

ODOUR MANAGEMENT PLAN

Whitwick Manor, Herefordshire

STL Energy Limited

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Odour Diary

Odour Complaints Report Form

1 **Introduction**

1.1 **General**

1.1.1 Oaktree Environmental Ltd has been instructed by STL Energy Limited to prepare an Odour Management Plan (“OMP”) for their Anaerobic Digestion (AD) Plant at Whitwick Manor, Hereford.

1.1.2 The site address and contact details for STL Energy Limited (i.e. the ‘site operator’) is:

Whitwick Manor, Herefordshire, HR8 2UE	Contact:	Nicholas Layton
	Position:	Director/TCM

1.1.3 This OMP has been prepared in support of a permit application for the development. An Environmental Permit (EP) will be required for the operation, with day to day operations regulated by the Environment Agency (EA). The EP will contain conditions controlling emissions to air, land and water, including odour.

1.1.4 The site will be operated in accordance with an Environmental Management System (EMS) along with other documents targeted to specific environmental considerations including this OMP.

1.1.5 This OMP will allow STL Energy Limited to implement an action plan should the site operatives detect an odour presence, receive complaints from local businesses or residents and if the EA suspects odour emissions from the site during an inspection.

1.1.6 A copy of this OMP will be retained within the site office and will be made readily accessible to all staff. Training on odour control and monitoring procedures contained within this OMP will be provided to all new staff and toolbox talks on odour control procedure will be undertaken every 6 months (as a minimum). Training will be provided by the site management team.

1.2 Relevant Guidance

1.2.1 Reference has been made to the following relevant permitting guidance during the drafting of this OMP:

- H4 Odour Management: How to Comply with your Environmental Permit, Environment Agency (EA), March 2011.

1.2.2 Appendix 4 of the EA H4 guidance outlines information considered to be essential for inclusion within an OMP. This OMP has covered the following aspects, in accordance with the H4 guidance:

- Details of potential odour sources, including descriptions and quantities;
- Details of relevant receptors sensitive to odour;
- Details of local meteorological conditions;
- Assessment of potential risks from odours at sensitive receptors, taking account of receptor sensitivity, location, prevailing meteorological conditions and odour potential from operations on site, using an established risk assessment approach;
- Outline of control measures to be used to control potential odour risks to an acceptable level;
- Outline of contingency measures for dealing with incidents or emergencies;
- Details of odour monitoring procedures to be used; and,
- Details of complaints response procedure.

1.3 Site Location

1.3.1 The site is located on land at Whitwick Manor, Herefordshire. The approximate National Grid Reference for the site is 360844, 245849.

1.3.2 The site is located at Whitwick Manor, off the A417, within an area of existing arable land between the villages of Newtown and Ocle Pychard.

1.4 Facility Overview / AD Process

- 1.4.1 The facility includes an AD plant and associated grain drying operation, which will generate renewable energy and digestate products from various feedstocks. AD is a biological process, which breaks down organic matter within the biodegradable/agricultural wastes/products in the absence of oxygen, through the actions of a variety of micro-organisms.
- 1.4.2 The plant will be capable of processing up to 176,000 tonnes/annum of feedstocks. These will comprise up to 100,000 tonnes/annum of poultry manure, 16,000 tonnes/annum of apple pomace, 35,000 tonnes/annum of digestate from the applicant's existing AD facility and 25,000 tonnes/annum of liquid wastes from dairy units and drinks industry processes.
- 1.4.3 The result of the AD process is the production of biogas, which consists predominantly of methane (CH₄) and carbon dioxide (CO₂) and a digestate product. The AD process is a 'closed and sealed' process between input of feedstocks to the process and output of digestate products.
- 1.4.4 The poultry manure will be stored within an enclosed building operated under negative pressure with exhaust air abated within a Combined Heat and Power (CHP) Unit. Liquid feedstocks will be delivered to site in sealed tankers and unloaded direct to the process. Apple pomace will be stored within a storage clamp. Any liquid residues and/or recirculation water from the end of the process will be stored in one of the large tanks ready for feeding hourly into the pre-treatment process.
- 1.4.5 There will be 4 walking floor feeders of approximately 100m³ capacity, each giving a loading capacity of around 1 day to avoid night filling. There will be three hydrolysis/pasteurisation tanks, each being 1000m³ in volume to allow for the feedstocks to be pre-processed by hydrolysis, pasteurisation and to provide for ammonia removal. Approximately 55% of the ammonia is removed before the digestion process to prevent the nitrogen from inhibiting the digestion process and to extract 55% of the nitrogen into a concentrated ammonium

sulphate solution which can be sold as a fertiliser. A large 6250m³ ammonium sulphate storage tank is also provided for.

- 1.4.6 The pre-treated material is pumped into 4 primary digesters, each 6250m³ in volume and then into two secondary digesters, also providing 6250m³ of volume. These will be maintained at over 40 degrees Celsius for the digestion process and fully stirred. The biogas that is produced will bubble up to the headspace in the double membrane roofs. The roofspace has support straps and a de-sulphurisation net as well as a flexible gas membrane and air-blown outer weather membrane. The resultant biogas is around 55% CH₄ and 45% CO₂ and is piped via desulphurisation units for use in the Combined Heat and Power (CHP) units and the biomethane plant.
- 1.4.7 The digestate overflow is treated to extract nutrients in a multi-stage process where the majority of the remaining nitrogen, phosphates and potassium are removed. These processes collect the nutrients in a concentrated form including ammonium sulphate and calcium phosphate both of which can be easily transported and then applied as available fertilisers where and when agronomically required. The fertiliser products will substitute fossil fuel derived fertiliser products.
- 1.4.8 The low nutrient digestate is then separated with screw presses and/or decanter centrifuges into a benign solid soil improver and a liquid stream. The liquid stream is still around 1% solids so requires further processing through a reverse osmosis membrane / ion exchange plant to create a liquid stream suitable for re-circulation or final polishing in a reed bed before discharge.
- 1.4.9 An area of around 5.33ha has been allocated for a reed bed system which further cleans the water. A buffer storage lagoon has been provided for to allow for maintenance and process control. A second lagoon has also been provided for to capture rain from the site which can be used in the AD process or discharged to the reed bed.
- 1.4.10 The biogas is first dehumidified and polished with carbon filters prior to compression. The clean dry biogas is then compressed to around 15bar before passing through a 3-stage membrane plant which separates out the gas into a c.98% pure CH₄ biomethane stream and

a 99% pure CO₂ stream. The biomethane stream is then piped to the Network Entry Facility (NEF) and then onto the gas grid. The CO₂ stream is then piped to the CO₂ liquefaction plant.

