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Odour Management Plan

Scottow Enterprise Park

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Odour Management Plan

Scottow Enterprise Park



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1. INTRODUCTION

This document has been prepared by Sol Environment Ltd on behalf of Standard Gas SG No.1 Limited (referred to as '*Standard Gas*' hereafter) to provide an Odour Management Plan (OMP) in support of a Bespoke Installation Permit application for the proposed operation of a synthesis gas fired CHP facility that incorporates Advanced Thermal Treatment (ATT, pyrolysis) which thermochemically produces cracked and cleaned syngas from pre-processed, non-hazardous solid wastes, principally Solid Recovered Fuels (SRF) and Refuse Derived Fuels (RDF) to operate a series of gas fired CHP engines to generate power and provide heat to the wider Scottow Enterprise Park.

The document provides a structured framework and approach in effectively managing potential odour releases associated with the operations at the site.

This OMP has been produced in accordance with the following documents:

- Environment Agency's Technical Horizontal Guidance Note '*H4: Odour Management: How to comply with your permit*'; and
- General monitoring procedures detailed in Environment Agency guidance document Internal Guidance for the *Regulation of Odour at Waste Management Facilities*.

The purpose of this document is to outline the management control measures that have been established to prevent and control odour emissions and associated impacts from the site.

1.1 Structure of Odour Management Plan

The OMP has been structured in accordance with the EA H4 Odour Management Plan Guidance.

This OMP has been developed to clearly define the measures by which odour emissions will be controlled and prevented, namely by;

- Receipt and Management of Odorous Materials;
- Transfer of Odour Chemicals to Air;
- Containment of Contaminated Air;
- Transport and Dispersion;
- Engaging your Neighbours;
- Response to Complaints;
- Ceasing or Reducing Operations; and
- Accident Management Plan.

The OMP considers the following aspects of the facility:

- Activities that have the potential to produce odour and sources of release;
- Actions to mitigate the effect of odour release (during normal and abnormal operations);
- Details of the sites monitoring regime;
- Details of responsible persons at the installation; and
- Potential outcomes of each failure scenario in respect to odour impact.

1.2 Status of the OMP

The OMP is a “live” document and will form part of the key environmental management document for the facility. All monitoring procedures, responsibilities and compliance actions will updated as and when required.

Any revisions in the OMP or associated Annexes will be updated and inserted accordingly.

2. SITE BACKGROUND

2.1 Site Setting

The site is located within Hangar 2 of the former airfield at RAF Coltishall between the villages of Badersley and Scottow in Norfolk. The Scottow Enterprise Park is located to the north of the airfield a majority of which is now a PV array solar farm.

Hangar 2 is within the Enterprise Park, surrounded by other industrial or commercial units, with Gravitilab Aerospace Services to the east, Vdepot Ltd to the north, and KMR Motorsport and EMH Joinery to the west. To the northwest lies HMP Bure (prison) with the Douglas Bader School and residential properties associated with the village of Badersfield beyond.

The surrounding area is predominantly agricultural, with the solar farm dominating the southern area associated with the airfield. The closest water feature comprises a pond approximately 375m east, beyond which is an unnamed stream within Stewards Plantation at 1.2km distant. The River Bure is located 1.6km to the west of the site. Residential properties on Barton Road are the closest in proximity to the site located approximately 400m to the northwest.

The site lies within Flood Zone 1 with a negligible chance of flooding.

The site is not considered to be overly sensitive in relation to potential odour impacts.

Details pertaining to potential odour receptors which have been considered in detail within the OMP are provided in Section 2.6.

2.2 Facility and Process Overview

The process has been designed to process pre-prepared non-hazardous solid waste, principally SRF and RDF at approximately 6 tonnes per hour to produce clean syngas. The key infrastructure and design of the site will comprise the following:

- Main processing building;
- External baled storage area;
- Feed system with de-baler and screening equipment;
- Pyrolysis Island;
- Syngas cleaning and conditioning system;
- Pyrolysis exhaust stack (A1);
- Emergency flare (A3);
- Char collection and cooling system;
- 2 x CHP Engines with associated exhaust stack (A2); and
- Emergency diesel generator and associated auxiliary fuel storage.

