



ODOUR MANAGEMENT PLAN

RDF Energy No.1 Ltd
Newport EfW

Prepared By:
Sol Environment Ltd

Date:
February 2023

Project Ref:
SOL_22_P087_CO

VERSION CONTROL RECORD			
Contract/Proposal Number:		SOL_22_P087_CO	
Authors Name:		Emily Hingston	
Issue	Description of Status	Date	Reviewer Initials
1	First Submission to Client	February 2023	SB

This report has been prepared by Sol Environment with all reasonable skill, care and diligence, and taking account of the Services and the Terms agreed between Sol Environment Ltd and the Client. This report is confidential to the client, and Sol Environment accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Sol Environment Ltd beforehand. Any such party relies upon the report at their own risk.

Sol Environment disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the Services.

CONTENTS

	Page
1 ODOUR MANAGEMENT PLAN	1
1.1 Introduction	1
1.2 Structure of Odour Management Plan	1
1.3 Status of the OMP	2
2 SITE BACKGROUND	3
2.1 Site Setting	3
2.2 Facility and Process Overview	3
2.3 Competent Operator	5
2.4 On-site Odour Sources	5
2.5 Off-site Odour Sources	1
2.6 Nearest Sensitive Receptors	1
3 CONTROL MEASURES	3
3.1 Receipt and Management of Odourous Materials	3
3.2 Transfer of Odour Chemicals to Air	6
3.3 Containment of Contaminated Air	6
3.4 Transport and Dispersion	Error! Bookmark not defined.
3.5 Engaging your Neighbours	7
3.6 Response to Complaints	7
3.7 Ceasing or Reducing Operations	8
3.8 Accident Management Plan	8
4 MONITORING	9
4.1 Responsible Persons	9
4.2 Meteorological Conditions	9
4.3 Olfactory ('Sniff Test') Monitoring	10
4.4 Internal Odour Monitoring	11
4.5 Further Monitoring	12
4.6 Records	12
5 COMPLIANCE ACTION PLANS	13
5.1 Control & Trigger Levels	13
5.2 Compliance Actions	13
5.3 Detection of Moderate Odour During Olfactory Survey	13
5.4 Corrective Actions	14
5.5 Reporting	14
6 INCIDENTS AND EMERGENCIES	15
6.1 Abnormal Meteorological Conditions	16

Annex A: Figures

Annex B: Extraction System Technical Specification

Annex C: Odour Reporting Form

Annex D: Odour Complaint Report Form

Annex E: Responsible Persons

Annex F: Failure and Abnormal Event Summary Table

1 ODOUR MANAGEMENT PLAN

1.1 Introduction

This document has been prepared by Sol Environment Ltd on the behalf of RDF Energy No.1 Ltd, in support of an Environmental Permit Application at their energy from waste facility in Alexandra Dock, Newport.

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

This Odour Management Plan document (referred hereafter as the '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.

1.2 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.

1.3 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 on land off Tom Lewis Road, Associated British Ports, Alexandra Docks, Newport, NP20 2WF (National Grid Reference: ST 31253 84755).

The treatment process will be permitted by Natural Resources Wales (NRW) as a Waste Co-Incineration Activity and will be operated in accordance with the Environmental Permitting Regulations 2018 and Chapter IV of the Industrial Emissions Directive (IED).

The site is located within an industrial dockside area and is bound by Tom Lewis Way to the north and east, with industrial sheds to the south and west. Alexandra docks (South Dock) is located approximately 200 m to the south.

The River Ebbw is located approximately 170 m west of the site, flowing in a southerly direction to join the River Usk approximately 900 m south of the site. The River Usk itself is located approximately 1km to the east and 850 m south of the site flowing in a southerly direction to join the Severn Estuary approximately 3 km south. The nearest residential dwelling is sited at New Diary Farm located approximately 870 m southwest of the site, with the residential area of Duffryn located 1 km to the west.

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 proposed development is a energy from waste facility which has been designed to recover energy from the combustion of Refuse Derived Fuel (RDF) feedstocks specifically for the production of electricity. The facility will produce a high temperature flue gas which is then used to raise steam and generate electricity, through steam cycle turbine generation.

The facility is designed to use up to 260,00 tpa of Refuse Derived Fuel (RDF) feedstocks to produce heat to raise steam in a conventional tube boiler for utilisation in a steam turbine for the production of renewable electricity with a gross electrical output of up to 24MWe.

Refuse Derived Fuel (RDF) in loose form will be delivered directly to the Reception Building. HGV's will unload directly into one of two Fuel Storage Bunkers, where a visual inspection will take place. The

entrance to the building will be via a roller-shutter door, which will be permanently closed save for when vehicles enter and exit. Any wastes which do not conform to the sites stringent acceptance criteria, including excessively malodorous waste is rejected from the site.

Periodically baled RDF will be accepted and stored externally within the Bale Storage Area. This storage area will be utilised for short duration and only periodically to account for long weekends when supply may be disrupted. RDF storage onsite is limited to a maximum of 10 days externally and typically 36 hours internally.

External bales are required to be well wrapped to prevent escape of odorous emissions, with control measures in place including twice daily inspection of all waste piles and immediate removal of any damaged or loosely wrapped bales.

The Fuel Reception Building is kept under slight negative pressure, through a ventilation extraction system. Air from within the building is extracted into the intake of the primary combustion air fans and any odorous compounds thermally destroyed. The extraction system has an air exchange ratio of 3 times per hour. A back-up ventilation system incorporating activated carbon filtration is additionally installed in case of plant shutdown.

Pre-treatment of RDF onsite is limited to debaling and shredding via a mobile shredder prior to transfer to one of the two Fuel Storage Bunkers until required by the combustion plant.

RDF is mixed for homogeneity within the Fuel Storage Bunkers via the crane feeding system. The prepared RDF is then transferred from the bunkers to the feeder hoppers and conveyed via a metering system to the moving grate combustor, where it will be combusted producing a high temperature flue gas.

The flue gas is then directed to the boiler where high pressure steam is generated at circa 43 bar pressure and 420°C. The high-pressure steam is then expanded through the steam turbine at a flow rate of 105 t/hr. This generates approximately 20 MWe electricity for export to the grid via the Distribution Network Operator (once parasitic load has been accounted for). The plant includes a steam bypass to allow control and adjustment of the steam turbine inlet mass flow. Steam is diverted through a pressure reducing station and air-cooled condenser for recirculation through the process.

Flue gases from the boiler are directed through the flue gas treatment (FGT) and air pollution control (APC) unit comprising a dry scrubber and baghouse filter prior to discharge through the 50 m high stack (A1).

All site activities will be performed by competent and trained individuals who are both suitably qualified and experienced.

The site operates a strict housekeeping policy ensuring all stockpiles are managed appropriately and the site is neat and tidy.

2.3 Competent Operator

All site activities will be performed by competent and trained individuals who are both suitably qualified and experienced.