- 1.4.11 The CO₂ stream is then compressed to around 18bar before cooling to around minus 30 degrees Centigrade to liquify the gas. It passes through a reboiler so that any contaminants including a small amount of residual methane can be separated. This 'reject' gas is then piped back to the AD plant so that the methane can be recovered. A building for a dry ice (solid CO₂) plant can treat a proportion of the CO₂ stream to make dry ice for use in the catering / food delivery industry. The balance of the liquid CO₂ is stored in vacuum insulated tanks prior to collection by Heavy Goods Vehicle (HGV) tankers. The liquid CO₂ will substitute fossil fuel derived CO₂.
- 1.4.12 Some of the biogas is used directly in two 1MWe CHP units which are provided to supply power to the plant as well as the farm and grain stores. In addition to the green electricity generated the units generate around 2MW of heat which is used to heat the digestion tanks, pre-treatment and nutrient recovery processes. It is hoped some surplus will be available in the summer to facilitate grain drying if required.
- 1.4.13 A dual stream flare is to be installed to allow either excess biogas or reject biomethane to be burned at a high temperature so as to prevent any methane emissions. In practice it is used rarely, such as during maintenance of equipment or for a few minutes when the biomethane is adjusted prior to injection into the grid.
- 1.4.14 Reference should be made to the site plans in Appendix I which illustrates the locations of the above infrastructure.

1.5 Feedstock Types and Products

- 1.5.1 The waste types handled on site will consist of agricultural type wastes and feedstocks. A description of the feedstock types, storage arrangements, quantities stored and duration of storage is included in the table below. The site will not accept any putrescible wastes, including clinical waste or waste from meat or fish processing, which would be considered to be most offensive in terms of potential for odour.

Table 1.1 - Feedstock Types

Feedstock Description	Nature of Waste and Storage Arrangements On-Site	Max Quantity Stored (tonnes)	Odour Potential of Waste (see Table 2.1 for descriptors)
Poultry manure	Solid waste. Stored within enclosed building maintained under negative pressure	8,333	Moderate
Apple pomace	Solid waste. Stored within clamps within the site	16,000	Moderate
Digestate	Loaded straight into plant to sealed tanks	673	Moderate
Liquid wastes	Liquid wastes from agricultural and drinks industry processes. Loaded straight into plant to sealed tanks	961	Moderate

1.5.2 If the maximum storage capacity is reached then no further waste will be accepted until waste can be removed from the site and taken to a suitably permitted or exempt site.

1.5.3 Liquid wastes will be delivered to site in sealed tankers and introduced straight to the process via enclosed line.

1.6 Raw Materials

1.6.1 The following table outlines potentially odorous raw materials used within the process, storage location and odour potential of materials.

Table 1.2 - Raw Materials

Raw Material	Storage Arrangements	Odour Potential of Raw Materials
Propane	Stored in storage tanks with emergency venting	Moderate
Gas odourant	Stored adjacent to grid entry unit	Moderate

1.7 Operational Infrastructure and Methods for Odour Reduction

1.7.1 The site will have measures in place to ensure odours do not escape beyond the boundary, as follows.

- **Monitoring** – The site will undertake Olfactory/Sniff assessments which have been outlined further in Section 5 of this OMP.
- **Stock rotation** – All potentially odorous wastes will be contained and undergo continuous monitoring. The site will follow a first in, first out principle which ensures that the oldest wastes are removed from the site first and aren't left to stand for a long period of time.
- **Housekeeping** – The site will carry out regular cleaning (minimum once daily) of all operational areas at the site paying special attention to storage areas for odorous wastes. The site has a housekeeping schedule shown in section 4.
- **Storage procedures** – All odorous wastes are contained within bays or brought onto the site within sealed tankers and loaded directly into the system.

1.8 Site Management

- 1.8.1 The site will have a Technically Competent Manager (TCM) who will be responsible for the general management of the site, including the acceptance and handling of any potentially odorous wastes.
- 1.8.2 The company, through the TCM, will ensure that nominated deputies are sufficiently trained and familiar with all site management documentation (which includes this OMP) in addition to all relevant company procedures.

2 Odour Risk Assessment

2.1 Methodology

2.1.1 This OMP has been completed to identify where the likely risks are in relation to surrounding land uses. This assessment has been used to inform Section 5.0 of this OMP with regard to specific odour monitoring procedures.

2.2 Odour Intensity

2.2.1 Table 2.1 below the contains the criteria used to measure/evaluate odour intensity. A judgement is made of odour intensity at each receptor location.

Table 2.1 - Odour Intensity Scale & Description

Odour Intensity Scale & Description	
Negligible	No detectable odour
Low	Faint odour (barely detectable)
Moderate	Moderate odour easily detected while walking (possible interference)
High	Strong odour (bearable, but offensive)
Severe	Very strong odour (this is when you really wish you were somewhere else)

2.3 Receptor Sensitivity

2.3.1 Table 2.2 below outlines the criteria used for assessing receptor sensitivity to odour which has been used when determining nearby odour sensitive receptors for the purpose of the risk assessment. Sensitivity to odour is subjective. An odour that may tolerable to one person, may not be acceptable to others. However, in general, some types of receptors will be more sensitive to odour than others. For example, domestic residences are more likely to be sensitive to odour than receptors within an industrial complex or other receptors with short term transient exposure, including passers-by. Furthermore, direction and distance from the potential source of odour will have a bearing on potential for impact, along with prevailing meteorological conditions, including wind speed and direction. The broad criteria

below for assessing receptor sensitivity has been developed to take into account of such criteria and is precautionary in order to ensure the risk assessment and subsequent control measures are suitably robust/precautionary.

Table 2.2 - Receptor Sensitivity Criteria for Odour

Sensitivity of Receptor	Criteria
Low	Industrial workplaces, areas of short term, transient exposure (eg public footpaths and areas where shorter periods of recreational use are undertaken)
Medium	Commercial/retail premises, places of work, residential use, areas used for extended periods of recreation, schools and hospitals >200 m from site boundary
High	Commercial/retail premises, places of work, residential use, areas used for extended periods of recreation, schools and hospitals <200m from site boundary

2.4 Sensitive Receptor Locations

2.4.1 The table below identifies relevant receptor locations. The receptors highlighted are those which are considered to be at risk from odour generated by the site. The receptors identified are representative of worst case exposure in each direction for each type of receptor. The distances have been scaled from the site boundary, which does not necessarily represent distance to sources with highest potential for odour, therefore providing a worst case assessment.

