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Odour Management Plan

Proposed AD Plant, Land off Weighbridge Road, Deeside

Presented to: Deloitte LPP

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Report Details

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About Us

Lucion Delta Simons is part of Lucion, a technology-led environmental services company dedicated to protecting people and the planet. With expert advice, guidance, and a comprehensive array of services, we support you at every stage of your asset lifecycle, helping you mitigate regulatory impact, improve business practices, and ensure safety and environmental protection.

As part of Lucion's group of companies, we can support you with a broader range of holistic services. Through our pool of multidisciplinary experts, we help you navigate complex regulatory frameworks, saving you time and money.

Being part of your sustainable supply chain is a key goal for our team. As a member of the UN Global Compact and a commitment to sustainability, we are the partner of choice for businesses looking to make informed decisions and mitigate risks across your portfolio.

Lucion is carbon neutral. We annually measure and report our Scope 1, Scope 2 and specified Scope 3 carbon emissions, and offset 100% of residual emissions through verified carbon credits, supporting carbon reduction and prevention projects overseas. We are taking steps to reduce our carbon emissions and have committed to setting and achieving near-term and Net Zero Science-Based carbon reduction targets in line with the goals of the Paris Agreement to limit global warming to 1.5°C above pre-industrial levels. Lucion is a signatory of Pledge to Net Zero and Members of the United Nations Global Compact.

If you would like support in understanding your carbon emissions, or those of your supply chain, please get in touch with your Lucion contact above who will be happy to help.

Executive Summary

Site and Report Context	Lucion Delta-Simons Ltd ("Lucion") was instructed by Deloitte LPP (the 'Client') to undertake an Odour Management Plan in support of a planning application for an anaerobic digestion plant (the 'Proposed Development') at land off Weighbridge Road, Deeside (the 'Site'). This report presents the odour sources during the operational phase of the Proposed Development and the measures that should be employed to minimise any odour impacts on the surrounding area.
This is intended as a summary only. Further detail and limitations of the assessment is provided within the main body of the Report.	

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1.0 Introduction

1.1 Appointment

1.1.1 Lucion Delta-Simons Ltd ("Lucion") was instructed by Deloitte LPP (The 'Client') to undertake a review and update of the Odour Management Plan (OMP) to supplement the planning application for a Refuse Derived Fuel (RDF) production, anaerobic digestion power plant facility (the 'Proposed Development') at the Land east of Weighbridge Road, Deeside Industrial Park, Flintshire (the 'Site').

1.1.2 To support a Section 73 application which considered a proposed layout change to the original permission, and in aid of discharging Condition 24 of the extant application FUL/000689/24 for the Anaerobic Digester facility, this OMP adapts the previously approved plan to reflect the Site changes and discharge Planning Condition 24 which states the following:

"Prior to the commencement of works above the ground floor slab level, an odour abatement scheme shall be submitted to and approved in writing by the Local Planning Authority. The scheme shall be implemented as approved and the site shall not receive waste unless and until fitted with the approved odour abatement measures, unless otherwise agreed in writing by the Local Planning Authority.

Reason: In the interests of protecting the amenity of the area, in accordance with policy EN18 of the Flintshire Local Development Plan."

1.1.3 Reference should be made to **Figure 1** for a map of the Site and surrounding area.

1.2 Site Location and Context

1.2.1 The Site is located on Land east of Weighbridge Road, Deeside Industrial Park, Flintshire.

1.2.2 Flintshire County Council have determined a planning application for the construction and operation of a waste management facility for RDF production, the management of municipal, commercial and industrial waste, comprising a waste reception hall, sorting hall, refused derived fuel hall, control room, electrical room, workers facilities and anaerobic digestion facility and associated infrastructure. It is understood the facility will accept waste of which part will be digested to produce electricity for export. The AD process will use water and mechanical equipment to separate the organic fraction, produce green energy and recycle up to 70-80% of the waste. The materials recycling facility will be processing municipal solid waste, commercial and industrial waste.

1.2.3 Following receipt of planning permission for an anaerobic digestion (AD) and combined power plant off Weighbridge Road on Deeside, there is the requirement to submit an Odour Management Plan (OMP) as part of the discharge of Planning Condition 24.

