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ODOUR IMPACT ASSESSMENT

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2017

**GROVE TURKEYS LTD
SMITHBOROUGH
CO. MONAGHAN**

INDUSTRIAL EMISSIONS LICENCE No: P0832-01

Report No:	NA_17_8809	Date:	17 th July 2017
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ODOUR IMPACT ASSESSMENT 2017

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EXECUTIVE SUMMARY

Panther Environmental Solutions Ltd was commissioned to carry out an odour assessment at Grove Turkeys Ltd, Monaghan and at odour monitoring locations around the facility. The survey was carried out on Wednesday 28th June 2017.

The EPA guidance document “*Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)*” was consulted as part of the preparation of this report. Odour monitoring was conducted, as per the “sniff testing” methodology outlined within the EPA Guidance Note (AG5).

Weather conditions during the odour survey were mild (12-14°C), with scattered showers, scattered cloud and light breezes (3-6 knots). Wind direction was somewhat variable during the ten-minute survey periods; however, the dominant wind direction was from the north-east. Due to intermittent rain, the transmission of odours from the site was suppressed.

Potential sources of odours within the site were identified and included the Refrigeration room, Kill area, Burger Plant, Spice Store, Offal room, CAT 3 Skip, Sludge Trailer, Screw Press, Effluent Sumps and Effluent Plant Tanks.

The majority of odour plumes were confined within the site boundary during the odour assessment. Odours from the offal shed were detected at the western-most boundary of the facility. The offal type odours were faint and very intermittent in the variable wind. These odours were no longer detected at the site boundary when the curtain door/screen on the offal shed was closed.

Those odours which were noted at the site boundary were intermittent and faint, and therefore would be below the threshold that would be likely to cause a nuisance, as defined by the EPA AG5 Guidance

As a result of this odour assessment, it is concluded that the odour emissions from the Grove Turkeys facility were not found to be contributing odours which would significantly impact upon amenity at odour sensitive locations.

It is also recommended that an Odour Management Programme, as per Appendix B, be prepared and implemented by the site, and integrated into the existing environmental management system and reviewed annually.

ODOUR IMPACT ASSESSMENT 2017

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1.0 INTRODUCTION & SCOPE OF WORK

Grove Turkeys Ltd operates a turkey processing plant at Smithborough, Co. Monaghan. The installation produces turkey burgers and turkey portions along with whole turkeys. This installation is licensed under the Industrial Emissions Licence system (Reg. No. P0832-01).

The site is licensed by the Environmental Protection Agency (EPA) to carry out the following activities:

7.4.1 “The operation of slaughterhouses with a carcass production capacity greater than 50 tonnes per day”.

The recovery or disposal of waste in a facility within the meaning of the Act of 1996, which facility is connected or associates with another activity specified in this Schedule in respect of which a licence or revised licence under Part IV is in force or in respect of which a licence under the said Part is or will be required.

7.8(a)(i) “The treatment and processing, other than exclusively packaging, of the following raw materials, whether previously processed or unprocessed, intended for the production of food or feed from: only animal raw materials (other than exclusively milk) with a finished product production capacity greater than 75 tonnes per day; For the purposes of clause (a), packaging shall not be included in the final weight of the product. Clause (a) shall not apply where the raw material is milk only”

Condition 5 of the sites IED licence relates to the control of emissions from the activity, which includes the control of odours as follows;

5.2 “No emissions, including odours, from the activities carried on at the site shall result in an impairment of, or an interference with amenities or the environment beyond the installation boundary or any other legitimate uses of the environment beyond the installation boundary.”

Panther Environmental Solutions Ltd was commissioned to carry out an odour assessment within the site and at odour monitoring locations around the site. The survey was carried out on Tuesday 27th June 2017.

The EPA guidance document “*Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)*” was consulted as part of the preparation of this report.

The main aims of this Odour Impact Assessment included:

1. Description of odour and the odour monitoring methodology used.
2. Detailing the locations for odour monitoring stations.
3. Detailing the odour measurements obtained.
4. Discussion, Conclusions & Summary.
5. Odour Management Programme.

2.0 LEGISLATION PERTAINING TO ODOURS IN IRELAND

Appendix II Information on odours pertaining to the facility odour impact assessment.

The Public Health Act of 1878 introduced legislation to control nuisance in Ireland, but its execution only became viable after the implementation of the Planning and Development Act (1963) (Scannell, 1995). Any industry producing a nuisance was controlled under these regulations and subsequent pressure from environmental lobby groups together with the development of scientific measurement techniques made it practical to quantify and control the release of gaseous environmental pollutants from these enterprises.

Odour impact from any facility on the surrounding vicinity may be considered a nuisance. Section 107 of the Public Health Act 1878 states that “Sanitary authorities are bound to inspect their district for nuisances.” Upon the receipt of any information respecting the existence of a statutory nuisance, the sanitary authority is obliged, if satisfied of the existence of the nuisance, to serve an abatement notice on the person by whose act or default the nuisance arises or continues or, if such a person cannot be found, on the owner or occupier of the premises on which the nuisance arises” (Scannell, 1995).

In order to control the possible pollution effects of large developments, relevant legislation was enacted under the Environmental Protection Agency (EPA) Act of 1992. Waste licensing and Integrated Pollution Control Licensing (IPC) (now IED and IPPC) for specified facility types was implemented in 1996 by the EPA and the related guidance note was termed BATNEEC (Best Available Technology Not Entailing Excessive Cost) (i.e. now BAT which complement the BATNEEC Notes) (EPA, 1996). It set out specific conditions for these industries (i.e. Intensive Agricultural Production, Landfills, Waste transfer stations, etc.) to be implemented in order to comply with the environmental requirements of the EPA.

Minimisation of odour emissions and complaints is one of the requirements of the BATNEEC Guidance Note for industries likely to cause odour emissions. For example, a typical IPC license/Waste license condition states “that there shall be no emission to the atmosphere of environmental significance and that all operations on site shall be carried out in a manner such that air emissions and/or odours do not result in significant impairment and/or interference with amenities beyond the site boundary and at odour sensitive locations in the area” (EPA, 1996).

Local authorities and the EPA have responsibility for ensuring enterprises meet their planning and environmental requirements. Where these facilities are found to be causing odour nuisance, local government enforces Section 29 of the 1987 Air Pollution Act and serves the offenders with an abatement notice. If the facility is licensed as an IPPC or Waste enterprise, the EPA can enforce the conditions of the license and either serve the facility with non-compliance for odour detected beyond the site boundary or prosecute the facility and seek a high court injunction to close the facility. Verification for the presence of odour nuisance usually encompasses the licensing officer visiting the facility and detecting the odour beyond the boundary.