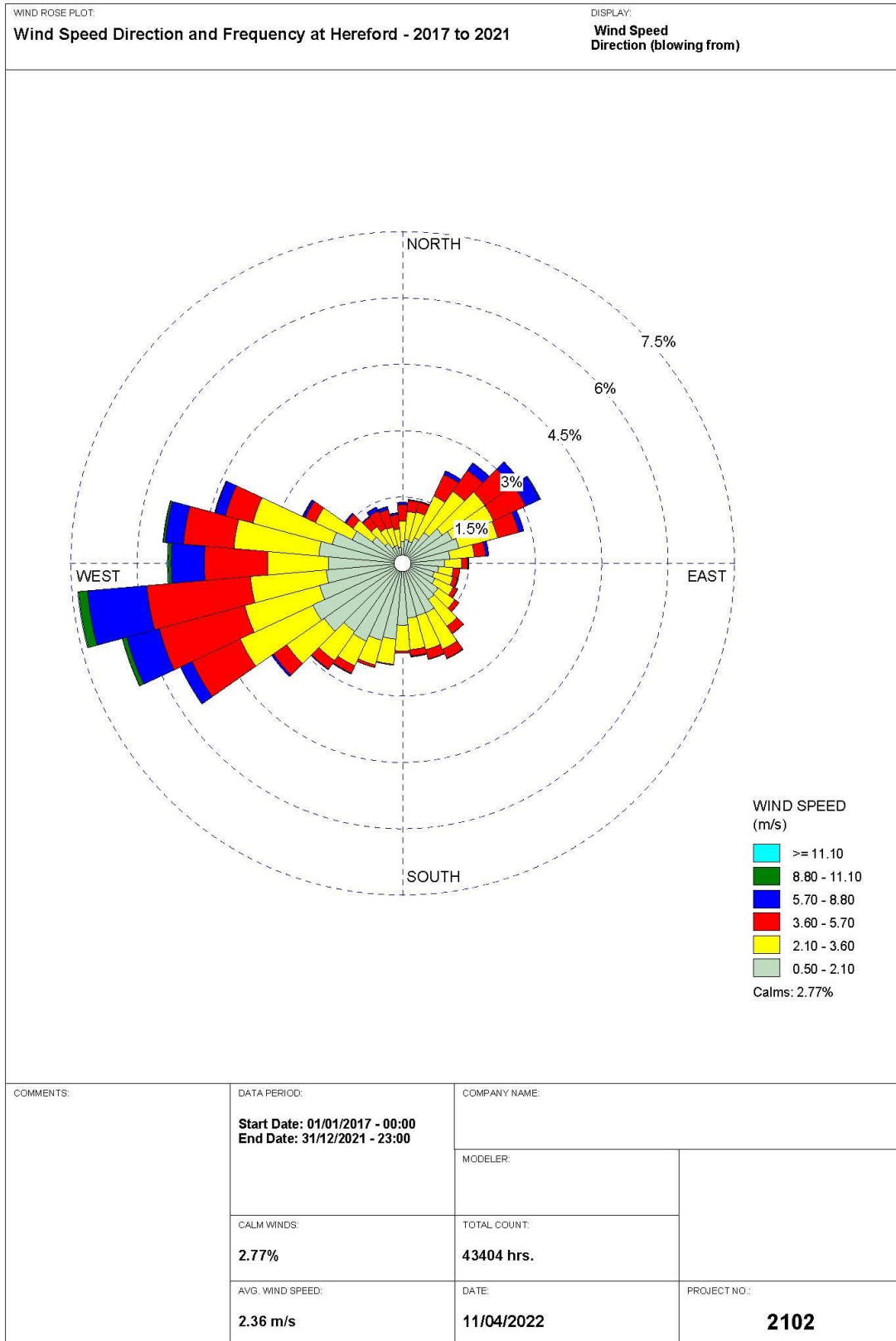
Table 2.3 - Odour Sensitive Receptors Within 400m of the Site

Receptor name	Type	Distance and Direction from Nearest Part of Site Boundary	Receptor Sensitivity to Odour
Residential properties within Whitwick Manor Estate	Residential	50m South-East, 80m North-East	High
Residential properties	Residential	400m, West-North-West/North	Medium
Ancient Woodland	Short term recreational	10m, North	Low
Footpath	Short term recreational	320m, East-North-East	Low

- 2.4.2 Total distances are measured from the boundary of the AD Plant closest to the nearest receptor point. In reality distances to the waste storage/treatment areas may be greater.

2.5 Prevailing Meteorological Conditions

- 2.5.1 The nearest representative meteorological station to the site is located in Hereford. Overleaf is a wind rose which shows the prevailing wind speed and direction at the site. Given the proximity and nature of this observing station, it is considered that it provides a representative indication of wind speed and direction frequency at the site. As is indicated, the predominant wind direction is between South and West, with much less frequent winds arising from other directions. This is generally the norm for most parts of the UK.



2.6 Risk Matrix

2.6.1 The odour risk in any particular event can be established using the risk assessment matrix given in Table 4 below, which is derived based on receptor sensitivity and odour intensity

Table 2.4 - Resultant Risk Matrix (Colour-Coded)

		Sensitivity		
		Low	Medium	High
ODOUR INTENSITY	Negligible	NEGLIGIBLE	LOW	LOW
	Low	LOW	LOW	MEDIUM
	Moderate	LOW	MEDIUM	MEDIUM
	High	MEDIUM	MEDIUM	HIGH
	Severe	MEDIUM	HIGH	VERY HIGH

3 Potential Sources of Odour

3.1 Waste Deliveries, Waste Acceptance & Pre-Acceptance Procedures

- 3.1.1 Wastes will be delivered to the site as and when needed. However, all wastes are subject to strict pre-acceptance procedures to ensure the feedstocks meet the required specification, ensuring that no wastes other than those detailed within this OMP will be accepted on-site. All available information in respect of each waste stream including any chemical analysis will be reviewed in order to verify that waste is coded correctly as part of pre-acceptance procedures.
- 3.1.2 If it is suspected that any incoming wastes are not suitable or may cause the AD process not to comply with PAS 110, the incoming waste will be quarantined pending further testing and removal from site for treatment at a suitably permitted facility if necessary.
- 3.1.3 All incoming vehicles upon arrival are required to report to the person in charge of waste acceptance at the site. The details of the load will be recorded, and the duty of care note/company documentation will be further checked by the operator to ensure that the load is acceptable at the site, including a visual check prior to the vehicle proceeding to the tipping area. Any deviation from the procedures or problems with any loads will result in tipping facilities being suspended for the offending company. Loads which are not acceptable within the above terms will be rejected.
- 3.1.4 The volumes of materials within each stage of the process is the subject of continuous monitoring. Wastes will only be brought on to the site where there is sufficient capacity to process the material. Records of the volumes of materials within each stage of the process at any one time will be kept on the site. The process will be managed by the operator in order to ensure that no individual stage of the process will be overloaded.
- 3.1.5 Due to the nature of the waste streams accepted at the site, it is extremely unlikely that an entire load of non-conforming material will be brought to site. Each load will be the subject of a visual inspection on arrival and no unloading of material will take place if the operator suspects that an appreciable portion of the incoming load may be non-conforming.

3.1.6 The above procedures will ensure that no wastes will be accepted which present additional odour issues to those which have been assessed in this OMP and for which suitable mitigation has been incorporated into the proposals.

3.1.7 Waste acceptance on-site will only be undertaken by staff who have been fully trained in waste acceptance procedures.

3.2 Poultry Manure

3.2.1 Poultry manure will be delivered to site via tractor/trailers and Heavy Goods Vehicles (HGVs) from surrounding farms. Whilst this presents a potential source of odour, this is a typical agricultural type odour, which will not be uncommon in the context of the location. However, loads will be covered/sheeted.

