Appendix 10

OPERATIONAL ODOUR MANAGEMENT PLAN

Version Control

Version	Date	Changes	Issued By	Approval
1	November 2018	1st issue of operational OMP	A. Kesterson	M. Mehta
2	September 2018	First review for permit IC3 and to account for changes to odour management from primary tanks on WWTP	M. Howard	J. Colley
3	November 2018	Review following installation of enclosures around ETP emissions points	M. Howard	J. Colley
4	April 2019	Addition/ Amendment following comments from NRW (refer to CAR 15/03/2019)	M. Howard	J. Colley
5	November 2019	Review for permit variation application for new live bird holding building	M. Howard	J Colley
6	September 2022	Review for permit variation (3) to cover Phase 2. Changes are shown in red.	S Hutchinson	J Colley

Contents

1 Introduction

Maelor Foods Ltd must implement an Odour Management Plan (OMP) for our poultry processing facility at Pickhill Lane, Wrexham, LL13 0UE.

The planning permission (Condition No. 4) for the site required us to implement an OMP:

> *"The use hereby granted permission shall not commence until an odour management plan has been submitted to an approved in writing by the Local Planning Authority. All odour control measures set out in the plan shall be installed prior to first use of the premises for the purposes hereby granted permission and the site shall thereafter be operated in strict accordance with the odour management plan as approved"*

Our environmental permit for the site (EPR/AB3591ZQ) is regulated by Natural Resources Wales (NRW) under The Environmental Permitting (England & Wales) Amendment Regulations 2018.

An OMP was prepared to support our environmental permit application and condition 3.3.1 requires us to implement an operational OMP:

> *"Emissions from the activities shall be free from odour at levels likely to cause annoyance outside the site, as perceived by an Authorised Officer of NRW, unless the Operator has used appropriate measures, but not limited to, those specified in any approved odour management plan, to prevent or where that is not practicable to minimise the odour"*

This OMP is designed to ensure that all reasonable measures are taken to control odour emissions, and if an adverse impact is caused then prompt action will be taken to identify the source and apply corrective measures. It provides a schedule of actions that will be taken to help minimise odour impact and sets out site management procedures for the management of odour.

2 Objectives & content

The objectives of this OMP are to identify all significant sources of odour present at the facility (an odour inventory) and then provide information on management practices and the infrastructure in place to abate or minimise odorous emissions from the facility.

The effects of emergency and abnormal circumstances on odour emissions are also considered. Monitoring procedures are described to help validate the effectiveness of measures taken to control odorous emissions. The plan also outlines measures taken in the event of the detection of excessive odour during monitoring, with a view to reducing this odour to an acceptable level as soon as possible.

Response procedures are described in case odour related complaints are received from a neighbour of the plant, with procedures for recording all relevant information and investigating the potential cause of the odour release emissions.

3 Guidance & review

The OMP has been produced with reference to the following guidance:

- Environment Agency, H4 Odour Management: How to comply with your environmental permit. April 2011.
- Institute of Air Quality Management, Guidance on the Assessment of Odour for Planning. 2014.

Under the environmental permit improvement programme (IC3), the first review of this OMP was undertaken within 9 months of commencing operation at the site. Thereafter, this OMP is reviewed on a regular basis (at least annually) or more frequently if there are any changes to the activities and/or if any specific issues in respect of odour have become apparent.

Any amendments stemming from these reviews may need to be agreed with and approved by NRW and / or the Planning Authority to meet the terms of the planning condition (No. 4).

NRW and the Planning Authority should be consulted at an early stage to ensure that the OMP can be amended in future, with the prior written agreement of the authorities, to ensure that any necessary and beneficial changes to odour management practices can be implemented without breaching the terms of this condition and to allow compliance with the EPR permit.

Such changes may need to be made in the light of operating experience, complaint episodes or if new developments or technologies become available in future so that facilities or practices can be adapted and optimised to further reduce odour impacts.

4 Site Location and Plant Description

4.1 Site Location

The poultry processing facility has been developed on the site of the former Maelor Creamery, Pickhill Lane, approximately 1 km to the north-north-west of the village of Bangor-on-Dee and approximately 700m to the south-east of the residential area of Cross Lanes. The map in Appendix 1 shows the locations of potentially sensitive receptors around the plant.

There are small numbers of potentially sensitive residential properties located off Pickhill Lane, to the west of the proposed main poultry processing building, and isolated residences to the north of the plant at Pickhill Old Hall and Whitegate Cottage. The proximity of sensitive receptors on Pickhill Lane is such that there are risks of off-site odours being caused and therefore high standards of odour management are required.

4.2 Plant Description & Risk Assessment

The plant undertakes the slaughter and processing of up to 2 million broiler chickens per week under Phase 2 operations. The following paragraphs describe the key activities in each area of the plant, the odour risks in each area and the key control measures which will be used to reduce

odour emissions and/or disrupt the pathways for odours to potential receptors. The odour risk of each area has been assessed against experience gained to date and from knowledge of other UK poultry processing plants.

4.2.1 Delivery & Lairage / Intake

Live chickens from broiler production farms arrive at the plant in modules on HGV trailers. In order to reduce any potential odours from incoming live bird vehicles, movements are planned daily and drivers adhere to a "just in time" delivery schedule. Procedures are in place to ensure that prior to leaving the farm, modules are as clean as possible in order to minimise the volume of chicken manure transferred from farm to site. The HGV trailers enter a lairage area, before moving to the intake area where the modules are unloaded. All doors remain closed when not in use. Birds are transferred from the intake area to the preliminary processing area.

The Lairage / Intake area has a low level of odour from the birds. A recirculated air conditioning system maintains good working conditions and a comfortable environment for the birds held in this area prior to slaughter.

The lairage is cleaned daily with the manure manually scraped into collection bins and floors washed using trigger operated spray lances. This area is lined with easy clean smooth wall panels and the lairage floor design allows dry scraping and easy cleaning.

The live bird holding area is large enough to accommodate the temporary holding of live bird delivery vehicles pending unloading if there are processing delays and deliveries of live birds are pushed back until the plant is operational again. As a further contingency, under permit Variation 2 Maelor Foods acquired the former transport depot adjacent to the installation and have scope to convert this into an additional live bird holding area for emergency use. This could allow up to seven live bird vehicles to be parked inside so the live birds can be cooled by air fans in a non-stressful manner. The live bird vehicles would be moved from here into the lairage as soon as the lairage was available to receive them.

Until this is implemented the odour potential is unsubstantiated but it is expected to be a low odour source and no worse than the lairage.

This is a LOW odour risk area of the plant.

4.2.2 Stunning and bleeding

Birds are transferred from the intake area via a Linco module handling system to the preliminary processing area. Here the modules are loaded onto the intake line and the birds are gas stunned, then removed from the modules and hung-on to the "shackles" of an overhead conveyor line and transferred to a bleeding area. Here the birds are decapitated and blood is drained into the blood trough and pumped away at frequent intervals during the day to the blood storage tank in the ABP storage building. Blood is therefore removed from the bleeding area before there is any odorous decay. This area is thoroughly washed and sanitised at the end of each processing day, and this prevents odours from the decay of residues.

The empty modules are transferred to the "module wash" and then transferred to the "box return" service area where they are loaded onto empty HGV trailers for subsequent re-use in the collection of birds from farms.

Low intensity odour emissions can arise from these activities but emissions are limited because:

- there is only a small number of birds in the stunning and hang-on areas at any one time
- there are no significant changes to the state or composition of the birds
- fresh blood has no significant odour

The internal workplace is air conditioned on a recirculated air system with replaced air discharged externally via roof mounted fans.

Floors and walls of the stun and bleed area are washed down and sanitised during night shifts and at weekends. The live bird handling systems area is cleaned every night and briefly in between kills so faecal contamination of the area is minimal.

As we use a gas stun method there will be no live birds flapping wings during bird hang on as found at electric stun sites. Dust levels and associated odour are therefore much lower.

This is a LOW odour risk area of the plant.

4.2.3 AeroScalder

After bleeding the birds are conveyed into the de-feather room where they are scalded by a saturated hot air system. The birds are conveyed through the scalding unit to loosen their feathers to facilitate mechanical plucking in the de-feather area. This technology provides a non-immersion scalding method that has much lower odour emissions than immersion techniques.

The AeroScalder system is entirely enclosed and consists of two chambers; an air conditioning chamber where the moisturised hot air is prepared and, next to it, the scalding chamber itself through which birds are conveyed and into which the scalding air is blown. Moisturised hot air is blown forcefully onto the most critical parts of the broiler, preventing over scalding of fragile parts. It penetrates and separates the feather pack, transferring heat effectively to the feather follicle. Air temperature depends on whether products are to be hard, medium or soft scalded. The spent scald water within the scalder is filtered and recirculated in the system.

Immersion scalding is normally a "High-risk" odour area as residual blood and organic matter from the birds' feet and feathers progressively decay in the warm water in conventional scald tanks during each production day. Odour emissions are much lower with the Aeroscalder technology and scald vapours are enclosed inside the unit. As a precautionary measure we extract air from this area of the plant at high rates directly to our two chemical scrubber odour abatement systems before dispersion to atmosphere through tall stacks.

There are also fresh air inlets to provide "cooling" air, which is also extracted to the chemical scrubbing abatement system.

This is a MEDIUM odour risk area of the plant.

4.2.4 De-feathering

After scalding the birds are conveyed to the de-feather area where mechanical defeathering is undertaken in defeathering machines.

Feathers are rinsed from the machines with re-circulated water fed via nozzles and transported via a recirculating water flume into the ABP storage building. The flume water is drained down to the effluent treatment plant at the end of each day. The feathers are pressed to remove excess water before collection in a vehicle trailer in an ABP collection bay.

Wall and ceiling mounted fans introduce cooling air into the building. The headspace air in the de-feather area is potentially odorous so is extracted directly to the chemical scrubber odour abatement systems.

This is a MEDIUM odour risk area of the plant.

4.2.5 Evisceration

The birds are mechanically eviscerated to remove the intestines and other internal organs (heart, lungs, gizzards, livers etc.). Evisceration does not generate significant emissions of odours because the intestines are not broken and the other organs are not odorous while fresh.

Edible offal is separated, dry chilled and packed for retail markets and transferred to the cold store awaiting distribution.