Standard Gas have developed a facility that will produce clean gas for the purposes of generating renewable heat and power from pre-processed non-hazardous wastes. The Installation has been designed to process approximately 6 tonnes per hour of pre-prepared non-hazardous waste, which will be thermally treated /

pyrolysed at elevated temperatures to produce a cracked and clean synthetic gas that satisfies the EU Industrial Emissions Directive Article 42(1) requirements.

Accordingly, the resultant syngas will be purified to the extent that it will no longer be classed as a waste, and its combustion will result in emissions no higher than those resulting from the combustion of natural gas.

The relevant listed activity for the Installation is defined by Section 1.2 Part A(1)(f) (iv). All emissions from the combustion activities shall be in accordance with the MCP Directive, noting that Chapter IV of the Industrial Emissions Directive (IED) does not apply where Article 42 (1) is achieved – deeming syngas as no longer a waste and causing emissions no higher than combustion of natural gas.

Under Abnormal Operating Conditions it is anticipated that the Installation will be required to mirror the Emission Limit Values (ELV) prescribed by Chapter IV of the IED.

All feedstock will either be delivered to site loose or in pre-prepared sealed bales. Bales will either be stored externally within a designated sealed storage area or internally within the main processing building. All loose waste will be stored internally within a dedicated bay within the main processing building. All feedstock will be inspected via a dedicated quality assurance site operative. When ready for processing, the feedstock will be loaded into a sealed and contained hopper, de-baled if required, and pre-processed via screening equipment. Once processed, the feedstock will be transferred into the primary pyrolysis retort where it undergoes thermal conversion and processed into syngas. In order to ensure that there is no secondary formation / reformation of tars and oils within the syngas, the syngas is then passed through multiple heat exchangers to elevate and thermally crack and to ensure the effective thermal decomposition of all long chain hydrocarbons. Once cracked, the syngas is quenched and rapidly cooled to remove any residual carbon and solids in the gas stream.

Any residual contamination in the syngas such as acid gases, halides and particulates are fully scrubbed from the gas using conventional 'wet' scrubbing abatement techniques. The elevated temperature of the gas cracking and quenching stages ensures that condensable hydrocarbons (tars and oils) do not reform in the gas and that the downstream gas cleaning system are effective in conditioning the gas.

The mineral fraction/inert material (ash, glass, stone etc) present within the waste is retained within the carbon char stream and removed from the pyrolysis system via a water cooled sealed screw conveyor and stored in a sealed container. The pyrolysis char is a high carbon, low ash material that is intended to be sold into the construction sector and used as a low carbon aggregate additive product. Any ash or particulate that may be entrained within the syngas will be removed through the syngas abatement system.

The syngas is then cooled further to below the dew point and any condensate collected. The condensate is low volume, clean and odour free. The condensate is discharged to a sealed vessel and returned into the scrubber liquor systems and reused within the process or collected and transferred offsite for offsite disposal at a suitably qualified third-party treatment process, as required. Syngas quench and scrubber liquors are all cooled using a non-contact heat exchanger connected to a evaporative cooling system and returned and recirculated through the process.

All syngas is monitored in real time using gas chromatography to ensure that the CV and gas composition are consistent with the requirements of the gas engine. The clean syngas is then combusted within the two Jenbacher type Gas Engines for the production of renewable electricity and heat.

During start-up scenarios, the pyrolysis plant is brought up to temperature using LNG auxiliary fuel supplied from an onsite tank farm. Once at temperature, the pyrolysis plant is operated using clean synthesis gas.

All electricity produced by the CHP engines is exported to local distribution network via the onsite 11kV transformer.

2.3 Competent Operator

All personnel working at the facility will be trained and overseen by the technology developer and manufacturing team.

All personnel, irrespective of discipline will be trained in necessary sections of Standard Gas' operational procedures and management plans.

All staff working for and on behalf of the site will be suitably trained and competent (e.g. professional maintenance engineers, electricians, equipment operators etc). All personnel working on site will be trained in the necessary sections of the EMS and associated procedures.

Additional activities will include general site housekeeping and administration activities. Additional staff attending the site will be visiting engineers from the equipment manufacturers who are adequately trained to perform their duties at site. The operator will maintain written operation instructions for all plant and monitoring equipment present on site.

2.4 On-site Odour Sources

Source Materials

The site will process 50,000 tonnes of pre-processed non-hazardous solid waste per annum.