All personnel employed on site will be suitably trained and experienced at operating all plant and equipment associated with their particular role; especially with regard to the acceptance and handling (and associated rejection) procedures in the event that odorous materials are received on site.

On occasions where these competent and experienced personnel are off work or unable to perform their role, the most suitable replacement will be sourced from the available workforce and any relevant training will be administered before they perform the task.

2.4 On-site Odour Sources

Source Materials

The site will process 260,000 tonnes of RDF feedstocks per annum.

All reception, unloading and processing activities take place within the enclosed Fuel Reception Building.

Potentially odorous air from within the Fuel Reception Building is extracted for use as primary combustion air and thermally destroyed within the combustion system. In addition, vehicle marshalling and building controls ensure that the fast action doors remain closed at all times during unloading, handling and treatment activities and additional odourising misters above all doors provides further protection. The air extraction system maintains the building at a slight negative pressure, ensuring no escape of potentially odorous air when the buildings doors are opened. In the event of an unplanned shutdown, where the combustion system is unavailable, a back up extraction and ventilation system has been installed which incorporates activated carbon filtration to treat odorous emissions prior to release to atmosphere.

The site will also store wrapped RDF 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. In addition, the external storage facility is only utilised periodically and storage times are kept to a minimum (10 days maximum).

An inventory of Odorous Materials onsite has been provided in the table below.

Table 2.1: Source Materials

Waste Type	Description	Odour Potential	Quantities and Storage Time
Loose RDF	Loose RDF is delivered into the Reception Building on a just in time basis by covered vehicle and stored within the two Fuel Storage Bunkers	<p>Medium</p> <p>Odour potential is minimised through:</p> <ul style="list-style-type: none"> • delivery in covered vehicles; • unloading undertaken only when roller shutter doors are closed; • rejection of excessively malodorous waste loads; • short storage time preventing potential degradation of waste; • internal storage and processing within the Fuel Reception Building; • Fuel Reception Building is kept under negative pressure with potential odorous air thermally destroyed within the combustion system; • Additional misting system fitted if required; and • Back up extraction and ventilation system provided for the Fuel Storage Building incorporating activated carbon filtration. 	<p>Fuel Storage Bunkers – 2 x 2,508m³ Max</p> <p>Stored internally for up to 36 hours</p>
Baled RDF	Baled RDF is delivered to the external Feedstock Transit Area for storage	<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; 	<p>External Storage Piles – 450m³</p> <p>Stored for up to 10 days</p>

		<ul style="list-style-type: none"> Twice daily inspection to ensure no damaged or loosely wrapped RDF bales remain in the external area; and Minimising storage times and external storage utilisation (estimated use of up to 20 days per annum) 	
Processed RDF	Treated RDF which has undergone debaling and shredding is directly transferred to the Fuel Storage Bunkers until required by the combustion system.	<p>Medium</p> <p>Odour potential is minimised through:</p> <ul style="list-style-type: none"> Mobile shredder located within an unloading bay transferring processed RDF directly to the Fuel Storage Bunkers; Processing occurring only when roller shutter doors are closed; Fuel Reception Building is kept under negative pressure with potential odorous air thermally destroyed within the combustion system; Additional misting system fitted if required; and Back up extraction and ventilation system provided for the Fuel Storage Building incorporating activated carbon filtration. 	<p>Fuel Storage Bunkers – 2 x 2,508m³ Max</p> <p>Stored internally for up to 36 hours</p>
Ash residues	<p>Bottom ash from the base of the moving grate and boiler ash is quenched prior to storage within the concrete lined common Bottom Ash Bunker.</p> <p>APCr residues are collected and stored within an enclosed silo.</p>	<p>Low</p> <p>IBA and APCr are not typically inherently odorous materials. Enclosed storage will also reduce odour risk.</p>	<p>IBA bunker – 800 tonnes</p> <p>APCr silo – 125 tonnes</p> <p>Stored onsite for typically 1 week</p>

Releases

Potential fugitive release of odours from the waste are likely during offloading, transportation around site and processing activities.

2.5 Off-site Odour Sources

The site is surrounded by neighbouring industrial processes which could potentially generate odour, most notably the Newport Household Recycling Centre located 1.1km to the north and associated landfill 150m north.

Due to the site being located in a heavily industrialised dockside area and approximately 870m from the nearest residential dwelling, the site is considered to be located in an area with low sensitivity to odour.

2.6 Nearest Sensitive Receptors

The Site is located predominantly within an industrial setting.

The nearest residential dwelling is sited at New Diary Farm located approximately 870 m southwest of the site, with the residential area of Duffryn located 1 km to the west. The site is situated in an industrialised environment where other activities may contribute to background odours, as detailed above. The location is therefore considered have low sensitivity to odour.

All sensitive receptors within a 1km radius are listed in Table 2.4 overleaf and are shown on the plan in Annex A.

Table 2.2: Location of Sensitive Receptors

ID	Receptor	Type	Distance	Direction
R1	ABP Docks Industrial Units	Industrial	Adjacent	Surrounding
R2	South Dock Industry	Industrial	630 m	southeast
R3	North Dock Industry	Industrial	830 m	northeast
R4	Mae-glas Residential Area	Residential	1.4 km	northwest
R5	A48	Infrastructure	1.1 km	north
R6	Railway	Infrastructure	880 m	west
R7	Mae-glas Industrial Estate	Industrial	1.2 km	north
R8	Newport HWRC	Industrial	1.1 km	north
R9	Felnex Industrial Estate	Industrial	1.2 km	northeast
R10	New Dairy Farm	Residential	870 m	southwest
R11	Whitecross Farm	Residential	1 km	southwest
R12	Severn Estuary SSSI/SAC/SPA (River Usk section)	Leisure	1 km	south
R13	Gwent Levels (St Brides) SSSI	Leisure	300 m	west
R14	Wales Coast Path	Leisure	650 m	southwest
R15	Uskmouth Power Station	Industrial	1.4 km	southeast
R16	River Ebbw	Leisure	175 m	west

Please refer to Annex A which shows a site plan identifying the sensitive receptors.

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-treated RDF feedstocks.

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

The initial stage, a 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.
- 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.

Acceptance of Waste

The EMS details the sites acceptance procedures to ensure that no excessively malodorous 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 Fuel Reception Building 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 malodorous and likely to cause odour at the site boundary will not be accepted.

If a malodorous 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 RDF in accordance to the sites working plan procedures.

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

All vehicles will be directed from the weighbridge to the Feedstock Building.. RDF will be delivered loose (24 tonnes per HGV) within covered vehicles. Vehicles will enter backwards into the building into one of 6 unloading bays where they will discharge loose RDF directly into one of 2 Fuel Storage Bunkers. Vehicles will only be unloaded when the roller shutter doors are closed. All waste will undergo a visual inspection during unloading with rejected material removed to the quarantine area.