Inedible offal is transferred by vacuum lines to the animal by-products trailer in the ABP collection bay where it is collected daily for off-site processing. No offal is therefore allowed to accumulate in the evisceration area, minimising its potential as an odour source.

Carcasses are rinsed during evisceration and internal drains have meshes to prevent scraps washing into the wastewater system and increasing the organic loading of the wastewater. Spills of meat scraps onto floors are quickly dealt with and collected into bins for transfer to ABP trailer.

An enclosed air system is in place with cooling to moderate the working environment and a small amount of input air is provided to maintain fresh air**.** Any excess air from this process is drawn through the chemical scrubber serving each Line.

Odours from evisceration are less offensive than the scalding and defeathering areas in our experience and this area is a low odour source and unlikely to contribute to offsite odour.

This is a LOW odour risk area of the plant.

4.2.6 Treating, processing & packing

Under Phase 2 we will be applying flavouring rubs to some whole bird products but will not undertake cooking of whole birds. Ingredients will be mixed onsite and flavours such as, but not limited to sage and onion, garlic and herb will be injected into the whole birds. Up to 30,000 birds per week will be flavoured (approx. 50T per week) which will utilise around 6-8T of marinade per week. There is no external extraction from the area where flavourings are made up and applied.

This is a LOW odour risk area of the plant.

4.2.7 Edible Offal Cold Store

Offal material which is fit for human consumption is transferred to chillers and cold storage areas, where it is stored before transport off-site. The cold storage buildings are kept refrigerated to prevent decay and are largely "sealed" by means of a cold-store type door.

This is a V.LOW odour risk area of the plant.

4.2.8 Animal By-Products Storage and Handling

The animal by-products (ABP) comprise of inedible offal, feathers, blood, inedible material, meat scraps, dead on arrival birds and WWTP screenings. These are all held in the ABP storage building which accommodates sufficient trailers to ensure ABP are always stored inside and collected in a timely manner.

Inedible offal and other ABP are transferred by vacuum lines into trailers located inside the ABP storage building. Feathers are transferred in a water flume and separated from the flume water and pressed. The pressed feathers are loaded into bulk trailers inside the building awaiting collection for further processing off-site.

The ABP and feather trailers are collected daily to minimise degradation and odours. Dolavs and other small containers used for collecting ABP around the process are emptied into the ABP trailer and then washed out.

The ABP building is large enough to accommodate the collection vehicles and the trailers are sheeted up inside before being driven out.

The ABP building is fully enclosed and access doors are kept closed at all times apart from immediate access and egress. The building headspace air is extracted at a rate of at least 3 air changes per hour to the chemical scrubber(s) for odour abatement. This prevents fugitive escape of internal air.

Although ABPs are removed from site daily before odorous decay becomes established, our experience is that even small traces of animal protein residues on equipment and trailers may result in the generation of some odours. It is therefore acknowledged that due to any additional time spent in the offal building, the risk of odours from this activity is heightened to a degree and as such, we specify a maximum ABP residence time of 48 hours in cases of abnormal events, however under Phase 2 we expect an average holding time of 8 hours. Rigorous cleaning and house-keeping regimes are important, as well as maintenance of good rates of extraction.

This is a MEDIUM odour risk area of the plant.

4.2.9 Blood Storage Tank

Blood from the bleeding area is pumped/transferred to the blood tank located inside a room housing the feather separation pit which has internal drains to the effluent treatment plant. Poultry blood is not sold on for further processing into foodstuffs for human consumption or pharmaceutical applications, so the blood tank is not refrigerated.

The blood tank is fitted with a lid and has a high-level interlocked alarm to prevent overfill. It has capacity to hold at least 110% of the maximum kill capacity of blood to cover contingencies such as transport delays.

The blood tank is fully emptied daily and regularly cleaned using the integrated CIP system to prevent build-up of odorous residues.

There is potential for very high intensity odour emissions from the storage of blood if the blood decays in warmer weather, although this decay is limited in larger processing plants, such as this plant, by the frequent collection and removal of blood from the site. Procedures are in place to ensure a consistent approach is taken with regards to blood collections. Use of a hopper bottomed tank means that all blood is removed each time the tank is emptied, and therefore there are no odorous residues in the tank. The blood storage tank is connected directly to extraction ducting to the chemical scrubbing odour treatment system.

Air displaced from HGV road tankers collecting blood from the storage tank is ducted directly into the odour extraction system. Tanker drivers connect the outlet/exhaust of their tanker vacuum pumps to a flexible hose which is directly connected to the chemical scrubber abatement system extraction ducting.

The building area is fully enclosed and extracted directly at a rate of at least 3 air changes per hour to the chemical scrubber and stack odour mitigation systems.

This is a HIGH odour risk area of the plant.

4.2.10 Cleaning

The floors and walls of the processing areas are all washed down and sanitised daily during night shifts and at weekends, as required by the Meat Hygiene Regulations and the site's HACCP. This also helps to minimise odours.

This is a LOW odour risk area of the plant.

4.2.11 Module Washing

Empty live bird modules are washed in the "module wash" serving each line. Low intensity odours may arise from handling and washing of the empty modules.

The building air from this area of the plant is extracted and dispersed at high level.

This is a LOW odour risk area of the plant.

4.2.12 Truck Washing

Unloaded HGV trailers are moved from the intake area to the internal "truck washing" area where they are completely washed down before moving to the "box return" area for reloading with clean empty modules. Low intensity odour emissions may arise from truck washing operations and the building air from this area of the plant is extracted for high level dispersion.

This is a LOW odour risk area of the plant.

4.2.13 Module Return Area

Washed and sanitised modules are returned to the "box return" area where they are loaded onto clean HGV trailers. Insignificant odour emissions arise from box loading operations as both the vehicles and the modules have been washed at this stage. The building air from this area of the plant is extracted for high level dispersion.

This is a V.LOW odour risk area of the plant.

4.2.14 Waste-Water Treatment Plant (WWTP)

Waste-water (effluent) comprises of contaminated wash water from the abattoir and specifically from the de-feather areas and the feather flume system.

The WWTP is located downhill beyond the factory buildings, well away from the Pickhill Lane residencies.

Raw effluent drains to an enclosed/housed raw effluent pump sump. Displaced air from this enclosure is ducted into the WWTP area scrubber. From the sump the raw effluent is pumped through an enclosed rotary drum screen on top of the balance tanks to screen out larger solids from the effluent before treatment. The primary screenings fall into a skip which is enclosed on

three sides with strip curtains on the fourth to minimise odours. Full skips are covered to minimise odour and keep rainwater out. The screenings are transferred into a trailer in the ABPs storage building. Screenings are removed at a minimum frequency of 1 hour in order to minimise odour emissions and attracting vermin (principally flies). The screen and associated elements are cleaned daily.

The balance tanks have a retention time at peak flow of around 12 hours. This allows wastewater streams of high and low organic loading to be combined so the WWTP is presented with a consistent pollutant load / flow and not peak or more "concentrated" flows such as occur at the time of discharge feather flume contents at the end of each production day.

There is also a diversion tank which can occasionally be used to segregate effluent in abnormal events such as spillages or to recycle out of specification treated effluent. It is not envisaged that the diversion tank will be used other than very occasionally as a contingency. Low volumes of effluent produced by the Aeroscalder system are unlikely to overload the WWTP and are adequately buffered in the balance tank.

The balance (and diversion tank on the occasions when it is used) are agitated by two venturi mixers to mix and aerate the contents and to maintain aerobic conditions and prevent them from going septic and becoming odorous.

The balance and divert tanks were covered after the olfactometry survey undertaken under permit improvement programme condition IC2 in May 2018 identified that these uncovered tanks were a source of very high odour concentrations which could contribute to offensive offsite odours.

For Phase 2 the existing divert tank is being replaced and a 2nd balance tank added. These two tanks will be fully enclosed and ventilated into the WWTP area scrubber while the existing balance tank will remain covered and headspace air extracted to the scrubber.

Measures to prevent these tanks becoming septic and to minimise the intensity of odour were taken and include:

- Minimising the loss of solids to drains in the slaughterhouse by improving operating procedures and filtration systems
- Lowering the levels of wastewater held in the primary tank(s) and increasing the frequency of emptying and cleaning of the tanks

However, odours from these tanks can potentially contribute to offsite odour episodes so the vents and headspace air is abated through the WWTP area chemical scrubber and dispersed via a tall stack.

For Phase 2 a new scrubber will be installed to serve the odour sources at the WWTP area and will benefit from automated blowdown and top-up of the scrubber liquor solution as well as automated dosing with caustic soda and sodium hypochlorite.

From the balance tank, effluent is transferred to a Dissolved Air Flotation (DAF) system to flocculate and separate/remove suspended solids, fats, oils and greases, from where the separated solids are pumped to a covered sludge storage tank.

DAF plants can generate small volumes of quite intense and offensive odours, so for Phase 1 the DAF plant was fitted with a stainless-steel cover with removable inspection hatches and the headspace vented directly to a passive carbon filter for odour removal. The DAF will be housed inside the sludge dewatering plant building for Phase 2 and will remain covered with vented air extracted into the WWTP area scrubber.

The separated liquid from the DAF plant is transferred to an activated sludge system tank for aerobic (activated sludge) treatment before final settlement and discharge to river.

The odour from the activated sludge tanks is much less offensive than from DAF plants and sludge facilities, and odours are not usually attributable to them unless the system has been overloaded and this has adversely affected the treatment.

Our activated sludge plant consists of an anoxic vessel followed by an aeration tank where the conditioned mixed liquor is injected with air via fine bubble air diffusion manifolds. A final settling clarifier tank removes the remaining suspended solids from the effluent backed up by rotary disc ultrafilters to guarantee the final effluent quality.

The increase in wastewater from the second processing line requires a second activated sludge treatment system comprising anoxic, aeration and final settlement tanks of the same proportions as the existing plant. Odour emission rate measurements undertaken by ADAS have shown that these open tank facilities have relatively low odour emissions and that complex odour mitigation measures, such as covering and treating of extracted air, are not necessary or justified.

Given the controls in place, the improved enclosure of odour sources at the WWTP and its relatively isolated location, there should be a low / medium odour risk from this area of the plant providing that the new scrubber meets the design specification. Odour impact assessment based on dispersion modelling of the predicted emissions shows there should be no detrimental offsite odour impact from the WWTP area.

This is a LOW / MEDIUM odour risk area of the plant.