3.2.2 Poultry manure will unloaded to an enclosed reception building which will be operated under negative pressure. Exhaust air from the building will be directed to CHP plant for abatement of ammonia and odour.

3.3 Apple Pomace

3.3.1 Apple pomace will be delivered to site in HGVs. These will be enclosed and therefore, potential for odour during transportation of the pomace will be negligible. The pomace will be unloaded to storage clamps within the site.

3.4 Liquid Wastes

3.4.1 Liquid wastes will be delivered site within sealed tankers and unloaded from tankers direct to enclosed tanks for introduction to the process.

3.5 AD Process

3.5.1 The AD process itself is not expected give rise to any significant odour emission as the process is totally enclosed. Furthermore, the very nature of the process involves the breaking down of odour-making substances and organisms.

3.6 Loading/Unloading/Transfer of Feedstock to AD Process.

3.6.1 Liquid wastes will be unloaded via enclosed line. Therefore, this operation will not present a significant source of potential odour.

3.6.2 Apple pomace will be loaded to storage clamps and manure unloaded to an enclosed storage building. The movement and agitation of such material during the operation may present a temporary and minor source of odour whilst being transferred to the site/process, however, it is not expected that such operations will be undertaken for any extended periods of time.

3.7 Digestate

3.7.1 The process involves the breaking down of odour making substances and organisms with the feedstocks, meaning that the resultant digestate has a much lower odour potential than the original feedstocks. This is aided by a lengthy 122-day retention time dependent on the feedstocks within the process.

3.8 Gas Upgrade Unit

3.8.1 The biogas requires cleaning and upgrade prior to export to the grid. Part of this process includes the addition of an odourant to the gas and active carbon filtration to further remove any residual contaminants, which in itself presents a potential source of odour. However, the abatement used will remove the vast majority of contaminants and potentially odorous compounds.

3.9 LPG Storage

3.9.1 LPG will be delivered to site in tankers, unloaded via sealed line to LPG storage tanks. There may be brief fugitive odour release from vents on tanks during filling operations, but this will be for very short periods of time and not highly significant.

3.10 Reed Bed & Buffer Lagoons

3.10.1 An area of around 5.33ha has been allocated for a reed bed system which further cleans the water. A buffer storage lagoon has been provided for to allow for maintenance and process control. A second lagoon has also been provided for to capture rain from the site which can be used in the AD process or discharged to the reed bed.

3.11 AD Process

3.11.1 The AD process itself is an enclosed process once feedstocks have been introduced into the system. This ensures containment and control of potential odour whilst the wastes are processed through the remainder of the plant.

3.12 Foul surface water

3.12.1 The site drainage system will be monitored regularly to ensure it is functioning correctly.

3.13 Background Odour Sources in the Area

3.13.1 Consideration has been given to other potential local off-site sources of odour. A search on the EA public register has not identified any other waste sites or Part A1 installations in the vicinity of the proposed site. The site and surrounding area is heavily agricultural in nature. Therefore, there is potential for odours associated with agricultural processes in the vicinity of the site at present, as a result of manure spreading activities.

3.13.2 In order to determine whether complaints are the result of activities from the site or from other nearby activities, an odour complaints form will need to be completed in line with the company's complaints procedure which is attached in Appendix II.

4 Odour Control

4.1 Site Operations

4.1.1 Following site procedures will prevent odour release from the site under normal operating conditions. The only conceivable release of significant odour would occur if there is an accidental spillage either on its own or associated with some wider incident.

4.1.2 Limiting odour from the waste facility can best be achieved through employing effective site management and good general practice. It is much easier minimising odours in the first instance than dealing with problems once they occur.

4.1.3 This section addresses the general site management guidelines and identifies specific procedures to mitigate against odourous emissions.

4.2 Waste Acceptance Procedure

4.2.1 Strict waste acceptance procedures will be in place at the site as shown below and the following details will be recorded for every load deposited at the site:

- a) The date and time of delivery.
- b) The name and address of the waste producer.
- c) The detailed and accurate description of the waste including type, quantity (in tonnes and/or cubic metres) and EWC codes.
- d) How the waste is contained e.g. loose, container type.
- e) The carrier's name and address.
- f) Driver's name, signature and vehicle registration No.
- g) Signature or initials of person(s) producing/ accepting/ inspecting/ carrying the waste.
- h) Additional handling details/notes made by the driver after inspection of the load.
- i) SIC code of the premises which produced the waste (where relevant).
- j) Waste hierarchy declaration.
- k) Information on any previous treatment of the waste e.g. manual or mechanical.

4.2.2 Any wastes identified during the incoming waste inspections which do not conform to site acceptance criteria will not be accepted. If the non-conforming waste is discovered following deposit, the waste will be loaded back onto the vehicle and removed off site or quarantined immediately in a sealed/covered skip or container to await safe removal.

4.2.3 If the site reaches capacity and/or operational difficulties occur, incoming wastes will be diverted to another authorised treatment facility.

4.3 Receiving Wastes

4.3.1 Poultry manure will be delivered to site in covered trailers or enclosed HGVs and unloaded to the enclosed storage building. Apple pomace wastes will be delivered to site in enclosed HGVs and unloaded to the silage clamp. Liquid wastes will be delivered to site in sealed tankers and unloaded via an enclosed line to an enclosed tank. Care will be taken when unloading wastes to minimise drop heights and agitation of material.

4.4 Waste Storage

4.4.1 Poultry manure will unloaded to an enclosed reception building which will be operated under negative pressure. Exhaust air from the building will be directed to CHP plant for abatement of ammonia and odour.

4.4.2 Low storage volumes and strict turnaround of wastes on site will be observed. Stock rotation procedures will be observed to ensure the maximum duration of storage times are not exceeded.

4.4.3 It is not anticipated that wastes will need to be stored for any extended periods of time. Liquid wastes will not be stored on site, these being introduced directly to the process from sealed tankers to an enclosed tank.

4.5 Transfer of Feedstocks to Process

- 4.5.1 There is potential for odour during transfer of feedstocks to the process. However, the feedstocks will be exposed for very short periods of time and therefore not anticipated to give rise for significant potential for odour.

4.6 Gas Upgrading Unit

- 4.6.1 The gas upgrading unit will upgrade the biogas from the anaerobic digestion process. The biogas will be cooled, compressed and cleaned using desulphurization bacteria and active carbon filtration to further remove any residual contaminants which ensures that it reaches the quality of natural gas and presents no odour risk.

4.7 Reed Beds

- 4.7.1 The reed bed system will polish/clean the treated liquid ready for discharge.