The site stores wrapped bales externally which have the potential to become an odour source. The sites primary control measure in relation to external storage of bales is stringent management. Only well wrapped and non-odorous bales are suitable for external storage, thereby minimising potential for odour escape or rainwater ingress and subsequent generation of leachate. The bale storage area is subject to inspection as part of the twice daily site walkover and any damaged or loosely wrapped bales are immediately removed and stored internally prior to processing as soon as possible.

Further waste storage and all processing activities take place within the enclosed Hangar Building. To avoid any odour emissions from the building, the building is kept at slight negative pressure. An air extraction system will be in place resulting in odorous air within the building being thermally destroyed by the combustion system.

An inventory of Odorous Materials onsite has been provided in Table 2.1 below.

Table 2.1 Source Materials

Waste Type	Description	Odour Potential	Quantities and Storage Time
Baled feedstock	Baled feedstock is either delivered to the external storage yard or the main processing building	<p>Medium</p> <p>Odour potential is minimised through:</p> <ul style="list-style-type: none"> • Rejection of excessively malodorous waste loads; • Storage in wrapped form to prevent escape of odorous air or ingress of rainwater; and • Twice daily inspection to ensure no damaged or loosely wrapped bales are stored on site. 	<p>Five external storage piles and six internal storage piles with the following dimensions – 14.3m long x 5.6m wide x 3.3m high (265m³)– each pile will contain 144 bales</p> <p>Typically stored for 5 – 7 days and no longer than 3 months</p>
Loose feedstock	Loose feedstock is delivered to the internal storage bay	<p>Medium</p> <p>Odour potential is minimised through:</p> <ul style="list-style-type: none"> • Located internally only; • Processing occurring only when roller shutter doors are closed; • The processing building is kept under negative pressure with potential odorous air thermally destroyed within the combustion system. 	<p>Internal Storage Bay for loose feedstock with the following dimensions – 15m long x 7.5m wide x 4m high (450m³)</p> <p>Typically stored for 5 – 7 days and no longer than 3 months</p>
Biochar	Bottom ash is extracted from the process by a cooled scroll unit and stored within external sealed containers.	<p>Low</p> <p>Biochar is not typically inherently odorous material. Enclosed storage will also reduce odour risk.</p>	<p>External sealed containers</p> <p>Stored onsite for typically 1 week</p>

2.5 Off-site Odour Sources

The site is located within Enterprise Park, surrounded by other industrial and commercial units which don't have the potential to generate odour.

Due to the site being located within Enterprise Park and surrounded predominantly by agricultural, a solar farm and previous airfield, the site is considered to be located in an area with low sensitivity to odour.

2.6 Nearest Sensitive Receptors

The surrounding area is predominantly agricultural, with the solar farm dominating the southern area associated with the airfield. Residential properties on Barton Road are the closest in proximity to the site located approximately 400m to the northwest.

Information from the Multi Agency Geographic Information for the Countryside (MAGIC) website (<http://magic.defra.gov.uk/>) has been used to obtain information on sensitive ecological receptors within 1km of the site's boundary. There are no sensitive ecological receptors within 1km of the site. However, there are three LWS within 2km of the site, to the north and north west. Within 10km of the site there are three European sites, Norfolk Valley FENS, approximately 9km to the west and is designated as a SAC. Between the east and south of the site are numerous pockets of land specified as the Broadland and The Broads and are designated as Ramsar, SPA and SAC sites.

All sensitive receptors within a 1km radius are listed in Table 2.2 and Figure 2.1 below.

Table 2.2 Sensitive Receptors within 1km

Receptor	Type	Distance	Direction
3D at Depth	Commercial/industrial	20m	South east
October Studios	Commercial/industrial	Adjacent	West
Specialist Vehicle Training	Commercial/industrial	50m	West
HM Prison	Residential	190m	North west
Filby Road	Residential	380m	West
Douglas Bader School	Local Amenities	420m	North west
Barton Road	Residential	460m	North west
West Lodge	Residential	535m	North
Manor Farm	Residential	640m	North east
All Saints Church	Local Amenities	750m	North east
Honeysuckle Cottage	Residential	975m	South



Figure 2.1 Sensitive Receptors within 1km

3. CONTROL MEASURES

The site has a number of measures in place to control odour, all of these are considered in relation with the operations that are undertaken on site on a daily basis.

