REPORT

Wootton Organics - Odour Assessment

Proposed Abattoir Extension, Farley - Planning Application number SMD/2016/0241

Client: J.C. Bamford Excavators Limited

Reference: I&BPB5818R001F01

Revision: 01/Final

Date: 05 August 2016

Royal HaskoningDHV

Enhancing Society Together

HASKONINGDHV UK LTD.

Newater House
11 Newhall Street
Birmingham
B3 3NY
Industry & Buildings
VAT registration number: 792428892

+44 121 7096520 **T**
info.birmingham@uk.rhdhv.com **E**
royalhaskoningdhv.com **W**

Document title:	Wootton Organics - Odour Assessment
Document short title:	Proposed Abattoir Extension - Odour Assessment
Reference:	I&BPB5818R001F01
Revision:	01/Final
Date:	05 August 2016
Project name:	PB5818 - Wootton Organics Odour
Project number:	PB5818
Author(s):	Matthew Edwards

Drafted by:	Matthew Edwards
Checked by:	John Drabble
Date / initials:	05/08/2016
Approved by:	John Drabble
Date / initials:	05/08/2016

Classification
Project related

Royal HaskoningDHV

Table of Contents

Table of Tables

Table of Figures

1 Introduction

Wootton Organics, part of J.C. Bamford Excavators, is seeking planning permission for expansion of their Cote Farm facility in Fawley, Staffordshire. Application SMD/2016/0241, submitted to Staffordshire Moorland District Council (SMDC) on 12th April 2016, sought approval for the following.

> *"Proposed extension to an existing Abattoir building for extended packaging store and temperature controlled storage, construction of a new poultry processing plant linked to the existing Abattoir, including temperature controlled production and storage areas, staff amenities, offices, loading bays together with workshop / plant room to rear of the new poultry plant for refrigeration / heating / compressors other equipment and storage and maintenance of factory machinery."*

The SMDC Environmental Health Officer indicated that potential odour impacts required consideration as part of the planning application. During consultation with SMDC[1] it was agreed that the scope of the assessment would include:

- A description of the proposed potential odour sources;
- Likely offensiveness and strength;
- Mitigation options;
- Consideration of receptor locations; and
- Conclusions of the overall significance of the proposed development.

The assessment of potential impacts of the proposed development was conducted in accordance with guidance provided by the Institute of Air Quality Management (IAQM)[2].

This document includes a description of the odour control processes and management procedures which are currently used at the site. Due to the level of integration between the current processes and those that are proposed for the extended site, these odour management procedures would equally apply to the site after implementation of the proposed expansion.

This document follows the structure of an Odour Management Plan and could be used for this purpose if required as part of the planning approval.

1.1 Overview of Site Processes

The Wootton Organics facility is a small scale abattoir used for the preparation of on-site reared livestock including cattle, pigs, lamb and deer. The facility currently comprises a small lairage area for short term livestock holding, a slaughtering process, product preparation area, packaging area, waste disposal area and chilled product storage.

Animals are currently delivered on a demand basis to minimise the on-site housing of livestock. Operations normally commence within 2-4 hours of deliveries and there is no overnight storage of animals. Waste material collections are conducted daily by a local provider which prevents overnight or long term stockpiling of potentially odorous material.

[1] *Telephone Conversation with SMDC on Thursday 14th July 2016*
[2] *Institute of Air Quality Management (IAQM) 2014 - Guidance on the Assessment of Odour for Planning,*

The processing capacity of the abattoir is below 50 tonnes per day, the threshold defined in the Environmental Permitting (EP) Regulations[3] under the Part A(1) regime, and its operations are not regulated by the Environment Agency. The capacity of the plant is well below this limit, with the current facility processing on approximately 12 cattle, 50 pigs, 100 lambs and, when in season, 6 deer per week.

The site activities are not currently prescribed by the Part B regime of the EP Regulations, and operations are therefore not covered by an Environmental Permit. Odour (and other potential environmental issues) is therefore subject to the statutory nuisance provisions of the 1990 Environmental Protection Act and would be investigated by SMDC.

Based on information provided by the site operator, no odour complaints have been received from members of the local community regarding site operations.

