

Odour Management Plan for Millhouse Farm

Farm Name: Millhouse Farm

Operator: Mr Ross Howie

Application Reference: 15/02097/FLL

Date: 07.10.16

Introduction

This bespoke Odour Management Plan (OMP) has been prepared to support the planning application & overall Environmental Management System planned for Millhouse Farm. The objective of this OMP is to ensure that the day-to-day activities are carried out in accordance with government guidelines and best practice to minimise the overall environmental impact. There are in excess of 15 sensitive receptors within 100m of the planned site.

Setting

The planned site (consisting of two units for cattle housing along with a feed store and office/workshop building) approximately 1.80 hectares in size, is located at 714218 northing and 302030 easting; it is approximately 500m southwest of the village of Dunning with the nearest sensitive receptor* located approximately 43m north of the site (73m from the nearest unit). Figure 1 shows the location of the farm with a 450m radius. The figure shows the location of the receptors which have been considered in this OMP; these locations have been summarised in Table 1 (below).

Table 1

Receptor	Distance from North Unit (m)	Direction from South Unit (m)	Type of Receptor
Findony	260	313	Workplace/Residential
Longmeadow Cottage	269	314	Residential
The Manse	103	110	Residential
Glenrossie	76	75	Residential
Sawmill Cottage	84	73	Residential

**Sensitive receptors, for the purposes of odour regulation, are typically defined as residential locations as it here that impact limits (based on a percentile of hourly averages over a year) should be applied. This will typically include the gardens of these residences. Other locations where there is potential to cause a loss of amenity may include workplaces (offices in particular), hospitals, recreational areas etc. It is important to recognise that the same quantitative annual exposure criteria should not be applied at these locations as for residential receptors due to the lower frequency of exposure.*

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Figure 1.



The purpose of this odour Management Plan is to:

- Establish the likely source of odours arising from the farm
- Set out procedures at the farm in order to mitigate or minimise the risk of odour
- Formalise an effective method of dealing with any odour complaints quickly and efficiently

As recommended by the Environment Agency H4 Odour Management the following areas have been fully considered, with control measures devised which will prioritise odours at their earliest stages of development.

- Managing Inventory
e.g. feedstock & storage of feed
- Controlling Evaporation
- Containment & Abatement
- Dispersions
- Reducing Impacts

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Potential Odour Sources

In accordance with section 3 of the H4 Odour Management guidance, a risk assessment of odour pollution was performed (H1 risk assessment dated 20th April 2016, submitted in support of planning application 15/02097/FLL).

As a result, the following sources have been identified as contributing to a potential medium risk odour source:

- Odour emissions from feed selection (maximum of 40 tonnes of feed stored on site at any one time)
- Odour emissions from yard areas
- Odour emissions from housing
- Odour emissions from ventilation
- Odour emissions from feed delivery, mixing & storage
- Odour emissions from out loading (bedding / manure).

Pathways & Receptors

The pathway for all of the above is via the atmosphere. With the most sensitive receptors being inhabitants of nearby residential dwellings the wind direction will significantly influence how receptors are affected. The prevailing wind direction is south-westerly and therefore odour emission would be predominantly blown away from nearby neighbours. Wind direction & speed is known at all times as there is a wind sock located approximately 380m from the planned site.

Odour Impact Assessment (Prepared by The Airshed Ltd, v3, as amended, 20.04.16)

The conclusion of the Assessment is that the predicted worst case odour at the nearest sensitive receptor will be 3.0 OU_E/m³ 1 hour 98%ile (with a surface roughness of 0.5m) i.e. of minor adverse significance.

Complaints Procedure

There is a procedure in place to ensure that all required information is documented to allow for an investigation to be carried out along with corrective/preventative action, to reduce the likelihood of a repetition. Clear & transparent communication will be undertaken with the complainant to ensure they are kept abreast of all developments and are aware that prompt action is being taken to address their issues. All complaints will be recorded, numbered for easy referencing and trended, as a minimum annually, to allow issues to be clearly identified. In the event of a complaint the following information will be acquired: time & date of complaint; name & contact details of complainant; date, time & location of odour issue; weather conditions including temperature; wind strength & direction; description & duration of odour; any other relevant information e.g. if there have been other similar complaints. For full details please refer to MH 002 Odour Complaint Report Form.

