

RUNCORN ENERGY RECOVERY FACILITY

Odour Management Plan
EPR/XP3005LB

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1.0 INTRODUCTION

Viridor Energy Ltd (Viridor) operate the Runcorn Energy Recovery Facility (ERF) in Weston Point, Runcorn ('the Site') under environmental permit reference EPR / XP3005LB. This Odour Management Plan (OMP) outlines appropriate measures necessary to prevent odour pollution, or minimise it when prevention is not practicable. The content and layout of this document has been compiled in consideration of the most recent template provided by the Environment Agency (EA)¹.

1.1 Site Description

1.1.1 Site Summary

The facility is designed for the thermal treatment of waste for the purpose of generating energy with a total capacity of 350 MW (thermal input) and is capable of generating up to approximately 86 MW of electrical power and 110 tonnes of steam per hour. The site is permitted to receive up to 1,100,000 tonnes per annum (tpa) of Refuse Derived Fuel (RDF). RDF is received at the ERF by road and by rail.

The ERF operates 24-hours per day. Waste is typically received at the facility by road between 6:30 and 23:00 on weekdays, and between 06:30 and 14:00 on Saturday. Typically, three trains are received at the railyard each weekday (at approximately 12:00, 20:30 and 22:30) and one on a Saturday (at approximately 22:30).

1.1.2 Site Location

The Runcorn ERF site is located off Picow Farm Road in an industrial area at Weston Point in Runcorn at approximate National Grid Reference (NGR) x349860, y381680. The Site extends from south to north, in parallel with the A557. The Site location is presented in Figure 1-1 below.

¹ Environment Agency Odour Management Plan Template Final V2, Dated: 05/05/21.

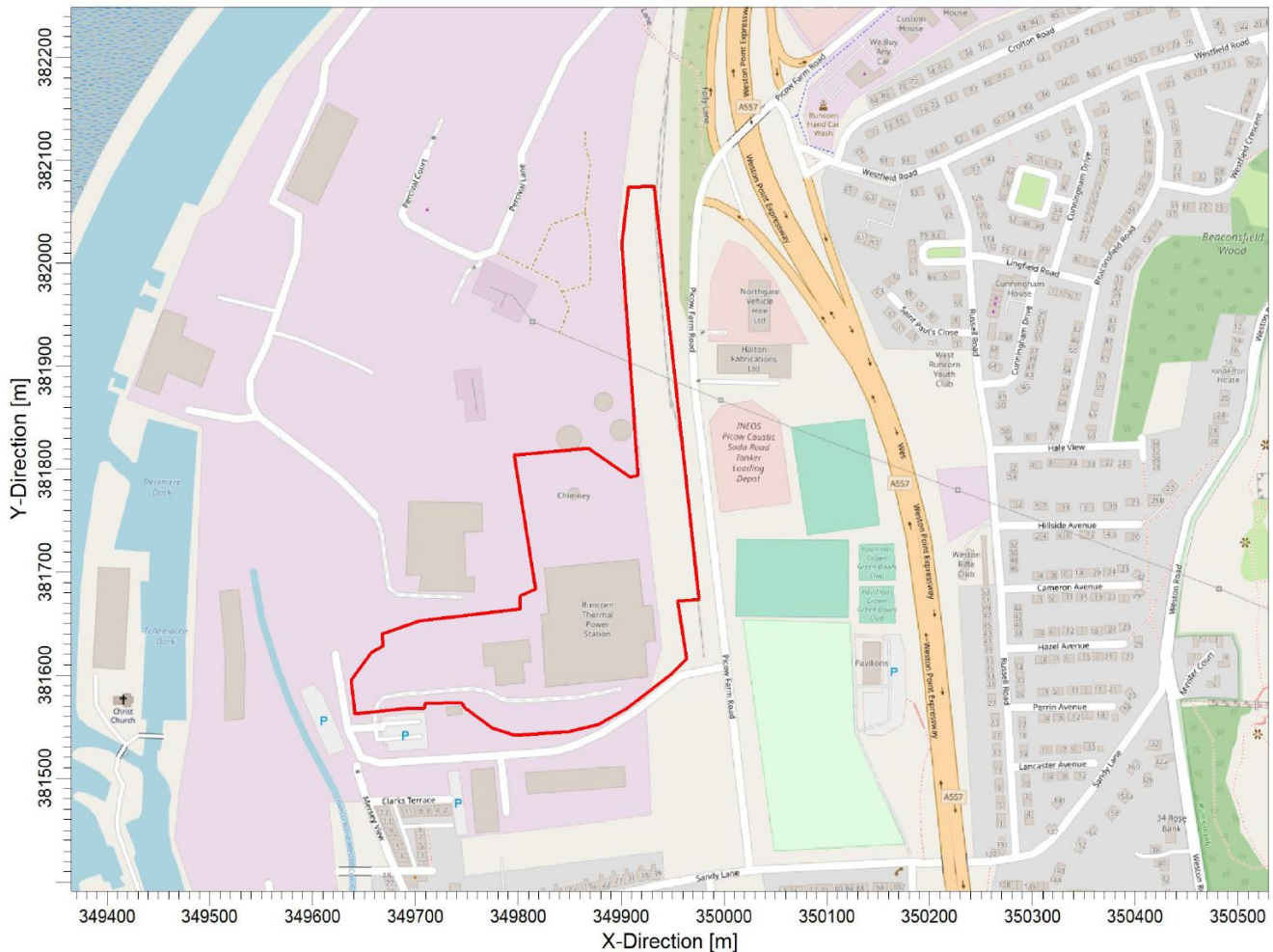


Figure 1-1
Site Location

1.2 Maintenance and Review of the OMP

1.2.1 Responsible Staff

It is the responsibility of the EHS Manager, with the support of environmental professionals, to identify environmental risks that are relevant to the Site and determine if a particular activity or service is environmentally significant. It is also the responsibility of the EHS Manager to maintain the OMP and ensure that staff are appropriately trained in its use.