Fuel will typically be delivered on a 'just in time' basis directly into the fuel storage bunkers where waste undergoes mixing via crane before transfer to the feed hoppers. The bunkers have the capacity for 2 days 3 hours fuel supply and as such storage of waste is typically limited to up to 3 days. This significantly reduces any potential biodegradation and odorous emissions from the waste onsite.

The site will also accept baled RDF which will be stored externally. This external storage will typically be only used during long weekends when there may be a disruption in supply and additional capacity is needed. As such, the storage area will typically only be utilised for up to 20 days a year.

Bales will be delivered to site only when required and following visual inspection will be offloaded by telescopic handlers / front loaders. Any damaged or inadequately wrapped bales will be rejected. Storage of bales in the external Feedstock Transit Area will be in piles sized 450m³ with a 6 m separation distance in line with Fire Prevention Plan requirements. Piles are therefore sized as 5 rows of bales up to two bales in height. As such, the area has a total storage capacity of 2,250m³ or the equivalent of 2 days 1 hour feed supply¹. External storage will be limited to a maximum of 10 days. All bales are wrapped to reduce potential rainwater ingress and odour emissions. Twice daily inspection and immediate removal of any damaged bales ensures that no odorous emission occur.

Loose RDF will typically not require any pre-treatment and will be mixed for homogenisation within the Fuel Bunkers through the crane grab system.

A mobile shredder will be installed for loosing bales or to shred oversized fuel and will be placed in a relevant unloading lane to directly convey shredded RDF into the storage bunker. Shredding is estimated to be required for <10% of the fuel throughput.

The Feedstock Building, including the reception area, fuel storage bunkers, and feed system, 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. In addition the building will be covered by a misting system which will be operated when required in order to control odour and dust emissions.

¹ Based on a nominal bale dimension of 1.2 m x 1.2 m x 1.2 m and weight of 1,020 kg per bale

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 and interceptors 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 any odorous wastes are stored internally;
- Ensuring externally stored baled wastes are well wrapped to prevent rain ingress and escape of potentially odorous air;
- Minimising storage times of wastes onsite;
- Storage of waste for short periods of time (internally 3 days maximum, externally 10 days maximum);
- Locate storage of odorous materials out of direct sunlight to prevent heating.

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. Initial waste reception and unloading of delivered wastes takes place internally within the Feedstock Building. All unloading of wastes takes place within the building with the roller shutter doors closed.

Only inspected and well wrapped bales will be stored externally and this will only be undertaken on a periodic and temporary basis. Wrapping of the waste ensures the containment of any potentially odorous wastes during storage.

The Feedstock Building is kept at slight negative pressure by air extraction, preventing escape of potentially odorous air during opening of the roller shutter doors. Extracted air is utilised a primary combustion air within the incineration process, ensuring thermal destruction of any odorous compounds prior to release to atmosphere. A back-up extraction and ventilation system incorporating active carbon filtration is additionally installed.

3.4 End of Pipe Treatment

Any odorous air from the Fuel Reception 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 combustion system.

A back up extraction and ventilation system is installed for use during potential plant shutdowns (planned or unplanned). This system utilises active carbon filtration. Details of the extraction systems onsite are provided in *Annex B*.

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 Local NRW area team will be informed in advance. Neighbours who may be affected (see Table 2.4) 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, RDF Energy 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 D.

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 C;
- 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 as required by the Environmental Permitting Regulations.

The accident plan 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 E. 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 C. Surveys shall be carried out in accordance with the monitoring protocol contained within Technical Guidance Note H4.

Four suitable locations downwind of the processing area 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 D). 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
	Corrective action monitoring	Post-implementation of a corrective action
Complaints		

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 & 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 presented in Annex F and 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 RDF will cease.

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

The back-up extraction system incorporating active carbon filtration will be activated.

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.

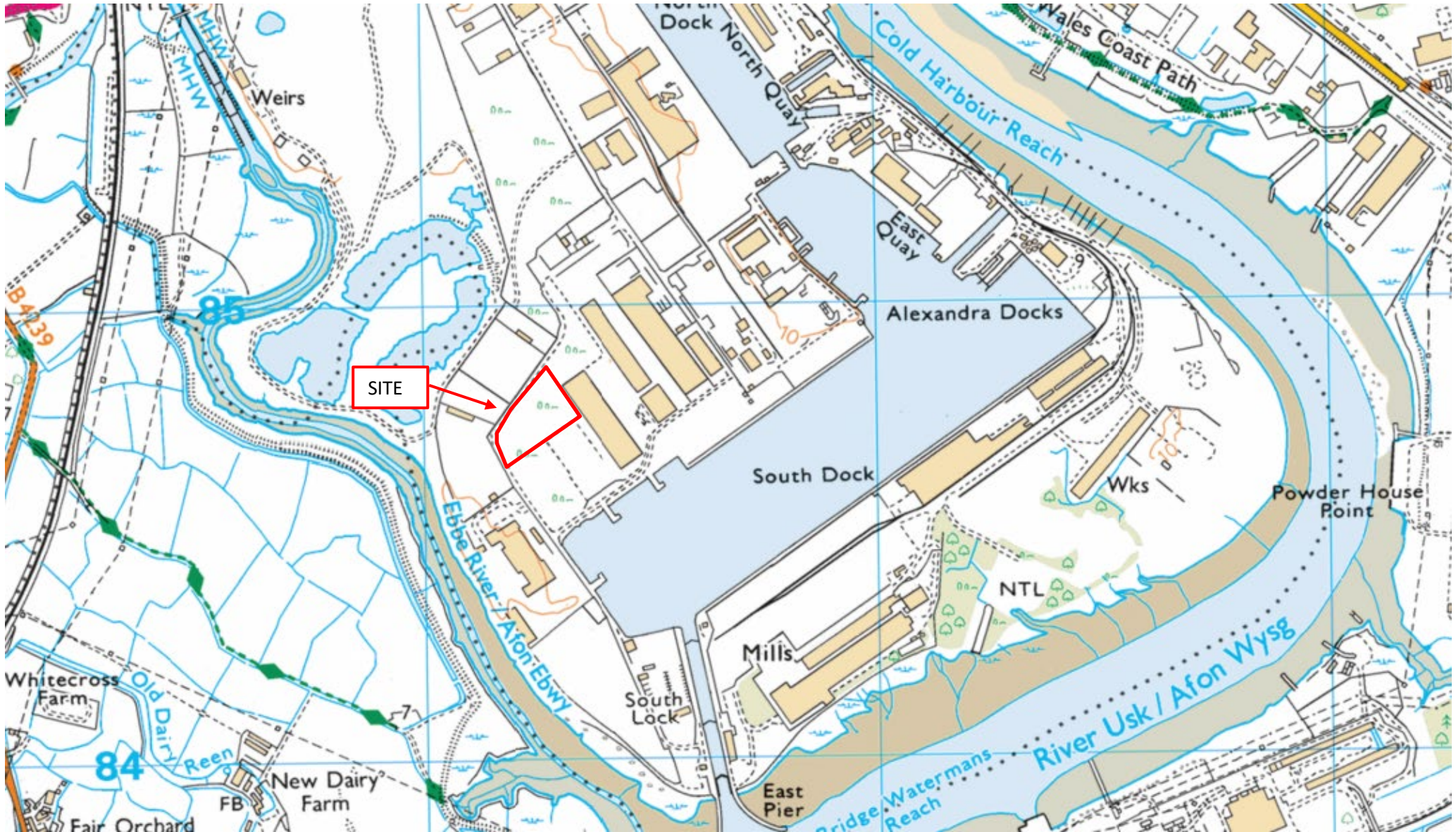
Following a fire, all plant would be inspected, replaced and repairs implemented as necessary. Further waste receipt would be suspended until normal operation is restored.