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Index of Control Measures Found in Table 2

Section of Table 2	Potential Issue
A	Animal Housing & Management
B	Cleaning Out
C	Animal Carcasses
D	Feed Delivery
E	Odour Complaints
F	Dust (especially as an odour vector)
G	Manure Storage
H	Effects of Diet on Odour and Ammonia Emissions (feed selection)
I	Fugitive Emissions / Abnormal Operations
J	Feed Storage
K	Ventilation
L	Cleanliness of Yard Areas
M	Litter Quality
N	Pest Control
O	General Comments

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Table 2

Proposed Control Measures for Minimising Odour Emissions

Section	Potential Issue	Control Measures
A	Animal housing & management	<ul style="list-style-type: none"> The design, including planned layout, of the housing has been done with BAT both for animal welfare and to limit the likelihood of fugitive emissions including the lack of side walls in the cattle housing unit, orientation of unit to prevailing wind, pitch of the roof (+ 35°) with an open roof apex detail.
		<ul style="list-style-type: none"> Pens and stock will be checked daily for cleanliness and the welfare of the animals & will be recorded on MH 007.
		<ul style="list-style-type: none"> All pens, housing and buildings will be cleaned out according to the cleaning schedule MH 005.
		<ul style="list-style-type: none"> Any odorous spillages will be cleaned promptly (within 12 hours) e.g. feed/ingredients & recorded on MH 007.
		<ul style="list-style-type: none"> Stocking density will be maintained at, or below, levels defined by Defra taking into account livestock units per hectare along with breed; as such there will be 120 head of cattle being raised at any one time.
		<ul style="list-style-type: none"> Ventilation will correspond to the animals' requirements. The buildings have been designed to allow constant natural ventilation. Roof pitch, open sides and large ridge vents ensure that there is no risk of stagnant air being trapped.
		<ul style="list-style-type: none"> Build-up of waste feed is prevented by removing it daily from eating areas; this will be disposed of in the midden along with waste manure. Should spoilage & therefore odours develop then the affected quantities will be placed into lidded waste receptacles.
		<ul style="list-style-type: none"> Drinking systems have been designed to prevent wastage & leaks by placing the drinking bowls throughout the cattle lay-down areas and close to the feed barriers. They are designed so that they store only enough water for a single visit from each animal; whilst it is drinking the water gets replenished due to the pressure from the nose of the animal. The water pipes which feed the bowl will be encased behind concrete walls and they will be 'heat-taped' for frost protection to avoid bursts or freezing issues during the winter. All systems are monitored via the <div style="text-align: right;">  </div>
		<p>maintenance schedule MH 004 & ongoing daily visual checks by farm staff.</p> <ul style="list-style-type: none"> Feeding systems are clean slabs of concrete which lie outside the feed barrier – this allows the feeding waggon to automatically drop the allocated ration onto the slab in order that the cattle can eat comfortably; the cattle will eat all that is provided to them before any new feed is laid out. The area is protected from the elements by a canopy to avoid spoilage. The slabs will be cambered inwards to ensure any moisture that is there runs back towards the cattle where it will either be absorbed by the feed or brushed clean at the end of the day. Should there be any waste this will be disposed of in the midden along with waste manure. Should spoilage & therefore odours develop, then the affected quantities will be placed into lidded waste <div style="text-align: center;">  </div> <p>receptacles.</p>
		<ul style="list-style-type: none"> Housing surfaces have been designed, where appropriate, to be made of non-porous, smooth surfaces to allow for satisfactory cleaning.