4.2.15 WWTP Sludge treatment, storage and handling

For Phase 2 the combined DAF and waste or surplus activated sludge will be dewatered before transfer off-site for land spreading or injection by contractors or other waste recovery method. The dewatering plant will be housed in a new building at the WWTP and will accommodate HGV vehicles collecting sludge cake.

The existing sludge storage tank will be retained as a contingency. It is covered and a mixer keeps the sludge mixed when operational. The off gas from the tank headspace will be connected into the WWTP area scrubber.

Displaced air from the road tanker during non-dewatered sludge transfers is fed into the WWTP area scrubber. The tank has high level alarms and our procedures cover offloading to road tanker. Tanker drivers connect the outlet/exhaust of their tank or tanker vacuum pumps to a flexible hose which is directly connected to the scrubber for treatment before release to atmosphere.

There is a low to medium odour risk from this area of the plant and although the sludge can generate unpleasant odours, the combination of a fully enclosed dewatering plant, air extraction and abatement and infrequent tanker loading events minimise the risks of off-site odour impacts.

This is a Low / MEDIUM odour risk area of the plant.

4.2.16 Chemical Scrubber Odour Control & Mitigation Systems

Odorous emissions from the areas of the plant which generate the most intense odours, i.e., the scald / de-feather and ABP storage areas are extracted to two chemical scrubber odour abatement units under Phase 2. The chemical scrubber abatement systems each comprise of single stage chemical scrubber with caustic soda and sodium hypochlorite scrubbing liquor and a final mitigation stage of a tall stack to disperse residual odours. The scrubbers abate air extracted from the most odorous areas of the plant and monitoring during Phase 1 has proven this to be very effective.

The scrubbing systems are a moderately high odour risk area of the plant as they are abating air extracted from the most odorous areas of the plant and therefore effective scrubber operation is critical to controlling off-site odour impacts of the processing facility. However, it is noted from odour measurements of the Aeroscalder system that it is significantly less odorous than scald tank based de-feather systems on other processing sites.

For Phase 2 a second scrubber is installed to treat air from the proposed new Aeroscalder plus all ABP transfer vacuum pump exhaust flows not treated by the existing scrubber.

Mitigation of the impact of treated odours from both scrubbers is achieved by tall dispersion stacks to disperse residual odours.

This is a MEDIUM / HIGH odour risk area of the plant.

4.2.17 Air Handling Systems in Low Odour Process Areas

The off-site impact of air handling systems from the less odorous areas of the plant (lairage, hang-on area, bleeding, evisceration, and the module and trailer washing areas) are mitigated by an internal recirculated air conditioning system and / or dispersion of building headspace air at high level through roof mounted fans.

This is a LOW odour risk area of the plant.

4.3 Key Odour Control Measures

The key odour controls at the plant are summarised below:

1. The de-feather area is fully enclosed and building air is extracted to the chemical scrubber odour mitigation systems.
2. The ABP storage building is fully enclosed and building air is extracted to the chemical scrubbing system.
3. All ABPs are removed from the site on a daily basis (before odorous decay sets in)
4. Blood is stored in a covered tank inside the ABP storage building and the tank breather vent is connected to the chemical scrubbing system.
5. All vacuum tankers collecting blood and sludge "back vent" displaced air from the tanker vacuum pumps through flexible hoses into a duct which transfers air to the odour abatement systems (scrubber and carbon filters respectively). Any spills will be reported by tanker drivers and remediated immediately by site staff.
6. The floors and walls of the lairage, module handling and truck washing areas, kill and bleed, scald, de-feather and evisceration areas are all washed down and sanitised daily during night shifts and at weekends, as required by the Meat Hygiene Regulations and the site's HACCP.
7. Building headspace air from the module and vehicle wash areas is extracted and dispersed to atmosphere at a high level.
8. The raw effluent sump is enclosed and any potential odorous air is ducted through the WWTP area scrubber.
9. The primary screenings at the WWTP fall into a skip which is enclosed on three sides with strip curtains on the fourth to minimise odours.
10. A cover is installed over the existing WWTP balance tank and for Phase 2 the new divert tank and second balance tank are fully enclosed tanks.
11. The sludge dewatering plant and DAF plant are housed inside a building to minimise fugitive odours.
12. An extraction system draws the air from the headspaces of these tanks / cover through a WWTP chemical scrubber also serving the extraction from the DAF / sludge dewatering plant building and sludge tank vents.
13. The WWTP area scrubber has automated scrubbing liquor control to optimise performance and discharges to air via a tall stack for dispersion.
14. The WWTP balance tanks are operated and cleaned so as to minimise the build-up of solids and anaerobic conditions while procedural controls in the processing area minimise carry over of solids into the drains.

5 "Waste" Inventory

5.1 ABP and Waste Storage and Disposal

Several potentially odorous by products and wastes are generated onsite. Their potential to generate odour emissions is controlled by the storage, handling and duration of their storage on site. These materials are stored on site before removal for disposal or recovery off-site on a daily basis. A summary of the maximum quantities of these materials stored on site is shown in

Table ***1*** below:

Table 1 - Waste Inventory

Wastes	Daily Production (tonnes)	Maximum Storage on-site (tonnes)	Frequency of Removal from Site
Feathers	15	60	Daily
Blood	10	30	Daily
Other Cat 3 ABP	47	75	Daily
Cat 2 ABP	15	30	Daily
WWTP Sludge	25	30	1-2 times/week

6 Source Identification & Review

Table 2 summarises the potential sources of odour for the poultry processing operations as well as factors which may influence odour emissions on site and the potential for variations in emissions.

Table 2 - Potential Odour Sources

Area / Source of Odour	Factors that may influence Odour Emissions
1.Lairage / Intake	Cleanliness of floor and frequency of cleaning/washing are key controls. The building is sanitised daily. Effectiveness of air re-circulation system.
2.Module washing	Likely to be more odorous in warmer weather as chicken droppings decay more rapidly, but all modules are washed immediately after use so that no accumulation occurs. Floor and equipment cleanliness all influence emissions.
3.Hang-on and bleeding area	Bird, floor and equipment cleanliness influence emissions. These areas are washed down at least once each day to prevent accumulations. Effectiveness of air re-circulation system & high-level dispersion.
4.Scalding unit & De-feather	Variations in levels of contamination of birds with droppings/litter (and resulting accumulation of solids in system). Effectiveness of air extraction system from these process areas to air treatment system influence emissions.
5.Evisceration	Effectiveness of air re-circulation ~~extraction~~ system. This is a low odour potential area of the plant and is sanitised daily as a food production area.
6. Treating, processing and packing – flavouring of whole birds	Flavourings could be offensive if concentrated but this is an internal sealed area.
7. ABP handling and storage	Cleanliness of trailers, buildings and equipment all influence emissions. Collection trailers are thoroughly sanitised before delivery to site to

Area / Source of Odour	Factors that may influence Odour Emissions
	meet Animal By-Product Regulations requirements and filled trailers are covered before removal outside for offsite transfer. Duration of storage of material on site is critical in warmer weather as odour potential can increase due to accelerated odorous decay of organic materials and residues. All ABP materials are collected daily (on average within 8 hours) under normal operations with a maximum residence time of 48 hours in abnormal events. Extraction of building air and blood storage tank to chemical scrubber provides effective disruption of odour path to receptors. The building is fully enclosed and undergoes at least 3 air changes per hour which minimises fugitive escape of odours from building. Odour potential of blood higher in warm weather with accelerated odorous decay. Residues of blood in tank after emptying Spillages in blood tanker loading area can cause short term emissions. Extraction to chemical scrubbers provide effective disruption of odour path to receptors Procedure for blood tank emptying and venting of collection tanker
8. Edible offal handling and storage in cold store	Promptness of fresh material being transferred to the cold store. Material is used in food products so that prevention of decay is critical.
9. WWTP area	Effectiveness of the balance tank cover, extraction, abatement and operational controls on balance and divert, WWTP tanks Operational procedures to minimise solids entering the effluent system Duration of storage of material on site. Effectiveness of air extraction serving primary tanks, pit area, dewatering plant building, DAF and sludge tanks. Odour potential of wastewater and sludge higher in warm weather with accelerated odorous decay. Residues of sludge in tank after emptying Spillages in sludge tanker loading area can cause short term emissions. Extraction to chemical scrubber provides effective disruption of odour path to receptors with dispersion via tall stack Efficient chemical scrubber dosage / liquor drain down Procedure for sludge tank emptying and venting of collection tanker
10.Main extraction and air treatment system	Effectiveness of air extraction system from odorous process areas to air treatment system controls fugitive emissions. Effectiveness of scrubbers (evenness of air distribution and effectiveness of liquor pumping and dosing systems in maintaining optimum scrubber operations).
11. Tanker loading	Adherence to operating procedures. Effectiveness of extraction hose/ducting system in controlling leaks of odorous air. Back vented into odour abatement systems (chemical scrubbers)

Table 3 addresses the nature of the odours and the key odour mitigation and control measures and provides commentary on the type and composition of odours in the various parts of the plant.

ADAS, our odour consultants' experience from Gas Chromatography-Mass Spectrometry (GC-MS) gas analysis on other comparable plants is that the odours associated with poultry and processing poultry specifically are typically complex mixtures of large numbers of different organic compounds and there are no predominant odorous compounds, Typically poultry processing odours will include alcohols, ketones, aldehydes acids, chlorine containing compounds, aliphatic, cyclic and aryl hydrocarbons and a number of sulphur containing compounds including sulphides. Sulphides are most likely to occur in the decay of feathers and blood, in vapours from the scald tanks, and in any anaerobic conditions in effluents and sludge. Ammonia is also a by-product from processing and storage of feathers.