Once identified, it is the responsibility of the Site's Operations Manager to highlight the significant aspects to all relevant employees and contractors. The Operations Manager is also responsible for monitoring and managing all activities under the Company's control to improve environmental performance.

All personnel on site have a responsibility to be aware of the need to ensure that odour emissions from the site are kept to a minimum, and to report to the Operations Manager or appointed deputy any issues or areas requiring improvement.

Work instructions, job descriptions and procedures exist for critical areas of the Company's activity and have been issued to or made available to personnel responsible for undertaking these tasks.

1.2.2 Odour Management Plan Review

This OMP is a controlled document, and forms part of the Environmental Management System (EMS). A comprehensive record of the results of the monitoring and inspection programme contained within this OMP will also form part of the EMS.

The specification for the periodic review and update of the OMP will be set out within the EMS. In line with the recommendations of EA's H4 Odour Management guidance, this takes place on an annual basis, as a minimum.

However, the OMP is intended to be a live document which serves as a reference during daily operations, and as such would be updated on a more frequent basis should the following occur:

- Significant changes are made to the plant or operational practices;
- There is a change to the management structure, designation of responsibility or training provision;
- EA requests that the OMP is updated, in their role as regulator; or
- Complaints are received, which on subsequent investigation result in the identification of further control measures or remedial action, in addition to those set out within this OMP.

A physical copy of the OMP is stored at the site office. Electronic copies of the OMP would be available from the EHS Manager and Site Manager.

1.2.3 Staff Training

All Viridor site personnel shall receive role specific training on a range of environmental issues on joining the site. This training will include the responsibility to be aware of the need to manage odour emissions and the potential for statutory nuisance arising from activities at the facility. The training will include the requirement to report any potential issues or areas of improvement regarding potential odour emissions to the Operations Manager or EHS Manager.

An assessment of training needs will be carried out to identify the posts for which specific environmental awareness training is needed, and the scope and level of such training relevant to their role. The assessment of training needs will be reviewed on an annual basis.

The training programme ensures that relevant staff will be fully aware of the following:

- Regulatory implications of the EP for the facility and their specific work activity;
- All potential environmental effects from operations under normal and abnormal circumstances;
- The need to report deviations from the EP;
- Prevention of accidental emissions and action to be taken should accidental emissions occur; and
- Records of training needs and training received will be maintained.

1.3 Relevant Sector Guidance

EA guidance Note H4 Odour Management How to comply with your environmental permit (hereafter referred to as 'H4 Odour Guidance') issued by EA describes how the IPPC Directive includes odour in the definition of pollution and requires that "[...] all the appropriate preventive measures are taken against pollution [...]". This Directive has been transposed in the UK by the Environmental Permitting Regulations (EPR) and sites encompassed within these Regulations will have the following odour condition included within their permit:

Emissions from the activities shall be free from odour at levels likely to cause pollution outside the site, as perceived by an authorised officer of the Agency, unless the operator has used appropriate measures.

including, but not limited to, those specified in an approved odour management plan, to prevent or where that is not practicable to minimise the odour.

Viridor as the operator must therefore employ the appropriate measures necessary to prevent odour pollution or minimise it when prevention is not practicable.

The measures that are appropriate have been determined in reference to the Waste Incineration Best Available Techniques (BAT) Reference Document², in order to take costs and benefits into account.

² Best Available Techniques (BAT) Reference Document for Waste Incineration, European Commission, 2019.

2.0 Receptors

2.1 Receptor List

There are a number of sensitive receptors in proximity to the Runcorn ERF, the closest of which are existing residential properties located to the southwest (Clarks Terrace), South (Sandy Lane) and east (Russell Road).

The identified sensitive receptors in proximity of the Site are presented in Table 2-1. The discrete receptors presented within Table 2-1 do not represent an exhaustive list, but the closest sensitive receptors in each direction surrounding the Site. There may be more receptors at a greater distance, however when considering that odour concentration decreases with the distance from the source, it can reasonably be inferred that receptors at a greater distance would not be adversely affected if receptors in closer proximity are not predicted to experience an adverse effect.

Table 2-1
Nearby Sensitive Receptors

Receptor	Receptor Type	Direction from Site	Distance to Permit Boundary (m)	Sensitivity to Odour
DR_1	Residential	SSW	90	High
DR_2	Residential	SSW	90	High
DR_3	Residential	SSW	150	High
DR_4	Residential	SSW	220	High
DR_5	Residential	S	180	High
DR_6	Residential	S	140	High
DR_7	Residential	SSE	150	High
DR_8	Residential	SSE	190	High
DR_9	Residential	SE	220	High
DR_10	Residential	SE	260	High
DR_11	Residential	SE	300	High
DR_12	Residential	ESE	330	High
DR_13	Residential	ESE	290	High
DR_14	Residential	E	270	High
DR_15	Residential	E	300	High
DR_16	Residential	E	310	High
DR_17	Residential	ENE	300	High
DR_18	Residential	ENE	220	High
DR_19	Residential	NE	190	High

Receptor	Receptor Type	Direction from Site	Distance to Permit Boundary (m)	Sensitivity to Odour
DR_20	Residential	NE	180	High
DR_21	Residential	NE	210	High
DR_22	Residential	NE	270	High
DR_23	Recreational	E	160	Medium

The receptor sensitivity has been determined in reference to the IAQM guidance³, in which residential dwellings are determined to be of a 'high' sensitivity to odours and recreational uses are determined to be of a 'medium' sensitivity to odours.