The site has aligned its environmental management system and operational procedures in accordance with the site environmental permit.

Site working plan procedures ensure that good operational practices are employed. Effective management and control minimises odour generation.

The following sections detail management techniques, procedures, and odour control measures to minimise the potential for odour generation.

3.1 Receipt and Management of Odorous Materials

The primary odour control measure on site is the strict adherence to the waste acceptance procedures. The below waste acceptance regime will result in a significant reduction in the likely odour potential of waste treated at the facility.

Pre-Acceptance of Waste

In order to prevent the acceptance of unsuitable wastes at the facility which may lead to adverse reactions or uncontrolled odours and emissions, the following systems and procedures are in place to ensure that wastes are suitable for treatment at the facility.

The site will only accept pre-prepared feedstocks.

The initial stage, as detailed within the pre-acceptance procedure, involves the provision of information and representative photographs and samples. Information gathered during the pre-acceptance phase will be used to determine the suitability of the waste for the facility before arrangements are in place to accept the waste.

At this waste pre-acceptance stage, the Operations Manager will ensure that information is obtained in writing to confirm:

- The type of process producing the waste;
- The specific process from which the waste derives;
- The quantity of waste;
- The form the waste takes (solid, liquid, sludge etc.);
- Hazards associated with the waste; and
- Description of the waste.

The Operations Manager will assess the suitability of the waste for processing through the process based on the information gathered. At the initial assessment of new waste streams, waste which is considered too malodorous by the Site Management, will not be accepted at the site.

These checks will be carried out before any decision is made to accept a waste and are the responsibility of the Operations Manager.

Acceptance of Waste

The EMS details the sites acceptance procedures to ensure that no excessively malodourous waste is accepted on site.

A check shall be made that the waste type and source has been Pre-Accepted. The vehicle will be then directed from the weighbridge to the relevant waste storage area where it will unload the waste and undergo visual inspection.

Where waste has not been Pre-Accepted the Site Manager shall be contacted and the waste assessed on specification. Any non-conforming material will be segregated, covered and disposed of as soon as possible in accordance with the sites waste rejection procedure.

Waste Rejection

All wastes will have undergone an assessment for suitability during the pre-acceptance stage, which includes an assessment on the potential for the waste to cause odour. Agreements with waste suppliers will clearly set out that loads that are very malodourous and likely to cause odour at the site boundary will not be accepted.

If a malodourous load arrives on site, the Operations Manager will be informed immediately. The Operations Manager will assess the load and decide if it should be rejected. The criteria for rejection is whether the load is likely to cause offense at the site boundary or cannot be processed through the plant without causing adverse impacts.

If the load is rejected it will be immediately returned within the delivery vehicle and the Operations Manager will notify the supplier that the load is un-acceptable and that any further non-conforming loads will result in the waste not being accepted on the site. A rejected load form will be completed by the Operations Manager and a note made in the site diary.

Waste Reception & Storage

All vehicles will enter the site and report to the weighbridge at the site entrance to weigh and record the delivered feedstock in accordance to the sites procedures.

All incoming and outgoing delivery vehicles will be recorded via the weighbridge.

Baled fuel feedstock will be delivered either to the external storage area or the main processing building in a curtain sided HGV and unloaded by forklift truck. Loose fuel feedstock will be delivered directly to the main processing building.

It is key to note that fuels are delivered to an agreed specification and do not require any further processing in advance of pyrolysis. When required the waste will be loaded directly into a sealed and contained hopper, de-baled if required and then transferred into the thermal conversion retort and processed into syngas.

The Hangar processing building, is kept under slight negative pressure through an extraction and ventilation system which draws potentially odorous air to the combustion system, thermally destroying any odorous compounds prior to release.

Site Management

In addition, general management of the site including good housekeeping measures ensure all wastes are stored appropriately, including a twice daily formal site inspection. Clearance of drainage gullies is regularly undertaken to prevent build up of potentially odorous detritus.

3.2 Transfer of Odour Chemicals to Air

The mobilisation of odorous chemicals to the air will be minimised through the following control measures:

- Reducing the rate of evaporation through only accepting dry wastes onto site;
- Ensuring externally stored baled wastes are well wrapped to prevent rain ingress and escape of potentially odorous air; and
- Minimising storage times of wastes onsite.