1.2.4 The application Site comprises of an area of vacant brownfield land and grassland. The former use of the Site was Shotton Power Station, a 210-megawatt gas-fire combined heat and power generating station. The station ceased generating in June 2012 and was subsequently closed. Following a restoration scheme, the majority of the site comprises of remediated previously developed land and undeveloped grassland.

1.2.5 The Site is currently a disused industrial site. The eastern boundary of the Site is defined by a railway line which runs from north to south along the boundary, beyond which is more industrial development. The western boundary of the wider site is defined by Weighbridge Road and industrial buildings and green fields beyond which forms part of the DEE Estuary RAMSAR site. The northern boundary of the application Site has no defining boundary features a parcel of land exists which is an Energy Recovery Facility. To the south is the development of the Flintshire Bridge Converter Station, this is on land formerly part of Shotton Steelworks.

1.2.6 The nearest residential properties to the Site are located within Connah's Quay, approximately 1.8km to the southwest of the site. Several industrial buildings also lie within this vicinity and the River Dee lies 1.5km to the southwest of the Site.

1.3 OMP Structure

1.3.1 The elements to be included within an OMP are detailed in Defra and Environment Agency (EA) guidance. Whilst these guidance notes focus on odour for Environmental Permitting, they provide a robust structure upon which this OMP is based. The EA H4 guidance states: 'all OMPs will need to consider sources, releases and impacts, and use these to identify cost effective opportunities for odour management. For a particular activity, some methods may be more effective/applicable than others.'

1.3.2 The following sections of the OMP detail:

- Odour Sources, Pathways and Receptors;
  - Proposed Development Overview;
  - Odour Sources and potential Odour Pathways; and
  - Odour Receptors.
- Odour Management and Control Measures;
  - Abnormal and Emergency Events; and
  - Odour Management Review.

1.3.3 The standard limitations associated with this assessment are presented in **Appendix A**.

1.3.4 A glossary of terms used in this report is provided in **Appendix B**.

2.0 Process Overview

2.1 Proposed Development Overview

2.1.1 The Site is located at the land east of Weighbridge Road, Deeside Industrial Park. The land is currently brownfield with a former use of Shotton Power Station combined heat and power station which completed operations in 2012.

2.1.2 The Site is bound by industrial land to the north, Weighbridge Road to the west, Flintshire Bridge HVDC Converter Station to the south and the railway line to the east. The Site and surrounding area are shown in **Figure 1** .

2.1.3 The closest high sensitivity receptors (residential) are the properties at Connah's Quay, located approximately 1.8km to the south of the development Site.

2.2 Process Overview

2.2.1 The Proposed Development aims to process specified organic wastes streams through an anaerobic digestion process which will also provide biomethane for injection into the natural gas grid and/or for direct usage at the facility. The Proposed Development comprises the following components:

- Reception building (equipped with odour control filters);
- Technical Building which contains the Pre-Storage Tanks (2), Anaerobic Digestion tanks (3), digest storage tanks (2), post fermenter tank (1);
- Biogas holder;
- CHP, Steam Generator and gas flare;
- Car parking area, bin storage, maintenance depot/fuel and oil storage; and
- Office.

2.2.2 The AD has the following process:

- Reception and feed systems;
- Fermentation process;
- Substrate distribution system;
- Post-fermentation process;
- Pasteurisation of by-products;
- Digestate and residue management, including
  - Storage
  - Recirculation;
- Heating system;
- Ancillaries for the operation and safety of the process, including
  - Process management systems
  - Safety systems;
- Gas Conditioning/upgrading; and
- Control Systems

2.2.3 The following describes the detailed process flow:

Reception and Feed system:

2.2.4 On arrival the waste will be put through the processing unit for mechanical separation and preparation. This includes the waste reception hall, sorting hall with associated equipment for separation and processing. The building also includes a Refused Derived Fuel RDF (hall), control room, electrical room and workers facilities;

Fermentation Process and Substrate Distribution System:

2.2.5 There are three fermentation tanks fitted with mixers which are heated to 40 degrees Celsius and are used to generate biogas of approximately 55% methane and 45% carbon dioxide with other trace gases. The substrate distribution system enables distribution of the substrate and digestate between the fermentation tanks, post digestion, pasteurisation, storage tanks and feed pit and solids feeder.