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Section	Potential Issue	Control Measures
A (cont'd)	Animal Housing & Management (cont'd)	<ul style="list-style-type: none"> Temperature & humidity for animal housing along with feed & straw storage will be monitored & controlled daily by means of onsite equipment located throughout the cattle housing areas. Monitoring will be carried out using Testo 184 H1 data loggers which record for up to 500 days though these will be downloaded to the office computer as a minimum monthly. A visual alarm will be activated on the data logger if pre-set parameters are breached (i.e. if humidity levels goes above 70% or temperature is outwith the expected averages for the region -2 to +15 °C however given there are no side walls to the animal housing unit and the cattle will only be housed in it during the winter months neither humidity nor extremes of temperature are perceived to be an issue). The Testo data loggers will be monitored daily by farm staff.
		<ul style="list-style-type: none"> Bedding material will be stored in the Straw Shed which has been designed to keep bedding clean & dry therefore reducing the likelihood of it spoiling/deteriorating. The straw will be under cover (enclosed on 3 sides in a portal framed shed); contact with rain, should this happen (e.g. at the one open side of the shed), will be minimal due to the open side facing away from the prevailing winds; this will also allow the straw to dry out again once the rain has abated. Temperature & humidity will be monitored & controlled daily by means of onsite equipment located throughout the area. Monitoring will be carried out using Testo 184 H1 data loggers which record for up to 500 days though these will be downloaded to the office computer as a minimum monthly. A visual alarm will be activated on the data logger if pre-set parameters are breached (i.e. if humidity levels fall below 70% or temperature is outwith the expected averages for the region -2 to +15 °C). These will be visually checked daily by farm staff.
B	Cleaning Out	<ul style="list-style-type: none"> Cattle are re-bedded with fresh straw twice per week; cleaning out of animal housing will be performed as required in affected areas e.g. at drinking areas, where there is an increased risk of wet litter & therefore potentially odour, this will be done fortnightly; otherwise, if the litter remains in an acceptable condition it will be changed twice a year as a minimum and deep cleaned annually when the cattle are returned outside after the winter. Yard brushing and good housekeeping will be a major factor in the business for all other areas. Please refer to example MH 005 documents (once the farm is completed our chemical supplier will come on site, carry out a full risk assessment & write up site specific cleaning procedures).
C	Animal Carcasses	<ul style="list-style-type: none"> Fallen stock will be stored appropriately, i.e. where they cannot be accessed by other animals or birds & in an area/suitable container which can be cleaned & disinfected, whilst awaiting uplift by an approved transporter for disposal e.g. by incineration. This will be within a maximum of 24 hours (carcase collection is a 363 day a year service). The enclosed container will be kept in the shed at the south end of the site, which is farthest away from all domestic receptors.
D	Feed Delivery	<ul style="list-style-type: none"> All feed will be stored in covered, protected areas to prevent it from spoiling/deteriorating (see Feed Storage for further details).
		<ul style="list-style-type: none"> No liquid feeds will be used. Fresh water is the only liquid stored on site.
		<ul style="list-style-type: none"> All feed will be distributed via proprietary mixing wagon, after being mixed in a closed building then transported for automatic lay down at the feed area.
		<ul style="list-style-type: none"> Feed storage & distribution equipment will be included in the Maintenance Schedule & therefore monitored frequently & fixed promptly; any spillages will be cleared up promptly (within 12 hours).
E	Odour Complaints	<ul style="list-style-type: none"> Any odour complaints will be dealt with efficiently and promptly by the Owner or Farm Manager who will log the complaint and carry out a full investigation; once the source of the odour issue has been identified, it will be monitored at the site boundary closest to the complainant as part of the investigation. All details of the complaint will be recorded on the Complaints Log in the Farm Office and kept for a minimum of 2 years (copy of Complaints Record attached).
F	Dust (especially as an odour vector)	<ul style="list-style-type: none"> In the cattle housing shed dust build-up will be removed when the facility is cleaned down and the litter replaced; in other locations, such as vehicle access areas & general surrounds to the buildings (which will be concrete) these will be washed down as required to prevent either dust or mud build-up and run off will be run through an interceptor, not the mains drainage system.