6.1 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.

ANNEX A: FIGURES



1. Do not scale off this drawing
2. All dimensions to be confirmed on site
3. This drawing is copyright of Sol Environment Ltd
4. This drawing is to be read in conjunction with relevant consultant drawings and specifications

Rev: 0
Date: FEB 23
Desc: Original

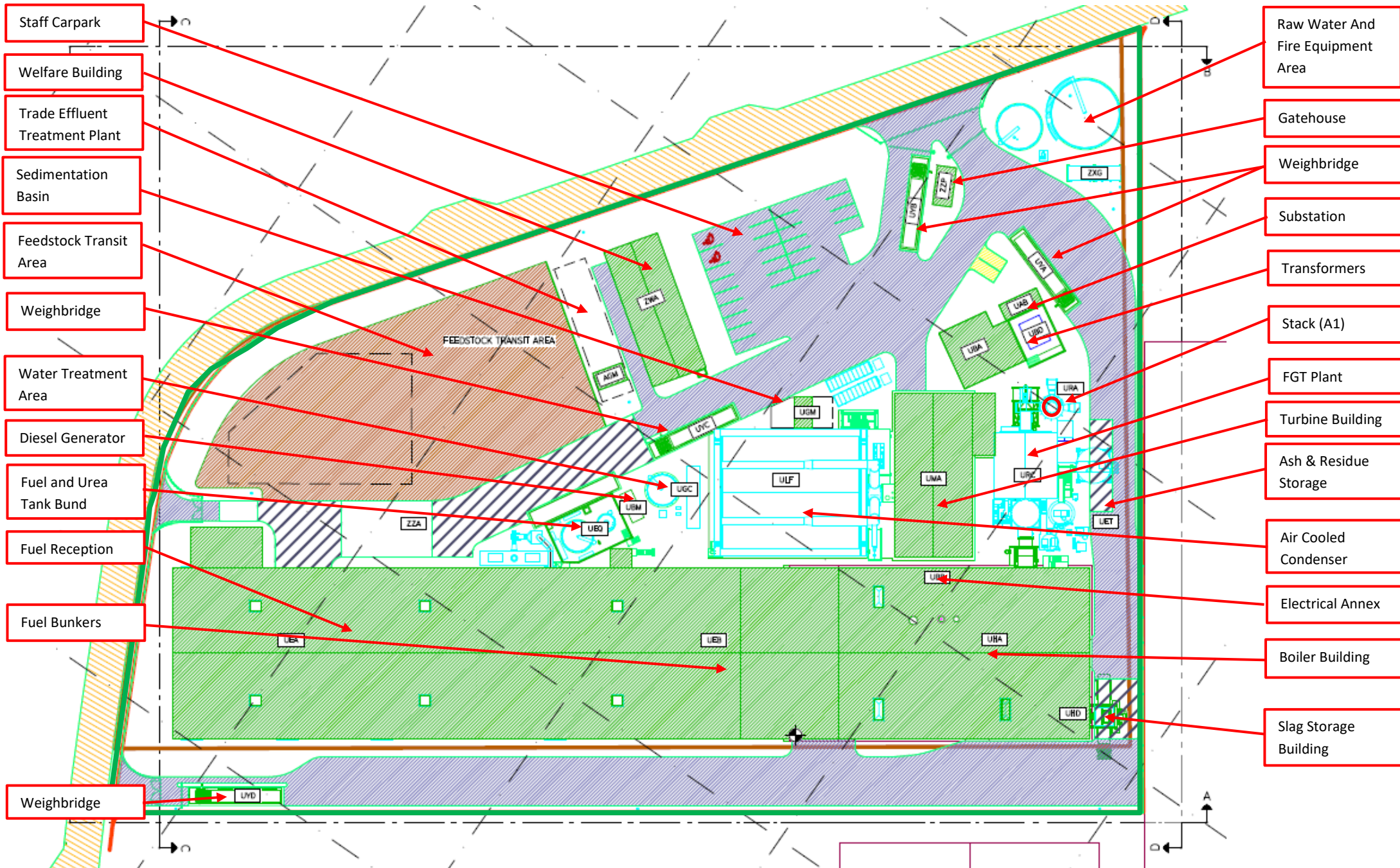
Client: RDF ENERGY NO 1 LTD
Project: NEWPORT EFW
Drawing Title: SITE LOCATION

Job No: SOL_22_P087_CO
Date: FEBRUARY 2023
Drawn By: EMILY HINGSTON

Drawing No: C001
Revision: 0
Scale: NTS



Sol Environment Ltd
2nd Floor,
10 The Lees, Malvern,
Worcestershire WR14 3HT
t: +44(0)1684 572727
e: enquiries@sol-environment.co.uk
www.sol-environment.co.uk



1. Do not scale off this drawing
2. All dimensions to be confirmed on site
3. This drawing is copyright of Sol Environment Ltd
4. This drawing is to be read in conjunction with relevant consultant drawings and specifications

Rev: Date: Desc:

0 FEB 23 Original

Client: RDF ENERGY NO 1 LTD

Project: NEWPORT EFW

Drawing Title: SITE LAYOUT

Job No: SOL_22_P087_CO0

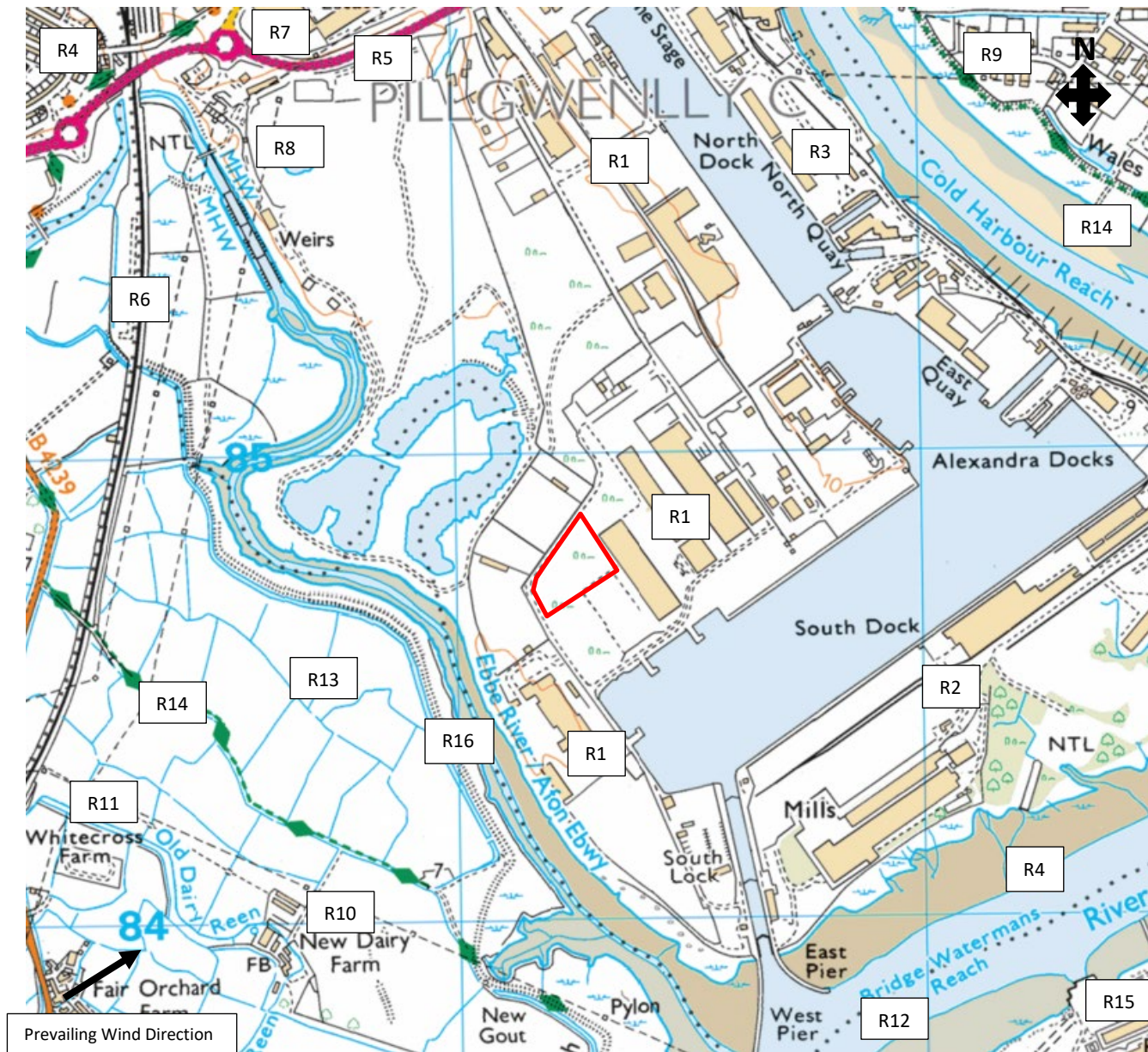
Date: FEB 23

Drawn By: EMILY HINGSTON

Drawing No: CO02

Revision: 0

Scale: NTS



Receptor No.	Receptor Name
R1	ABP Docks Industry
R2	South Dock Industry
R3	North Dock Industry
R4	Maes-glas Residential Area
R5	A48
R6	Railway
R7	Maes-gal Industrial Estate
R8	Newport HWRC
R9	Felnex Industrial Estate
R10	New Dairy Farm
R11	Whitecross Farm
R12	Severn Estuary Ramsar/SSSI/SAC/SPA
R13	Gwent Levels (St Brides) SSSI
R14	Wales Coast Path
R15	Uskmouth Power Station
R16	River Ebbw

1. Do not scale off this drawing
2. All dimensions to be confirmed on site
3. This drawing is copyright of Sol Environment Ltd
4. This drawing is to be read in conjunction with relevant consultant drawings and specifications

Rev: 0
Date: FEB 23
Desc: Original

Client: RDF ENERGY NO.1 LTD
Project: NEWPORT EFW
Drawing Title: SENSITIVE RECEPTOR PLAN

Job No: SOL_22_P087_CO
Date: FEBRUARY 2023
Drawn By: EMILY HINGSTON

Drawing No: C005
Revision: 0
Scale: NTS



Sol Environment Ltd
Unit 5.3 Paintworks,
Bristol,
BS4 3EH
t: +44(0)1684 572727
e: enquiries@sol-environment.co.uk
www.sol-environment.co.uk

ANNEX B: EXTRACTION SYSTEM TECHNICAL DETAILS

Project 1017 Newport
Created 31 January 2023

Document no. Rev.no.
1017.S4.X01.001 01

Subject **Odour related technical description**

Page 1/9

TECHNICAL SPECIFICATION

Rev.	Date	Description	Issuer	Reviewer	Approver
00	2023.01.31	First issue	ALGU	HSW	

1.	General	2
2.	Main plant capacity and performance characteristics	2
3.	Odour characteristics.....	2
3.1	Reception and handling	3
3.2	Waste handling & processing facility	3
3.3	Building arrangement and ventilation.....	3
3.4	Ventilation flows and treatment	4

TECHNICAL SPECIFICATION

1. General

Above project is to receive and incinerate domestic waste and produce electric power for the public grid.

Waste will be delivered from an ex-situ waste collection and processing facility, but since waste is potentially odorous and the plant is located within an industrial area with sensitive receptors nearby, it is essential that the plant will not give rise to neighbour odour nuisance.

This document briefly describes plant characteristics designed to ensure that the facility will not give rise to odour nuisance.

2. Main plant capacity and performance characteristics

The facility will be based on direct combustion of waste on a grate, followed by steam generation in boiler for steam turbine electricity production/energy recovery.

The plant will consist of one combustion grate with a nominal capacity for burning 28.8 tons/h of waste, linked to a steam turbine generator (STG) and an air cooled condenser (ACC) for electricity production.

Nominal thermal input is 88 MW_{th}, allowing for a gross electricity production of approximately 23.5 MW_e and net electric export of about 20 MW_e after internal consumption and losses.

Above waste handling capacity is based on nominal waste quality with about 33% water content and about 15% (dry) ash content. The actual waste tonnage processed will vary according to calorific value, equivalent to a thermal input around 88 MW_{th}.

The grate consumes about 142,000 Nm³/h combustion air at nominal load, of which 101,000 Nm³/h comes from the feedstock building (primary air) and 41,000 Nm³/h from the boiler building (secondary air).

The plant will operate continuously at full load except for a planned annual service outage, with an operating time of the order 7,500 – 8,000 hours per year, allowing for a few unplanned short stops.

A level of equipment redundancy is included to support above continuous operation with minimum unplanned stops.

3. Odour characteristics

The operation of the plant is based on two different formats of fuel: Shredded RDF packed in bales in an outdoor area, and loose RDF delivered to the bunker indoors. The bale storage will be used mostly in the event of long weekends, and each bale will be sealed with 6 layers of 25-micron thick plastic film. The plastic sealing prevents the release of odour from the bales, solving the issue of storing them outdoors. Therefore, all of the odour solutions that will be discussed here will focus on the indoor loose RDF storage.