Post-fermentation Process and Pasteurization

2.2.6 The substrate/digestate generated from the fermenters is transferred to the post fermenter for further biological degradation. This ensures the maximum amount of biogas to be generated. The post fermenter is heated to ferment at 40 degrees Celsius.

2.2.7 Digestate is transferred from Post Fermenter to pasteurisation tanks via the substrate distribution system to three identical stainless-steel tanks heated to over 70 degrees Celsius for a minimum of an hour. The purpose of pasteurisation is to cease biological activity of the digestate and remove pathogens.

2.2.8 Once pasteurisation is complete the digestate is pupped to the digestate storage tanks which later can be removed for off-site distribution.

Gas Conditioning

2.2.9 Biogas generated in the fermenters and post fermenter is collected in the gas membrane PVC roofs where injections of oxygen remove sulphides and hydrogen. The biogas is chilled and scrubbed with sulphuric acid to remove ammonia prior to being further chilled and passed through an activated carbon filter.

2.2.10 Biogas is then compressed and passed through a series of membranes which strip the biogas of the methane which is then passed to the grid for propanation and odorization prior to injection into the grid. The remaining carbon dioxide is upgraded in a recovery unit and stored in tanks to pump into the tanker for offsite distribution.

2.3 Description of Odour Control Systems

2.3.1 The odour control comprises of an air extraction system situated in the reception building, with extraction points located within close proximity to the areas which are known for their potential odour release, such as tipping bays, biomass mixers, mixing units and the centrifuge.

2.3.2 Introduction of clean air as high velocity air induction aims to direct internal air flow toward air extraction fans and away from external doorways. The building will be maintained under negative pressure with continuous extraction through carbon and dust filters.

2.3.3 Connection of the storage tanks to the odour control system complete with damper valves helps regulate the flow of the gas stream within the extraction ducts, ensuring that optimum balancing rates are achieved before the malodorous gas is introduced to the filters.

2.3.4 Carbon filtration (Carbon Adsorber Filtration High and Low Flo system) will be used as the primary pollution control technique using two sets of carbon adsorber filtration systems. The air will first pass through the Nodour Hi-Flo horizontal bed activated carbon system will be used for the reception building and filling station area and will be combined with a particulate/dust pre-filter filter bed to protect the carbon media.

2.3.5 Connections will also be made separately to the de-pack machines in the reception area, to the mixing pit in the filling station area and the tanker vent one in the taking station. The air will flow through the carbon adsorber filtration system prior to passing through the carbon beds for further filtration.

2.3.6 The filters are covered and has a single discharge point, which has a sealed connection leading to the stack. Duty and standby air extraction fans, complete with alarm sensor controls and remote monitoring, allow the air flow to be regulated. A variable speed drive is also fitted to help optimise air extraction to reflect operational activities and to conserve energy.

3.0 Receptors and Odour Pathway

3.1 Receptors

3.1.1 The closest human receptors to the Site are occupants of the industrial facilities directly adjacent to the Site. Due to the nature of the activities and duration of exposure to odour impacts, these are considered medium sensitivity receptors.

3.1.2 The closest high sensitivity receptors are the residential units located approximately 1.8km to the south of the Site at Connah's Quay.