The proposed extension to the facility will largely comprise an expanded packaging facility and an increase in chilled product storage areas. The facility will also include a small scale poultry processing facility. The proposed poultry processing plant includes a small lairage for short term poultry handling, and slaughter and product preparation areas. The intention is for the processing of up to 2,500 birds, on one day per week, with a long term plan to extend this to 5,000 birds over two days of operation. Waste material from the expanded process will be collected alongside that from the current operations.

[3] *Statutory Instrument 2010 No. 675 – The Environmental Permitting (England and Wales) Regulations - 2010.*

2 Site Description

2.1 Location

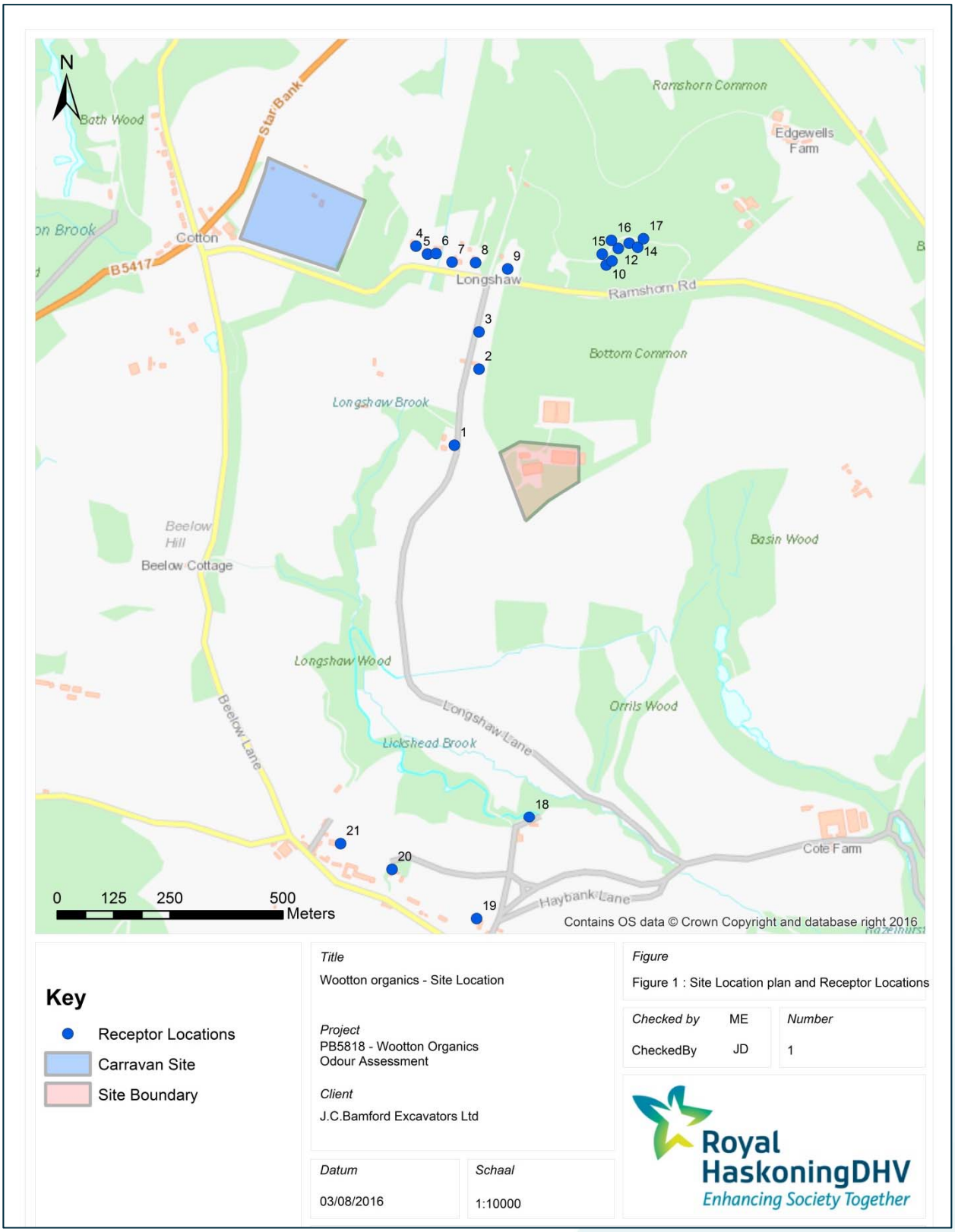
The Wootton Organics facility is located off Longshaw Lane, approximately 900 m northeast of the village of Farley, Staffordshire. The site address is:

J.C. Bamford Excavators Ltd,
Cote Farm,
Wootton Estate,
Alton,
Staffordshire,
ST10 3BQ.