Table 3 - Odour Sources, Characteristics & Controls

Odour Source		Odour Controls		
Source	**Type of odours**	**Odour Reductions Measures at Source**	**Containment or Enclosure**	**Source Receptor Pathway Disruption**
1. Lairage (bird reception & holding)	Low intensity odour from birds in modules and from droppings on floors. Odour from poultry faeces is likely to be caused by volatilisation of ammonia and other odorous compounds, including hydrogen sulphide, skatole, indole, amines, mercaptans, other sulphurous organic compounds and possibly octanal and nonanal	Lairage cleaned and washed daily as part of daily hygiene routines. Bird feeding restricted on farms immediately prior to delivery to Maelor site so that gut content and droppings output are minimised. Floor and equipment are all washed daily as part of daily hygiene. Building served by an air recirculation system with cooling provides an air-conditioned environment for the birds which keeps odours down.	All activities within fully enclosed lairage building area. Doors closed except for immediate vehicle access and egress.	Fully enclosed building with air recirculation system
2. Module washing	Low intensity odours from droppings on modules A range of organic compounds, as for lairage	Floor and equipment are all washed daily as part of daily hygiene routine. Modules washed as soon as empty	All activities within enclosed building area with air extracted and dispersed	High level dispersion of building air
3. Hang-on and bleeding area	Low intensity odours from birds in modules and when handled during hanging on to line. A range of organic compounds as above	Floor and equipment all washed daily as part of daily hygiene routine. Blood trough emptied and rinsed throughout each production day to ensure no decay odours.	Enclosed in primary processing area with replaced air extracted and dispersed	Fully enclosed building with air recirculation system. Replaced air extracted and dispersed at high level
4. AeroScalders & De-feather	Odour emissions from Aeroscalder and de-feather are lower than from conventional scald tank systems Odours made up organic compounds typically including methyl mercaptan, dimethyl sulphide, 2, 3 butanedione, dimethyl sulphide, and nonanal	Faecal related emissions reduced at source by restricting birds feed intake prior to slaughter. and by the nature of the "moist air" scalding system	The Aeroscalder system is enclosed within the de-feather rooms and the rooms are separately enclosed within the overall plant building.	Process room air is extracted to chemical scrubbing systems for abatement and treated air then discharged at high level from scrubber stack to disperse residual odours.

Odour Source		Odour Controls		
Source	**Type of odours**	**Odour Reductions Measures at Source**	**Containment or Enclosure**	**Source Receptor Pathway Disruption**
5. Evisceration	Low intensity, inoffensive odours of fresh "meat" arising from organ and gut removal from carcasses.	Intestines are not broken during evisceration and feed is withdrawn prior to slaughter. Floor and equipment all washed daily as part of daily hygiene routine and wastes and products are removed from the room throughout each day.	All plant fully enclosed within evisceration room which is itself within the main umbrella building	~~Extraction of room air and high level dispersion of extracted air by roof fans/stacks~~ Fully enclosed building with air recirculation system
6. Treating, processing and packing – flavouring of whole birds	Odours of marinades such as sage & onion and garlic and herb. May be offensive if very concentrated	Whole bird flavouring and marinade mixing areas are fully enclosed. Emissions from ventilation to be assessed	Whole bird flavouring and marinade mixing areas are fully enclosed. Emissions from ventilation to be assessed	Fully enclosed building with air recirculation system?
7. ABPs ~~Bulk offal & feather~~ handling/storage	Potentially offensive odours from decaying ~~feather and~~ ABPs ~~by-products,~~ but primarily from small traces or residues on surfaces. Odours are a complex mixture of organic compounds which may include dimethyl sulphide, dimethyl trisulphide, octanal and nonanal	Empty trailers are cleaned and disinfected before delivery to site. Plant washed down daily. All ABPs ~~Feathers and by-products~~ removed daily. ABP storage ~~Offal bay~~ building doors kept closed when not in use for vehicle movements ~~While category 2 collections are twice per week, additional observations are conducted to ensure existing controls are working.~~	ABP ~~Offal~~ trailers and loading equipment within enclosed building with air extraction at a rate of at least 3 air changes per hour. ABP ~~and feather~~ trailers ~~to be~~ covered (sheeted) inside the building before being moved outside for transfer offsite.	Building air extracted to chemical scrubbing system for abatement and treated air discharged at high level from scrubber stacks to disperse residual odours. ABP collections are short duration at end of production day
8. ~~Product~~Edible "offal" and carcass products for food use.	Low intensity, inoffensive fresh "meaty" odours from offal and carcass products	Handling and storage in dedicated chiller and cold storage area. Handling bins and building areas are washed after each use and kept clean for re-use.	Handling and storage in dedicated and enclosed food product area, with chiller and cold storage.	Although potentially putrescible all materials for human consumption are stored in a refrigerated room/cold store area to maintain quality and thereby to prevent decay and control emissions.
9. Blood Storage Tank and feather pit room	Potential for highly offensive faecal/sulphidic odours from decaying feathers and blood and from traces of blood on surfaces. Odours are a	Frequent (daily) removal of blood from tank and the feather pit and flume cleaned out each day. Blood tank emptied completely to remove residues and washed internally at least weekly	The blood tank is fully enclosed to control emissions and evaporation and all feather pit facilities housed within a room. High level alarms /	Air/odour extracted from the tank headspace and the room to the chemical scrubbing systems for abatement. Treated air discharged

Odour Source		Odour Controls		
Source	**Type of odours**	**Odour Reductions Measures at Source**	**Containment or Enclosure**	**Source Receptor Pathway Disruption**
	complex mixture of organics which may include sulphides and mercaptans and indole if blood decays.	with CIP system. Any spills washed away, and the tank area kept clean as part of daily hygiene routines.	interlocks on blood tank to prevent overfilling. Tank capacity > daily blood volume. Direct odour extraction from the tanks headspace and the room to the odour control system.	at high level from scrubber stacks to disperse residual odours
10. Blood Tanker Loading	Potential for highly offensive faecal/sulphidic odours from decaying blood and from traces of blood on surfaces. Odours are a complex mixture of organics which may include Sulphides, mercaptans and indole if blood starts to decay	Frequent (daily) removal of blood from tank. Tank emptied completely to remove residues. "Hopper" bottomed tank facilitates complete emptying. CIP system for internal clean of tank. Any spills washed away, and the tank area kept clean as part of daily hygiene routines.	The blood tank is housed within building and air displaced from vacuum tankers during filling is back vented to the chemical scrubber odour treatment system through a flexible hose connected to the tanker air outlet/vacuum pump exhaust.	Air extracted from the tank headspace during tanker loading to chemical scrubbing systems for abatement. Treated air discharged at high level from scrubber stacks to disperse residual odours Potential exposure limited by short duration of the activity which at most is 2 x <20 minutes per day
11. Wastewater Balance and Treatment Tanks	Some potential for offensive odours from decaying wastewater if solids accumulate and become anaerobic. Odours from wastewater are a complex mixture of organics which may include sulphides and mercaptans	Tank levels managed to minimum for effective wastewater treatment and emptied routinely to prevent accumulations of solids. The balance tank is aerated by venturi aerators to maintain aerobic conditions in balance tanks. Activated sludge process is an aerobic process. Dissolved Air Flotation system is de-sludged and cleaned out at monthly intervals	Cover fitted over balance tank and new balance tank and divert tank fully enclosed. Headspace extracted through chemical scrubber. Treated air is then vented to atmosphere. DAF unit housed in sludge dewatering plant building and building is vented to the chemical scrubber	Air extracted from the tanks headspace to chemical scrubbing systems for abatement. Treated air discharged from scrubber stack to disperse residual odours. WWTP is 200m away from nearest receptors on Pickhill Lane and 280m from Pickhill Old Hall. Odours are diluted and dispersed between source and potential receptors.
12. WWTP Sludge Dewatering & Storage	Potential for offensive odours from decaying sludge. Sludge and wastewater odours are complex mixtures of organic compounds which may include sulphides and mercaptans if sludge is allowed to decay anaerobically.	New sludge dewatering plant in enclosed building. Sludge tanks retained for contingency so occasional use only. Any spills washed away, and the tank area kept clean as part of daily hygiene routines	Dewatering plant inside building which has air extraction to WWTP area scrubber. Retained sludge tanks fully enclosed and tank headspace air displaced through the WWTP area scrubber.	WWTP is 200m from nearest receptors on Pickhill Lane and 280m from Pickhill Old Hall. Odours are diluted by distance. Odorous air displaced to atmosphere through chemical scrubber (to abate organic compounds) and dispersed by tall stack

Odour Source		Odour Controls		
Source	**Type of odours**	**Odour Reductions Measures at Source**	**Containment or Enclosure**	**Source Receptor Pathway Disruption**
12. Sludge transfers	Potential for offensive odours from decaying sludge. Sludge odours are complex mixtures of organic compounds which may include sulphides and mercaptans if sludge is allowed to decay anaerobically.	Sludge dewatering plant inside building and sludge cake stored and handled inside. Building air extracted to scrubber. Sludge tanks only operated as a back up to sludge dewatering plant. Any spills washed away, and the tank area kept clean as part of daily hygiene routines Less collections of sludge cake than non-dewatered sludge and conducted inside building. Only occasional sludge tanker transfers of non-dewatered sludge.	Sludge cake stored and collected in enclosed building. Tanks fully enclosed to control emissions and displaced road tanker headspace air passed through the WWTP area scrubber.	Building enclosed and air extracted to WWTP area scrubber. Tanker drivers connect air hoses from tanker vacuum pumps exhaust outlets to WWTP area scrubber so that displaced air is abated during filling. Potential exposure during tanker loading limited by duration and infrequent contingency activity
13. Main Process Areas Extraction and Chemical Scrubbing Systems	Treated odours may have a “chlorine” component from the sodium hypochlorite oxidising reagent and any chloro-amines generated in the scrubber. Potential for odours from untreated air if scrubbers are ineffective due to malfunction	Chemical scrubbing with automated controls on chemical dosing and liquor recirculation to ensure optimum treatment.	All odour extraction ducting maintained under negative pressure to ensure there is no fugitive “leakage” and odours are contained.	Extraction system has sufficient flow rate to capture air emitted from odorous processes. Treated air discharged at high level through stacks to disperse residual odours. Dispersion modelling proves minimal impact.

7 Odour Risk Assessment

A qualitative odour risk assessment is included below in Table 4. The risk assessment has been prepared with reference to Horizontal Guidance Note H1- Annex (b) (2010) and is based on qualitative risk assessment methodology, where a judgement of risk of an odour impact is assigned based on the 'Source-Pathway-Receptor' Model.

A subjective risk score has been calculated for each identified odour source based on a potential Impact score "**I**" (scored from 1 to 5), which is a subjective measure of odour intensity/emission rates, multiplied by a Likelihood "**L**" score (also from 1 to 5). The overall risk score assumes that specified suitable control measures are in place, however, the bracketed scores with asterisks provide an assessment of the potential risk if odour controls are not effective or not effectively used/monitored.