4.8 Housekeeping

- 4.8.1 Regular cleaning of operational areas (i.e. minimum once daily) such as roads, drainage channels and holding tanks will be carried out using mobile plant and water supplies to discourage odour generation from old degrading materials. The odourous materials will then be placed in a sealed rejected waste skip.
- 4.8.2 In addition to daily visual monitoring and inspections of the site and plant, site management will also monitor the integrity of the plant. In the event that there are any issues with the plant or issues that may lead to the release of odour then maintenance works will be carried out as soon as practicable.
- 4.8.3 In addition to the above measures, the operator will further avoid fugitive odorous emissions by committing to the following housekeeping:

1. Maintain a clean, well-organised site
2. Jet spray and disinfect storage areas when emptied
3. Clean equipment that has been in contact with odorous materials
4. Carry out a deep clean of the feedstock storage area once a quarter and record this in the site diary
5. Site surfaces and drainage systems designed in a way that allows easy cleaning.
6. Floors sealed to prevent absorption and adsorption of odour producing residues.
7. Periodically treat drainage systems with bacteria-inhibiting solution.

4.9 Liaison with Neighbours

- 4.9.1 In the extreme event of significant but temporary odour releases outside normal operations, neighbours will be contacted to advise them of what is occurring and the action being taken. The Environment Agency (EA) and/or Local Authority will also be notified.
- 4.9.2 An open-door policy will be encouraged by the operator to enable any complaints from neighbouring premises (if received) to be dealt with immediately. The complainant will then be supplied with remedial actions taken and any procedures or measures put in place by the operator to reduce or ideally eradicate the likelihood of a subsequent complaint.
- 4.9.3 If any odour complaints are received, the complaint will be assigned to an operative familiar with the sites operation who will complete a 'complaints and events log' which will be detailed individually on the complaints form (in Appendix II), both of which will be kept for inspection on request by the EA. Details of information to be completed are dates, nature of complaint, weather conditions at the time of the complaint, investigation details, action taken and a signature (as a minimum). Odour complaints will be investigated and responded to within 24 hours and suitably reviewed by the site manager who is ultimately responsible.
- 4.9.4 The operator would also be required to make a note of any unavoidable events such as plant/equipment malfunctions in the site diary, rather than just actual complaints received. This will ensure that if complaints are received retrospectively from either the Council/EA or directly, any circumstances which led to that complaint as a result of elements outside of the operator's control would be able to be attributed to the cause of the complaint. If there are significant odour releases outside normal operations, the operator will cease operation, investigate and resolve the issue before continuing.

4.10 Trigger levels

4.10.1 The table below identifies trigger levels for action to be taken in relation to odour attributed to the plant.

Table 4.1 – Odour Trigger Levels

Odour Intensity Scale & Description		Actions Taken
1 - Negligible	No detectable odour	No further action taken
2 - Low	Faint odour (barely detectable)	No further action taken
3 - Moderate	Moderate odour easily detected while walking (possible interference)	Immediate investigation in accordance with the OMP and the issue will be rectified as soon as practicable
4 - High	Strong odour (bearable, but offensive)	Immediate investigation in accordance with the OMP and the issue will be rectified as soon as practicable
5 - Severe	Very strong odour (this is when you really wish you were somewhere else)	Immediate investigation in accordance with the OMP and the issue will be rectified as soon as practicable

4.10.2 Regardless of intensity, any score over 3 will be investigated immediately with suitable measures implemented at the site to rectify the issue. All investigations will be recorded in an odour diary.

4.10.3 Due to the operation being predominantly enclosed the potential for an odour release intensity over 3 is very low – negligible. The site will be operated in accordance with a preventative maintenance schedule which ensure that the plant is maintained and operated correctly at all times to significantly reduce the risk of any potential odour release.

4.11 Training

4.11.1 All employees and sub-contractors of STL Energy Limited involved with potentially odorous materials and their handling will receive training in Sniff testing (including office/admin workers allocated to undertake the Olfactory (Sniff) test) and complaint reporting (management and operations staff).

- 4.11.2 Training will be given to all relevant persons to make sure they are competent in completing olfactory assessment survey forms, odour complaint report forms and the odour diary to ensure sufficient monitoring of odours can be carried out.

- 4.11.3 Operational staff will receive spill clean-up training including containment of odorous wastes.

5 Monitoring (If Required)

5.1 Monitoring Odorous Releases

5.1.1 STL Energy Limited will use the following techniques to monitor odorous releases, if required:

- a) Olfactory Monitoring
- b) Complaints Monitoring
- c) Odour Diaries (when necessary)

5.2 Olfactory Monitoring

5.2.1 The site supervisor will monitor odour around the entire site perimeter on a daily basis and an Odour Diary will be completed. The monitoring will be carried out at intervals while the site is operational, additional monitoring may be carried out should there be reason to suspect a potential odour problem.

5.2.2 The results of monitoring exercises and any remedial action taken will be entered into the logbook which will be available to inspect upon request. The name of the site supervisor will be stated in the site's diary along with notes on weather including precipitation, temperature, wind speed and direction (from Met Office information).

5.2.3 Should the monitoring conclude that a certain activity/waste is giving rise to odour which is migrating offsite, steps will be taken to reduce the impact of this activity, which may include, but is not limited to; removal offsite to a suitably licensed facility, faster processing/lower storage rates, pumping and removal of standing surface water etc.

5.2.4 Prior to carrying out a routine odour check, the relevant member of staff will vacate the site for a period of 30 minutes and then carry out the assessment on their return to ensure they are not desensitised to the odour.

5.2.5 Further details of the trigger levels for odour intensity are detailed in the previous section.

5.3 Odour Monitoring Procedure

- 5.3.1 Olfactory (Sniff) testing will be carried out by trained, competent staff. Assessments will be carried out in response to specific complaints or should the site operator detect odour on-site.
- 5.3.2 The Assessor should not:
- a) Smoke or consume strongly flavoured food or drink for at least 30 minutes before the assessment.
 - b) Consume confectionary or soft drinks immediately before the assessment.
 - c) Apply scented toiletries, such as perfumes or aftershave immediately before an assessment.
- 5.3.3 Starting points of assessments outside the site should first be upwind of the site as far as access and safety factors in the surrounding area allows, progressing towards the site boundary. The next starting point should be downwind of the site as far as access and safety factors in the surrounding area allows, progressing towards the site boundary and then moving away from the site in an upwind direction. The person carrying out the assessment should walk slowly and breathe as normal. The points have not been provided on the site plan due to the regular variations in wind speed and direction.
- 5.3.4 To ensure odour adaptation / blindness does not affect the results of the outcome, an additional employee who is not exposed to odour throughout the day will take an additional assessment. In addition to this and prior to carrying out a routine odour check, the relevant member of staff will vacate the site for a period of 30 minutes and then carry out the assessment on their return to ensure they are not desensitised to the odour.

5.4 Complaints Monitoring

- 5.4.1 All odour complaints will be investigated promptly and appropriate remedial action will be taken if the complaint is validated. Complaints will be recorded on the form found in Appendix II.

5.4.2 Complaints to the EA will also be recorded and taken into account. An olfactory assessment survey will be carried out from where the complaint was made and from any convenient locations between the complainant/receptor and the site so that the complaint can be validated or rejected.