The location of the facility is shown in **Figure 1**, on which local sensitive receptor locations are also indicated (see Section 2.2). **Figure 2** shows the layout of the current abattoir structure, which comprises a short term holding livestock lairage, slaughtering area, processing facilities, product preparation, packaging facilities and cold storage.

A layout plan of the proposed expanded facility is included as **Figure 3**. The proposed additional structure, forms a link-attached southern extension which will include defined slaughtering, preparation, packaging and storage areas to allow processing of poultry reared at other parts of the Wootton Estate. The existing structure will also be extended to the east in order to provide additional chilled storage capacity.

Figure 1: Site Location



Royal HaskoningDHV

Figure 2: Existing Site Layout

Layout plan provided by Wootton Organics

Royal HaskoningDHV

Figure 3: Proposed Extension Layout

Layout plan provided by Wootton Organics

2.2 Potential Odour Sensitive Receptors

The site is located in a predominantly rural setting. There are isolated residences and small villages within 1 km of the facility, with a caravan park and holiday cottages also within the vicinity. **Table 1** identifies receptor locations in the vicinity of the facility, with reference to Figure 1, and describes the likely sensitivity to potential odour impacts.

Table 1: Potential Receptor Locations and Sensitivity to Odour

Receptor	Description	Receptor Sensitivity and Duration of Occupancy
Individual Residential Properties	Two residential properties owned and rented by staff working at the Wootton Organics facility - The closest is located 150 m to the east of the facility (Receptors 1 and 2 on Figure 1)	Low Sensitivity Long Term Occupation
	Isolated property (Woodside Bungalow) on Longhurst Lane - Located 300 m northwest of the facility (Receptor 3 on Figure 1)	High Sensitivity Long Term Occupation
Residential Areas	Residential properties located north of Ramshorn Road – the closest property is located approximately 450 m north of the facility. (Receptors 4-9 on Figure 1)	High Sensitivity Long Term Occupation
	Multiple properties located in the village of Farley – the closest properties are located approximately 900 m south west of the facility. (Example receptor locations 18-21 on Figure 1)	High Sensitivity Long Term Occupation
	Multiple properties located in the village of Ramshorn – the closest properties are located approximately 900 m east of the facility. (Example receptor locations 22 and 23 on Figure 1)	High Sensitivity Long Term Occupation
Holiday Homes	Ramshorn Holiday Lodges – the closest lodge is located approximately 475 m north east of the facility. (Receptors 10-17 on Figure 1)	High Sensitivity Short Term Occupation
Tourist Caravan Park	The Star Camping and Caravan site – located approximately 600 m to the north west of the facility. (blue area on Figure 1)	High Sensitivity Short Term Occupation

The assessment considered that residential properties which are owned and rented to staff of the Wootton Organics facility are likely to have a reduced sensitivity to odour impacts and are unlikely to be a source of complaints. All other identified receptors were considered to have a high sensitivity to odours.

3 Potential Odour Sources

Some of the site activities have the potential to create odours. These include processes relating to the storage of livestock, slaughtering, preparation of products and storage of wastes. Potential odour sources can be categorised into the following four sub groups:

- Lairage of livestock
- Preparation
- Collection and Storage of Wastes
- Waste removal processes

Each of the identified potential odour sources are discussed in sections 3.1-3.4. As the proposed expansion does not introduce any new processes to the facility, the identified potential odour sources apply to both current and post development operations.

3.1.1 Lairage

There is potential for odours to be emitted from on-site lairage facilities, used to temporarily hold livestock and poultry prior to processing. The current facility houses livestock in an open shed adjoining the processing building. Odours may be caused by build-up of animal wastes within lairage areas which will be exacerbated by increasing the duration of livestock holding or delaying cleaning operations. The proposed facility will include a new lairage area for poultry but this will be housed inside the new structure.

It is expected that odours from animal lairage are likely to be moderately offensive but unlikely to be significant due to the small size and temporary nature of animal holding. These facilities will be used for approximately 6 to 8 hours per day.