Reference should be made to Figure 2-1 for an illustration of the sensitive receptors relative to the Site.

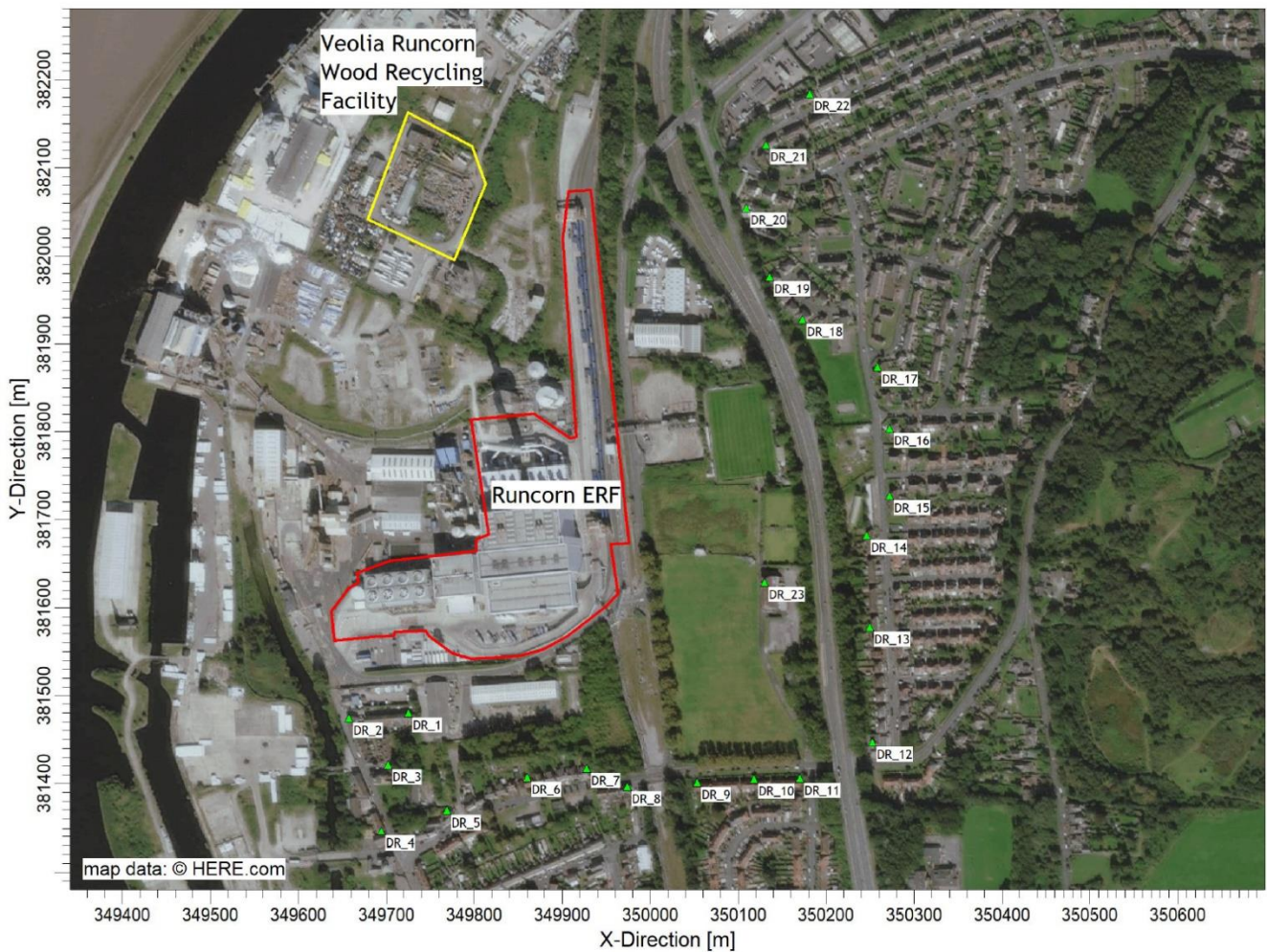


Figure 2-1
Nearby Sensitive Receptors

³ IAQM Guidance on the assessment of odour for planning. Institute of Air Quality Management, 2014.

2.2 Existing Odour Sources

From a review of aerial imagery the current primary source of odours in the area is industrial. A number of industrial facilities border the site to the north and west. The majority of these facilities are not considered to be likely source of odours, however the Veolia Runcorn Wood Recycling Facility could present a possible source of odours (outlined in yellow in Figure 2-1).

2.3 Meteorological Data

The nearest meteorological recording station to the Site is the Liverpool Airport meteorological recording station, approximately 6km west of the Site at an elevation of 22m. Wind speed and direction data for the years 2015 to 2019 is presented in Figure 2-2. It shows the prevailing wind to be from the south-and west. As a result, the potential impact of emissions is likely to be greater to the north and east of the Site.