As an example, if air is not effectively extracted from the de-feather area, then there is significant increase (from 2 to 4) in the likelihood of off-site odours.

The risk assessment has been based on the following risk matrix scoring system suggested by the Environment Agency for a poultry processing site in East Anglia and used in other sectors, including the National Health Service.

Risk Matrix

	Likelihood				
Impact	**1**	**2**	**3**	**4**	**5**
	Rare	**Unlikely**	**Possible**	**Likely**	**Almost Certain**
5 Catastrophic	**5**	**10**	**15**	**20**	**25**
4 Major	**4**	**8**	**12**	**16**	**20**
3 Moderate	**3**	**6**	**9**	**12**	**15**
2 Minor	**2**	**4**	**6**	**8**	**10**
1 Negligible	**1**	**3**	**3**	**4**	**5**

For grading risk, the scores obtained from the risk matrix are assigned grades, as follows;

	1 – 3	Low risk
	4 – 6	Moderate risk
	8 – 12	High risk
	15 – 25	Extreme risk

* = risk of abnormal events, e.g., failure of odour control systems and / or prolonged hot weather

Table 4 - Odour Risk Assessment & Key Odour Controls to Minimise Risk

Inventory		What can harm/ be harmed?			Managing the risk		Assessing the risk	
Source	**Process (Location)**	**Hazard**	**Receptor**	**Potential Impact 'I'**	**Risk Management**	**Likelihood of exposure 'L'**	**Magnitude of Risk 'I' x 'L'**	**Overall Risk**
1. Lairage (bird reception & holding)	North-east section of factory (new extension)	Odour from birds in modules and from droppings on floors	Closest houses (owned by Maelor) on Pickhill Lane approx. 140 m West of lairage	1 - Negligible	Lairage cleaned and washed daily as part of daily hygiene routines. Bird feed restricted on farms prior to delivery to processing site so that gut content and droppings output reduced Fully enclosed building with air recirculation system. Doors closed except for immediate vehicle access / egress. Live bird holding building not yet in use	3 - Possible	3 - Low	Low if thoroughly washed routinely & doors closed
2. Module washing	Southern section of factory	Odours from droppings on floors & equipment	Closest houses on Pickhill Lane approx. 140 m to West of bird reception area	1 - Negligible	Enclosed and floor and equipment are all washed daily as part of daily hygiene routine. Modules washed as soon as empty. Air from area extracted to high level exhaust point and is low odour intensity.	3 - Possible	3 - Low	Low if well managed and kept clean
3. Hang-on and bleeding area	Central section of factory	Odours from birds in modules and when handled during hanging on to line	Closest houses on Pickhill Lane (owned by Maelor) approx. 140 m West of primary bird reception area	2 - Minor	Floor and equipment all washed daily as part of daily hygiene routine. Modules are all washed as soon as empty. Building air extracted and high-level dispersion through roof mounted stack Fully enclosed building with air recirculation system.	1 - Rare	2 - Low	Low
4. Aeroscalder & De-feather	Central section of factory	Odour emissions from Aero-scalder and de-feather area	Closest houses on Pickhill Lane (owned by Maelor) approx. 115 m to West of primary bird processing area.	3 - Moderate	Fully enclosed area. Aeroscalder design minimises odour and vapour releases into building Extraction of air from the area to the chemical scrubbing system. Main extraction system must have sufficient flow rate to capture all air emitted from scalder & de-feather process to building headspace.	2 - Unlikely	6 - Moderate	Medium dependant on effectiveness of extraction to abatement system

Inventory		What can harm/ be harmed?			Managing the risk		Assessing the risk	
Source	**Process (Location)**	**Hazard**	**Receptor**	**Potential Impact 'I'**	**Risk Management**	**Likelihood of exposure 'L'**	**Magnitude of Risk 'I' x 'L'**	**Overall Risk**
5. Evisceration	Northern section of factory	Odour from gut removal	Closest houses on Pickhill Lane (owned by Maelor) approx. 115 m West of primary processing area.	1 - Negligible	Low odour because intestines are not broken All fully plant enclosed within building. Fully enclosed building with air recirculation system. -	2 - Unlikely	2 - Low	Low
6. Treating, processing and packing – flavouring of whole birds	South of the main building opposite side close to Pickhill Lane	Odours of marinades unlikely to be offensive	Closest houses on Pickhill Lane (owned by Maelor) approx. 115 m West of primary processing area.	1 - Negligible	Whole bird flavouring and marinade mixing areas are fully enclosed. Emissions from ventilation to be assessed	2 - Unlikely	2 - Low	Low
7. ABPs handling & storage	Northern section of factory	Odours from decaying ABPs and residues on surfaces	Closest houses on Pickhill Lane (owned by Maelor) approx. 140 m to West of offal bay area.	3 - Moderate	Fully enclosed building - air extracted to chemical scrubbing system. Extraction system must have sufficient flow rate (at least 3 air changes / hour) to contain odours inside ABP trailers covered (sheeted) inside the building before being moved outside for transfer offsite. Empty trailers cleaned and disinfected before delivery to site. Plant washed down daily. ABPs removed daily. <u>Doors must be kept closed when not in use for vehicle movements</u>	2 - Unlikely	6 - Moderate	Moderate to High depending on both the effectiveness of extraction & abatement and the frequency of removal of ABPs Risks controlled with effective extraction and scrubbing. Worst case – abatement failure during very hot weather & ABP collections delayed
				(4 - Major*)		3 – Possible	12 – High	

Inventory		What can harm/ be harmed?			Managing the risk		Assessing the risk	
Source	**Process (Location)**	**Hazard**	**Receptor**	**Potential Impact 'I'**	**Risk Management**	**Likelihood of exposure 'L'**	**Magnitude of Risk 'I' x 'L'**	**Overall Risk**
8. Edible offal handling & cold store	North-west section of factory	Odours from decaying products and residues on surfaces	Closest houses on Pickhill Lane (approx. 100m West of processing area	2 – Minor (3 – Moderate*)	Fully enclosed and refrigerated area Potentially putrescible products stored in refrigerated building to maintain quality and thereby prevents odours Handling bins and building areas washed after each use and kept clean.	1 – Rare 2 - Unlikely	2 – Low (6 – Moderate*)	Low - not significant if managed carefully
9. Blood Storage Tank and feather pit area	Northern section of factory	Odours from decaying blood and feathers	Closest houses on Pickhill Lane (owned by Maelor) approx. 140 m to West of ABP building	3 – Moderate (4 – Major*)	Facilities inside ABP building and blood tank fully enclosed to control emissions and evaporation. Air from tank vent and building extracted to chemical scrubbing system. Daily collection of blood and feathers. Blood tank emptied completely to remove residues and internal CIP wash system. Feather pit area cleaned daily	2 – Unlikely (3 – Possible*)	6 – Moderate (12 – High*)	Risk will be fully controlled if extraction is effective and if tanks emptied frequently. Elevated risk if extraction & abatement plant fails or if there are any spills.
10. Blood tank – collection by tanker	Northern section of factory	Odours from decaying blood	Closest houses on Pickhill Lane (owned by Maelor) approx.140 m West of blood tank area.	3 – Moderate	Tanker drivers must ensure that they connect air extraction hoses to tanker vacuum pumps exhaust. Air displaced from vacuum tankers during filling vented to the chemical scrubber air treatment system. Ensure tanker drivers report any spills.	2 – Unlikely	6 – Moderate	Not significant if managed carefully Short-term and infrequent activity, approximately 15-

Inventory		What can harm/ be harmed?			Managing the risk		Assessing the risk	
Source	**Process (Location)**	**Hazard**	**Receptor**	**Potential Impact 'I'**	**Risk Management**	**Likelihood of exposure 'L'**	**Magnitude of Risk 'I' x 'L'**	**Overall Risk**
				(4 – Major*)	Fast clean-up of spills -Spill response procedure Potential exposure / impact during offloading limited by duration of the activity which at most will be <20 minutes per day.	(3 – Possible*)	(12 – High*)	20 minutes once per day. Elevated risk if extraction & abatement plant fails or if there are any spills.
11. WWTP	Eastern edge of site activities	Odours from decaying wastewater / solids	Closest houses on Pickhill Lane (owned by Maelor) approx. 290 m West of WWTP. Pickhill Old Hall is around 270m North of effluent plant	3 – Moderate	Enclosed drum screen and screenings collected in covered skip. Reception pit extracted to WWTP area scrubber. Covered / enclosed balance and divert tanks with extraction of headspace into chemical scrubber with automated liquor dosing. Tanks aerated by venturi to prevent anaerobic conditions. Divert tank only to be used to capture spillages / abnormal wastewater streams to prevent overloading WWTP and cleansed after use. DAF plant covered to control emissions and housed inside sludge dewatering plant building. Building air extracted to WWTP area scrubber	2 – Unlikely	6 – Moderate	Not significant if plant is maintained within normal operating parameters and extraction and abatement is effective. Elevated risk if plant malfunctions or extraction & abatement plant fails or if there are any spills. Worst case - anaerobic conditions in balance tank during very hot weather with scrubber performance drop
				(4 – Major*)		(3 – Possible*)	(12 – High*)	

Inventory		What can harm/ be harmed?			Managing the risk		Assessing the risk	
Source	**Process (Location)**	**Hazard**	**Receptor**	**Potential Impact 'I'**	**Risk Management**	**Likelihood of exposure 'L'**	**Magnitude of Risk 'I' x 'L'**	**Overall Risk**
								& wind toward houses
12. Sludge dewatering and storage	Eastern edge of site activities	Odours from decaying sludge	Closest houses on Pickhill Lane (owned by Maelor) approx. 290 m West of WWTP. Pickhill Old Hall around 270m North	3 – Moderate (4 – Major*)	Sludge dewatering plant inside building and sludge cake stored and handled inside. Building air extracted to scrubber. Sludge tanks only operated as a back up to sludge dewatering plant. Any spills washed away, and the tank area kept clean as part of daily hygiene routines Less collections of sludge cake than non-dewatered sludge and conducted inside building. Only occasional sludge tanker transfers of non-dewatered sludge.	2 – Unlikely (3 – Possible*)	6 – Moderate (12 – High*)	Not significant if containment and abatement is effective. Elevated risk if extraction & abatement plant fails or if there are any spills.
13.WWTP sludge collections / tanker loading	Eastern edge of site activities	Odours from decaying sludge in air displaced from tankers during loading.	Closest houses on Pickhill Lane (owned by Maelor) approx. 290 m West of WWTP plant. Pickhill Old Hall around 270m North	3 – Moderate (4 – Major*)	Building enclosed and air extracted to WWTP area scrubber. Sludge cake loaded to HGVs inside. Tanker drivers connect air hoses from tanker vacuum pumps exhaust outlets to WWTP area scrubber so that displaced air is abated during filling. Potential exposure from tanker loading limited by short duration and infrequent contingency activity. Ensure tanker drivers report any spills.	2 – Unlikely (3 – Possible*)	6 – Moderate (12 - High*)	Not significant if managed carefully Short term and infrequent nature of the activity

