTP.

Both processing Bio-Filters are identical in size and construction, which have been designed for airflows of 30,000 m3/hr. Each Bio-Filter has a media area of 160 m2 giving a bed residence time of 38 seconds. The WWTP Biofilter is slightly smaller in area and has only a single bay. Residence time was designed to be similar.

The airstream is humidified prior to bio-filtration using an in duct ultrasonic spray system. The sprays are checked and cleaned in accordance with the manufacture's requirements. There are four nozzles on each duct which require air pressure. The sprays are located where the duct exits the plant to maximize the contact time with the air stream. This contact time is equivalent to raising the relative humidity (RH) of the air from 20% to 100%.

Pressure readings are to be monitored as this is an indication of when the media needs replacing due to decomposition.

13. Management of Odour and the Waste Water Treatment System

Refer to Management of Liquid Waste and Contingencies and task instruction for the Operation of the WWTP for more detailed information.

14. Complaints Management Procedure

Complaints/Incidents will be reported as per the Environmental Incidents and Complaints Handling system. Forms and Standards as referenced in the references and records are available on "ELO" our Document control Management system. Completed records are located in the Incidents and Complaints Register within the Oakburn EMS Hub. There is a hyperlink on the register for the completed incident report form.

15. Key Performance Indicators

The key performance indicators of this OMP are as follows:

- No offensive odour beyond the site boundary.
- No loss of amenity – no community complaints related to odour.

16. Monitoring

The odour monitoring/inspection requirements of this OMP are tabled below.

	REQUIREMENT
Parameters	• Date and time of monitoring • Description of monitoring location • Weather conditions (wind speed and direction – Tamworth AWS) • Odour intensity, duration, offensiveness, and potential source
Locations	• Facility operations perimeter • Bio-filter • WWTP • Downwind site perimeter
Frequency	Daily and with greater frequency if warranted (e.g. if complaints have been received)
Method	Monitoring will be conducted in general accordance with standard VDI 3940-3 : 2010 '*Measurement of Odour Impact by Field Inspection – Determination of odour Intensity and hedonic odour tone*'. At each monitoring location odour intensity will be recorded as follows: • If no odour is perceptible, the intensity will be recorded as **0**. • If odour is detected but there is some doubt as to whether an odour is actually present, then the intensity will be recorded as **1 (very faint)**. • If odour is detected but cannot be described using precise words or terms, then intensity will be recorded as **2 (faint)**. • If odour is detected and the odour character is recognisable and attributable to the Facility, the intensity will be recorded as at least **3 (distinct)**. • If the odour character is easily recognisable then the intensity will be recorded as **4 (strong)**. • If the odour is bearable but considered offensive, the intensity will be recorded as **5 (very strong)**. • If the odour is considered offensive and, for example, an instinctive reaction is to reduce personal exposure to the odour, then the intensity will be recorded as **6 (extremely strong)**.
QA/QC	Nominated monitoring staff to be tested for suitability (receive screening/training by olfactometry). Staff exposed to odorous process areas of the Facility are likely to be desensitised to the process odours, therefore nominated monitoring staff should not be exposed to

	odorous process areas as part of their normal duties (e.g. office-based roles).
Demonstrate Compliance	• No abnormal odour detected from Facility operations, Bio-filter or WWTP. • No offensive odour detected at downwind site perimeter
Reporting	Daily results incorporated into weekly site environmental audit and entered into the Oakburn EMS Hub

17. Corrective Actions

Where odour is detected on site to be abnormal. It should be reported to the Site Manager who is responsible for ensuring checks are performed to identify odour producing areas of the site and report / consult with Senior Management, consult site Emergency Procedure Manual/PIRMP.

Where equipment or facilities are identified as not complying with this standard, consultation with management may be required to ensure compliance.

17.1. Biofilter monitoring

In the event that the bio-filters are suspected to be the source of abnormal odour emission, odour emission monitoring of the bio-filters will be conducted in accordance with Australian Standard AS 4323.3 by a suitably qualified person(s). Odour testing of the inlet air stream and filter bed emissions will be conducted to assess the odour control efficiency of the bio-filter system (expressed as a percentage). Where the control efficiency has fallen below the design specification, corrective actions will be taken to rectify.

Monitoring reports will be entered in the Oakburn EMS Hub.

18. Verification

- Weekly site audits.
- Bi-monthly management reviews.
- Six monthly internal/external audits

19. OMP Updates

This OMP is a live document that will be reviewed upon on an annual basis (as a minimum), to ensure that it remains relevant to site operations and to determine whether improvements can be implemented. As a matter of course, the plan will be reviewed should the following occur:

- Changes to consent conditions
- Significant changes to plant operational practices
- Substantiated odour complaint
- Occurrence of significant odour emission (identified through site inspections).

20. Amendment History

Updated: July 2019 to include requirements relating to Environmental Incidents and Complaints from the 2019 Independent Environmental Audit.

Updated: May 2021 to include requirements of Condition B12 of Development Consent SSD-9394.