3.1.3 A review of receptors (medium and high sensitivity) within 1km of the Site are shown in **Table 1**.

Table 1 - Receptors within 1km of the Site

Receptor Name	Type	Sensitivity	Distance and Direction
Parc Adfer ERF	Industrial – waste to energy facility	Medium	Directly adjacent 0-5m North
Weighbridge Road	Public Road	Low	35m West
Flintshire Bridge HVDC Convertor Station	Industrial – Power Station	Low	55m South
UPM Shotton	Industrial – Paper Mill	Medium	150m West to Northwest
Toyota Motor Manufacturing UK	Industrial - Car Factory	Medium	185m East
Sunhill Transport	Commercial - Trucking company	Medium	250m
Great Bear Distribution Deeside	Commercial - Logistic Services	Medium	350m Northeast
KK Fine Foods	Commercial – Food production	Medium	450m East
Whole Ice Limited	Commercial – Food production	Medium	470m East
Commercial Colours	Commercial – Car body shop	Medium	480m North
Saica Flex – Deeside	Commercial – Label Printer	Medium	605m East
Westbridge Furniture Designs	Commercial – Furniture Maker	Medium	630m North East
Unilever	Commercial - Logistic Services	Medium	680m North
UPD Deeside	Commercial - Logistic Services	Medium	690m West
Eriks Limited	Industrial - Manufacturer	Medium	700m Northwest
Panels and Profiles	Industrial - Manufacturer	Medium	850m Southwest
Akzo Nobel	Commercial- Paint shop	Medium	980m Southwest
Gwynedd Shipping and Transport	Commercial - Logistic Services	Medium	930m South Southwest

Receptor Name	Type	Sensitivity	Distance and Direction
TATA Steel	Industrial - Manufacturer	Medium	1000m Southeast
TI Group Automotive Systems	Industrial - Manufacturer	Medium	1000m West Northwest

3.2 Odour Pathway

3.2.1 The predominant wind direction is from the west and the south southeast as seen in **Table 2**.

Table 2 - Wind Direction (2022)

Wind Direction	Percent Frequency
N	2%
NNE	2%
NE	3%
ENE	5%
E	6%
ESE	6%
SE	11%
SSE	11%
S	7%
SSW	6%
SW	8%
WSW	5%
W	13%
WNW	8%
NW	4%
NNW	3%

3.2.2 Meteorological data for 2022 Liverpool meteorological station shows the prevailing wind in this location is from the west for approximately 13% of the year and from the southeast and south southeast for 11% of the year. Receptors located downwind of the prevailing wind directions will be most impacted from adverse odours from the Site.

3.2.3 There are no residential receptors located within 1km of the Site downwind of the prevailing wind directions.

4.0 Odour Sources and Mitigation Measures

4.1 Odour – Normal Conditions

4.1.1 Potential odour sources from the Proposed Development during the regular operational phase which may cause a nuisance or loss of amenity in the surrounding environment have been identified and are discussed below as well as the control measures to be instilled to mitigate odour impacts.

4.2 Reception and Storage of Waste Materials

Odour Source:

4.2.1 Waste reception and offloading of dry waste material at the building may generate odour. This will be dependent on a number of factors including ambient weather conditions, the nature and age of material imported to the Site (ie. high temperatures and prolonged storage may cause odorous waste due to degradation and fermentation).

Odour Minimising Procedures:

4.2.2 The following measured will be adopted to minimise odour releases during receipt, offloading and storage of waste materials.

4.2.3 All waste will be inspected on delivery to ensure waste conforms to the Site's permit conditions, it's individual waste transfer note and that the waste has been packaged and contained correctly.

4.2.4 The Site Manager will ensure there is sufficiently trained staff and sufficient plant capacity to deal with the anticipated waste loads coming in.

4.2.5 Dry waste vehicle will deliver to the Reception; fast acting roller shutter doors will open and allow the vehicle to reverse into the building. The doors will close as soon as the vehicle is fully within the delivery hall. This method ensures the access door is open for minimal time.

4.2.6 This part of the building will be highly ventilated with all extract air going to the Odour Control Plant. In addition, the reception building will be kept under negative pressure to ensure the potential odours from waste can not exit the building.

4.2.7 The operational area of the Site will be maintained in a clean and tidy manner, including the prompt clean-up of any potentially odorous spillages.

4.2.8 Waste inputs will be managed to ensure there is sufficient capacity in the feedstock reception pit to deal with the incoming waste material.

4.2.9 Where necessary, periodic audits of the suppliers will be conducted to ensure that contracts are being adhered to and waste is not being stored for significant periods of time prior to arrival at Site.

4.3 Anaerobic Digestion Process

Odour Source:

4.3.1 The anaerobic digesters can lead to the emission of odour if controls are not maintained throughout the process.

4.3.2 The digester has been designed as a high end Mesophilic Anaerobic Digester (MAD) operating at a temperature of 40°C (+/- 2°C).