The process itself will ensure no escape of odorous emissions to air due the thermal destruction of any potentially odorous compounds within the waste during combustion prior to release to atmosphere.

3.3 Containment of Contaminated Air

All incoming waste transferred to site will be delivered to site within sheeted/covered vehicles. Only inspected and well wrapped bales will be stored externally. Wrapping of the waste ensures the containment of any potentially odorous wastes during storage.

To avoid any odour emissions from the main processing building, the building is kept at slight negative pressure. An air extraction system will be in place resulting in odorous air within the building being thermally destroyed by the combustion system.

3.4 End of Pipe Treatment

Any odorous air from the main processing building is extracted to the combustion system via an air extraction system.

The air extraction system will result in odorous air within the building being thermally destroyed by the combustion system.

There are no separate or additional release points associated with this system as all air is ultimately drawn into the pyrolysis system.

3.5 Engaging your Neighbours

If an action is being considered that has the potential to cause temporary odour impacts (however small) outside of the normal operational procedures, then the EA will be informed in advance. Neighbours who may be affected (see Table 2.1) will be contacted to advise them of the operation being undertaken, and that any increase in odour will be of a temporary nature.

In addition, the site will engage with the local community as often as possible in order to alleviate against negative site perception. The site management shall operate a publicly accessible website, whereby contact information is published such that the public remain informed and are provided with a means of contacting the site if necessary.

In the event of a complaint received from the public, Standard Gas will operate in accordance with the dedicated odour complaints procedure (See Section 3.6 below).

3.6 Response to Complaints

Receipt of an odour complaint during normal operations is treated as an exceedance of control levels. The primary response will be as detailed in accordance with the site's complaints procedure.

An Odour Complaint Report Form will be completed as soon as the complaint is received. A copy of the form is provided within Annex A.

An investigation shall be initiated into the cause of the complaint, this will involve as necessary:

- An olfactory survey following the procedure detailed in Section 4.3. The results of the survey will be recorded on the Odour Reporting Form provided within Annex B;
- An examination of the site activities at the time of the complaint;
- An examination of the meteorological conditions at the time of the complaint; and
- A review of the effectiveness of operational and odour control procedures.

If the complaint is validated it will be treated as an exceedance of the control level. The outcome of the investigation will determine the corrective actions to be implemented (see Section 5).

3.7 Ceasing or Reducing Operations

If the investigations carried out as a result of the complaint suggest that the activities on site need to cease, no more waste will be accepted on site and the process will be stopped until such time that the root cause has been addressed.

3.8 Accident Management Plan

The site maintains an Accident Management Plan (AMP) as required by the Environmental Permitting Regulations.

The AMP sets out the actions to be taken and measures required to prevent incidents and where an incident occurs the appropriate mitigation action to be taken.

The plan considers the following scenarios:

- Any spillage / leaks or loss of containment;
- Any vandalism which could cause damage to the plant and equipment resulting in spillage of waste;
- Flooding;
- Fire due to plant malfunction or electrical equipment causing an ignition source;
- Receiving incompatible waste on site;
- Failure of main services;
- Failure of major plant and equipment;
- Failure or unavailability of any environmentally critical plant; and
- Being unable to receive waste into the site i.e. alternative storage or refusal of loads.

Please refer to Section 6 which provides more information on how the site will address any events which could cause odour emissions from site.

4. MONITORING

The company will employ the following monitoring techniques to ensure that the Key Control Measures (Section 3) are maintained and effective, operational procedures are followed and that good practices are being implemented:

- Site inspections by the Site Manager or delegated personnel;
- Site audits and inspections by Natural Resources Wales;
- Site Inspections by the Planning Authority; and
- Third party audits.

4.1 Responsible Persons

Responsible persons are detailed within Annex C. All site personnel are responsible for immediately reporting odour problems to the Site Manager or Managing Director.

4.2 Meteorological Conditions

Meteorological forecasts and conditions shall be monitored to ensure that any potential odour complaints can be fully investigated and that effective monitoring can be carried out. Meteorological data will be recorded as per Table 4.1 below.