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3.0 MONITORING SURVEY

3.1 METHODOLOGY

The 2010 agency guidance document “*Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)*” has been used as the basis for the methodology for this assessment.

Unlike certain airborne pollutants, odour in ambient air cannot be measured by conventional chemical analyses. Odours are in most cases a complex cocktail of various substances that have intricate synergistic effects upon each other. The measurement of individual compounds in ambient air will therefore not provide useful information on the character of an odour within that air.

Such techniques involving the use of instrumentation and/or analytical methods to identify and quantify specific odorous compounds may not provide any real insight into the intensity or offensiveness of odours in human terms. The threshold concentration, for example, of many odorants is often well below their analytical detection limit and hence many odours may be deemed to be causing nuisance, although the compounds responsible for the odours are not being detected by chemical techniques.

Furthermore, interactions between mixtures of odorants may lead to synergistic or antagonistic effects, leading to difficulties in linking analytical and sensory measurements for impact assessment purposes.

Olfactometry using the human sense of odour is the most valid means of measuring odour (Dravniek et al, 1986) and at present is the most commonly used method to measure the concentration of odour.

Representative sampling for olfactometry analysis of air may be suitable for point source emissions or at times ambient assessments on a site (i.e. within a site’s boundary), however sampling air beyond a site boundary for olfactometry purposes is highly unlikely to be representative of odour impact.

Due to the unsuitability of the above measurement approaches, the EPA guidance AG5 procedure describes a “sniff testing” approach to odour assessment. This requires a human assessor to use their own sense of odour to assess odours by means of a sensory technique referred to as “sniff testing”.

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3.2 MEASUREMENT PARAMETERS

The following key describes the numerical values used to describe observation point sensitivity, wind strength, odour persistence, and odour intensity as per the Agency Guidance Document 2010 (AG5).

Note 1: Observation point Sensitivity (assuming detectable, if not then 0)		
0	Remote (no housing, commercial/industrial premises or public area within 500m of observation point)	
1	Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point)	
2	Moderate sensitivity (housing, commercial/industrial premises or public area within 100m of observation point)	
3	High sensitivity (housing, commercial/industrial premises or public area within area of observation point)	
4	Extra sensitive (complaints arising from residents, businesses and users of public areas within area of observation point)	
Note 2: Wind Strength		
0	Calm	Smoke rises vertically
1	Light air	Direction of wind is shown by smoke drift, but not wind-vanes.
2	Light Breeze	Wind felt on face; leaves rustle, ordinary vane moved by wind.
3	Gentle Breeze	Leaves and small twigs in constant motion.
4	Moderate Breeze	Raises dust and loose paper; small branches are moved.
5	Fresh Breeze	Small trees in leaf begin to sway.
6	Strong Breeze	Large branches in motion; umbrellas used with difficulty against the wind.
7	Near Gale	Whole trees in motion; inconvenience felt when walking against wind.
8	Gale	Twigs break off trees; progress generally impeded.
9	Strong Gale	Slight structural damage occurs (chimney pots and slates removed).
Note 4: Odour Persistence		
0	No Odour	
1	Intermittent (detected intermittently during the period of assessment)	
2	Persistent (detected throughout the period of assessment)	
Note 5: Odour Intensity		
0	No detectable odour	
1	Faint Odour (barely detectable, need to stand still and inhale facing the wind)	
2	Moderate Odour (easily detectable while walking and breathing normally, possibly offensive)	
3	Strong Odour (bearable but offensive – might make clothes / hair smell?)	
4	Very Strong Odour (unbearable, difficult to remain in area affected by odour)	

Wind direction is given as “the direction from which wind blows” as per Agency Odour Investigation Field Record Sheets.

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3.3 MONITORING LOCATIONS

Odour source locations were selected during the survey period in order to provide for the drawing of an indicative odour plume for each survey, as per EPA (AG5) guidance. A total of 13 odour monitoring locations and 17 odour source locations within the site were monitored on the day of the assessment.

3.4 MEASUREMENT RESULTS

The detailed results of monitoring are provided within the Odour Investigation Field Record Sheet in Table 3.1 below, which are based upon the 2010 EPA guidance document "*Odour Impact Assessment Guidance for EPA Licenced Facilities (AG5)*".

An odour assessment was carried out at odour source location and monitoring locations on Wednesday 28th June 2017.

Monitoring was conducted by Martin O’Looney and Maria Ward of Panther Environmental Solutions Ltd.

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Table 3.1: Odour Monitoring Results

General	Reference	Site Location		Assessment by		Date of Assessment
	OS_17_8809	Grove Turkeys Ltd, Smithborough, Co. Monaghan		Your Name:	Martin O'Looney	28/06/2017
Pre-Assessment Preparation	Observer is free from medical conditions (cold, sore throat, sinus trouble)?	Observer abstinence (30 min) from smoking, flavoured drinks, scented toiletries and deodorisers?	Reason for odour assessment – Complaint verification; routine; other (specify).	Map – Has a map showing assessment locations been attached?	Weather Conditions Note 3 (record wind info on page 2)	
	YES	YES	Odour Impact Assessment	YES	Dry, overcast, rained during the night, warm, slight breeze	
Notes (the ranking systems in these notes must be used when completing the field observations table overleaf)	Note 1: Observation point Sensitivity (assuming detectable, if not then 0) 0 Remote (no housing, commercial/industrial premises or public area within 500m of observation point) 1 Low sensitivity (no housing, commercial/industrial premises or public area within 100m of observation point) 2 Moderate sensitivity (housing, commercial/industrial premises or public area within 100m of observation point) 3 High sensitivity (housing, commercial/industrial premises or public area within area of observation point) 4 Extra sensitive (complaints arising from residents, businesses and users of public areas within area of observation point)			Note 3: Weather Conditions Precipitation – dry, rained recently, drizzle, raining, foggy Temperature – cold, cool, warm, hot		
	Note 2: Wind Strength 0 Calm Smoke rises vertically 1 Light air Direction of wind shown by smoke drift, but not wind vanes 2 Light Breeze Wind felt on face; leaves rustle, ordinary vane moved by wind 3 Gentle Breeze Leaves and small twigs in constant motion 4 Moderate Breeze Raises dust and loose paper; small branches are moved 5 Fresh Breeze Small trees in leaf begin to sway 6 Strong Breeze Large branches in motion; umbrellas used with difficulty against the wind 7 Near Gale Whole trees in motion; inconvenience felt when walking against wind 8 Gale Twigs break off trees; progress generally impeded 9 Strong Gale Slight structural damage occurs (chimney pots and slates removed)			Note 4: Odour Persistence 0 No Odour 1 Intermittent (detected intermittently during the period of assessment) 2 Persistent (detected throughout the period of assessment)		
Odour Source Investigation (Post Odour Survey)	Start Time	Do any of the odours experienced on-site match in character those recorded during the off-site survey?	List areas inspected		What relevant activities were occurring on-site during the off-site odour assessment?	
	13.00pm	No odours were detected at offsite locations during the monitoring period.	All Areas		Normal Operations: deliveries; truck washing; by-product and waste storage.	
	Finish Time	Potential on-site odour sources identified				
15.10pm	Refrigeration room, Kill area, Offal room, Sludge Trailer, Screw Press, Effluent Sump, Balance Tank, Aeration Tank, Spice Store, CAT 3 Skip, Burger Plant.					