Inventory		What can harm/ be harmed?			Managing the risk		Assessing the risk	
Source	**Process (Location)**	**Hazard**	**Receptor**	**Potential Impact 'I'**	**Risk Management**	**Likelihood of exposure 'L'**	**Magnitude of Risk 'I' x 'L'**	**Overall Risk**
14. Main Process Areas Extraction and Chemical Scrubbing Systems	To east of main factory building	Treated air odours likely to be of a "chlorine" nature, possibly with undertones of "ABP" type odours	Closest houses on Pickhill Lane (owned by Maelor) approx. 190 m West of scrubbers and their stacks and Pickhill Old Hall is approximately 300m away	3 – Moderate (4 - Major*)	Extraction system must have sufficient flow rate to capture air emitted from odorous processes. Automated scrubber dosing / liquor replenishment system and controls. Plant must be carefully monitored & maintained to ensure that it is working within design parameters. Odour measurements in 2022 show scrubber performs well and impact from emissions is low according to dispersion modelling for Phase 2 with two scrubbers.	2 – Unlikely (3 – Possible*)	6 - Moderate (12 – High*)	Moderate ~~Low~~ risk if performance optimised. High risk, if not, so performance is critical

8 Management of Odour

This OMP is a working document, intended to be used as a reference document for operational staff on a daily basis. It provides a schedule of actions that must be taken to minimise odour and waste impact and details site management procedures for the management of odour.

The OMP is available on-site to all relevant site personnel and any visiting officers from Wrexham County Council or NRW.

Our environmental management system (EMS) addresses odour and we will use and review the OMP to ensure we minimise odour from the installation. The management systems include:

- Staff roles and responsibilities
- Training of staff
- Operating procedures
- Auditing and inspections
- Preventative and breakdown maintenance
- Housekeeping standards
- Incidents and emergency response
- Complaint handling and investigation
- Community liaison

The remainder of this document is structured according to aspects of the operation and management of the site.

All measures, contained in this OMP are to be implemented in the daily operation of the site. Additional measures that may be adopted in response to incidents or one-off events, detailed in the contingency procedures section.

9 Roles & Responsibilities

9.1 Site Management

The overall implementation of this OMP is the responsibility of the General Manager, supported as required by other Maelor Foods staff with specific roles relating to odour control. The roles and responsibilities of staff are documented under the EMS.

The General Manager can delegate certain tasks as required, although ultimate responsibility will remain with him / her.

A nominated deputy can be appointed for all times when the General Manager is not on site. In such circumstances, it will be the nominated deputy's responsibility to ensure that the requirements of the OMP are adhered to.

9.2 Staff Training

Staff training is a key aspect of ensuring that odour is controlled through effective management during daily operations. All key site operatives involved in "odour" related areas of the plants, and particularly the offal and effluent sections and maintenance personnel responsible for the scrubbers, must be trained on induction with "tool-box talks" to deal with odour management issues in the areas in which they will work. They must also be made aware of the existence of this OMP and its requirements through environmental training tailored to staff responsibility levels.

Training needs are reviewed for all staff on an annual basis and refresher training scheduled at set intervals. General odour management forms part of the site induction process to all new members of staff or contractors working in potentially odorous areas of the plant.

Where investigation of an incident identifies a gap in training or a need for refresher training this will be carried out as soon as possible.

9.3 Operating Procedures

All departments have a set of operating procedures that cover specific and generic tasks. These procedures' identity areas where odour could be released and specify the measures that must be taken to ensure that odour is minimised. The procedures cover the measures to be taken if abnormal events occur, such as spillages and plant failure and spell out the reporting and recording criteria if abnormal events occur.

Plant whose failure could cause an odour event is covered by operational procedures, such as the chemical scrubber, carbon-filters and ETP.

9.4 Maintenance

Any plant item whose failure could cause an odorous release is covered on the preventative maintenance (PM) system which schedules a series of maintenance tasks at set frequencies. The PM system includes regular checks and maintenance of doors, extraction systems, building fabric, odour abatement plant, ETP and process plant to minimise failure events and keep odour control optimised. The tasks and their frequency are based on plant manufacturer's guidance or site experience of operating the plant.

We hold stocks of essential spare parts, so plant can be repaired as soon as possible, and we have same day call out contracts for the main elements of the plant if specialist help is required.

Breakdown maintenance is prioritised if there is potential for or an actual release of odour. We will undertake a bespoke environmental risk assessment if we need to undertake maintenance tasks that could release odour and will identify precautions and additional measures that we must take to control odour during the work. This could include work on building doors or roof if they need to be opened for prolonged periods. Wherever possible, we will schedule such work for non-production days and favourable weather patterns to minimise the potential for offensive odour releases to reach site neighbours. We may also issue neighbourhood bulletins to advise neighbours in advance of such work.

There is a clear structure of responsibility which allows operational staff to call in specialist contractors to deal with emergencies and unplanned events which may lead to an odour impact, such as leaks and spillages, damages to extraction ducts etc.

Such events, and appropriate remedial measures are normally the responsibility of the Site Manager, but lines of responsibility and delegation will be clarified in case the manager is off site when an unplanned event occurs. A list of approved contractors who can be called out to deal with incidents is maintained by the Engineering Manager and all staff with delegated responsibility are aware of this list.

9.5 Sub-Contractors

Any sub-contractors working at the site must adhere to the requirements of the OMP. Failure to comply with odour control measures will result in a formal warning to the operative and his or her employer. Failure to comply with the warning will result in the operative being banned from the site.

9.6 Measures for Reducing Odorous Emissions On-site – Auditing and Inspections

Maelor Foods will address all reasonable opportunities to reduce odorous releases from the site. Measures for reducing the risk have been detailed throughout the document. Audits and inspections are carried out across departments covering housekeeping and adherence to procedures where they address odour. Departmental Managers will also undertake their own checks, inspections and audits as part of the shift handover process.

The specific odour management and odour related checks and tasks are listed in

Table ***5*** below. This list must be reviewed as experience of the plant is collected and if incident investigations identify any areas for improvement:

Table 5 - Routine Odour Management & Monitoring Tasks / Checks

No.	Tasks	Who?	Targets/Action Levels	Record form
1	Inspect the site for odour emissions at least daily during the hours of production (whether it be during the day or night) and record the findings to determine trends. Frequency to be increased in event of complaints	Environmental Manager/ Hygiene Manager and Security	Checks to include: 1. Not >1 live bird delivery waiting to get into the lairage 2. Doors closed on lairage, ABP storage ~~offal~~ building and sludge dewatering building when not in use for vehicle movements 3. Lairage & module handling areas clean 4. Doors closed on other process buildings 5. ABP storage ~~Offal bay~~ building clean and in good condition 6. Screens on drainage in ABP ~~offal~~ bays in place and being cleaned? 7. Blood tank area clean 8. WWTP area clean and functioning normally. No abnormal parameters or odours, spills, Sniff check down wind of WWTP chemical scrubber to check for offensive odour 9. Check that the extract fan on the primary balance tanks is operational and that there is a detectable flow from the duct. 10. Sludge or blood tanker loading (drivers back vent air from tankers) - spills cleaned up 11. External areas of the site, e.g., blood tanker loading area clean and free of any spillages or uncovered containers	Daily Odour Management Plan Site Checks Record Form - **Error! Reference source not found.**
2	Site perimeter odour assessments or SNIFF tests (daily initially -1st 6 months) at different times of day. To be carried out by personnel NOT involved in production or wastes areas to avoid odour desensitisation.	Environmental Manager/ Hygiene Manager and Security	Detectable/recognisable odours. Back track up plume if odours are detected and carry out site checks as set out at 1 above.	Sniff survey record form - Appendix 2
3	Check operation of extraction fans & all odour scrubbing systems daily. Scrubber pH and Redox levels and fan operation will be monitored and logged continuously, and the control system fitted with alarms to warn of exceptional conditions or failures (To ensure that the air treatment system is operating within design parameters.)	Maintenance/ Environmental Manager/ Hygiene Manager and Security	1. Ensure that fans are running, and any drive belts have not broken. 2. Check chemicals/reagent stock levels for all scrubbers. 3. Spot checks on scrubber monitoring systems, pH and redox values. 4. Liquid level in scrubbers 5. Check chemical dosing pump operation 6. Check air dampers/shutters are in correct positions. 7. Check scrubber blowdown/overflow drains. 8. Measure & or check and record pressure in extraction system is effective	Daily chemical scrubber checks record form **Error! Reference source not found.**

10 Abnormal Events and Emergency Operation

We have contingency measures to deal with the foreseeable abnormal events that could influence odour emissions from the installation. Table 6 describes several abnormal events or emergencies which may take place at the site and lead to odorous emissions and lists the response measures.