Table 4.1 Meteorological Monitoring

Monitoring Requirements	Frequency
Observed and recorded description of conditions: precipitation, drizzle, rain, sleet, snow, temperature, winds etc.	Recorded daily
Wind speed and direction	Recorded continuously
Temperature	Recorded continuously

4.3 Olfactory ('Sniff Test') Monitoring

Odour shall be monitored daily at points around the site boundary and observations shall be noted on the daily odour report form provided within Annex B. Surveys shall be carried out in accordance with the monitoring protocol contained within Technical Guidance Note H4.

Four suitable locations downwind of the processing building but internal to the site boundary will be chosen to carry out the sniff test to clarify that the impact is not detectable at the site boundary and able to create an offsite impact.

In the event that odour is detectable at the site boundary, an offsite investigation will be required in the direction of the prevailing wind and closest sensitive receptor. This will also be recorded on the daily odour report form provided within Annex C.

The odour assessor must not be subject to significant odour in the 30 minutes prior to the assessment and shall be compliant with the requirements laid down in the Olfactory Survey procedure (detailed in Annex B). This is to ensure that monitors are not suffering from odour fatigue and will be sensitive to site odours.

If any detectable odour is identified at the site boundary and is judged to be moderate (Odour Intensity Rank 3) then the Managing Director (or Site Manager) will be notified immediately and the olfactory survey will continue to attempt to determine the scope and extent of the odour plume, as follows:

- A suitable location downwind of the site and potentially sensitive receptor at which the odour plume is unlikely to extend will be selected for assessment;
- Survey will continue toward the facility until a site-related odour is perceived; and
- Assessment points perpendicular to the plume axis and equidistant from the site will then be monitored, subject to access requirements.

Monitoring frequencies shall be as detailed in Table 4.2.

Table 4.2 Monitoring Frequencies

Parameter	Monitoring Technique	Frequency
Meteorology	See Table 4.1	
Odour	Olfactory monitoring	Daily site and perimeter checks. Increased frequency in response to complaints.
	External Olfactory Monitoring	Quarterly site odour monitoring by competent third party
	Complaint monitoring	Continuous
Complaints	Corrective action monitoring	Post-implementation of a corrective action

The following scales will be used:

Table 4.3 Odour Intensity Scale

Score	Intensity
0	No Odour
1	Very Faint Odour
2	Faint Odour
3	Distinct Odour
4	Strong Odour
5	Very Strong Odour
6	Extremely Strong Odour

Table 4.4 Hedonic Tone Scale

Score	Intensity
+4	Very Pleasant
+3	Pleasant
+2	Moderately Pleasant
+1	Mildly Pleasant
0	Neutral Odour / No Odour
-1	Mildly Unpleasant
-2	Moderately Unpleasant
-3	Unpleasant
-4	Very Unpleasant

4.4 Internal Odour Monitoring

Odour monitoring is conducted at frequencies detailed in Table 4.2 by a competent person.

Distances and locations of off-site monitoring points will vary in accordance with the meteorological conditions (i.e. depending on the specific wind speed and direction at the time of monitoring).

The main aim of monitoring will be to test if any odours emitted from the site will be causing the nearest receptors nuisance. In scenarios where nuisance is being caused then operations can be suspended until the conditions improve, also the site manager may deem it necessary to find the precise source of the odour and attempt to eliminate it or neutralise it immediately.

4.5 Further Monitoring

If odour becomes a problem on site and / or repeated complaints have been received, odour modelling will take place to establish the source and any corrective action that may be required.

4.6 Records

Daily records shall be maintained and include the following details:

- Results of inspections and olfactory monitoring carried out by site personnel;
- Weather conditions including wind speed and wind direction;
- Operational problems including date, time, duration, prevailing weather conditions and cause of problem;
- Complaints received including address of complainant (if available);
- Details of corrective action taken, and any subsequent changes to operational procedures; and
- An evaluation of the effectiveness of control and abatement techniques used.

If any samples have to be analysed by laboratory-based olfactometry then the following records must be made:

- Date, time and details of emissions point sampled, and why you chose them;

- How you preserved the samples (holding time and conditions);
- Method of sampling (e.g grab sample);
- The laboratory where the results were analysed, and any certification status;
- Any laboratory observations that might affect how you interpret results;
- Process parameters; and
- Weather conditions.