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Parameter	Name of household / commercial site (describe so that location can be easily identified again by a third party)	Sensitivity (1-5) Note 1	Direction from which wind blows	Orientation (Observer Vs. facility)	Strength Note 2	Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note 4	Odour Intensity (0-4) Note 5	Description of any odours, other source(s) of odours etc. (Also note variable weather conditions etc.)
Thresholds that could indicate nuisance	...	≥3	...	Down-Wind Approx. DW or not detectable etc.	...	...	mins	1 or 2	≥2	Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.
Field Observations	OM1	1	N.N.E	c.D.W.	1	13.00	10	1	2	Moderate but intermittent in the wind - musty offal / feathers type odour from the lairage area. Balance tanks also detected.
	OM2	1	N.N.E	D.W.	1	13.10	10	1	1	Intermittent and barely detectable musty offal / feathers type odour from the lairage.
	OM3	0	N.N.E	c.D.W.	1	13.20	10	2	2	Moderate and persistent offal odour beside offal skip and offal shed. Dissipating quickly as distance increases.
	OM4	0	N.N.E	c.D.W	1	13.30	10	1	1	Very intermittent and faint offal type odour. Odours stopped when curtain door closed on offal shed.
	OM5	0	N.N.E	D.W.	2	13.40	10	1	1	Intermittent and faint offal type odour. Odours stopped when curtain door closed on offal shed.
	OM6	0	N.N.E	D.W.	2	13.50	10	1	1	Intermittent and faint musty offal / effluent odour from offal room, balance tanks and slight chemical odour from aeration tank.
	OM7	0	N.N.E	D.W.	2	14.00	10	1	1	Intermittent and faint musty offal / effluent odour from balance tanks.
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc.):										

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Parameter	Name of household / commercial site (describe so that location can be easily identified again by a third party)	Sensitivity (1-5) Note 1	Direction from which wind blows	Orientation (Observer Vs. facility)	Strength Note 2	Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note 4	Odour Intensity (0-4) Note 5	Description of any odours, other source(s) of odours etc. (Also note variable weather conditions etc.)
Thresholds that could indicate nuisance	...	≥3	...	Down-Wind Approx. DW or not detectable etc.	...	...	mins	1 or 2	≥2	Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.
Field Observations	OM8	0	N.N.E	c.D.W.	1	14.10	10	1	2	Intermittent but moderate offal / effluent odour from balance tank.
	OM9	0	N.N.E	D.W.	1	14.20	10	2	2	Persistent and moderate musty offal / effluent odour from balance tanks.
	OM10	0	N.N.E	c.D.W.	1	14.30	10	2	2	Persistent and moderate chemical fertiliser type odour above aeration tank, due to ferric addition. Not unpleasant.
	OM11	0	N.N.E	c.D.W.	2	14.40	10	1	1	Intermittent and Faint spicy cooking type odour.
	OM12	0	N.N.E	D.W.	2	14.50	10	1	1	Intermittent and Faint spicy cooking type odour.
	OM13	0	N.N.E	D.W.	3	15.00	10	1	1	Intermittent and Faint spicy cooking type odour. Very intermittent as wind varied in strength.
Brief details of any meeting with local residents/complaints received during assessment (include names/addresses/telephone numbers etc.):										

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4.0 DISCUSSION

Grove Turkeys Ltd is located on the Mulladuff road, off the N54 approximately 550m from Smithborough. The North and west of the facility contains scattered residential areas with mostly agricultural land with larger residential quantity to the south-east of the facility.

The topography of the area is dominated by drumlins arrayed in an approximately north-east to south-west direction, with ground levels varying from 60m OD to 90m OD. Grove Turkeys Ltd is located adjacent to the Magherarney Lough, in a depression between two drumlins.

The closest odour sensitive residential location to the facility is c. 85 metres to the west of the facility boundary on the local road. Smithborough is located approximately 300m south-east of the facility in an adjacent valley between two drumlins.

Air quality in this region is generally good and reflective of the sub-urban/rural climate in Ireland with odour sources of a minor nature.

As can be seen in the Monaghan Wind Rose Diagram, as per Appendix C, the prevailing winds in this area range from the west to south which have a total percentage occurrence frequency of 49.5% (hourly data). Winds ranging from the south-east have a total percentage occurrence frequency of 4.4%.

Weather conditions during the odour survey were mild (12-14°C), with scattered showers, scattered cloud and light breezes (3-6 knots). Wind direction was somewhat variable during the ten-minute survey periods; however, the dominant wind direction was from the north-east. Due to intermittent rain, the transmission of odours from the site was suppressed.

Potential sources of odours within the site were identified and included the Refrigeration room, Kill area, Burger Plant, Spice Store, Offal room, CAT 3 Skip, Sludge Trailer, Screw Press, Effluent Sumps and Effluent Plant Tanks.

As can be seen in the indicative odour plumes provided in appendix A, the majority of odour plumes were confined within the site boundary during the odour assessment.

Odours from the offal shed were detected at the westernmost boundary of the facility. The offal type odours were faint and very intermittent in the variable wind. These odours were no longer detected at the site boundary when the curtain door/screen on the offal shed was closed.

Odours from the facility were not detected at odour sensitive locations as the wind direction carried odours to the south-west of the facility, in the direction of the Magherarney Lake/River. Those odours which were noted at the site boundary were intermittent and faint, and therefore would be below the threshold that would be likely to cause a nuisance, as defined by the EPA AG5 Guidance

As a result of this odour assessment, it is concluded that the odour emissions from the Grove Turkeys facility were not found to be contributing odours which would significantly impact upon amenity at odour sensitive locations.