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




Section	Potential Issue	Control Measures
G	Manure Storage	<ul style="list-style-type: none"> Cattle are re-bedded with fresh straw twice per week; no manure storage is required as deep litter straw bedded courts will be used. Once the deep litter beds have reached their capacity, the buildings will be mechanically emptied. This will be carried out on days with wind speeds no greater than 10 Knots (mph) & a wind direction of the North or North east, which will ensure that the nearest receptors have no risk of detection – knowledge of wind direction is ensured due to the presence of a wind sock; the deep litter will be removed & loaded straight onto trailers then taken the same day out to the farm fields for storage and further decomposition. Spreading of this litter will take place once or twice a season and will be carried out greater than 400m from the nearest sensitive receptor. The litter will be loaded onto large 15 tonne trailers which have open tops and high sides; they hold approximately 30 m³ of litter and will be taken from the steading to the farm fields generally on frosty cold days to try and avoid damage to the soil. The trailer will drop the litter in remote locations where a 'midden' can be formed – this will be in excess of 400m from the nearest sensitive receptor and subject to wind conditions as outlined above.
H	Effects of Diet on Odour and Ammonia Emissions (<i>feed selection</i>)	<ul style="list-style-type: none"> Feed composition will be closely matched to the requirements of the cattle, especially protein
		<ul style="list-style-type: none"> Cattle will be fed a mixed ration of hay, straw, bruised barley along with concentrated proteins & sugars in a supplied pre-mix. These feeds will be provided through separate feed bins and wet/dry feeding systems; this will take place at 8am & 4pm.
		<ul style="list-style-type: none"> Diets will be continually reviewed with a professional nutritionist to ensure good performance of live-weight gains whilst considering possible effects on associated odours
		<ul style="list-style-type: none"> Records of crude protein levels and diet formulation will be kept in the farm office
I	Fugitive Emissions / Abnormal Operations	<ul style="list-style-type: none"> The aim is to limit the likelihood of these happening due to the control & maintenance schedules put in place to minimise leaks & or spillages etc as is the case at Findony, which benefits from a very high standard of maintenance and levels of hygiene. Leaks will be addressed via the Maintenance Report Record MH 008; spillages will be cleared up promptly (within 12 hours). For details of example cleaning procedures & the maintenance schedule then please refer to MH 005 and MH 004.
		<ul style="list-style-type: none"> In the case where, even with all the controls in place, there are unacceptable odour emissions then the activity causing these emissions will be stopped. In order to alleviate an immediate odour emergency then consideration would be given to retrieving the perfume spray dozer, owned by the Operator & which is routinely stored at Calport Ltd, Perth and transporting it to the farm & using it to mask the smell until such times as the objectionable odour had disappeared. A full investigation with corrective & preventative action measures implemented as required would be carried out as soon as reasonably practicable. Results of the investigation, including relevant contact with neighbours affected by the issue, would be fully documented and a proposed action plan generated where necessary. Other corrective action which may be taken would be to remove the item(s) causing the odour to the other side of the farm, arrange for immediate uplift by licenced contractor, place it into lidded receptacles.
J	Feed Storage	<ul style="list-style-type: none"> The feed storage shed will be completely wind and watertight with insulated doors and cladding on all sides. The walls & floors are designed to be constructed with impervious concrete which will be coated to avoid ingress of organics and moisture. The feed materials will be stored in 'bays' to facilitate good stock rotation. Each bay will be emptied completely (this is forecast as likely to be monthly) before being cleaned and sanitised then replenished with new feed. Feed will be checked for temperature using a temperature probe to ensure that no 'heating' is taking place – this will be done twice daily if there is reason to believe that the moisture content of the hay or straw was greater than 20% when baled. If the temperature is greater than 150 °F then it will be disassembled to allow for greater air circulation & at this time a decision will be taken on whether the feed needs to be replaced altogether as, along with being a fire risk, it may not be acceptable for animal consumption.

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Section	Potential Issue	Control Measures
K	Ventilation	<ul style="list-style-type: none"> Ventilation is natural & is best for the breed of cattle i.e. Highland &/or Luing; it will be provided via open side walls of the housing shed. Natural ventilation is the least troublesome, most efficient and least expensive system for providing an optimum ventilated environment – the aim being to provide a continuous stream of fresh air to every housed animal at all times of the day or night. In the UK, wind speed is above 1m/sec for more than 95% of the time which means that there will be sufficient generating force to provide the necessary air changes within the building, all by natural ventilation. For the remaining time, fresh air will automatically replace foul because there are no walls to contain the heat and therefore cause condensation/evaporation issues. Roof pitch, open sides and large ridge vents ensure that there is no risk of stagnant air being trapped. This constant replacement of animal/housing air with clean, fresh air will prevent both build-up of stale odour and microbe issues caused by dampness with bedding/litter.
L	Cleanliness of Yard Areas	<ul style="list-style-type: none"> Yard surfaces will be properly maintained (see MH 004) Yard surfaces will be cleaned weekly (daily if required); pooling will be prevented through routine maintenance e.g. holes will be filled, uneven surfaces levelled as required. There will be documented cleaning procedures & schedules along with records of completed tasks with sign offs; procedures will be amended as required on an ongoing basis to ensure they are sufficiently robust. For further details please refer to MH 005.
M	Litter Quality	<ul style="list-style-type: none"> Odour from the litter will be minimised by: adequate ventilation & limiting condensation (see 'Ventilation' and 'Animal Housing & Management'); maintaining litter depth at greater than 50cm to absorb moisture loading; correct feeder & drink type & management; limiting stocking density & having healthy livestock.
N	Pest Control	<ul style="list-style-type: none"> A pest control company, Graham's Environmental Services, will be contracted to ensure there are no issues with vermin or other pests. This contract will involve several visits throughout the year (risk assessment dependant) and full records will be maintained of both visits and baits etc used on site.
O	General Comments	<ul style="list-style-type: none"> Neighbours* will be informed (where necessary) prior to any activities which may be considered to be an odour nuisance e.g. when planned activities such as deep litter removal or the deep cleaning of the cattle housing shed. Where possible e.g. in instances of planned farm activities which may cause an increase in odour, neighbours will be alerted in a timely manner (2 - 7 days) by letter - given our inclement weather on occasion activities may have to be revised in order to avoid forecast rain/wind, so whilst we would endeavour to provide as much notice as we can this may not always be possible. In the event that posting letters is not an option e.g. in the event of an unplanned activity such as carcase storage then the neighbours will be alerted either by a phone call or in the case where addresses are known, by email; email or telephone notification is likely to be between 2 & 24 hours' notice. *as detailed in Table 1 on page 1 plus Castlehill Cottage. Effectiveness of all controls will be reviewed as a minimum annually (review will be triggered sooner in the event of complaints of odours or any major process changes which may have a possible odorous impact) Additional support & supplementary testing, as required, will be provided either by the qualified and trained staff of the Technical Department which operate out of Findony (one of the receptors) or by The Airshed Ltd, East Lothian. Supplementary testing will be on an ad hoc, as required basis, should a situation develop that requires testing for example after a justifiable odour complaint or at the reasonable request of the planning authority: testing will be continued until we are able to demonstrate that the issue has been satisfactorily resolved. Testing will be performed by Express Microbiology with whom we have an existing business relationship. The Technical Manager at Findony will provide support in the form of document control, annual reviews (further info & contact details can be found on MH 003 Organisation Chart & Responsibilities).