5. COMPLIANCE ACTION PLANS

5.1 Control & Trigger Levels

Control trigger levels are presented below in Table 5.1.

Table 5.1 Control and Trigger Levels

Parameter	Monitoring Technique	Control Levels
Odour	Routine olfactory monitoring	Odour Intensity ≥ 3 recorded at any monitoring location (persistent / transient nature noted and considered)
	Complaint monitoring	Receipt of complaint

5.2 Compliance Actions

A recording of Odour Intensity ≥ 3 during routine olfactory monitoring or the receipt of a complaint will necessitate further investigation into the causes and indicate whether further monitoring is required. Actions to be taken in the event of an exceedance will be dictated by the nature and extent of the exceedance(s) (e.g. by considering the magnitude of exceedance and whether it was event driven or on-going).

5.3 Detection of Moderate Odour During Olfactory Survey

Detection of a moderate odour, (i.e. 'odour easily detected while walking and breathing normally, possibly malodorous'), will initiate a more extensive olfactory survey to determine the extent of the odour plume (as described in Section 4.3). An investigation will be initiated into the cause of the odour. This shall involve as necessary:

- A review of the site activities at the time of the olfactory survey;
- A review of the site waste inventory at the time of the olfactory survey;
- A review of the meteorological conditions at the time of the olfactory survey; and
- A review of the effectiveness of process operations and odour control procedures.

5.4 Corrective Actions

The outcome of an investigation will determine the corrective actions to be implemented, they will consider, but not be limited to:

- Alteration to waste reception procedures and odour control measures employed;
- Review of all processes on site; and
- Update of OMP if new procedures are created.

5.5 Reporting

Exceedance of a control level will be investigated (as described above) and recorded. This includes recording the following:

- Nature of the incident;
- Date of occurrence(s);
- Results of the investigation;
- Details of responses/ action plans implemented;
- The event will be marked within the site's incident log; and
- The report of any exceedance will be made available to the Environment Agency on a quarterly basis.

6. INCIDENTS AND EMERGENCIES

Consideration has been given to the types of failure or abnormal events that have the potential to result in an odour impact. Abnormal events include the following:

- Breakdown of plant resulting in potential backlog of waste;
- Breakdown of plant resulting in failure of air extraction system; and
- Fire.

Failure and abnormal event scenarios are summarised below.

Breakdown of plant resulting in potential backlog of waste

A supply of critical spares will be maintained onsite. The site will employ skilled fitters / contractors to promptly repair any faults.

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

In the event that repairs cannot be promptly carried out relevant activities will be suspended where there is an increased risk of odour emissions or offsite impact.

If necessary, the facility will remain closed to further deliveries of waste until the plant is restored and any backlog cleared.

Breakdown of plant resulting in failure of extraction system

All receipt of feedstock will cease.

All stored feedstock will be processed through the plant as quickly as possible.

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

If necessary, the facility will remain closed to further deliveries of RDF until the plant is restored and the backlog is cleared.

Fire

Fire risk procedures will be adopted onsite. If required following a fire, operations will cease in the affected area until all plant and infrastructure are restored.

Following a fire, all plant would be inspected, replaced and repairs implemented as necessary. Further waste receipt would be suspended until normal operation is restored.

6.2 Abnormal Meteorological Conditions

Although it is accepted that a number of meteorological conditions can exist that promote the generation of odour and may inhibit its effective dispersion (i.e. high temperatures and still conditions) such scenarios are not considered to have the potential to impact the facility and surrounding receptors.

The facility will monitor and record all meteorological conditions and make suitable planning arrangements to ensure that any major maintenance activities are carried out in favourable meteorological conditions to reduce the potential for impact.

APPENDIX A

ODOUR COMPLAINTS REPORT

ODOUR COMPLAINT REPORT FORM	
Time and date of complaint:	
Name and address of complainant:	
Telephone number of complainant:	

Date of odour:		
Time of odour:		
Location of odour, if not at above address:		
Weather conditions (i.e., dry, rain, fog, snow):		
Temperature (very warm, warm, mild, cold or degrees if known):		
Wind strength (none, light, steady, strong, gusting):		
Wind direction (e.g. from NE):		
Complainant's description of odour:		
○ What does it smell like?		
○ Intensity (see Reference Table 1):		
○ Duration (time):		
○ Constant or intermittent in this period:		
○ Does the complainant have any other comments about the odour?		
Are there any other complaints relating to the installation, or to that location? (either previously or relating to the same exposure):		
Any other relevant information:		
Do you accept that odour likely to be from your activities?		
What was happening on site at the time the odour occurred?		
Operating conditions at time the odour occurred (e.g. flow rate, pressure at inlet and pressure at outlet):		
Actions taken:		
Form completed by:	Date:	Signed;