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5.0 CONCLUSIONS

- The monitored odour emissions from the Grove Turkeys facility were not found to be contributing odour levels which would significantly impact upon amenity at odour sensitive locations.
- Following on from this odour assessment, review of site documentation and discussions with staff, it is considered that the following aspects are key to the on-going management of odours from the site:
 - Offal Room and Skip
 - Effluent Plant Tanks
- These aspects have been used in the preparation of an Odour Management Programme, as per Appendix B of this document.

6.0 RECOMENDATIONS

From the results of this odour assessment report, the following is recommended;

- Carry out weekly odour patrol checks and keep a log of all findings, including weather conditions and wind direction.

WWTP

- Ensure the sludge trailer is covered at all times and removed off-site weekly.
- Calibrate dissolved oxygen probes in the aeration tank on an annual basis.
- Maintain dissolved oxygen levels in aeration tanks at >1 mg/l during the aeration process.

Blood and Offal Building

- Maintain a “closed door” policy at the offal building as practical i.e. curtain door.
- Remove offal and CAT3 skips daily

These recommendations have been included in the draft Odour Management Plan provided in Appendix B.

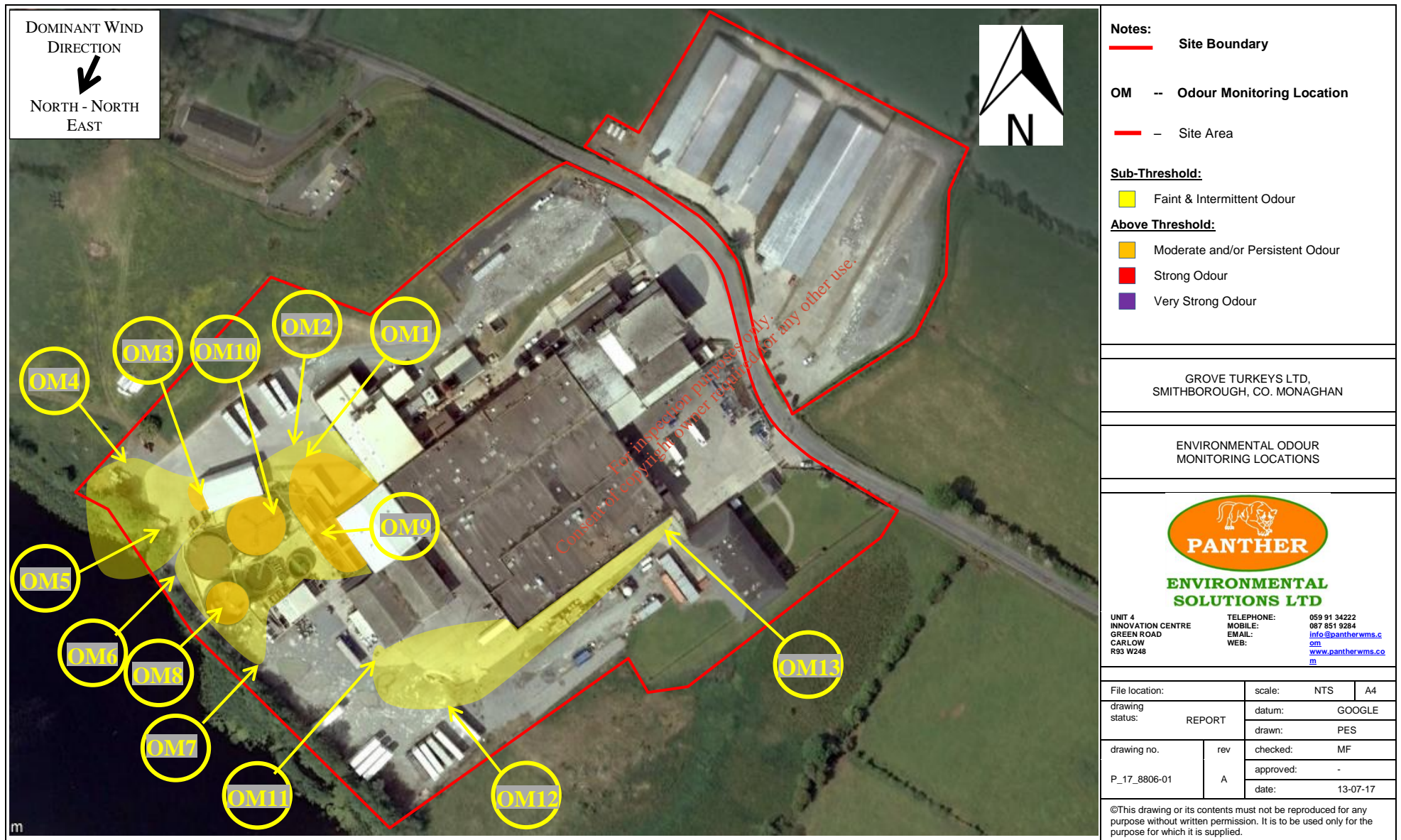
APPENDIX A
- SITE MAP WITH MONITORING POINTS -

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Figure A.1: Odour Survey Map



APPENDIX B
- ODOUR MANAGEMENT PROGRAMME -

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B.1 ODOUR MANAGEMENT

B.1.1 GENERAL PRINCIPALS OF ODOUR MANAGEMENT IN THE FOOD PROCESSING SECTOR

A statutory odour nuisance is something which is so offensive and prolonged that it significantly interferes with the enjoyment and use of the affected property.

Many things can affect whether an odour would be considered a statutory nuisance: time of day the odour occurs; how long it is a problem for; the type of smell and its effects; the character of the area.

For example, in the countryside it is reasonable to expect odour from farming activities.

Due to the complex nature of odour perception by the human olfactory system, levels of sensitivity to odour within a population will vary. Consequently, the perceived offensiveness of an odour will vary from person to person. In addition, the context in which the odour occurs will affect the nuisance value of an odour.

As odour accounts for a significant proportion of the complaints that local councils and the Environment Agency receive about environmental pollution, it is important that management are cognisant of odour issues in design and management of a facility.

B.1.2 BACKGROUND TO TURKEY PROCESSING AND WWTP ODOURS

Documented Odour Management

A written odour policy/ management programme can be helpful in maintaining standards and demonstrating a commitment to good odour management. Such a programme can also be an important tool in staff training.

All staff should be trained on the content of the programme to ensure a commitment to good odour management. A record may be kept of the date and name of person trained and made available for inspection by the licensing authority or environmental health responsible authority.

Methods for monitoring odour should be included in an odour policy i.e. perimeter checks and sniff testing by the staff.

A log book may be kept of any odour monitoring carried out, the findings and any remedial action taken. The log should indicate whether it was routine odour monitoring or the result of a complaint.