TECHNICAL SPECIFICATION

3.1 Reception and handling

All incoming loose waste shall be delivered in closed trucks, minimizing the risk of odour escaping transport vehicles in the vicinity of the plant.

Apart from a brief registration and weighting stop within plant gate trucks will be directed to a closed unloading hall and all subsequent unloading, handling, treatment and buffer storage will take place indoor under controlled ventilation and air treatment conditions.

Loose waste storage amount within the plant will be kept at a minimum to allow for uninterrupted 24/7 operation, i.e. maximum about 2 days consumption to schedule regularly waste deliveries within normal weekday hours only.

3.2 Waste handling & processing facility

Waste handling within the facility consists of following steps:

- Unloading from truck into a pit within a ventilated unloading hall.
- The unloading hall contain several unloading bays to minimize outdoor truck waiting time, and has fast moving gates to avoid odour migration from building interior.
- Waste mixing (as required) and removal from pit unloading areas.
- In the case of needing baled waste, or in the event of waste being too big for the waste chute to handle, waste will be fed into a coarse shredder. The outlet of the shredder will fall into the storage bunker, and it will be mixed and distributed by the mixing cranes.
- From the storage bunker, waste is fed by crane to a feeding hopper for the combustion grate.

The first 2 activities above mainly take place during waste reception opening hours plus possibly a limited period after last truck delivery to empty unloading pit, i.e. generally day time.

During nights and Sundays gates will remain closed and only the last activity, i.e. boiler feeding and possibly storage mixing, will take place. The exception will be in the event of a long weekend (i.e. more than 50 hours without receiving loose waste), where it would be necessary to use RDF stored in bales.

3.3 Building arrangement and ventilation

From a ventilation point of view the interior waste handling facility is arranged in 2 sequential compartments/areas as follows:

- Reception and unloading hall from entrance gates to edge of unloading pit.
- Unloading pit and shredder area with crane operation. Here you can also find the grate hopper.

To avoid odour escaping to the environment and to obtain best possible interior working environment, the entire building is continuously ventilated and purged in the waste flow direction, i.e. from entrance gate area to the interior of the waste bunker where air is extracted.

TECHNICAL SPECIFICATION

This ventilation flow direction/sequence ensures best fresh air purging of the truck tipping area where main human activity occurs, and odour load is lowest.

Air, which then flows further into the interior, passes the unloading bay area and flows over the buffer storage waste where further handling occurs to remove and catch odour for treatment.

Above the unloading pit a mist air system will be installed to allow for dust suppression if this should be deemed necessary depending on waste characteristics. Based on waste characteristics and moisture level dust suppression should not be required under normal circumstances.

Unloading and crane operation will at all times during waste reception opening hours be supervised from a fresh air ventilated operator cabin overlooking the unloading and shredder area.

To secure a sequential flow essentially as described above, it is foreseen to assist air entrance by forced air inlets along the truck gate entrance façade, directing fresh entrance air in the general direction toward the unloading pit and further into the interior of the building.

This air flow will be frequency modulated and offset in relation to combustion air fans to ensure that there will be a certain air deficit in the waste handling building to be drawn through passive openings or leaks, thereby preventing unintentional odour migration to the environment.

3.4 Ventilation flows and treatment

Normal operation

During normal operation primary combustion air will be drawn from the waste handling area (waste bunker and shredder area), i.e., up to approx. 101,000 Nm³/h.

This will ensure that the entire waste handling building/compartments is under weak vacuum/inward leak flow and prevent odour from escaping to the environment/surroundings.

Since all fresh air will pass through the reception building truck unloading section up to front of unloading pit, which has an approximate volume of 14,400 m³, plus the bunker area which has an approximate volume of 8600 m³, and the hopper area with an approximate volume of 11200 m³, the area will in normal full load operation be with an air exchange ratio around 3 times per hour.

Odour contaminated air drawn from the reception and storage building will be effectively treated in the combustion process, reaching a temperature of at least 1100 °C.

This will ensure effective destruction of all odorous substances. Eventually the air in the form of flue gas and excess air will, after having passed through the flue gas treatment facility, be discharged through the facility's flue gas stack for effective dispersal.

Secondary air for the combustion process is drawn from the separate boiler building to recover heat loss and improve conversion efficiency, as well as securing an acceptable thermal working environment in this section of the plant.

The combustion side of the boiler process will be under negative pressure, created/maintained by the induced draft (ID) fan downstream the flue gas treatment facility. Consequently, there is no risk

TECHNICAL SPECIFICATION

of Odour (or other harmful components) escaping from combustion air before being effectively destroyed in the boiler combustion process.

Operating schedule

The plant, consisting in a single line combustion grate, will be in 24/7 operation most of the year. During the event of a planned stop, the fuel hall will be emptied to avoid odour related issues during the down time.

Back up ventilation and treatment

Some plant facilities such as the ACC are tied to the rest of the process.

When such equipment needs servicing, it may be necessary to shut down the production line and thus lose natural combustion air ventilation and odour treatment.

Such periods are foreseen not to occur for more than up to 2 weeks a year, predominantly planned, although unplanned trips and shutdowns cannot be entirely ruled out.

In case of short-term electrical grid export trips or STG failure/service, the plant will be able to continue operation in steam by-pass mode without interruption of waste handling or ventilation/odour treatment.

During planned total stops waste deliveries will be diverted and buffer storage consumed up to planned stop.

During unplanned total stops, depending on duration forecast, waste reception may continue for a limited period, but otherwise it will be diverted as soon as possible.

In any case, planned or unplanned, some amount of waste will remain within the waste reception, handling and storage area during such stops, potentially releasing odour without the opportunity to draw air for the combustion process.

To cover such periods a back-up ventilation and odour treatment facility will be used to maintain waste handling building under negative pressure and with an inward leak flow.

This back-up facility will consist of a ventilation unit with a nominal air flow of 35,000 m³/h, with activated carbon filter cartridges to absorb odorous components from the ventilation air.

In this situation, generally with reduced waste reception and handling intensity, the air exchange ratio in the unloading section (bunker and tipping hall, 23,000 m³) will be above 1 per hour.

Activated carbon (AC) for odour reduction is a well-known method with typical reduction of the order 90-95% until saturated and active filling is replaced.

It is also relatively simple and suitable for long term reliable stand-by functioning and easy start up compared to more complex technologies typically used for continuous operation. Operational costs (cartridge replacement) may be somewhat higher than other technologies, but with the short operating time foreseen in this application this is not problematic.

TECHNICAL SPECIFICATION

Treated air from this unit, which may still contain residual odour, will be discharged via a duct leading to the top of the boiler building (elevation approx. 37 m), being discharged vertically some meters above roof (i.e. about 40 m above ground level) with a vertical velocity of minimum 15 m/s.

This will ensure effective dispersal of any residual odour and prevent diffuse migration of odour from the plant buildings during outage.

Judging whether supplementary ventilation is needed during operation, or other atypical operating conditions, will be based on the regular odour monitoring walk about forming part of the operational phase odour monitoring program.