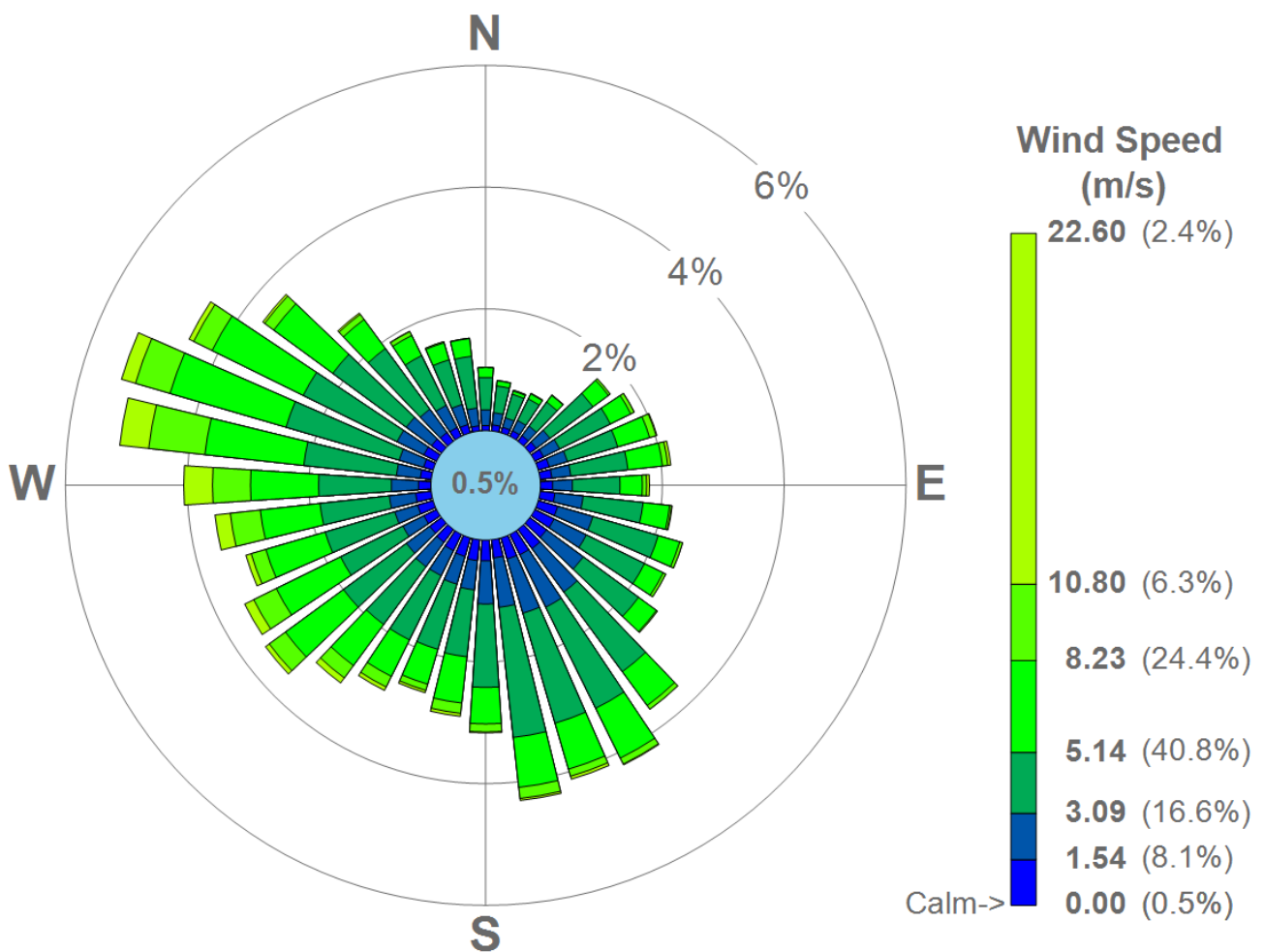


Figure 2-2
Liverpool Airport Meteorological Data Wind Rose 2015 - 2019

3.0 Sources of Odour and Site Processes

3.1 Odorous Material Entering and Leaving the Site

The Site is permitted to receive up to 1,100,000 tpa of RDF, commercial and industrial (C&I) wastes and source segregated packaging, which is received both by road and by rail.

Waste is typically received at the facility by road between 6:30 and 23:00. Typically, three trains are received at the railyard each weekday; the first at 12:00, second at 20:30 and a third at 22:30. Typically, only one train is received at the railyard each Saturday; at 22:30.

Under current operations, the Site almost exclusively receives RDF, which is predominately derived from MSW. On average, during normal Site operations, the facility receives 3,400 tonnes of waste each weekday, 1,500 tonnes of waste on Saturdays and receives no waste on Sundays. Approximately 60% of waste material received is received by road, and the remaining 40% at the railyard.

RDF is received at the site via road in large trailers hauled by articulated trucks, which enter the Site via the access point off Picow Farm Road. Loads are checked-in and weighed at the weighbridge prior to joining the queue for access to the Tipping Hall to offload. Trucks queue for access to the Tipping Hall on the Tipping Hall ramp, or where that queue is full, within the designated overflow area Locations A, and or where that queue is full, within the FGT area (as outlined in Figure 3-2). After entering the Tipping Hall, waste material is offloaded directly into the waste bunker.

RDF is also received at the Site's Railyard via the rail network. The Railyard is located on the north-eastern side of the Site. RDF is transported to the Site within individual 13-tonne capacity containers. Containers are offloaded from the trains via two overhanging loading cranes onto a number of loading trucks, which shuttle the waste containers to the Tipping Hall to be deposited within the waste bunker. Empty containers are returned to the railyard to be loaded back onto the trains.

RDF within the waste bunker is utilised as feedstock for the combustion process within the four operational lines. Air is drawn from within the Tipping Hall and Waste Bunker for use in the combustion process. Combustion emissions from the four lines are released from the main stack (comprising 4 stacks contained within a single shroud).

Incineration Bottom Ash (IBA) and Air Pollution Control Residues (APCr) resulting from the combustion process are transported off-site for recycling.

Wastewater is discharged into the Runcorn & Weston Canal.

Viridor has submitted an Environmental Permit variation application seeking to facilitate the receipt of up to 110,000 tpa of MSW at the Site. **MSW received would be offset by an equivalent volume of RDF, therefore this proposed variation would not seek an increase to the permitted volume of material which can be received at the Site.**

All waste received at the Site is monitored by the Fuel Reception Operators (FRO) to ensure it complies with the waste transfer note description and the permitted waste types for the facility. Any abnormal loads are rejected. Highly odorous loads are directed to the Tipping Hall as quickly as possible (bypassing the queue). Further details are provided in Table 4-1.