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Odours from Turkey processing arise mainly from the following sources:

- Live Turkey intake area.
- Scalding and plucking process.
- Offal processing, sorting and storage.
- Blood Storage.
- Coarse screening for feathers etc.
- Storage of blood and offal for transport off-site.
- Effluent Plant treatment processes.
- Cooking processes.
- Transport of offal/blood and effluent sludge for transport off-site.

In certain facilities drainage and bad housekeeping can be a significant source of odours. Spillages and drain liquid from offal storage containers and offal handling can contaminate significant surface areas. The build-up of organic matter on rough concrete surfaces can lead to significant emissions especially during warmer summer months. Great care should be taken to ensure the elimination of unscheduled emissions such as these through good housekeeping and management.

Odours from WWTP operations arise mainly from the volatilisation of odorous gases from:

- Aeration tanks where insufficient oxygen is being provided.
- The surfaces of non-quietness processes, including overflow weirs, returned pumped centrate/liquor above the working height of the tank/channel etc.
- Anaerobic decay of settles/floating organic debris upon quietness surfaces including organic matter attached to grit, rags and feathers, organic matter carryover to secondary tanks, etc.
- Screens operation and build-up of organic debris within screens area.
- DAF operation and fat storage/handling.
- Sludge handling operations including dewatering, thickening, storage and transport of raw/processed sludge's offsite and desludging.
- Turbulent processes within the inlet works, storage of screens (i.e. grit and feathers removal) and DAF process and fat/skim storage.
- Inefficient odour control/abatement equipment operation and design including loose fittings covers, inefficient extraction and odour control unit failure.

Fugitive emissions are generally associated with:

- Urine and manure (ammonia) odour from the abattoir lairage areas.
- Blood storage tanks.
- Yard areas used to store skips for gut contents, inedible offal, SRM waste and other animal by-products.
- Effluent treatment plant.
- Sludge and bio-solids removed from the effluent treatment plant.

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B1.2 COMPLAINTS PROCEDURE

A procedure should be established for verifying and responding to complaints about odours. The existence of a complaints procedure can help to:

- Improve relationships with neighbours;
- Identify sources of odours and prevent future problems.

Prompt action in response to complaints, including a discussion with an explanation to the complainant, is very important and may stop issues escalating and further complaints being made. It should be remembered that when people are disturbed, for example, by something that they believe to be avoidable (whether it is or not) they may be short-tempered. A quick and sympathetic response to complaints can often defuse a situation to the benefit of the complainant and the operator.

A contact telephone number should be made available to local residents which they can use to report odour disturbances to a 'responsible person' at the premises as and when they occur.

A suggested content for recording complaint details is given below (See Table B.3 for recommended format).

The complaints record form should be tailored to the specific business, location and neighbours, but most will have the following elements:

- 1) The form should be completed, signed and dated by a 'responsible person'.
- 2) A name, address and telephone number should be given by the caller.
- 3) Each complaint should be given a reference number.
- 4) The caller should be asked to give details of:
 - The time the odour found;
 - How long it lasted;
 - How often it occurs;
 - The nature of the odour – what sort of odour was it? What did it smell like?
- 5) The 'responsible person' should then, if possible, make a note of:
 - The weather conditions at the time the odour was detected – usually wind direction and a note of the conditions (light wind, no wind, strong breeze, or use the Beaufort scale); and
 - The activity on the premises at the time the odour was detected, particularly anything unusual.

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Table B.1: Beaufort Scale

Force	Description/	Observation	Wind-speed (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 moved by wind	6-11
3	Gentle Breeze	Leaves and small twigs in constant motion	12-19
4	Moderate Breeze	Raises dust and 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

6) The reason for the complaint should be investigated and a note of the findings added to a log – this need not be complicated but should be sufficient to identify any activity that may have led to the complaint.

7) The caller should then be contacted with an explanation. It often helps if you can show that you have taken some kind of action to minimize the odour in future.

Following complaints, it may be appropriate to review the Odour Management Plan.

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B.2 ODOUR MANAGEMENT PROGRAMME

The Odour Management Programme (OMP) is a core document that is intended to detail operational and control measures appropriate to the management and control of odour at the site. The format of the OMP should provide sufficient detail to allow operators and maintenance staff to clearly understand the operational procedures for both normal and abnormal conditions.

An Odour Management Programme (OMP) should be prepared for all processes. The OMP should also include sufficient feedback data to allow site management (and local authority inspectors) to audit site operations. An example of some of the issues to be considered is summarised as follows. More detailed guidance is provided with this document.

- A summary of the site, odour sources and the location of receptors.
- Details of the site management responsibilities and procedures for reporting faults, identifying maintenance needs and complaints procedure.
- Odour critical plant operation and management procedures (e.g. correct use of plant, process, materials, checks on plant performance, maintenance and inspection).
- Operative training.
- Housekeeping.
- Maintenance and inspection of plant (both routine and emergency response).
- Spillage management procedures.
- Record keeping – format, responsibility for completion and location of records.
- Emergency breakdown and incident response planning including responsibilities and mechanisms for liaison with the local authority.

The Odour Management Programme is a living document and should be reviewed annually.

It should form the basis of a documented Environmental and Odour Management system for the operating site. The Odour Management System documentation should define the roles of the key staff and management and set out templates in relation to the operating of the facility and reporting procedures to be employed.

Requirements for the Odour Management Programme should be implemented throughout the site with a branched management system implemented in order to share responsibility around the site. The Environmental Manager should ensure all works are performed in accordance with the OMP.

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Table B.2. Odour Management Action Plan (Draft)

	AREA SOURCE	ODOUR SOURCE	ACTION PLAN	IMPLEMENTATION / COMPLETION DATE
1.a			All relevant staff to be trained on OMP measures.	On-going
1.b			Review and update OMP annually, or following any relevant changes at the site. Key Performance Indicators (KPI's): - Number of Complaints, - Number of abnormal odour events (odour patrol checks), - Results/recommendations of any surveys	On-going
1.c			Provide contact details of relevant members of staff for the receipt of environmental complaints to neighbours.	Immediate
1.d			Inform neighbours or local council of any abnormal planned operations/projects which may lead to significantly increased odours. Provide detail of timing and likely duration to minimise odour annoyance.	As appropriate
1.e			Carry out weekly odour patrol boundary checks and keep log of all findings, including weather conditions and wind direction. EPA “ <i>Odour Impact Assessment Guidance for EPA Licensed Sites (AG5)</i> ”	Weekly