3.1.2 Site Processes

Some of the site processes will involve either odorous processes or the creation of odorous waste material. The main odorous processes include animal bleeding, evisceration and singing/scolding.

The potential for increased odour emissions occur where waste collection processes are ineffective, leading to the build-up and potential decay of organic matter. This could include accumulation of residual blood or green offal material within the processing areas.

Singing or scolding of animal products is also a potential odour source. These processes include the application of wet or dry heat to remove hair and feathers from the animals prior to packaging. These processes are performed in a specific area of the plant which is equipped with additional ventilation to maintain a suitable working environment. Odours from these areas are proportional to the scale of the process and the production capacity of the plant. As operations at the facility are small in scale and of low intensity, resultant odour emissions are likely to be insignificant.

Overall, odours from site processes would be categorised as moderately offensive. Significant off-site impacts are unlikely due to containment within the structure, prompt removal of wastes and daily clean-up activities preventing the build-up of potentially putrescible organic material.

3.1.3 Storage and Removal of Wastes

Storage of putrescible waste material is a potential source of odour generation. This includes the storage of blood, green offal and other organic wastes. The current operation includes in a daily clean down of the

facility, with all collected animal wastes being stored in lidded containers. No further processing of these wastes is conducted on site.

Removal of waste products can also be a source of odour generation. Odour can be emitted if waste removal contractors use open skips, or if liquid material is pumped into mobile tankers, due to displacement of odorous air within the storage container. Due to the small scale of operations and low quantities of waste products, the facility stores all its waste in lidded containers, which minimises emissions during waste removal. Wastes from the proposed expansion are also to be containerised to minimise odour emissions.

All wastes are stored in sealed containers and these containers remain closed during the removal process. The waste material has the potential to be moderately or highly offensive, however daily removal of wastes will ensure that no aged wastes are stored on site. Wastes are only likely to cause an odour impact if there is a significant spill. If a spill occurs, the impacts are minimised by a prompt response to the situation and adherence to good housekeeping principles. Off-site odour impact of waste storage and removal activities is therefore likely to be negligible.

4 Pathways and Effects

Dispersion of odour will be affected by the nature of the emission (i.e. stack exhaust conditions, area source of fugitive releases), distance, local topography and meteorological conditions. The impact of odour emissions at receptor locations is determined by the interaction of the dispersed and diluted airborne substances with the receiving environment.

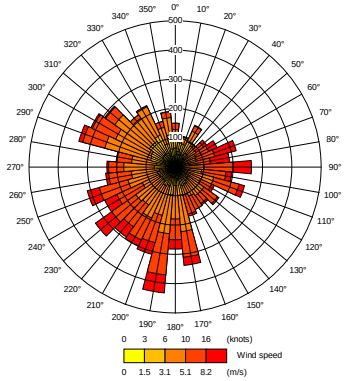
Although the majority of current and proposed processes are to be conducted within buildings, there is no specific provision for odour treatment methods or dispersion from an exhaust stack. The majority of odours leaving the site would therefore be fugitive in nature through any doors, hatches, windows and any small scale mechanical ventilation systems.

The site is not located in the vicinity of any large or complex terrain features which may affect odour dispersion. It is considered unlikely that dispersion of fugitive odours will be hindered by the woodland that surrounds the facility.

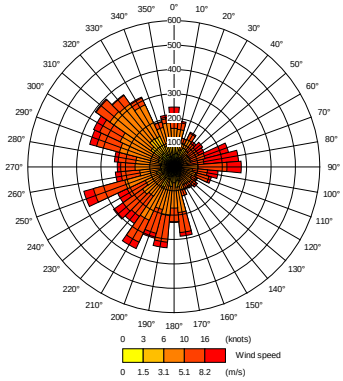
Local meteorological conditions near to the facility were represented by evaluation of data from nearby weather recording stations. The assessment has considered example data from the Leek (15 km to the northwest) and Shawbury (55 km to the south west) meteorological stations in order to investigate the prevailing wind direction. The evaluation indicated prevailing wind directions from the southwest, typical of the UK, alongside other easterly and north-westerly components. Annual wind Roses for the assessed meteorological data are presented in **Figure 4**.