A preliminary odour dispersal study (using the US-EPA Screen 3 model), based on back-up ventilation release at boiler building top indicate a minimum dilution rate before ground level impact of about a factor 1/1000 (ref. attachment A), even when considering potential building downwash (from boiler building), urban setting adjoining surface roughness and no thermal plume buoyancy.

Ventilation air odour content is, based on experience from other waste treatment plants, expected to be in the range 1,000 – 2,500 OU/m³ (Odour Unit) before treatment, and with an activated carbon filter efficiency of minimum 90% residual odour content at point of release can be expected to be in the range 10 – 25 OU/m³.

With expected release concentration of 10 – 25 OU/m³ after activated carbon treatment and a minimum dilution factor of 1000, ground level impact is expected far below 1 OU/m³ (human perception level).

Even in case of a complete absence of filter reduction the predicted maximum ground level impact would remain below 3 OU/m³, corresponding to the nuisance threshold level normally defined for such facilities.

A somewhat higher dilution rate could be achieved by ducting treated ventilation air to the top of the main stack. However, in view of layout this would be a very complex and costly solution without any appreciable benefit for receptors in view of above prediction with an impact below human perception level.

Furthermore, such solution would also involve a higher auxiliary power consumption impacting on the plants net electrical efficiency.

Figure 1 below (a variant of appendix A example) is adjusted so that results in micro-g/m³ correspond to OU/m³ show predicted ground level impact as function of distance.

Currently there is a residential area to the West at a distance of about 1200 m ref. Figure 2 below.



TECHNICAL SPECIFICATION

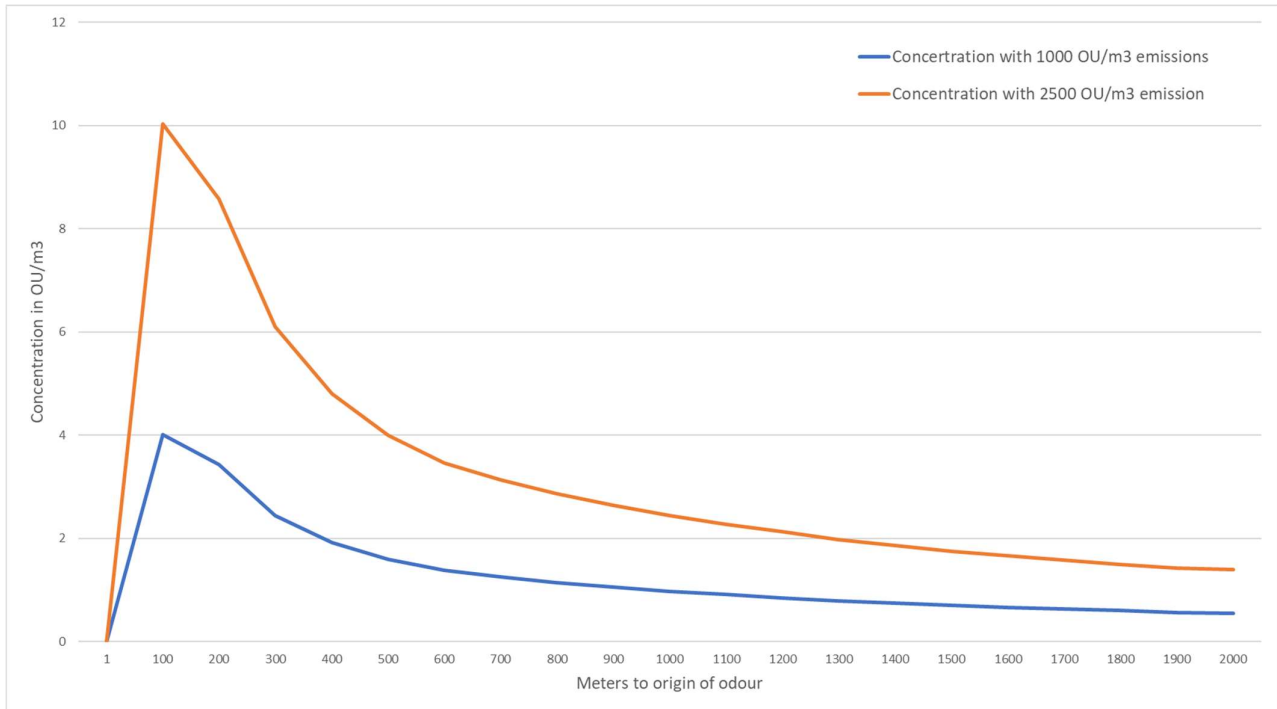


Figure 1: Screen 3 Ground Level Odour impact estimation (1 micro-g/m³ ~ 1 OU/m³ based on release concentration without AC reduction of 2500 & 1000 OU/m³.

As seen from above Figure 1 the predicted odour impact at these particular distances even without any AC reduction is about 2.1/0.85 OU/m³ @ 1200 m where the two values correspond to 2500 OU/m³ and 1000 OU/m³ respectively.

With any reasonable AC filter reduction, i.e., minimum 90%, these values would of course be much lower and well below human perception level.