Table 6 - Abnormal Events and Emergency Operation

Scenario / Event	Location on Site	Likely effect on emissions inventory	Response Measures
Special event circumstances in locality or Extreme weather, e.g., periods of unusually hot weather, ABP collections delayed	All wastes, effluents and ABPs	Potential increased rate of bio-degradation of wastes and ABPs with increased odour emissions	Greater focus on handling and storage practices for all wastes, ABPs and effluents, plant cleanliness and abatement plant performance. Increase frequency of off-site odour checks. Increase frequency of tasks in checklist at Table 5
Failure of odour control measures or WWTP	Site	The control measures proposed are all simple and low tech so the risk of failure is low. If failures do occur, then the potential effect would be an increased risk of off-site effects	All maintenance staff to be trained in identifying problems with control equipment or systems and applying simple fixes. For mechanical plant, such as fans and scrubber dosing and liquor circulation pumps, a supply of essential spares will be kept on site and on-call arrangements will be made to facilitate safe access.
Odour control flow/pressure anomaly – no flow, pressure drops too high or too low	Extraction systems	Odour may escape from de-feather / scald area roof space	Re-check/investigate fan operation. Check ducting for leaks or blockages (e.g., with flow meter). Investigate scrubber conditions Carry critical spares for fans and scrubbers
Unavailability of site staff	Odour control plant failure	Incidents occurring outside of site hours may be exacerbated by lack of staff available to attend.	Emergency contact details to be agreed such that someone is available on call to address issues which may arise.
Fire	Odour control plant	Low risk but potential increase of emissions at nearby properties	Follow emergency response plan and associated procedures
Flood	Entire Site	Potential increase of emissions at nearby properties	Follow emergency response plan and associated procedures
Site power cut	Entire Site – Production areas and odour controls	Odour emissions from most important primary process area sources are likely to fall. Emissions from effluent treatment plant sources may increase without treatment processes	Extraction systems should be prioritised as/when power systems are restored. A back-up generator contingency will be in place – unit to be supplied within 24 hours if power interruption persists.

Our Emergency Response Plan covers the generic aspects of how to respond and who to notify. We also have more specific procedures such as a spillage procedure to cover types of incidents. Other events are covered in our standard operating procedures such as how to address effluent treatment plant faults.

We treat door faults, extraction or abatement plant failures and any other incidents that cause or could lead to an odour release as an environmental incident. Such incidents are handled in accordance with our Incidents & Non-conformances Procedure and we will ensure they are fully investigated and recorded once resolved, with preventative and corrective actions.

We will report incidents to NRW in accordance with our Environmental Licence Reporting Procedure of and Schedule 5 of our environmental permit. These notifications comprise of an initial report to notify NRW of a potentially significant incident as soon as possible followed by a report covering the incident investigations and conclusions.

11 Record keeping

Throughout the whole of the OMP, accurate and thorough record keeping are essential to ensure odour is controlled and will allow us to review and analyse performance. We keep records of maintenance of plant, production, waste management, monitoring, audits and inspections, communication, incidents, complaints and training.

Our Production Managers are responsible for keeping records of vehicle arrivals, departures, load details, materials processed and records of any incidents or issues that occur. They also maintain a shift log of processing stages which detail any abnormal events or faults requiring maintenance.

12 Odour Complaints Procedure

The measures outlined in this OMP are aimed at preventing odour emissions occurring to the extent where complaints may be made by neighbours of the site. Nevertheless, it is recognised that having an established complaints procedure is a necessary part of the OMP and we have a generic Environmental Complaint Procedure which we use for this purpose.

The primary purpose of this complaint procedure is to ascertain whether any complaints are linked to the site and associated operations and, if so, to identify the cause(s) and what action may be taken to remedy any on-going complaint episode and to prevent or minimise the probability of a recurrence. All complaints and investigations into them are recorded on an Environmental Complaint Investigation Record Form as shown in Appendix 2 – **Daily Environmental Check Sheet**

Daily Environmental Check Sheet

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General Information

Inspection Date	Inspection Time	Weather Conditions	Temperature	Wind Direction	Wind Strength

Odour Survey

Location	Time	Nature of Odour	Odour Severity	Extent/ Persistence	Noise Level (dB)
1					
2					
3					
4					
5					
6					

Scoring Guide			
	Nature	Severity	Persistence
0	No Odour	No Odour	No Odour
1	Lairage/ Chicken	Very Weak	Localised, not off site
2	Defeather/ Aero scald	Weak	Offsite for brief period
3	Offal	Distinct	Persistent but localised
4	Effluent	Obvious	Persistent over narrow range
5	Sludge	Strong	Persistent over wider range
6	Blood Tanks	Very Strong	
7	Other (Describe)	Extremely Offensive	

ETP Alarm Y/N		Cyclone Alarm Y/N		Cyclone Redox:		Cyclone pH	
Main Scrubber Alarm (Y/N)				Scrubber Redox		Scrubber pH	

General Site Management

Question	Yes/ No
Are vehicles observing speed limits?	
Are FLTs driving safely and loads secure?	
Are external yard areas clean and free of spills?	
Are spill kits sealed and contents full/ unused?	
Are correct containers being used/ labelled?	
Are noise controls working around the site?	
Are all chemicals bunded/ stored correctly?	
Are bunds in good condition/ no leaks?	
Is site drainage colour coded?	
Are hardstanding areas in good condition?	
Cleaning activities in correct area?	
W2 and W3 free of visible oil/ grease?	
Borehole secure and free from obstruction?	

Completed By	
Signature	

Odour Management

Question	Yes/ No
Is there more than 1 vehicle waiting	
Are all offal/ lairage doors closed?	
Is lairage area clean	
Are all other process doors closed?	
Is offal bay clean and in good condition?	
Is blood tank area clean?	
Is ETP area clean?	
Are all carbon filters working?	
Are all Dolavs covered?	
Is sludge tank back venting (where applicable)?	
Other Comments/ Actions:	

Document Reference: EMS9.3.1.1.4	Issue Date: 20/04/2021	Issue Number: 4
Issued By: Suzanne Gray	Approved By: James Colley	

Appendix *3*.

13 Odour Monitoring

13.1 Plant Monitoring

The checklist in

Table ***5*** above details routine plant and odour mitigation monitoring checks.

We will be undertaking olfactometry testing of the chemical scrubber exhaust stack during the first 6 months of operation to check the odour destruction efficiency and confirm that the scrubber is meeting the design specification. This may be repeated in future on an ad hoc basis if odour episodes are thought to be linked to scrubber under performance.

13.2 Sniff Testing

Regular sniff testing is carried out in accordance with our Odour Sniff Survey Procedure to identify any off-site odours and assess odour strength in ambient air. This is based on:

1: A "slow" walk around the boundary of the premises (and not restricted to the process boundaries) and includes two assessments at pre-determined locations around the site boundary.

2: An off-site test, away from the immediate boundary (taking not of the wind direction) as odour released at high level my not necessarily be noticed at ground level within the boundary.

These assessments are to be carried out daily at different times of day for the first six months of plant operations, and then, if boundary odours are not experienced frequently the sniffing will be carried out on a weekly basis and as required in the event of an odour related complaint, as described above.

If odours are detected at any other point the assessor must stop and assess the intensity and persistence of the odour and make observations using the form in Appendix 2. The locations of any odours are to be marked on the map and cross-referred on the recording form.

Sniff tests are carried out by suitable person(s) with experience of the different types of odours generated in the various areas of the plant (e.g., lairage/chickens, de-feather, offal, effluent, sludge, blood tanks etc.), but it is very important the assessor does not work in any areas of the plant where they are routinely exposed to odours which would adversely affect their sensitivity to these odours. Odour is subjectively assessed using the following criteria:

Nature of odour		Odour severity		Extent & persistence	
0	No odour detected	**0**	No Odour Present - no odour perceived	**1**	Local and transient, not detected off Site
1	Lairage/chickens	**1**	Very Weak - probably some doubt whether odour present	**2**	Transient, detected off site for brief periods
2	Defeather/scalding	**2**	Weak - odour character is barely recognisable	**3**	Persistent but localised
3	Offal	**3**	Distinct - odour character is recognisable	**4**	Persistent and pervasive, detected over a narrow range
4	Effluent	**4**	Obvious - odour character is easily recognisable	**5**	Persistent and pervasive, detected over a wider range
5	Sludge	**5**	Strong - odour may be offensive if persistent		
6	Blood tanks	**6**	Very Strong - odour is offensive, exposure to this level considered undesirable		
7	Other (Describe)	**7**	Extremely Strong - odour is offensive, instinctive reaction to avoid further exposure		

The following information is also recorded when carrying out odour sniff monitoring:

- Any abnormal process conditions
- Any faults or overdue maintenance on odour abatement equipment
- Ambient temperature
- Information on any other odour generating activity taking place upwind of the plant
- Description of smell
- Time/duration of test
- Odour source (if apparent)

The results of sniff survey are recorded on the form in Appendix 2.

Odour monitoring results are regularly reviewed (initially monthly, and then quarterly after the first year of operation) to evaluate the effectiveness of the odour abatement measures in use at the plant, identify circumstances that cause increased odour emissions that may require additional odour abatement or mitigation measures and identify new techniques that could be effective in further reducing odour from the plant going forward.

This information is also used to review this Odour Management Plan and its effectiveness. It is envisaged that the odour abatement techniques described in this OMP will be effective at reducing the odorous emissions from the plant to an acceptable level and that the instances in which excess odour from the plant causes complaints from neighbours will be very infrequent.