4.3.3 Odorous biogases are produced as a result of the anaerobic digestion process.

4.3.4 Biogas will be stored within the roof space of each digester. A membrane is installed in the headspace; above the membrane is an external bio dome.

Odour Minimising Procedures:

4.3.5 Duty/standby air blowers pressurise the space between the membrane and the fixed roof, thus providing a fixed pressure in the digester. Gas is stored within the space between the membrane and top water level and eventually discharged to the biogas train.

4.3.6 Biogases are controlled and discharged into the CHP Plant from the anaerobic digester.

4.3.7 Excess biogas not used in the CHP plant will be diverted to a flare stack.

4.3.8 Pressure/vacuum relief valves will be utilised to prevent overpressure and to relieve vacuum to prevent digester roof failure in the event of a sudden loss of level and significant gas release.

4.3.9 Ferric is dosed into the pumped discharge line to prevent Hydrogen Sulphide accumulation in the digester.

4.4 Pasteurisation of Digestate

Odour Source:

4.4.1 The Pasteurisation process can lead to the emission of odour if controls are not maintained throughout the process.

4.4.2 Digestate from the digesters passes through filters and then on to the pasteurisation tank which is designed to heat the sludge to 70^{o}C for a minimum of one hour, to remove any traces of pathogens that still may exist in the digestate. The heated digestate and any biogases represent a significant potential source of odour.

Odour Minimising Procedures:

4.4.3 The tank is fully contained and is connected to the odour control system to ensure odours are collected and treated.

4.5 Dewatering of Digestate

Odour Source:

4.5.1 The dewatering process and subsequent handling of solid and liquid fractions can lead to the emission of odour if controls are not maintained throughout the process.

4.5.2 Prior to liquor treatment, the digestate will be dewatered. Liquids discharge by gravity into a small holding tank from where they are pumped into the larger Digestate Liquors Balancing Tank prior to treatment. Solid centrifuge cake is emptied into small skips

Odour Minimising Procedures:

4.5.3 The centrifuge and skip area is located in an annex of the main building which is connected to the Odour Control Plant.

4.5.4 Small skips will be used for centrifuge cake collection; these may require emptying during the working day, before the day's sludge load has been processed.

4.5.5 When a skip is removed it will involve opening a set of roller-shutter doors. When the roller shutter doors are opened, a motorised valve will open on a separate odour control duct on the skip area. The Odour Control Plant will increase its flow rate to accommodate the extra flow from the door area.

4.6 Treatment of Liquor in Sequence Batch Reactor (SBR)

Odour Source:

4.6.1 The treatment process can lead to the emission of odour if controls are not maintained throughout the process.

4.6.2 Treatment will be carried out using a Sequence Batch Reactor (SBR). This consists of a single tank in which waste is treated to the consent level in a batch process. The sequence is typically as follows:

- Fill and aerate

- Settle
- Decant
- Desludge (manual)

Odour Minimising Procedures:

4.6.3 The tank is sealed to control the release of odours.

4.7 Maintenance of Plant and Equipment

Odour Source:

4.7.1 The treatment process can lead to the emission of odour if controls are not maintained throughout the process.

4.7.2 Failure of plant or equipment or the biofilter losing its efficiency could result in the release of odours.

Odour Minimising Procedures:

4.7.3 Planned Preventative Maintenance programme should be in place for all items of plant and equipment that are critical in preventing the release of odour, such as CHP plant and flare, air extraction equipment and the carbon filter system.

4.7.4 Filter stack emission testing will be carried out regularly as a preventative measurement indicating the need for change of the carbon filter medium.

4.8 Odour – Abnormal Conditions

4.8.1 In accordance with the current EA guidance the following abnormal situations have also been considered:

4.9 Plant Failure or Malfunction

Odour Source:

4.9.1 Breakdown or malfunction of the loader, screening equipment or AD plant could result in unprocessed waste material being left in the reception area for extended periods of time, increasing the risk of further decomposition prior to processing.

Odour Minimising Procedures:

4.9.2 In the event of a prolonged mobile plant failure or malfunction, alternative equipment will be sourced as soon as possible (typically within 48 hours) until the equipment can be repaired or replaced as necessary. Contingency arrangements are in place with third party treatment facilities, to enable the diversion of waste material if required.