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	AREA SOURCE	ODOUR SOURCE	ACTION PLAN	IMPLEMENTATION / COMPLETION DATE
2.	Site-wide	Fouling of yards	<p>Ensure external areas are kept clear of pre-stabilised biosolids, including surfaces and yards.</p> <p>Clean up any spillages as they occur.</p> <p>Remove as much spilled material as is possible through dry methods (shovel/sweeping) prior to washing down the area.</p> <p>Collected material should be stored in a sealed container within the main building.</p> <p>Spills of stabilised biosolids should be handled as above, however, these can be stored with stabilised sludge stockpiles.</p>	On-going
3.	Main Facility	Open Doors	<p>Maintain a closed-door policy in all areas containing potentially odorous materials, particularly during warm weather.</p>	On-going
4.	Spice Store	Spices Storage	<p>Clean any spillages immediately.</p>	As necessary
5.	Refrigeration	Ammonia Leaks	<p>Check for ammonia leaks as part of environmental checklist.</p> <p>Carry out preventative maintenance on ammonia system and leak detection system as recommended by suppliers.</p>	<p>Weekly</p> <p>As required</p>

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	AREA SOURCE	ODOUR SOURCE	ACTION PLAN	IMPLEMENTATION / COMPLETION DATE
6.	Lairage	Feather / Offal	Ensure equipment and conveyors are maintained to ensure high efficiency. Clean equipment and conveyors regularly to prevent solids build up.	On-going As necessary
7.	Organics / organic waste containers	Offal / CAT3 Waste Storage	Putrescible materials to be collected and removed offsite every two days, particularly during warm weather conditions. Ensure all putrescible waste containers can be sealed / covered while not in use. Inform waste collectors of requirement for sealed / covered containers. Inspect all containers onsite as part of weekly environmental odour patrol check. Clean containers if necessary.	Two days On-going On-going Weekly As required
8.	WWTP	Plant and equipment	Maintain equipment, including preventative maintenance schedule, to ensure high efficiency.	On-going
9.	WWTP	Plant and equipment	Ensure that back-up critical equipment is available onsite (e.g. back-up aerators etc.)	On-going
10.	WWTP	Drains	Ensure all drains are flushed regularly and prevent persistent build-up of organic matter in drains by design.	On-going

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	AREA SOURCE	ODOUR SOURCE	ACTION PLAN	IMPLEMENTATION / COMPLETION DATE
11.	WWTP	Effluent Sumps	Minimise residence time for effluent in the raw sumps as practical	On-going
12.	WWTP	Inlet Screens	Power wash inlet screens and area with hot water to prevent solids build-up monthly.	Monthly
13.	WWTP	DAF Unit	Empty and clean DAF unit with hot water monthly. Monitor chemical addition to ensure on-going treatment efficiency.	Monthly On-going
14.	WWTP	Balancing Tank	Maintain at 50% levels. Maintain dissolved oxygen levels at > 1 mg/l. Calibrate DO probe annually Operator trained to check DO daily.	On-going. On-going Annually Daily
15.	WWTP	Aeration Tank	Maintain dissolved oxygen levels at > 1 mg/l. Calibrate DO probe annually Operator trained to check DO daily.	On-going Annually Daily

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	AREA SOURCE	ODOUR SOURCE	ACTION PLAN	IMPLEMENTATION / COMPLETION DATE
16.	WWTP	Sludge Holding Tank	Remove sludge from tank at minimum every two days (residence time). While sludge is stored in the tank, operate the mixer continuously. Avoid exposure of stored sludge to air during removal.	Every two days As required On-going
17.	Sludge Trailer	Sludge in transport	Ensure all trailers and skips used to transport sludges off-site are sealed and adequately covered to prevent any potential odours in transit.	On-going

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Table B.3: Register of Potential Odour Sources

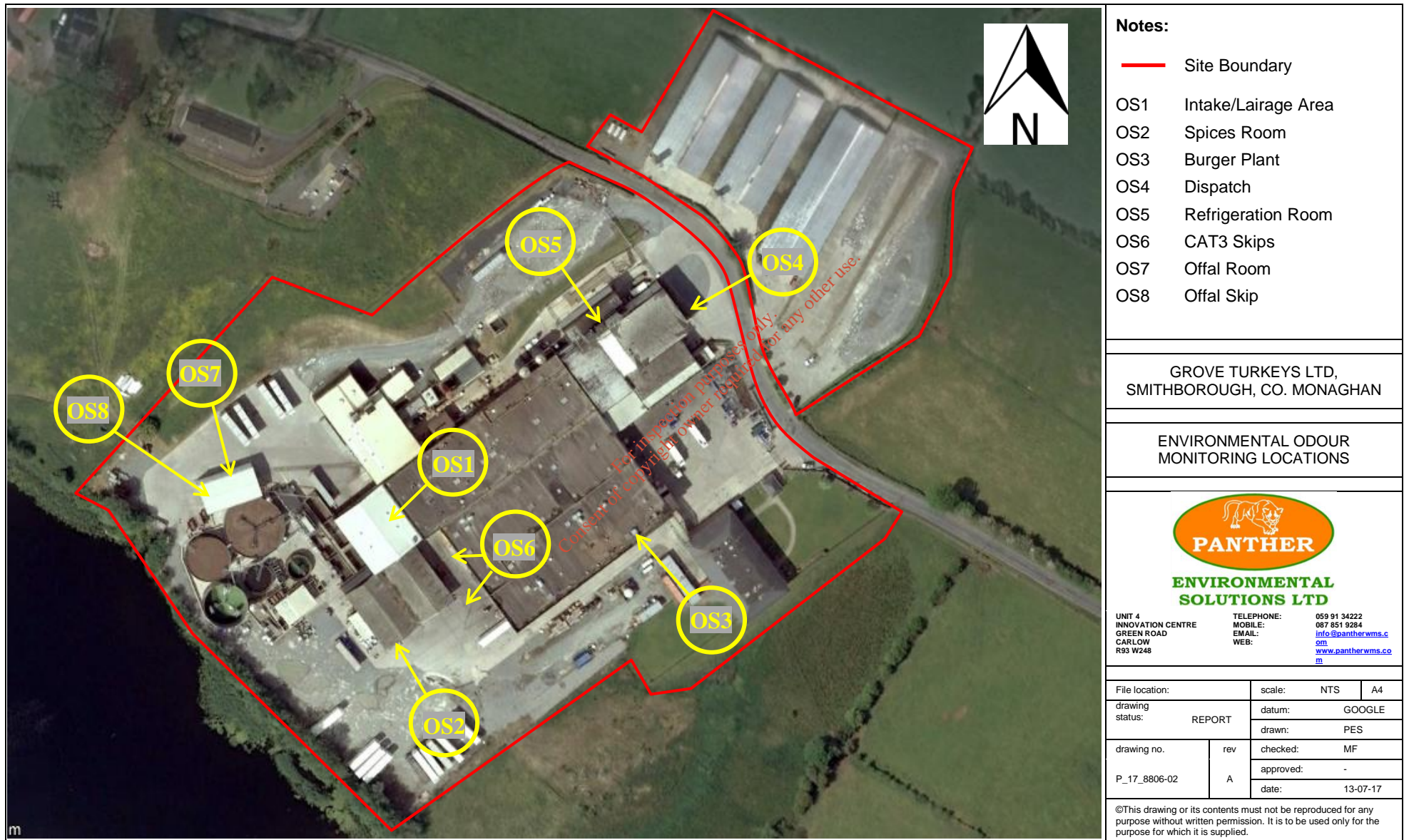
Parameter	Observer Location		Time		Odour Rating		Odour Description Comments
	Name of household / commercial site (describe so that location can be easily identified again by a third party)		Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note ⁴	Odour Intensity (0-4) Note ⁵	
Thresholds that could indicate nuisance	...		hh:mm	mins	1 or 2	≥2	Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.
Field Observations	OS1	Intake/Lairage Area	13.00	5	2	3	Strong and persistent feather / offal type odour within lairage building.
	OS2	Spice Store	14.35	5	2	1	Persistent but faint spices odour within room.
	OS3	Burger Plant	14.55	5	1	1	Intermittent cooking / spicy odour from production area chimney.
	OS4	Dispatch	12:50	5	0	0	No odours, risk of odours from spills.
	OS5	Refrigeration Room	12.55	5	2	2	Ammonia odour – only within building.
	OS6	Cat 3 Skip	14.45	5	0	0	No odour during assessment.
	OS7	Offal Room	13.20	5	2	3	Strong persistent offal/blood odour within building.
	OS8	Offal Skip	13.25	5	2	1	Faint but persistent offal type odour.
	OS9	Effluent Sumps	14.05	5	0	0	No odour during assessment.