5.5 Odour Diaries

5.5.1 If members of the local community are frequently reporting odour issues in the vicinity, then they will be asked (if agreeable) to keep an odour diary. This will help to build up an account of when the odour occurs, the location of the complaint and the site operations that were being carried out at the time, as well as the duration of the activities taking place. Any obvious problems can then be addressed.

6 Contingency Plans

6.1 Contingencies and Emergency Plans

6.1.1 In accordance with the EA's guidance on OMPs, contingency plans have been prepared to react to situations 'where monitoring indicates that a potential odour source is not completely under control, meteorological conditions are unfavourable or that adverse impact has occurred'.

6.1.2 If excessive odours are detected at the site boundary, other monitoring point or a complaint is received, the following remedial procedures will be taken:

- a) Firstly, identify the odour source; is it from:
 - i) Site operations; or,
 - ii) An off-site source (e.g agricultural spreading operation, other industrial sources)

- b) If on site:
 - i) Report incidence to the site or technically competent manager;
 - ii) Identify the point of release of the odour;
 - iii) Identify the cause of the release i.e. machine breakdown, leakage, etc.;
 - iv) Identify a solution;
 - v) Implement a solution;
 - vi) Carry out olfactory tests to check if fix is working;
 - vii) Record actions taken on relevant forms and site diary as required by this plan

6.1.3 Then, reference should be made to the next section for actions taken if odour is being produced on site, to identify an appropriate solution.

6.2 Corrective Actions for Various Situations

6.2.1 Table 6.1 below summarises the various problems that could potentially arise at the site and the standard responses available, which will assist in reducing odour potential.

Table 6.1 - Corrective Actions

Process/Event	Problem	Corrective Action
Normal operation	Excess odour	See section 6.3 for corrective actions required
Abnormal operation, eg adverse weather conditions	Adverse weather conditions resulting in increased odour risk at sensitive receptors	See section 6.4 for corrective actions required
Staff shortages/human error	Staff shortage due to absence/no-shows	See section 6.5 for corrective actions required
Operational failure	Operational failure such as machine/plant malfunction/failure leading to odour issues	See section 6.6 for corrective actions required
Waste Loading/unloading	Accidental Spillage	Follow identified spillage procedure to contain odour release.
Stored wastes	Odorous emissions detected	Olfactory/SNIFF test required to pinpoint source. Ensure procedures outlined in Section 5 are adhered to in full. Implement liaison programme if risk deemed HIGH or VERY HIGH i.e. strong or severe as shown in Table 2.5

6.3 Normal Operation

6.3.1 In the event that excess odour is detected during normal/routine operation, the offending odour will be traced and the reason for the cause of the problem will be investigated. Once solutions are in place, olfactory monitoring will be carried out to ensure the solutions put in place are having the desired effect.

6.4 Abnormal Events

6.4.1 Adverse weather conditions can promote generation of odour and inhibit its effective dispersion e.g. hot weather with little wind, resulting in increased risk of odour to receptor locations. If this happens odour causing operations will cease until more favourable meteorological conditions return.

6.5 Staff Shortages/Human Error

- 6.5.1 In the event of unforeseen staff shortages arising from illness, suspension or no shows, the operator will make a judgement whether to reduce the number of incoming loads, thus reducing processing frequency and storage of potentially odourous wastes. The operator will then seek to increase staffing levels within a timely manner to ensure the site can continue to operate at its required capacity.
- 6.5.2 All staff will be trained and undergo toolbox talks every 6 months (or sooner if operations change) to reduce the impact of human error. In instances where a human error has caused an odour issue, the site may suspend operations until the issue has been rectified and the member of staff will be warned and re-trained accordingly.

6.6 Operational Failure

- 6.6.1 The manager will be contacted by staff in the event of any operational failure such as the breakdown of plant, systems or equipment and will decide whether operations are to continue or be suspended prior to corrective action being taken. Serious operational failures, which result in the closure of the site, will be recorded in the site diary.
- 6.6.2 All repairs to site security will be made within 24 hours of discovery of the damage if possible and the site will be made secure until the repair has been carried out.
- 6.6.3 Any major defects found during the daily site inspection which are likely to lead to a breach of permit conditions will be repaired by the end of the working day in which they are found, where possible. If a repair is not possible by the end of the working day and a potential breach of permit conditions may occur, the EA will be contacted to agree a suitable timescale for repair.
- 6.6.4 All defects and problems likely to give rise to odour will be recorded on the form STL/RF/7 or the operators own recording procedures with repairs/solutions being carried out immediately. Neighbours will be alerted if the problem cannot be rectified immediately and provided a timescale for when the problem will cease.

6.6.5 Essential spares for plant maintenance will be kept on site.

6.7 Liaison with Neighbours

6.7.1 In the extreme event of significant but temporary odour issues during normal operations, neighbours will be contacted to advise them of the situation and the action being taken. The EA will also be notified.

6.7.2 An open-door policy will be encouraged by the operator to enable any odour complaints from neighbouring premises (if received) to be dealt with immediately. The complainant will then be supplied with remedial actions taken and any procedures or measures put in place by the operator to reduce or ideally eradicate the likelihood of a subsequent complaint.

6.7.3 If any odour complaints are received, the complaint will be assigned to an operative familiar with the sites operation who will complete a 'complaints and events log' and detailed individually on the complaints form (in Appendix II), both of which will be kept for inspection on request by the EA. Details of information to be completed are dates, nature of complaint, weather conditions at the time of the complaint, investigation details, action taken and a signature (as a minimum). Odour complaints will be investigated and responded to within 24 hours and suitably reviewed by the site manager who is ultimately responsible.

6.7.4 The operator would also be required to make a note of any unavoidable events or plant/equipment malfunctions in the site diary, rather than just actual complaints received. This will ensure that if complaints are received retrospectively from either the Council/EA or directly, any circumstances which led to that complaint as a result of elements outside of the operator's control would be able to be attributed to the cause of the complaint. If there are significant odour releases outside normal operations, the operator will cease operation, investigate and resolve the issue before continuing.