3.2 Odorous Materials

Potentially odorous materials received at the ERF have been identified in Table 3-1 below.

Table 3-1
Odorous Materials

Odorous and potentially odorous materials	Odour potential	Estimated Average Quantity Received per day	Maximum time material stored outside of Tipping Hall	Location of odorous materials on site
RDF	High	3,400 tonnes each weekday, 1,500 tonnes on Saturday (or bank holidays)	48 hours ^(a)	Road Trailers / Rail Containers / Waste Bunker
MSW	High		48 hours ^(a)	Road Trailers / Waste Bunker
Incinerator Flue Gas	Negligible	-	-	-
IBA/APCR	Negligible	-	-	-

Table Notes:

- a) 48 hours represents a worst-case estimate of the maximum time waste would be retained on the Site prior to deposit within the Tipping Hall. The anticipated maximum length of time waste may be held outside of the Tipping Hall is:
- Approximately 6 hours within road trailers, during periods of operational issues with the Site process (i.e. Tipping Hall crane or door breakdown); and
 - Approximately 48 hours in rail containers, during periods of operational issues with the Site process (i.e. railyard crane, Tipping Hall crane or door breakdown). It should also be noted that it is part of normal Site operations for waste received via the 23:00 train on a Saturday to remain on the Site for 32 hours prior to offloading at 07:00 on Monday.

Incinerator flue gas resulting from the main stack is considered to have a negligible odour potential. This has been determined in consideration of the high temperatures associated with the incineration process which would result in total thermal destruction of odorous compounds prior to release to atmosphere.

IBA & APCR produced from the incineration process are considered to have a negligible odour potential due to their inert nature (as a result of the incineration process).

3.3 Overview of Odorous Processes and Emissions

Figure 3-1 presents the site assets. Figure 3-2 identifies the location of potentially odorous Site operations.