Odour Intensity	Description
1	No detectable odour
2	Faint odour (barely detectable, need to stand still and inhale facing into wind.
3	Moderate odour (odour easily detectable while walking and breathing normally, possibly offensive)
4	Strong odour (bearable, but offensive odour – will my clothes hair/smell?)

5	Very strong odour (malodorous)
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APPENDIX B

ODOUR REPORT FORM

ODOUR REPORTING FORM		
Name of Assessor:		
Confirm Compliance with Reference Table 1:		
Survey Timings	Date	
	Start Time	
	Finish	
Location of Sniff Test :		
Weather Conditions (dry, rain, fog, snow etc)		
Wind Direction (e.g from the SW)		
Wind Strength (none, light, steady, strong, gusting)		
Cloud Cover (%)		
Temperature (°C)		
Precipitation		

Location ¹	Odour Intensity ²	Odour Extent ³	Odour Description ⁴	Receptor Sensitivity ⁵

Sketch

Provide a sketch of test and source locations

¹What site boundary points / sensitive receptor?

²Refer to Reference Table 2

³Refer to Reference Table 3

⁴Describe the character of the odour (e.g. rotten eggs, musty, earthy, drains etc)

⁵Refer to Reference Table 5

Notes:

If odour intensity is judged as 3 or above at any external location within the site boundary the Site Manager must be immediately notified

The extent of the plume should be investigated as follows:

Four suitable locations downwind of the biofilter beds / drying plant but internal to the site boundary will be chosen to clarify that the impact is not detectable at the site boundary and able to create an offsite impact.

In the event that the odour is detectable at the site boundary, an offsite investigation will be required in the direction of the prevailing wind and closest sensitive receptor. Continue toward the site until a faint odour is detectable.

Select further assessment points at right angles to the plume axis and equidistant from the facility to determine extent of plume.

REFERENCE TABLE 1

Requirements for Assessor

Assessor has not been exposed to waste related odours for previous 30 minutes

Assessor has not smoked or consumed strongly flavoured food or drink in previous 30 minutes

Scented toiletries should not be applied immediately before or during assessment.

Vehicle used for assessment should not contain deodoriser and care should be taken concerning odour in windscreen wash.

REFERENCE TABLE 2

Odour Intensity	Description
1	No detectable odour
2	Faint odour (barely detectable, need to stand still and inhale facing into wind.
3	Moderate odour (odour easily detectable while walking and breathing normally, possibly offensive)
4	Strong odour (bearable, but offensive odour – will my clothes hair/smell?)
5	Very strong odour (malodorous)

REFERENCE TABLE 3

Odour Extent	Description
1	Local and transient (only detected during brief periods when wind drops or blows)
2	Transient as above, but detected away from site boundary
3	Persistent but fairly localised
4	Persistent and pervasive up to 50m from site boundary
5	Persistent and widespread (odour detected > 50m from site boundary)

REFERENCE TABLE 4

Receptor Sensitivity	Description
1	Low (e.g. footpath, road)
2	Medium (e.g. industrial or commercial workplaces)
3	High (e.g. housing, pub/hotel etc)

APPENDIX C

RESPONSIBLE PERSONS

Annex C Responsible Persons		
Control Measure	Responsible Persons	
	Implementation on-site	Overall Manager
Receipt and Management of Odourous Materials		
In accordance with Section 3.1.		
Engaging your Neighbours		
In accordance with Section 3.6.		
Response to Complaints		
In accordance with Section 3.7.		
Meteorological Conditions		
In accordance with Section 4.2		
Olfactory Monitoring		
In accordance with Section 4.3		
Internal Odour Monitoring		
In accordance with Section 4.4		
Further Monitoring		
In accordance with Section 4.5.		
Record Keeping		
In accordance with Section 4.6.		
Complaint and Corrective Action Monitoring		
In accordance with Section 5.		