Figure 4: Wind Roses for Leek and Shawbury Meteorological Stations

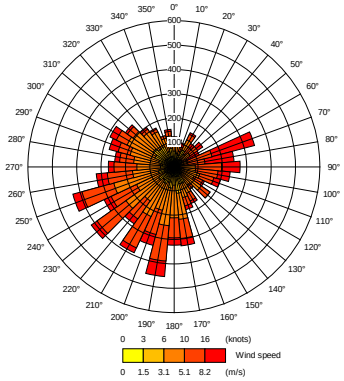
Leek 2006



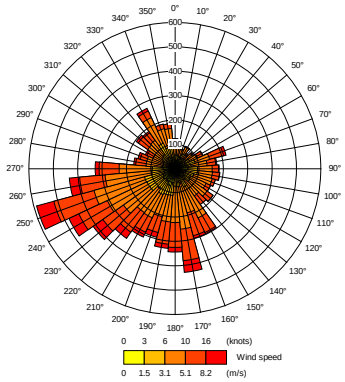
Leek 2007



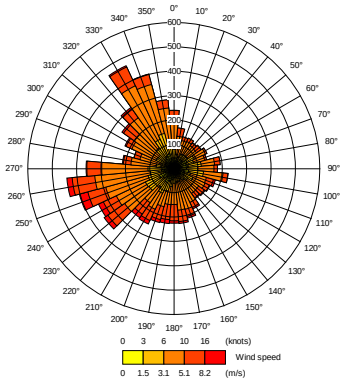
Leek 2008



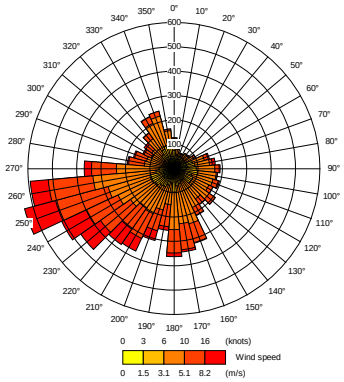
Shawbury 2009



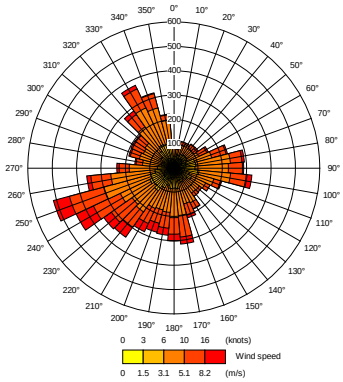
Shawbury 2010



Shawbury 2011



Shawbury 2013



5 Control Measures

This section details the operational practices and management processes which help minimise emissions of odours from onsite activities.

Although produced for facilities requiring Part A(1) and A(2) environmental permits, the Environment Agency sector guidance notes EPR 6.11[4] (Treating and Processing Poultry) and 6.12[5] (The Red Meat Processing) provide useful information on the Best Available Techniques (BAT) for the sector. Both documents identify control measures which are designed to minimise odour generation from onsite processes. The assessment also considers the non-sector specific control measures and management processes as identified in the Environment Agency H4 Odour management[6] guidance document.

Table 2 summarises the main control measures identified within the Sector Guidance Notes and H4 guidance document and identifies comparisons to operations at the Wootton Organics facility. Further details of specific control measures and management procedures are discussed in sections 5.1-5.8.

Table 2: Control Measured used at the Facility

Control Measure	Compliance with BAT	Comment
Good Housekeeping	Y	Good housekeeping principles incorporated in site procedures
Minimise manure	Y	Established process for management of livestock deliveries
Containerised waste	Y	All wastes stored in lidded containers
Frequent clean-down	Y	Daily clean-down
Refrigeration of wastes	N/A	Wastes not stored overnight
Enclosure of potentially odorous processes	Y – where appropriate	Conducted for scolding / singing processes
Odour Abatement	N/A	Not used on site
Maintenance of equipment	Y	All equipment is properly maintained to avoid leakages, spills and build-up of organic matter
Daily removal of wastes	Y	Waste is removed daily
Back-venting tankers	N/A	Not used on site.
Complaint handling	Y	Set procedure for handling and investigating complaints
Provision of an Odour Management Plan	N/A	Not required

[4] Environment Agency 2009 - How to Comply with your Environmental Permit Additional Guidance for: Treating and Processing Poultry (EPR 6.11).