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Parameter	Observer Location		Time		Odour Rating		Odour Description Comments
	Name of household / commercial site (describe so that location can be easily identified again by a third party)		Start Time (24hr clock)	Period of observation	Odour Persistence (0-2) Note ⁴	Odour Intensity (0-4) Note ⁵	
Thresholds that could indicate nuisance	...		hh:mm	mins	1 or 2	≥2	Guide- A location where the score meets or exceeds all the threshold values may be deemed subject to nuisance/significant impairment, particularly if the observations are supported by public complaints on impact, frequency and duration of odours.
Field Observations	OS10	Balance Tanks	14.16	5	2	3	Persistent, moderate to strong musty offal / effluent odour.
	OS11	DAF Tank	14.19	5	0	0	No odour during assessment, dominated by balance tanks.
	OS12	Balance Tank	14:10	5	0	2	Persistent, moderate to strong musty offal / effluent odour.
	OS13	Anoxic Tank	14:13	5	0	0	No odour during assessment.
	OS14	Aeration Tank	14.22	5	2	1	Chemical fertiliser type odour due to ferric addition. Not unpleasant.
	OS15	Sludge Tank	14:25	5	0	0	No odour during assessment.
	OS16	Screw Press Shed	14:28	5	0	0	No odour during assessment.
	OS17	Sludge Trailer	14.31	5	0	0	No odour during assessment.

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Figure B.1: Odour Source Location Map for Grove Turkeys Ltd, Smithborough, Co. Monaghan



Notes:

— Site Boundary

- OS1 Intake/Lairage Area
- OS2 Spices Room
- OS3 Burger Plant
- OS4 Dispatch
- OS5 Refrigeration Room
- OS6 CAT3 Skips
- OS7 Offal Room
- OS8 Offal Skip