Example Cleaning Schedule & Procedure for Millhouse Farm

Area	Frequency to be Deep Cleaned	Responsible for Cleaning	Recorded On:
Animal Housing Units	Annually	Farm Manager / Charge Hands / Farm Hands	MH 007

USE PRODUCT COLOUR MINIMUM NAME CODE CONTACT USE RATE TIME					CLEANING TOOLS REQUIRED			
Detergent	Farmdet		20 mins	1% - 1.3%	Tele-handler			
Disinfectant	Turbokill		Air dry	1.6% - 1.8%				
Disinfectant	Perbac Farm		Air dry	0.7% - 1%				

- Remove all drinker & feeder equipment and place in a suitable location
- Lift drinker and feeder lines.
- Remove all litter using Telehandler to trailer located outside the animal housing shed.
- Sweep floor area to remove remaining debris.
- Rinse roofing vents with fresh clean water.
- Drinker and feeder lines should be lowered.
- Apply **Farmdet** detergent foam solution to all surfaces ensuring an even coverage, including the ceiling, walls, drinkers, feeders and floor. The removed hopper bins should be returned to the house and foamed with **Farmdet** detergent solution also.
- Allow a minimum of 20 minutes contact time.
- Pressure rinse all surfaces thoroughly using fresh clean water.
- Visually inspect to ensure all surfaces are clean and free from debris.
- Re-clean if necessary.
- Spray disinfect all surfaces using either **Turbokill** or **Perbac Farm** solution.
- Allow to air dry.

Odour Complaint Report Form for Millhouse Farm, Dunning PH2 0RA

Time & Date of Complaint:	Name, Address & Telephone No. of Complainant:
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Date of odour:		Time of odour:	
Location of odour (if not at address detailed above) <i>Please also show on diagram on page 2:</i>			
Weather conditions (i.e. dry, rain, fog, snow):			
Temperature (° C):			
Wind strength* (none, light, steady, strong, gusty) <i>*refer to Beaufort scale on page 2:</i>			
Wind direction (e.g. from north east):			
Complainant's description of odour :			
<ul style="list-style-type: none"> What does it smell like? 			
<ul style="list-style-type: none"> Intensity** (<i>see page 2</i>) 			
<ul style="list-style-type: none"> Duration (how long you could smell it for) 			
<ul style="list-style-type: none"> Constant or intermittent in this period 			
<ul style="list-style-type: none"> Any other comments relevant to the odour complaint 			
Are there any other complaints relating to the farm or the location? (either previously or relating to the same exposure):			
Any other relevant information including cloud cover & extent*** (<i>see page 2</i>):			
Is the odour likely to have been as a result of farm activities?:			
What was happening on the farm at the time the odour occurred?:			
Actions taken as a result of the odour issue (if any):			
Is there a requirement to amend the Odour Management Plan?		Yes / No. Name of person informed:	
Form completed by:		Date:	Signed:

*Beaufort Scale

Force	Description	Observation	Km / Hr
0	Calm	Smoke rises vertically	0
1	Light air	Direction of wind shown by smoke drift but not wind vane	1-5
2	Light breeze	Wind felt on face; leaves rustle, ordinary vane moves	6-11
3	Gentle breeze	Leaves & small twigs in constant motion	12-19
4	Moderate breeze	Raises dust & loose paper; small branches are moved	20-29
5	Fresh breeze	Small trees in leaf begin to sway; small branches are moved	30-39
6	Strong breeze	Large branches in motion; umbrellas used with difficulty	40-50
7	Near gale	Whole trees in motion; pressure felt when walking against wind	51-61

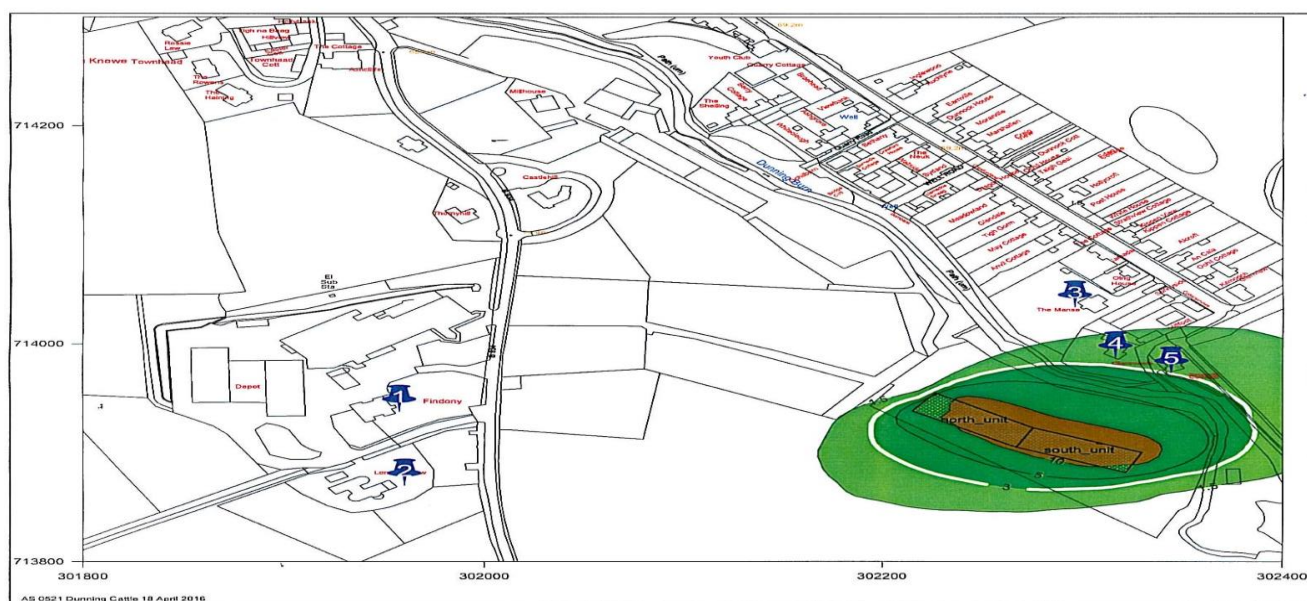
** Intensity Scale

Intensity	Description
1	No detectable odour
2	Faint odour (barely detectable, need to stand still and inhale facing into the wind)
3	Moderate odour (odour easily detected while walking & breathing normally)
4	Strong odour (strong but bearable)
5	Very strong odour (very offensive, possibly causing nausea, particularly if not accustomed to this odour).

***Extent Scale

Extent	Description
1	Local & transient (only detected on the installation or within the installation boundary during brief periods when wind drops or blows)
2	Transient as above but detected outwith the boundary
3	Persistent but fairly localised
4	Persistent & pervasive up to 50m outside the installation boundary
5	Persistent & widespread (odour detected >50m from the boundary).

Please mark below location & extent of odour:



Closing Out Details.

Date Complainant Contacted to Advise of the Outcome of Their Complaint:	
Action Still to be Taken (if any):	
Staff Member Who Contacted Complainant to Update Them:	
Format this Update Took e.g. Phone-Call, Email, Personal Visit:	
Please Record here Result of Contact & Investigation – was the Complainant <i>(circle as appropriate)</i> :	<p>Satisfied</p> <p>Neither satisfied nor dissatisfied</p> <p>Dissatisfied</p>