[5] Environment Agency 2009 - How to Comply with your Environmental Permit Additional Guidance for: The Red Meat Processing (Cattle, Sheep and Pigs) Sector (EPR 6.12)

[6] Environment Agency 2011 – H4 Odour Management – How to Comply with your Environmental Permit.

5.1 Good Housekeeping

Good housekeeping is an important consideration when minimising odour emissions from a facility, and is incorporated into the routine operation of the facility. As part of routine procedures, the site is cleaned after completion of the daily activities. In addition there is a waste spillage procedure to avoid unnecessary build-up of organic material. The cleaning procedures apply within both processing and waste storage areas.

5.2 Livestock Management

The Wootton Organics abattoir is used for the preparation of animals reared on the Wootton Estate. As the facility does not process any animals from third parties, there is full control over livestock deliveries to the facility. As a result, deliveries are made on an as-required basis to the facility. This control over the livestock production allows the deliveries to be tailored to both the production capacity and timetable of the abattoir. Full control over local livestock deliveries avoids the requirement for overnight or long term housing of livestock occurs at the facility, which reduces the amount of waste, and resultant odour emissions, within lairage areas.

5.3 Waste Management

All wastes are collected from site processes and stored within sealed containers. The waste storage areas are located within the processing building that will, in the event of a spillage, help contain any emissions of odour. As wastes are removed daily, no further storage procedures are deemed necessary.

The sealed containers are collected by a third party contractor at approximately 6 p.m. every day and are replaced with cleaned waste vessels. If for any reason the by-products are not collected on the day of storage, no further processing will take place until all by products are removed.

5.4 Management Procedures with Respect to Odour

The management of the site is the responsibility of the Technical Manager. This role includes responsibility for all legislative compliance including consideration and management of environmental impacts. The content and implementation of staff training and site inductions are also the responsibility of the Technical Manager.

Day to day management of the site is the responsibility of the General Manager. This includes ensuring that the site is operated in line with procedures and identification of any problems that could lead to additional odour emissions. This includes arranging remedial maintenance, clean up of spills, general site cleanliness, waste storage procedures and ensuring that products and wastes are removed from site promptly.

Complaint handling is conducted by the General Manager and reported to the Technical Manager. All complaints are logged and a full investigation is carried out. This includes comparing the time of the complaint to the operation log to check whether the complaint may have been caused by any unusual events, such as plant breakdown or a spill of potentially odorous wastes. The aim is for a first response to be made within 24 hours with any investigations completed no later than 7 days.

6 Risk of Odour Impacts

A qualitative odour risk assessment was conducted using the IAQM[2] methodology. The guidance provides a framework to attribute risk factors for the source odour potential, pathway effectiveness and receptor sensitivity. The resultant risk factors are combined to determine the risk of odour exposure. The assessment was conducted for both current processes at the site and proposed operations after implementation of the proposed expansion.

6.1 Source Odour Potential

The IAQM guidance defines three source odour potential classifications which are as follows:

- ***"Large Source Odour Potential Magnitude*** *– Larger Permitted processes of odorous nature or large STWs; materials usage hundreds of thousands of tonnes/m^3 per year; area sources of thousands of m^2. The compounds involved are very odorous (e.g. mercaptans), having very low Odour Detection Thresholds (ODTs) where known. Unpleasantness – processes classed as "Most offensive" in Table 5; or (where known) compounds/odours having unpleasant (-2) to very unpleasant (-4) hedonic score. Mitigation/control – open air operation with no containment, reliance solely on good management techniques and best practice."*

- ***"Medium Source Odour Potential Magnitude*** *– smaller Permitted processes or small Sewage Treatment Works (STWs); materials usage thousands of tonnes/m^3 per year; area sources of hundreds of m^2. The compounds involved are moderately odorous. Unpleasantness – processes classed in H4 as "Moderately offensive"; or (where known) odours having neutral (0) to unpleasant (-2) hedonic score. Mitigation/control – some mitigation measures in place, but significant residual odour remains."*

- ***"Small Source Odour Potential Magnitude*** *– falls below Part B threshold; materials usage hundreds of tonnes/m^3 per year; area sources of tens m^2. The compounds involved are only mildly odorous, having relatively high ODTs where known. Unpleasantness – processes classed as "Less offensive" in H4; or (where known) compounds/odours having neutral (0) to very pleasant (+4) hedonic score. Mitigation/control – effective, tangible mitigation measures in place (e.g. BAT, BPM) leading to little or no residual odour."*

It was considered that the source odour potential of the facility can be described as '**Medium**'. Implementation of the proposed expansion would not increase the source odour potential classification.