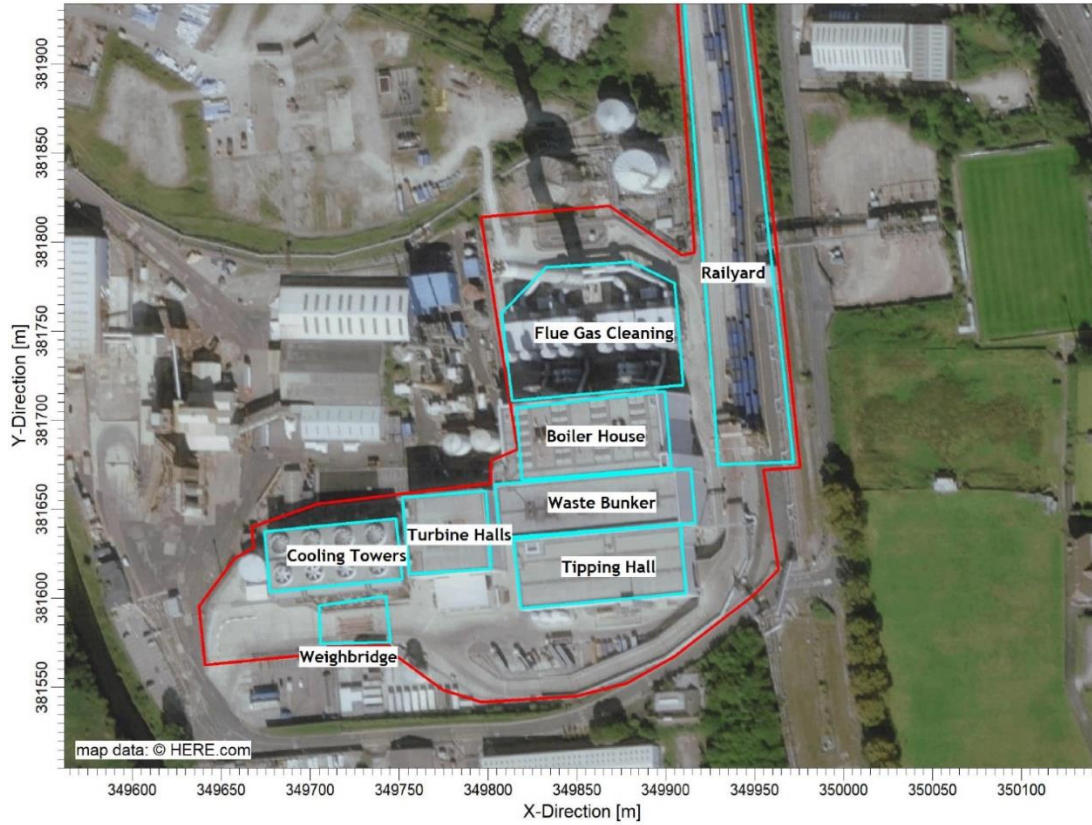


Figure 3-1
Site Assets

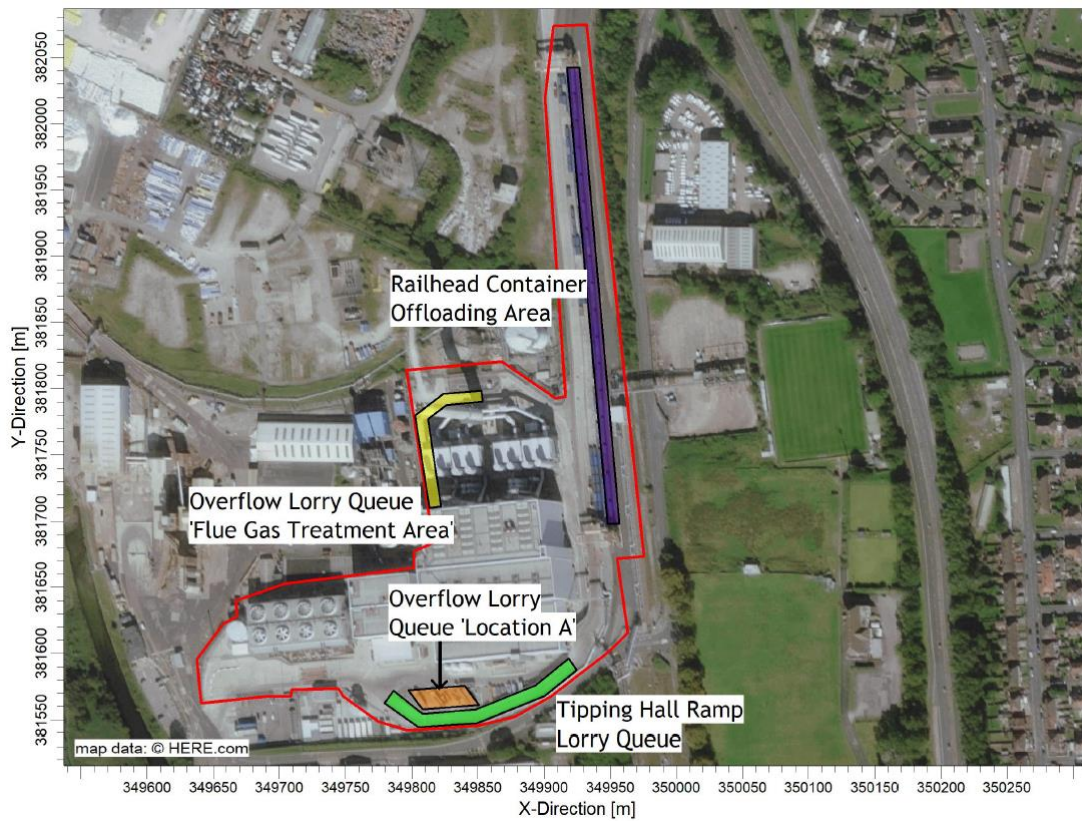


Figure 3-2
Location of Odorous Operations

4.0 Control Measures and Process Monitoring

4.1 Appropriate Measures / BAT

The appropriate measures / BAT employed at the Site are detailed in Table 4-1 below.

Table 4-1
Appropriate Techniques / BAT

Odorous and potentially odorous process / material	Control measures (Appropriate Measure / BAT)	Monitoring frequency	Monitoring procedure and optimum process parameters	Trigger level
Incoming RDF / MSW by road (trailers)	Waste rejection procedure	Constant, ongoing throughout shift	<p>All waste received at the Site is monitored by the Fuel Reception Operators (FRO) to ensure it complies with the waste transfer note description and the permitted waste types for the facility (otherwise it would be defined as an 'abnormal load'). Any abnormal loads are rejected (i.e. turned away and not received at the Site).</p> <p>Highly odorous loads are identified by the FRO during monitoring via direct sniffing. The FRO is aware of typical waste odours from the incoming waste, and can identify any lorries from which the odour is significantly stronger, or of a higher offensiveness than usual.</p> <p>Highly odorous loads are directed to the Tipping Hall as quickly as possible, bypassing the queue whilst the rest of the traffic is held (to reduce the time over which such loads are retained on Site). Traffic will be held whilst the highly odorous load passes the queue on the right hand side of the Tipping Hall ramp. If a highly odorous load cannot enter the tipping hall immediately upon identification, the load would be rejected.</p>	Abnormal or highly odorous loads identified.

Odorous and potentially odorous process / material	Control measures (Appropriate Measure / BAT)	Monitoring frequency	Monitoring procedure and optimum process parameters	Trigger level
			<p>There is a limit for the total number of trucks which can queue at the Site for access to the Tipping Hall under normal operations (as detailed in the sections below). Should the number of trucks queuing at the Site exceed 14, the operator would contact the customers to ensure a managed flow of incoming vehicles, thus ensuring that the total number of refuse trucks queuing at the Site remains below the numbers outlined below.</p> <p>These limits apply for normal site operations, and would not apply during exceptional events (such as collections around Christmas), where it may be an operational requirement for a greater number of trucks to be present at the Site for a short period.</p>	<p>More than 14 trucks queuing at Site.</p>
	<p>Minimising of retention time</p>		<p>A First In First Out (FIFO) approach is adopted, where by the first trucks to arrive at the Site would be the first permitted to enter the Tipping Hall, and so on. The exception to this would be the 'queue skipping' of highly odorous loads received, where identified.</p>	<p>N/A</p>
	<p>Covering in place over trailers to contain the waste</p>		<p>The coverings in place on the roof of the waste trailers minimises escape of loose waste from within the trailers, thus reducing litter around the Site. Where trailers are identified without coverings in place, the driver is instructed to utilise the covering and would be reminded to ensure it is used for future loads.</p>	<p>Sheeting not in place on trailer.</p>