4.9.3 In the event of screening equipment malfunction, the dry waste material may continue to be accepted and stored within the reception hall until the repairs are completed. Planned deliveries of waste will be managed during this period and postponed if the capacity of the reception area is reached.

4.9.4 In the event of a breakdown of the AD plant, the dry waste material may continue to be accepted and stored within the reception hall until the repairs are completed. If the operation of the dual waste storage tanks is unaffected, they can be filled with processed dry waste until capacity is reached. Planned deliveries of waste will be managed during this period and postponed if necessary.

4.9.5 In the event that the Plant malfunctions or becomes anaerobic due to operating problems, resulting in malodour issues, excess liquor will be tanked away until the problem is resolved. Peroxide dosing may be considered to alleviate short term odour problems.

4.9.6 All plant and equipment will be maintained and regularly serviced in accordance with the manufacturer's recommendations and planned maintenance procedures to minimise breakdowns.

4.10 Site Staff

Odour Source:

4.10.1 A shortage of trained operational staff may result in waste material being stored for long periods without processing and/or AD plant becoming non-operational. Failure of plant or equipment or the carbon filter losing its efficiency could result in the release of odours.

Odour Minimising Procedures:

4.10.2 In the event there is a shortage of trained operational staff at the Facility, alternative staff will be sourced from the Operator's other facilities or hired in as necessary. If necessary, waste deliveries will be controlled until the situation can be rectified. Contingency arrangements are in place with third party treatment facilities, to enable the diversion of waste material.

4.11 Digestate/Transport Haulier

Odour Source:

4.11.1 The identified outlet for the solid digestate is no longer able to accept the material at short notice or the transport haulier is unavailable.

4.11.2 Liquid digestate is discharged to sewer under a trade effluent consent and therefore is not reliant on vehicle transportation.

Odour Minimising Procedures:

4.11.3 The Operator has a number of alternative waste hauliers who can be contacted in the event the regular haulier is unavailable to remove the solid digestate from the Site.

5.0 Engaging With Neighbours

5.1 Complaints Procedure

5.1.1 As part of this OMP, engagement with the neighbours will be undertaken.

5.1.2 Typically, any complaints received at the Facility are likely to be through the NRW or Local Authority although the operator is willing to deal directly with the complainants and where necessary the following can be implemented:

- Information can be provided to the local neighbours (via the NRW) regarding the point and method of contact for the Facility in the event an odour has been detected or they want to discuss any activities etc at the Facility.
- The neighbours can be advised that any complaints / concerns will be addressed immediately following identification/notification and contingency action implemented.
- The neighbours can be advised of any corrective action and a follow up call carried out if required.

5.1.3 The primary point of contact at the Facility for complaints and liaison within the neighbours is the Site Manager who will ensure the recording, investigation and close out of complaints is undertaken as described above and in accordance with company management procedures.

6.0 Monitoring

6.1 Schedule

6.1.1 Odour Monitoring will be undertaken in order to assess how successful the operational management and mitigation control measure are at the Facility and to identify if necessary whether odour is causing a potential nuisance to ensure that appropriate remediation measures are adopted early.

6.1.2 Monitoring will be undertaken by designated staff who will be fully trained by Site management. All Site personnel will be responsible for reporting any problem odours identified during their day to day operations.

6.1.3 Monitoring at the Facility is summarised in **Table 3**.

Table 3 - Monitoring

Parameter	Monitoring Technique	Frequency
Meteorological Monitoring	On Site weather station	Manually checked at start of each working day. Data logged on Site computer.
Olfactory Monitoring	Site perimeter and off Site checks (towards the identified sensitive receptors)	Daily (or more frequently following odour complaints)
Odour Control Plant Stack – Emissions Testing	Grab sample (Total OUE/m3) as per 'BS EN 13725:2003: Air Quality, Determination of odour concentration by dynamic olfactometry'	On commission, and then 6-monthly thereafter
Complaints Monitoring	Logged in accordance with complaints procedure	Ad-Hoc

6.2 Meteorological Monitoring

6.2.1 The on-site weather station will be utilised for meteorological monitoring at the Facility and will include monitoring for atmospheric pressure, temperature, wind speed and direction, rainfall and humidity. The data will be logged and fed into a central data base, with data readily available to Site management.