6.2 Pathway Effectiveness

The factors affecting pathway effectiveness include receptor distance, direction with respect to prevailing winds and source dispersion effectiveness. The IAQM guidance defines three pathway effectiveness classifications which are as follows:

- *"**Highly Effective Pathway** for Odour Flux to Receptor Distance – receptor is adjacent to the source/site; distance well below any official set-back distances. Direction – high frequency (%) of winds from source to receptor (or, qualitatively, receptors downwind of source with respect to prevailing wind). Effectiveness of dispersion/dilution – open processes with low-level releases, e.g. lagoons, uncovered effluent treatment plant, landfilling of putrescible wastes"*

- *"**Moderately Effective Pathway** for Odour Flux to Receptor Distance – receptor is local to the source. Where mitigation relies on dispersion/dilution – releases are elevated, but compromised by building effects."*

- *"**Ineffective Pathway** for Odour Flux to Receptor Distance – receptor is remote from the source; distance exceeds any official set-back distances. Direction – low frequency (%) of winds from source to receptor (or, qualitatively, receptors upwind of source with respect to prevailing wind). Where mitigation relies on dispersion/ dilution – releases are from high level (e.g. stacks, or roof vents >3m above ridge height) and are not compromised by surrounding buildings"*

It was considered that as receptors are remote from the source (in excess of 300 m), there is an **ineffective pathway**. This classification would equally apply to the site after implementation of the proposed expansion.

6.3 Receptor Sensitivity

The IAQM guidance defines three receptor sensitivity classifications which are as follows:

- "***High Sensitivity Receptor** - surrounding land where: • users` can reasonably expect enjoyment of a high level of amenity; and • the people would reasonably be expected to be present here continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. Examples may include residential dwellings, hospitals, schools/education and tourist/cultural."*

- *"**Medium Sensitivity Receptor** – surrounding land where: • users` would expect to enjoy a reasonable level of amenity, but wouldn't reasonably expect to enjoy the same level of amenity as in their home; or • people wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. Examples may include places of work, commercial/retail premises and playing/recreation fields."*

- *"**Low Sensitivity Receptor** – surrounding land where: • the enjoyment of amenity would not reasonably be expected; or • there is transient exposure, where the people would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. Examples may include industrial, farms, footpaths and roads."*

It was considered that receptors in the local area have a **high sensitivity** to odour impacts. The assessment has however excluded any residence that is owned by and rented to operational staff of the abattoir facility.

6.4 Classification of Odour Risk

The qualitative odour risk assessment combined the source odour potential, pathway effectiveness and receptor sensitivity classifications in order to provide an overall odour risk classification. **Table 3** and **Table 4** define the assessment criteria and resultant risk classifications suggested by the IAQM.

Table 3: Risk of Odour Exposure (Impact) at the Specific Receptor Location

Pathway Effectiveness	Source Odour Potential		
	Small	Medium	Large
Highly Effective	Low Risk	Medium Risk	High Risk
Moderately Effective	Negligible Risk	Low Risk	Medium Risk
Ineffective	Negligible Risk	Negligible Risk	Low Risk

Table 4: Likely Magnitude of Odour Effect at the Specific Receptor Location

Risk of Odour Exposure	Receptor Sensitivity		
	Low	Medium	High
High Risk	Slight Adverse Effect	Moderate Adverse Effect	Substantial Adverse Effect
Medium Risk	Negligible Effect	Slight Adverse Effect	Moderate Adverse Effect
Low Risk	Negligible Effect	Negligible Effect	Slight Adverse Effect
Negligible Risk	Negligible Effect	Negligible Effect	Negligible Effect

Based upon the classifications defined in sections 8.1-8.3, the risk assessment concludes that there is a **negligible risk** of odour exposure which is likely to result in a **negligible effect** at receptor locations. The negligible risk of odour effects classification is confirmed subjectively by the absence of odour complaints about the current facility.

Although there is potential for the proposed expansion to increase odour emissions, it is expected that the source odour potential would still be classified as Medium. The risk assessment therefore concludes that a **negligible risk** of odour exposure would remain under future operations, which is likely to result in a **negligible effect** at receptor locations.