TECHNICAL SPECIFICATION

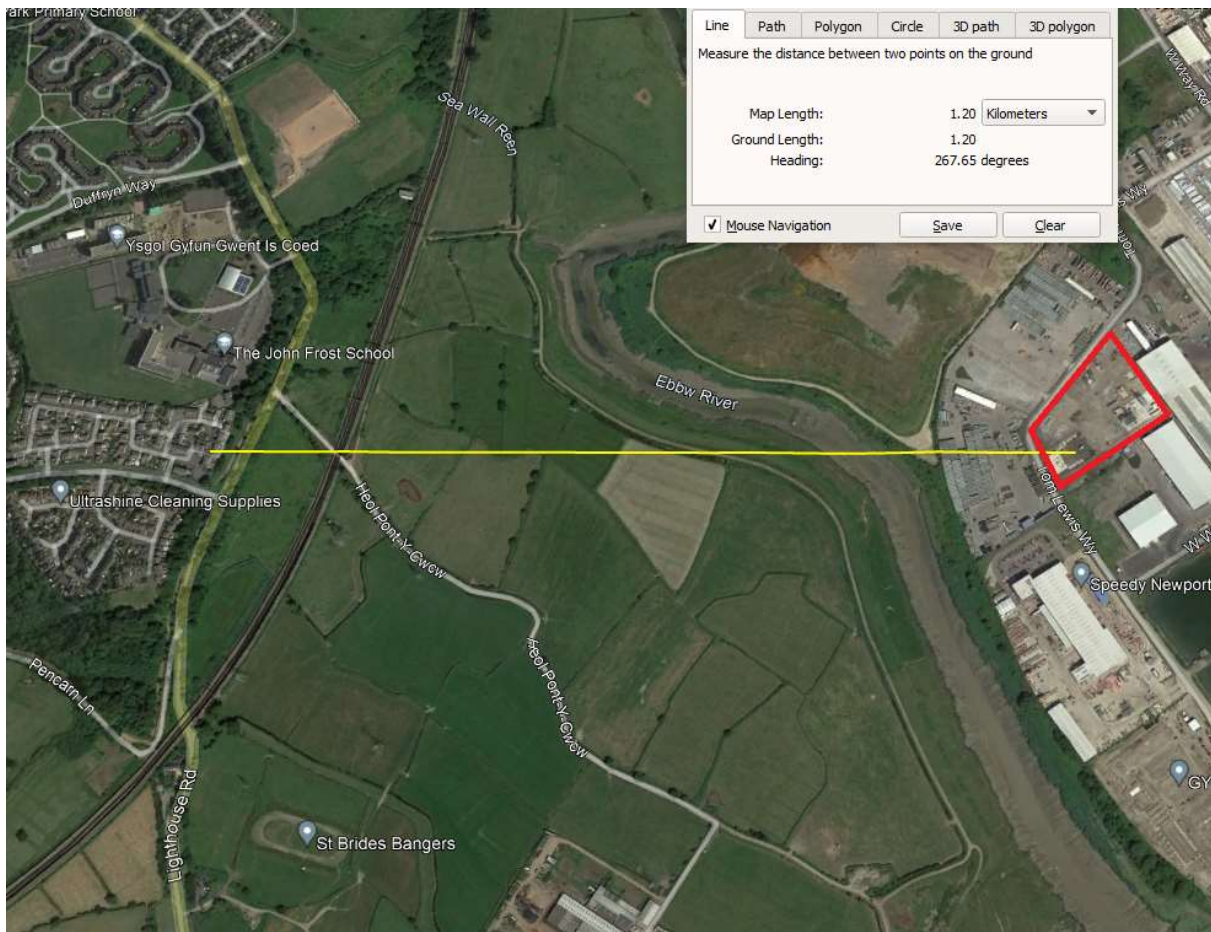


Figure 2: Newport site map and surroundings.

A full dispersion model assessment of the proposed ventilation release and of the odour control system using Advanced Dispersal Models may if required be provided at the Environmental Permit application stage. Given the significant headroom of the odour control system as described above it is not anticipated that there will be any difference in these findings from the study herein.

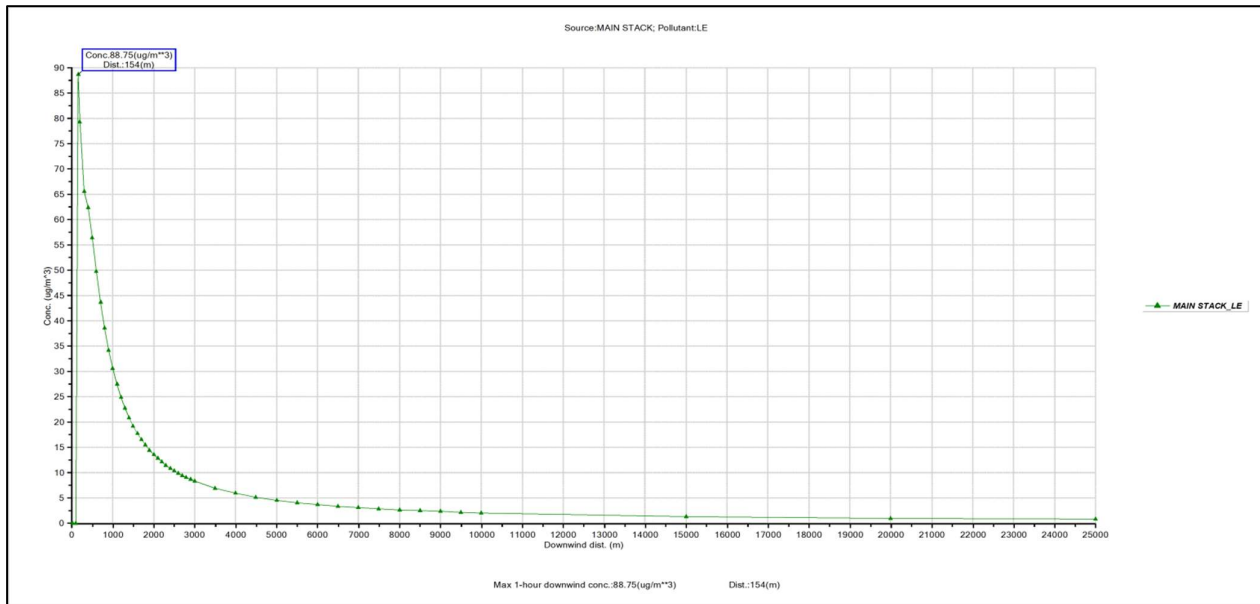
Attachments

A: Screen 3 dispersal calculation example as plot with explanation and model print out



TECHNICAL SPECIFICATION

Attachment A: Screen 3 dispersal calculation plot & result listing



Screen 3 dispersal result of a calculation with following main characteristics:

- Vent flow 35,000 m³/h
- Exit and ambient temperature 20 °C (293 °K)
- Exit velocity 15 m/s
- Release height 40 m (approx. 2.5 m above boiler house)
- Building effect/downwash considered for boiler bldg. H=37.5 m
- Urban surface roughness/atmospheric turbulence
- Full meteorology (all stability classes and wind velocities)
- Pollutant emission rate 1 g/s ~ 103 mg/m³ in 35,000 m³/h flow
- Max. ground level conc. 88.75 micro-g/m³ at distance 154 m (Stability A with 1 m/s wind speed), corresponding to a dispersal dilution factor 1:1,160.

ANNEX C: ODOUR REPORTING 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)

ANNEX D: ODOUR COMPLAINT REPORT FORM

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)

ANNEX E: RESPONSIBLE PERSONS

Annex E 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.		

ANNEX F: FAILURE & ABNORMAL EVENT SUMMARY TABLE

Annex F: Failure and Abnormal Event Summary

Odour Generating Process	Release Points	Abnormal Situation / Failure	Potential Outcome	Control Measure	Action (Resp)
Back log of waste	Fuel Reception Building and External Bale Storage Area	Breakdown of plant	Odour release	Immediate repair of plant – critical spares are stored on site	Replacement of components.
Fugitive emissions from the processing of waste	Waste processing area in Feedstock Building	Breakdown of plant / failure of extraction system	Odour release	Activation of the back up extraction system Immediate repair of plant Ceasing of waste acceptance	Repair of plant- Maintenance Team Assess reason for failure and amend procedures as necessary - Site Manager
Acceptance of odorous wastes into site	Quarantine area	Accidental acceptance of odorous wastes onsite	Odour release	Immediate quarantine of waste internally and processing as soon as practicably possible	Removal of waste and review of staff training in acceptance procedures – Site Manager
Damage to building	Building Fabric	Damage to building preventing negative pressure seal	Odour release	Immediate temporary repair of building fabric	Replacement of damaged sections.