6.2.2 In the event of odour complaints, the data enables complaints to be assessed against the meteorological conditions for the relevant period. Meteorological information will be recorded on the Odour Complaints Form.

6.3 Olfactory Monitoring

6.3.1 As part of the daily inspections, appropriately trained and experienced Site personnel will carry out olfactory monitoring at the site perimeter and off site at the locations.

6.3.2 Additional locations for monitoring may also be included, depending on the frequency and location of any complaints received at the Facility.

6.3.3 The monitoring results will be recorded in the site log, and immediate investigation/remedial action undertaken where necessary. The forms are inspected on a weekly basis by the Site manager to ensure actions have been implemented as required.

6.3.4 Olfactory monitoring will be carried out in accordance with the recommendations detailed in the Environment Agency H4 guidance, including avoid strong foods or drinks and strongly scented deodorisers or toiletries etc. for at least half an hour prior to the monitoring. In addition, individuals suffering from a cold, sore throat or sinus problems that may impair their ability to detect odours will not be used.

6.3.5 The designated person will conduct the olfactory monitoring on arrival at Facility prior to exposure to odorous material at the Facility to avoid odour fatigue affecting sensitivity.

6.3.6 Any external activities that may contribute to odour generation in the surrounding area will also be noted on the form and an assessment of the intensity of the odour will be made using the key provided.

6.3.7 In the event odour is detected above intensity ranking 3 (moderate odour), the Site management will be informed immediately, and the approximate location and extent of the odour plume assessed and site operations reviewed and remediated.

6.4 Odour Control Plant Stack Emission Testing

6.4.1 Emission monitoring from the stack of the Odour Control Plant will be carried out in line with the guidelines set out in 'H4 Odour Management' for determination of odour concentration by dynamic olfactometry. It involves taking grab samples that will be analysed in the laboratory in accordance with BS EN 13725:2003 to determine the emitted odour concentration (OUE/m3).

6.4.2 Testing will be done initially on commission of the Odour Control Plant, and then regularly to act as a preventative measurement, indicating biofilter medium change requirements.

6.5 Complaints Monitoring

6.5.1 Any complaints received directly by the Facility or via the Regulatory bodies, including the EA and Local Authority, will be recorded on the Odour Complaints Form and will instigate further olfactory monitoring at the location of the complaint and on site to determine the extent and location of the plume and the source of the odour will be identified.

6.5.2 If necessary, monitoring will also be carried out at the nearest sensitive receptors to the Facility and the monitoring results recorded.

6.6 Remedial Action Plan

6.6.1 Following receipt of a complaint, identification of an odour at the Facility which may give rise to an offsite odour impact or a significant odour (intensity 3 or above) being detected during the daily odour survey, the following action plan will be undertaken, including:

- Additional olfactory monitoring as detailed above to identify the extent of the plume and potential cause for the odour;
- Examination of the operational activities at the Facility at the time of the odour complaint or odour identification;
- Examination of the meteorological conditions at the time of the complaint or odour identification;
- Carry out a review of the operational procedure and process controls as detailed within Section 3 detailed above and instigate any control measures immediately following identification of the problem;
- Further olfactory monitoring will be carried out to ensure the issue has been addressed and to monitor the effectiveness of any control measures undertaken.

6.7 Record Keeping and Reporting

6.7.1 The Odour Complaints Form will be completed, maintained free from damage and kept within the Site office, available to the regulating authorities on request. The record keeping will form part of the Facilities Management System.

6.8 OMP Review

6.8.1 This OMP will be reviewed by site management on a regular basis to ensure that the controls described are effective and reflect best available techniques. The OMP will also be reviewed following a number of complaints at the Facility or relevant changes in the Site operations or procedures.