Odorous and potentially odorous process / material	Control measures (Appropriate Measure / BAT)	Monitoring frequency	Monitoring procedure and optimum process parameters	Trigger level
	Traffic Management		<p>Under normal Site operations, up to 19 trucks can queue for access to the Tipping Hall (7 on the Tipping Hall ramp, a further 4 at location A and 8 at the FGT area) during peak operations (usually between 06:30 and 12:00 on weekdays). Outside of peak operations, trucks should queue only on the Tipping Hall Ramp (capacity of up to 7 trucks). Site operatives will ensure the queueing trucks are located within the relevant designated areas as presented in Figure 3-2.</p> <p>The limits outlined above has been defined in reference to the updated odour modelling assessment undertaken⁴. Should further trucks arrive at the Site, they would be turned away until space is available to ensure the number of trucks queuing remains below the numbers outlined above.</p> <p>However, during exceptional circumstances (such as pre and post-Christmas), the arrival of a large number of incoming waste vehicles at one time could result in a queue for access to Site along the Barlow Way approach road. In an exceptional circumstance such as this, site operatives will allocate additional space on the Site for the trucks to park (to avoid queuing of trucks along Barlow Way), thereby minimising potential off-site odour impacts (most notably on Clarke Terrace). Space would first be allocated within the designated queuing areas (see Figure 3-2), but where this capacity is exceeded, further space would be made available within the FGT area and connecting access roads. These events are anticipated to be infrequent and short-term in their nature, and would not form part of normal Site operations.</p>	More than 7 trucks queuing on the Tipping Hall Ramp to access the Tipping Hall.

⁴ SLR report reference: 221125_Runcorn ERF_Further Modelling_v1.0.

Odorous and potentially odorous process / material	Control measures (Appropriate Measure / BAT)	Monitoring frequency	Monitoring procedure and optimum process parameters	Trigger level
	Vehicle cleanliness		The Runcorn Site requests that hauliers keep up a good standard of cleanliness of their vehicles and will report back any that they feel could be contributing to an odour on Site. This is proactively managed by the Tipping Hall supervisor and their team. The tipping hall supervisor would escalate to the Head of Contracts who would send a communication to the company that the cleanliness of their vehicle(s) is not acceptable. The situation would be monitored, and if improvements are not made, this may then result in tipping restrictions (i.e. that haulier is no longer allowed to tip at the Site) until the situation is resolved.	Where odours from vehicles (when empty) are excessive, or poor cleanliness is clearly observed.
Incoming RDF by Rail (containers)	Minimising of retention time	Constant, ongoing throughout shift	Containers are offloaded from the train (and emptied into the waste bunker) as soon as possible after arriving on Site, typically within 3 hours from arrival. The train which arrives in the evening (22:30) cannot be unloaded until the following morning due to noise restrictions, so is present on the rail sidings for a longer period out of necessity. Historical data indicate that this practice does not lead to complaints overnight.	N/A
	Containers provide a high level of containment		Visual inspection by site operatives. All containers should provide a high level of containment of odours and be free from obvious damage or defects.	If clear gaps are observed in the containers (most notably around the doors), or damage to the structure.

Odorous and potentially odorous process / material	Control measures (Appropriate Measure / BAT)	Monitoring frequency	Monitoring procedure and optimum process parameters	Trigger level
	Waste within the containers is not agitated during offloading from the train		Containers are offloaded from the train by two overhead cranes which ensure a controlled transition of the containers to the waiting trucks, reducing agitation of waste (minimising potential odour emissions).	N/A
	Waste rejection procedure		<p>All waste received at the Site is monitored by the FRO to ensure it complies with the waste transfer note description and the permitted waste types for the facility (otherwise it is identified as abnormal). Any abnormal loads are rejected.</p> <p>Highly odorous loads (as identified by the FRO) are immediately directed to the Tipping Hall, bypassing the queue. If a highly odorous load cannot enter the tipping hall immediately upon identification, the load would be rejected.</p>	Abnormal or highly odorous loads identified.
RDF/MSW deposited and stored within in the Bunker	Containment and Abatement of process air by an air extraction system	Constant, ongoing throughout shift	The air extraction system effectively contains odours from within the Tipping Hall and Waste Bunker. The extracted air is used in the combustion process in the furnace, effectively abating odorous compounds prior to release from the main stack. Periodic inspection of the extraction system is undertaken to ensure proper use.	N/A
	Use of the vehicular access door		<p>Although it is noted that the recent odour modelling assessment concluded that the air extraction system effectively contains odour emissions, use of the vehicular access door should be minimised. Therefore this door should be closed when not in use, where possible.</p> <p>Exceptions where the doors may have to remain open for a prolonged period include the abnormal events identified in Table 6-1 including:</p>	Vehicular access door open, but not in use

Odorous and potentially odorous process / material	Control measures (Appropriate Measure / BAT)	Monitoring frequency	Monitoring procedure and optimum process parameters	Trigger level
	Rotation of waste feeding operations		<ul style="list-style-type: none"> • Maintenance – of the door; • Damage – to the door, to be fixed as soon as possible; and • Use as pedestrian access if needed, i.e. pedestrian door has broken. Waste feeding operations from the bunker are carried out on a rotational basis to ensure a consistent turnover of waste.	N/A
Litter across the Site	Litter picking / good housekeeping	Constant, ongoing throughout shift	Periodic litter picking is undertaken around the Site as required to keep litter levels low. Good housekeeping practises are encouraged for both Viridor staff and contractors.	Excessive levels of litter around the Site

The receipt of RDF and MSW presents the most significant source of odour emissions from the Site. RDF arriving at the Site by rail would be transported in containers. These containers would provide a level of containment of waste odours. RDF and MSW arriving at the Site by road would be transported in open-top (but covered) trailers. Trailer coverings are not considered to provide any meaningful containment of odours, however it does reduce the potential for waste to escape the trailers and litter the Site.

The tipping of RDF and MSW into the waste bunker within the Tipping Hall also represents a significant source of odour emissions from the Site. Ambient air from within the Tipping Hall is extracted for used in the incineration process, putting the building under negative pressure. In reference to the leakage testing undertaken a part of the recent dispersion modelling assessment it was determined that the extraction system achieved a high level of containment of air from within the Tipping Hall, even during events where the doors are open to allow for vehicular access. Therefore it is considered that fugitive odours from the Tipping Hall are negligible when considering the effective containment measures in place.