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ENVIRONMENTAL ODOUR
MONITORING LOCATIONS



**ENVIRONMENTAL
SOLUTIONS LTD**

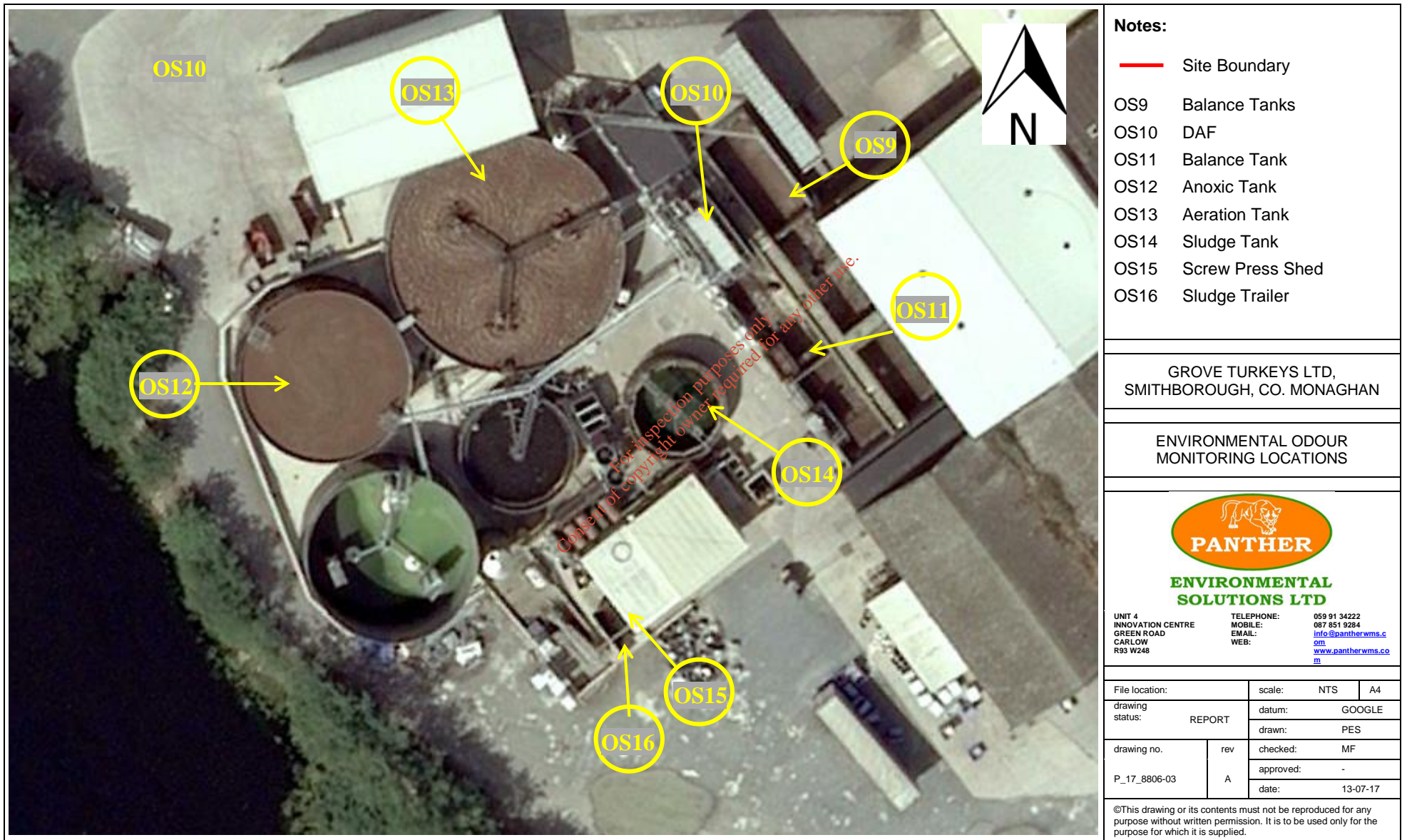
UNIT 4 INNOVATION CENTRE GREEN ROAD CARLOW R93 W248	TELEPHONE: MOBILE: EMAIL: WEB:	059 91 34222 087 851 9284 info@pantherwms.com www.pantherwms.com
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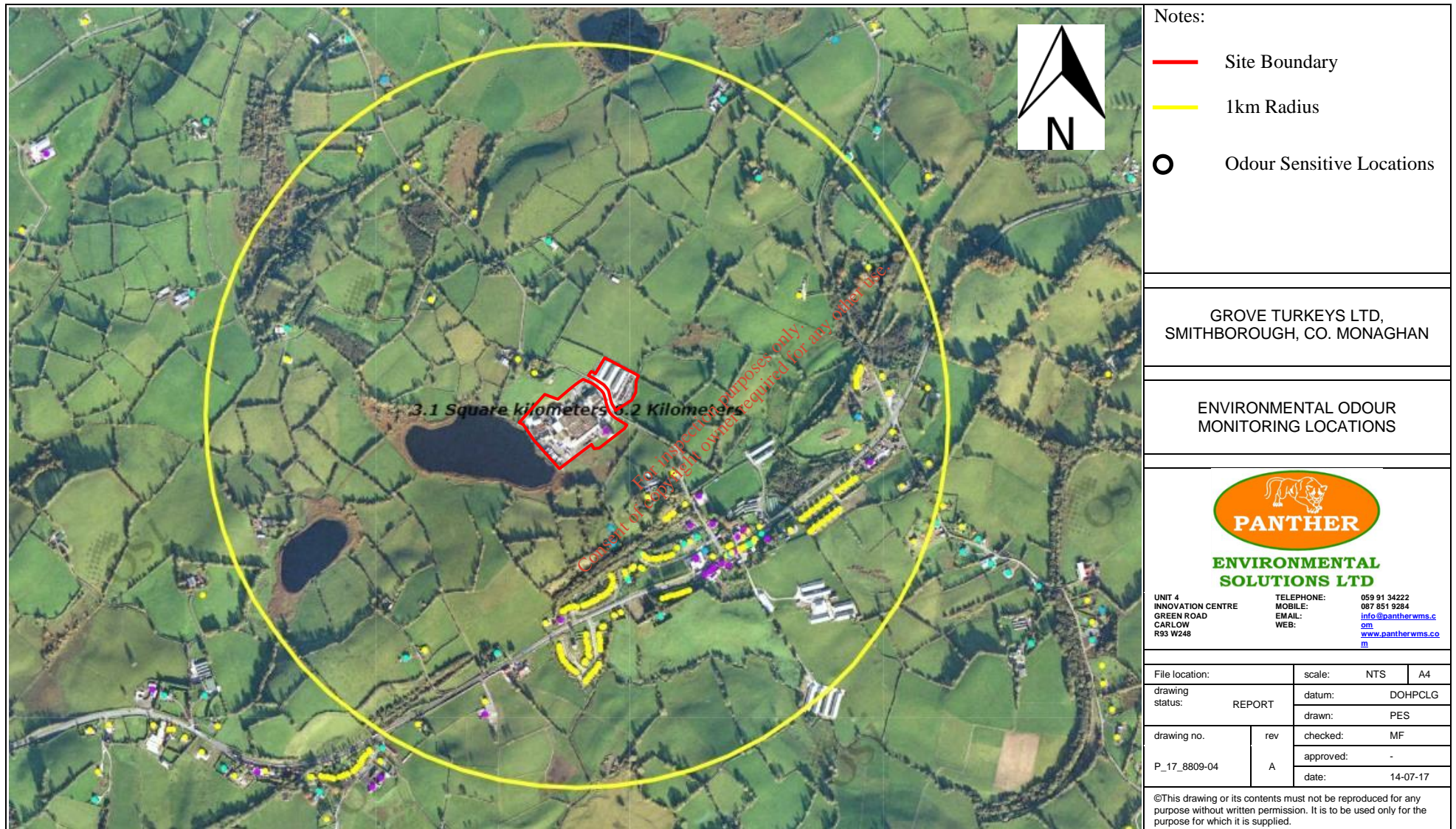
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Figure B.2: Odour Source Location Map for Grove Turkeys Ltd, Smithborough, Co. Monaghan



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Figure B.2: Odour Sensitive Receptor Map for Grove Turkeys Ltd, Smithborough, Co. Monaghan



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Table B4 – Odour Complaints Form

ODOUR COMPLAINTS FORM	
Complaint Reference No:	
RESPONSIBLE PERSON	
Name:	Position:
Signed:	Date:
COMPLAINANT	
Name:	
Address:	
Contact Number:	
DETAILS OF ODOUR	
At what time was the odour detected?	
How long did the odour last?	
How often does the odour occur?	
What was the nature of the odour?	
WEATHER CONDITIONS	
(Wind – Beaufort Scale, Precipitation – Fog/Drizzle/Showers/Heavy, etc.)	
COMPLAINT INVESTIGATION	
Odours detectable from Premises?	
Do any correspond to odour described by complainant?	
Mitigation actions planned/taken?	
RESULT OF FOLLOW-UP CORRESPONDENCE WITH COMPLAINANT	

APPENDIX C
- MONAGHAN WIND ROSE DIAGRAM -

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The wind-rose diagram is divided into 16 cardinal directions; north (N), NNE, etc.

The length of each sector indicates the wind direction frequency for each cardinal direction.

The colour coded lines subdivide the overall frequency of wind into the proportions at a given wind speed (in km/h) in each cardinal direction. Each wind-speed frequency is additive upon the previous wind-speed frequency percentage.