Figure 1 – Site Location and Context

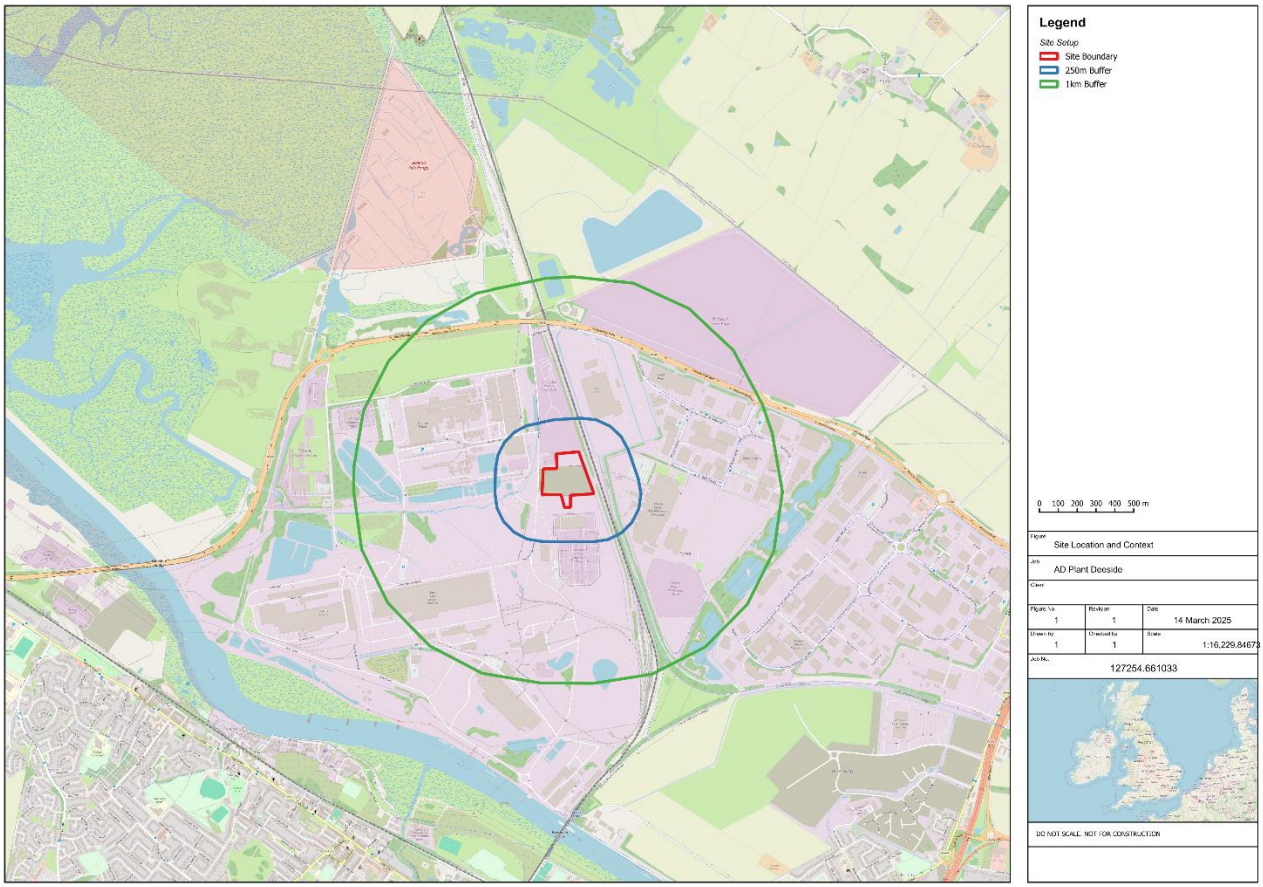

Figure 1 - Site Location and Context

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Appendix A - Limitations

Limitations

The recommendations contained in this Report represent Lucion's professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Lucion does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Lucion obtained, reviewed and evaluated information in preparing this Report from the Client and others. Lucion's conclusions, opinions and recommendations has been determined using this information. Lucion does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Lucion has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

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Appendix B - Glossary

Glossary

Term	Definition
AD	Anaerobic Digestion
CHP	Combined Heat and Power
EA	Environment Agency
OMP	Odour Management Plan
RDF	Refuse Derived Fuel
MAD	Mesophilic Anaerobic Digester
RDF	Refuse Derived Fuel
SBR	Sequence Batch Reactor