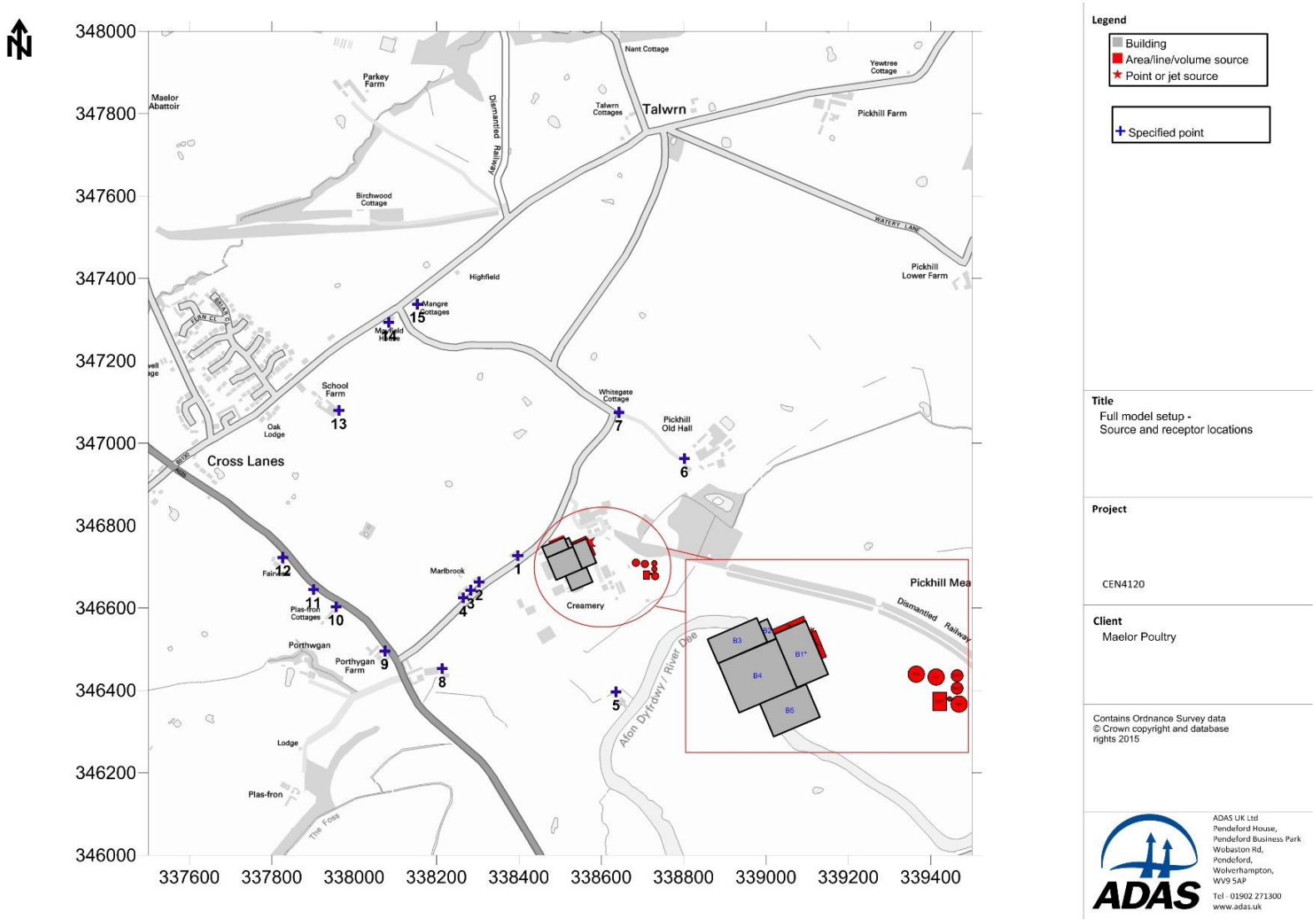
14 Community Liaison

We appreciate how important it is that our neighbours who could potentially be affected by odour from the plant are made aware that we take odour control very seriously and take all reasonable measures to reduce our environmental impact on the local community. Our neighbours will be kept informed of new developments and if requested, we will issue contact details for them to notify the company or to complain in the event of unacceptable odours being experienced.

Our neighbours are encouraged to report any odours at the time they are experienced so that timely investigations can be carried out.

15 Appendices

Appendix 1 - Potential Odour Receptors



Legend

- Building
- Area/line/volume source
- Point or jet source
- Specified point

Title
Full model setup -
Source and receptor locations

Project
CEN4120

Client
Maelor Poultry

ADAS UK Ltd
Pendeford House,
Pendeford Business Park
Wobaston Rd,
Pendeford,
Wolverhampton,
WV9 5AP
Tel - 01902 271300
www.adas.uk

Appendix 2 – Daily Environmental Check Sheet

Daily Environmental Check Sheet

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General Information

Inspection Date	Inspection Time	Weather Conditions	Temperature	Wind Direction	Wind Strength

Odour Survey

Location	Time	Nature of Odour	Odour Severity	Extent/ Persistence	Noise Level (dB)
1					
2					
3					
4					
5					
6					

Scoring Guide			
	Nature	Severity	Persistence
0	No Odour	No Odour	No Odour
1	Lairage/ Chicken	Very Weak	Localised, not off site
2	Defeather/ Aero scald	Weak	Offsite for brief period
3	Offal	Distinct	Persistent but localised
4	Effluent	Obvious	Persistent over narrow range
5	Sludge	Strong	Persistent over wider range
6	Blood Tanks	Very Strong	
7	Other (Describe)	Extremely Offensive	

ETP Alarm Y/N		Cyclone Alarm Y/N		Cyclone Redox:		Cyclone pH	
Main Scrubber Alarm (Y/N)				Scrubber Redox		Scrubber pH	

General Site Management

Question	Yes/ No
Are vehicles observing speed limits?	
Are FLTs driving safely and loads secure?	
Are external yard areas clean and free of spills?	
Are spill kits sealed and contents full/ unused?	
Are correct containers being used/ labelled?	
Are noise controls working around the site?	
Are all chemicals bunded/ stored correctly?	
Are bunds in good condition/ no leaks?	
Is site drainage colour coded?	
Are hardstanding areas in good condition?	
Cleaning activities in correct area?	
W2 and W3 free of visible oil/ grease?	
Borehole secure and free from obstruction?	

Completed By	
Signature	

Odour Management

Question	Yes/ No
Is there more than 1 vehicle waiting	
Are all offal/ lairage doors closed?	
Is lairage area clean	
Are all other process doors closed?	
Is offal bay clean and in good condition?	
Is blood tank area clean?	
Is ETP area clean?	
Are all carbon filters working?	
Are all Dolavs covered?	
Is sludge tank back venting (where applicable)?	
Other Comments/ Actions:	

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Issued By: Suzanne Gray	Approved By: James Colley	

Appendix 3 - Environmental Complaint Record Forms

Date of Complaint	Time of Complaint	Date Noticed	Time Noticed

Name and Address of Complainant	
Description of Odour (what does it smell like?)	

Odour Severity	1 Very Weak	2 Weak	3 Distinct	4 Obvious	5 Strong	6 Very Strong	7 Extremely Strong
	Probably unnoticed whether odour present	Odour character barely recognisable	Odour character is recognisable	Odour character is easily recognisable	Odour may be offensive / persistent	Odour is offensive – exposure considered undesirable	Odour is offensive, instinctive reaction to avoid further exposure

Constant or Intermittent		Duration	
Does the complainant have any other comments about the odour?			
Are there any other complaints relating to the installation, or to that location?		If yes please give details (dates etc.)	

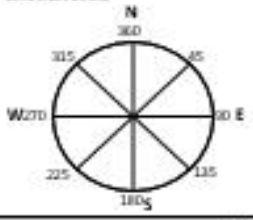
Location of complaint

Please mark on map location of complaint. ✕

Wind Direction Log

	Time	Direction
30 minutes before complaint	15.00	30
20 Minutes before complaint	15.10	98
10 Minutes before Complaint	15.20	1
Time of Complaint	15.30	331
10 minutes after complaint	15.40	304
20 minutes after complaint	15.50	252
30 minutes after complaint	16.00	174

Plot the above direction data onto the wind chart below



Weather Information (Please attach screenshot of weather station data log)

Weather Conditions	Average Wind Speed	Average Wind Direction	Average Temperature

Operating Conditions at time of complaint

Describe what was happening on site at the time? Any abnormal events, weather conditions or maintenance issues at the time or ongoing? E.g. power cut, abnormal weather (very hot or cold), chemical scrubber or ETP fault?	
ABP and sludge collection times	

Complaint Report Form	
Time and date of complaint:	Name and address of complainant:
Telephone number of complainant:	

Date noticed:	
Time noticed:	
Location, if not at above address:	
Weather conditions (i.e., dry, rain, fog, snow):	
Temperature (very warm, warm, mild, cold or degrees if known):	
Wind strength (none, light, steady, strong, gusting):	
Wind direction (e.g. from SW):	
Complainant's description of odour or noise or other nuisance: o What does it smell or sound or look like?	
o Severity (see below):	
o Duration (time):	
o Constant or intermittent in this period:	
o Does the complainant have any other comments about the odour or noise or other nuisance?	
Are there any other complaints relating to the installation, or to that location? (either previously or relating to the same exposure):	
Any other relevant information:	
Do you accept that odour or noise or other nuisance is likely to be from our activities?	
What was happening on site at the time?	
Operating conditions at time of occurrence (e.g. odour abatement plant parameters, ABP's collections etc.):	
Actions taken:	

Form completed by:	Date	Signed

ODOUR SEVERITY KEY	NOISE SEVERITY GUIDE
0 - No Odour Present - no odour perceived 1 - Very Weak - probably some doubt whether odour present 2 – Weak - odour character is barely recognisable 3 – Distinct - odour character is recognisable 4 – Obvious - odour character is easily recognisable 5 – Strong - odour may be offensive if persistent 6 - Very Strong - odour is offensive, exposure to this level considered undesirable 7 - Extremely Strong - odour is offensive, instinctive reaction to avoid further exposure	0 - No Noise Present - no noise perceived 1 - Very faint - probably some doubt whether noise present 2 – Faint - noise character is barely recognisable 3 – Distinct - noise character is recognisable 4 – Obvious - noise character is easily recognisable 5 – Loud - noise may cause minor annoyance - disruption of tranquillity 6 - Very Loud - moderate annoyance – must talk louder 7 - Extremely Loud - serious annoyance – forced to go inside

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Daily Checks Record - Chemical Scrubber

Week commencing						
Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Time						
Main scrubber (see Notes 1, 2, 3, 4 & 5) - "Yes" answers confirm systems ok & working. "No" answers indicate a problem and action required.						
General inspection of the plant - No leaks, drips or spillages?						
Check - is water up to level in the scrubber reagent tank?						
Hypochlorite IBC level ok?						
Caustic IBC level ok?						
When system is running observe reagent flow through the observation windows in the scrubber side - free flowing ok?						
Control panel (see notes 6 & 7)						
pH reading						
Redox reading						
Air Extraction System (8)						
Measure & or check and record pressure in extraction systems is effective						

Notes:

1. Please refer to the Scrubber operating manual for full details of required checks and corrective actions.
2. All work to be carried out by trained personnel in accordance with instructions.
3. Wear appropriate PPE.
4. Main scrubber checks to be carried out with scrubber operational and pumps running.
5. Replacement chemical IBCs to be reordered when levels are low.
6. The normal operating levels and ranges are: **(pH: approx. 9.0 as an upper limit) & (Redox: approx. 700 - 750 mV)**
7. If either is not correct it should adjust when the dosing pumps are running. Dosing pumps only run when the circulation pumps are running so that the reagents are mixed in the liquor and do not settle in a concentrated layer on the tank floor beneath the probes. If the readings remain outside these settings call an engineer immediately.
8. The normal pressure ranges are: **(add range)**

Comments & any actions taken	
Form completed by	
Signature	
Date	

Appendix 4 - Daily Checks Record Form - Chemical scrubber