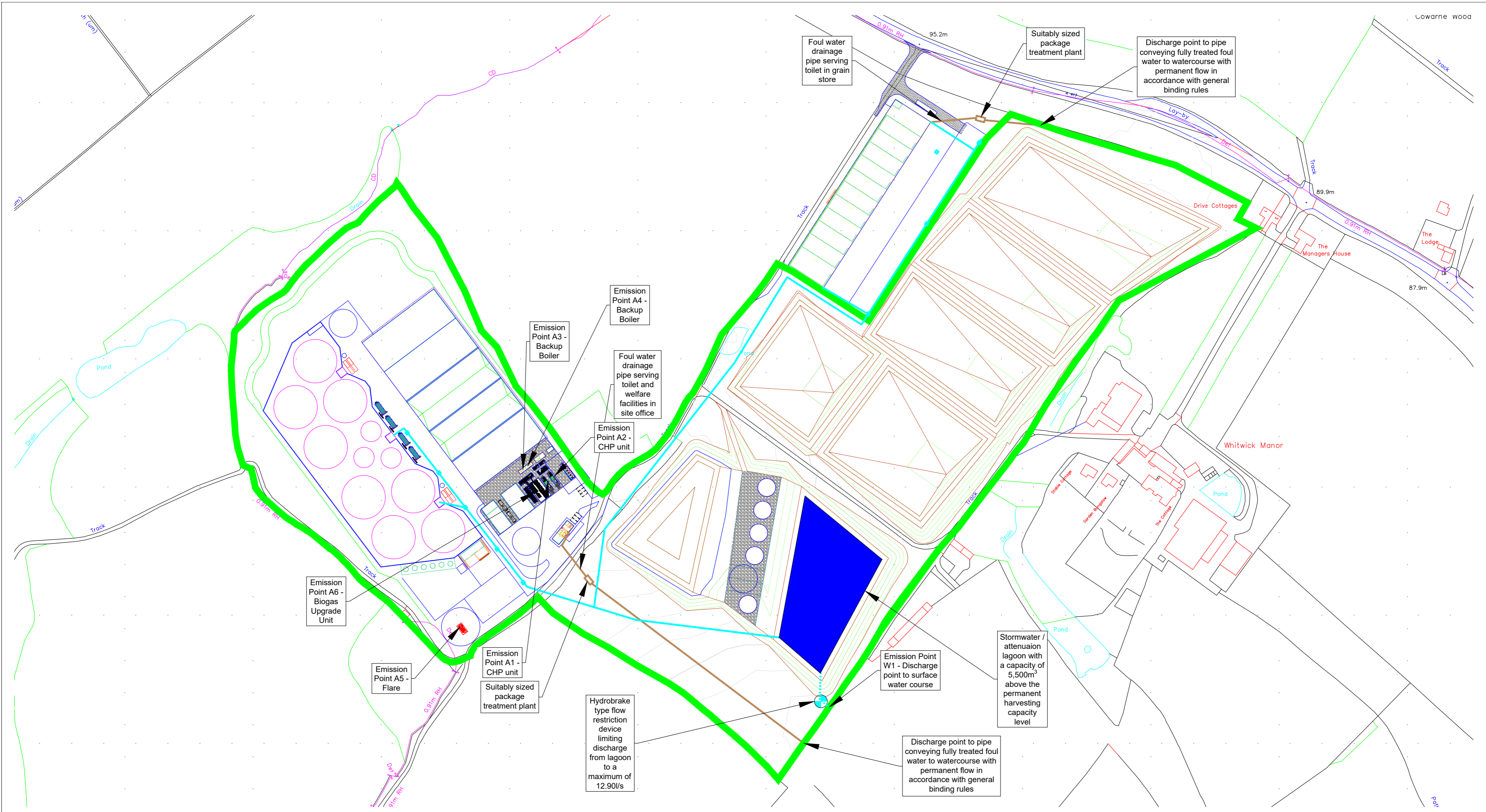
6.8 OMP Management

6.8.1 This OMP will be reviewed at least annually unless it becomes apparent that the activities are giving rise to pollution outside the site due to odour, in which case it will be revised

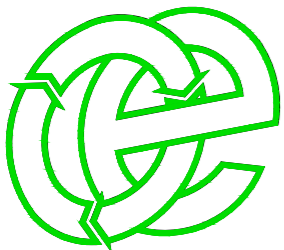
sooner within a timescale agreed with the EA and a copy forwarded to the EA for approval before implementation.

Appendix I

Drawings



Oaktree Environmental Ltd
Waste, Planning and Environmental Consultants



Lime House, Road Two, Winsford, Cheshire, CW7 3QZ
t: 01606 558833 | e: sales@oaktree-environmental.co.uk

DRAWING TITLE
SITE DRAINAGE PLAN

CLIENT
STL Energy Ltd

PROJECT/SITE
Whitwick Manor, Lower Eggleton, Herefordshire, HR8 2UE

SCALE @ A2 1:2,000 **CLIENT NO** 2102 **JOB NO** 006

DRAWING NUMBER 2102-006-02 **REV** B **STATUS** Issued

DRAWN BY CG **CHECKED** - **DATE** 27.04.23

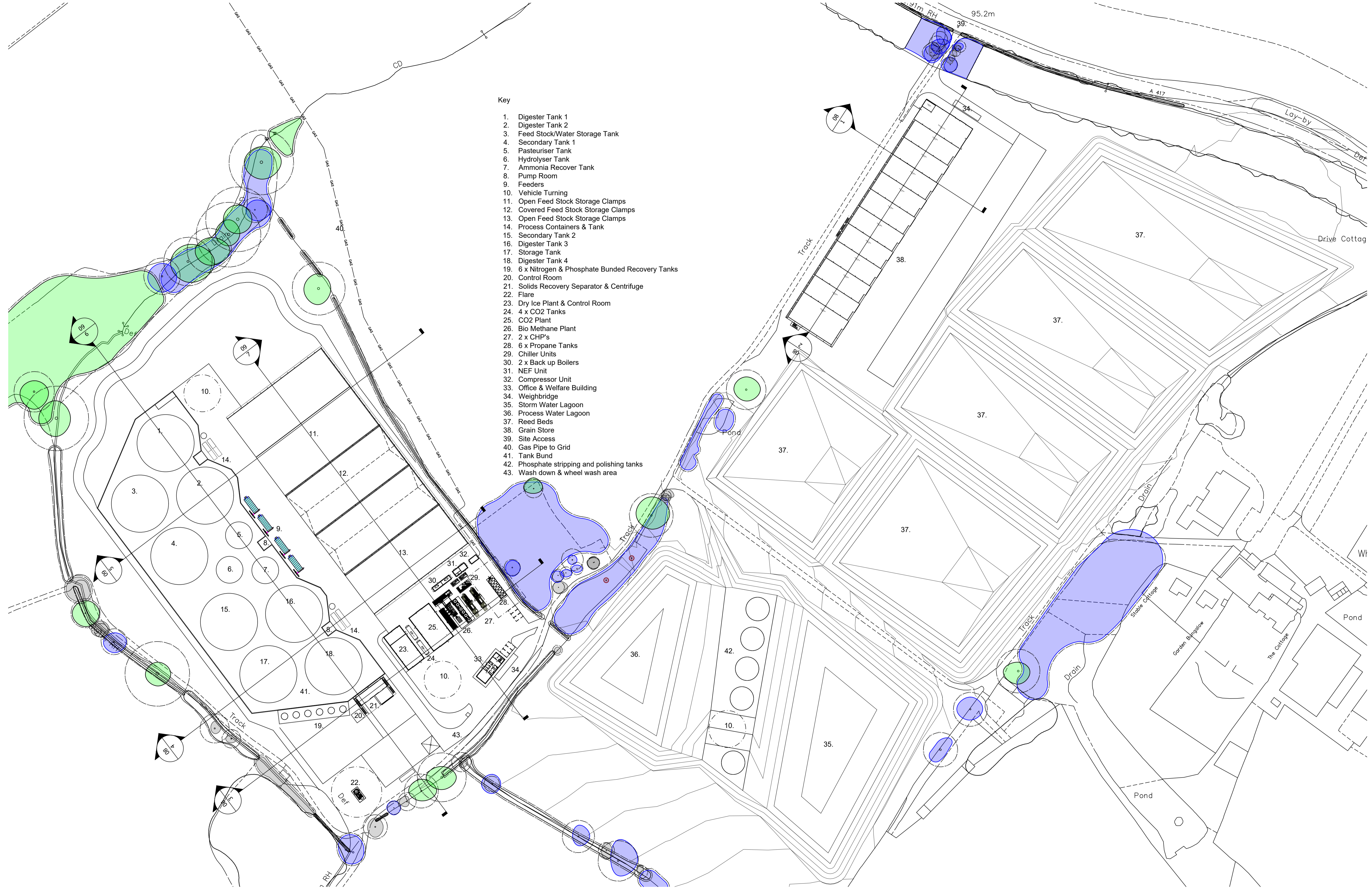
KEY:

- █ Site boundary
- 575mm diameter HDPE pipe with fall of at least 1 vertical in 50 horizontal
- - - - 150mm diameter HDPE pipe with fall of at least 1 vertical in 50 horizontal

NOTES
Drawing for indication only. Reproduced with the permission of the controller of H.M.S.O. Crown copyright licence No. 100022432. This drawing is copyright and property of Oaktree Environmental Ltd.

REVISION HISTORY

Rev:	Date:	Init:	Description:
-	25.11.22	CG	Initial drawing
A	28.11.22	CG	Minor amendment
B	27.04.23	IA	Boundary amendment

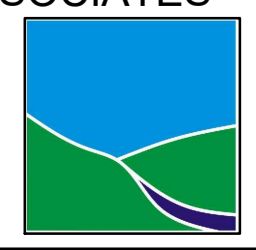


- Key
1. Digester Tank 1
 2. Digester Tank 2
 3. Feed Stock/Water Storage Tank
 4. Secondary Tank 1
 5. Pasteuriser Tank
 6. Hydrolyser Tank
 7. Ammonia Recover Tank
 8. Pump Room
 9. Feeders
 10. Vehicle Turning
 11. Open Feed Stock Storage Clamps
 12. Covered Feed Stock Storage Clamps
 13. Open Feed Stock Storage Clamps
 14. Process Containers & Tank
 15. Secondary Tank 2
 16. Digester Tank 3
 17. Storage Tank
 18. Digester Tank 4
 19. 6 x Nitrogen & Phosphate Bunded Recovery Tanks
 20. Control Room
 21. Solids Recovery Separator & Centrifuge
 22. Flare
 23. Dry Ice Plant & Control Room
 24. 4 x CO2 Tanks
 25. CO2 Plant
 26. Bio Methane Plant
 27. 2 x CHP's
 28. 6 x Propane Tanks
 29. Chiller Units
 30. 2 x Back up Boilers
 31. NEF Unit
 32. Compressor Unit
 33. Office & Welfare Building
 34. Weighbridge
 35. Storm Water Lagoon
 36. Process Water Lagoon
 37. Reed Beds
 38. Grain Store
 39. Site Access
 40. Gas Pipe to Grid
 41. Tank Bund
 42. Phosphate stripping and polishing tanks
 43. Wash down & wheel wash area



NUMBER - REV - CLIENT - PROJECT 01113-00 - E - N Layton - Whitwick Manor			
TITLE Site Plan		BOURNE VALLEY ASSOCIATES ANDOVER LANE FARM FABERSTOWN ANDOVER HAMPSHIRE SP11 9PE Tel: 01264 850159 Email: info@bournevalley.co.uk	
DATE 08.08.22	SHEET 02	SCALE 1:1000	PAPER SIZE A1
DRN BY AW	CHK BY AW		

Rev No.	Revision Note	Date	Drawn	Checked
A	Pre App Drawings	12.11.19	AW	AW
B	Wetlands system added to the site	01.04.20	AW	AW
C	Grain store updated	02.10.20	JB	AW
D	Red line site amended	07.09.22	AW	AW
E	Grain store and storage building revised	28.03.23	AW	AW



Appendix II

Record Forms

Odour Diary			Sheet No	
Name:		Address:		
Telephone Number:				
Date of odour:				
Time of odour:				
Location of odour, if not at above address:				
Weather conditions (dry, rain, fog, snow etc):				
Temperature (very warm, warm, mild, cold or degrees if known):				
Wind strength (none, light, steady, strong, gusting):				
Wind direction (e.g. from NE):				
What does it smell like? How unpleasant is it? Do you consider this smell offensive?				
Intensity – How strong was it? (see below 1-5):				
How long did go on for? (time):				
Was it constant or intermittent in this period:				
What do believe the source/cause to be?				
Any actions taken or other comments:				

Intensity (Detectability)

- 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
- 5 Very strong odour (possibly causing nausea depending on the type of odour)

STL ENERGY LIMITED
COMPLAINTS REPORT FORM (STL/RF/7)

Date Recorded:	Reference Number:
Name and address of caller	
Telephone number of caller	
Time and Date of call	
Nature of complaint (noise, odour, dust, other) (date, time, duration)	
Weather at the time of complaint (rain, snow, fog, etc.)	
Wind (strength, direction)	
Any other complaints relating to this report	
Any other relevant information	
Potential reasons for complaint	
The operations being carried out on site at the time of the complaint	
Follow Up	
Actions taken	
Date of call back to complainant	
Summary of call back conversation	
Recommendations	
Change in procedures	
Changes to Environmental Management System (EMS)	
Date changes implemented	
Form completed by	
Signed	
Date completed	

COMPLAINT RECORDING PROCEDURE:

Any complaints received will be recorded on form STL/RF/7. This form will normally be completed, signed and dated by the Site Manager; if they are not available the Office Manager will complete the form.

- 1) The name, address and telephone number of the caller will be requested.
- 2) Each complaint will be given a reference number.
- 3) The caller will be asked to give details of:
 - a) the nature of the complaint;
 - b) the time;
 - c) how long it lasted;
 - d) how often it occurs;
 - e) Is this the first time the problem has been noticed; and
 - f) what prompted them to complain.
- 4) The person completing the form will then, if possible, make a note of:
 - a) the weather conditions at the time of the problem (rain, snow, fog etc.);
 - b) strength and direction of the wind; and
 - c) the activity or activities taken place on the site at the time the noise was detected, particularly anything unusual.
- 5) The reason for the complaint will be investigated and a note of the findings added to the report.
- 6) The caller will then be contacted with an explanation of the source of the complaint if identified and the action taken to prevent a recurrence of the problem in future.
- 7) If the caller is unhappy about the outcome or unwilling to identify themselves the caller will be invited to contact Environment Agency and or the Local Authority.

Note: Following any complaint the relevant management plan(s) will be reviewed to ensure appropriate actions are in place to counter any problems.