5.0 Odour Reporting

5.1 Complaints Process

5.1.1 Recording and Reporting of Complaints

Upon receipt of an odour complaint, the EHS Manager (or deputy) will be informed as soon as possible, including the location, time and date of the complaint (where available).

The EHS Manager (or deputy) will record the key details using the Viridor Incident Management System (VIMS). The VIMS outlines the key information that should be recorded to facilitate further suitable investigation (i.e. time, date, location and any details provided as part of the complaint).

Odour complaints received by Viridor are reported to the EA by the EHS Manager (or deputy). Where complaints are substantiated, the EA would be informed of any remedial actions identified and implemented.

5.1.2 Substantiation of Complaints

The EHS Manager (or deputy) will subsequently undertake further assessment to substantiate the odour complaint through:

- Review of odour logs relating to the period in question;
- Review of the operations at the Site prior to and at the time of the complaint;
- Review of the environmental control systems operating prior to and at the time of the complaint;
- Review of the meteorological conditions (wind speed/wind direction/rainfall/atmospheric pressure) from the nearby Liverpool Airport recording station (see Section 2.3), prior to and at the time of the complaint, to establish whether a pathway can be established between the Site and the complainant; and
- Review of the previous complaint history at the location identified.

The odour complaint will then be classified as 'substantiated' or 'unsubstantiated' by the EHS Manager (or deputy). If the complaint is received in a timely fashion from the event reported, reactive sniff testing would be carried out to assist the substantiation process (as detailed in Section 5.4 below). It should be noted that sniff testing is only of use soon after the event reported as conditions (both meteorological and/or operational) rapidly change.

If contact details are available, Viridor will also contact the complainant directly to provide feedback on the investigation process and any remedial actions which are identified.

Where odour is substantiated, the key 'FIDOL' criteria will be considered to assess the effect of the odour detected at the complaint location:

Frequency – is the odour intermittent or persistent; is there a history of complaints at this location?

Intensity – is the odour faint, moderate, strong, or very strong?

Duration – how long is the odour present at this location?

Offensiveness – provide a description of the odour; is it high, moderate, or low offensiveness?

Location – is the odour present at a remote or highly sensitive (i.e. residential) location; is the odour plume localised or widespread?

In recognising that odour can be transient and short-lived, timely notification of odour complaints directly from the complainant or the EA is imperative to allow for appropriate investigation. However due to delays in reporting it may not be possible to fully investigate or substantiate the complaint. Viridor will, however, complete

and record a comprehensive complaint investigation, as set out below, for substantiated complaints received at the Site.

5.1.3 Remedial Actions

Odour 'non-conformances' may be determined at the Site as follows:

- Receipt of an odour complaint that is clearly attributable to the facility
- Detection of significant / offensive odour beyond the Site boundary during routine odour surveys that relates specifically to Site operations
- Damage to, or failure of, on-Site odour control infrastructure

If any of the above odour 'non-conformances' are determined at the Site, the following remedial actions shall be undertaken by the EHS Manager or Operations Manager:

The Plant Manager or appointed deputy will co-ordinate with the ERF Environmental Manager (internally) as well as the Environment Agency Officer and Environmental Health Officer (externally).

If not previously undertaken, the Plant Manager or appointed deputy will undertake a Site investigation in order to determine the likely cause(s) of the off-Site odour reported.

The Site investigation will incorporate assessment of the Site infrastructure and process conditions against the specific requirements of the facility odour controls set out above, to determine any diversion away from 'normal' Site operating conditions.

The key items for consideration would be:

- Material inputs / outputs – change in waste type, volume, odour characteristics;
- Waste reception hall – building integrity, housekeeping, door control;
- Odour abstraction ducting – fan speeds, performance of acid scrubber, integrity of the system, pressure drops, dust filters;
- Bunded liquid – failure of any tank, stagnant waters in the bunds;
- Failure of external utility supply Site water, electricity;
- Mechanical breakdown such as pumps or fans;
- Procedural failure (human error);
- Short-term abnormal weather patterns such as wind direction or temperature inversions (i.e. dawn/dusk); and
- Abnormal operating conditions or temporary odorous activities.

Upon identification of a likely odour source(s), the appropriate corrective and preventative measures will be identified and if possible, implemented under the direction of the Plant Manager or appointed deputy. Additional support and technical expertise would be sourced from internal or external technical specialists as required.

If it proves impracticable to carry out adequate remedial measures within one working day, the Plant Manager or appointed deputy will notify and agree with the Environment Agency the proposed actions and the timescales for their completion as a programme of works.

5.1.4 Timescales

Odour complaints received by Viridor are reported to the EA by the EHS Manager (or deputy) within 48 hours. Where complaints are substantiated, the EA would be informed of any remedial actions identified and implemented in a timely manner.

5.2 Community Engagement

Site contact details and emergency (out-of-hours) numbers are displayed at the Site entrance gate. Direct feedback to Site is always encouraged in relation to any perceived odour issues associated with operational activities.

Viridor's primary point of contact will be the EHS Manager for odour management issues and complaints. If the EHS Manager is unavailable, then the Operations Manager would take responsibility. If both the EHS Manager and Operations Manager are unavailable, this would be handled by the Shift Team Leader.

The Local Liaison Forum (LLF) for the Runcorn ERF was established as part of the planning consent for the facility in 2008. The purpose of the Forum⁵ is to act as conduit between Viridor, Halton Borough Council and community stakeholders in order to keep residents updated about the Site operations as well as to ensure that residents have the opportunity to enquire about any specific items of concern. Viridor, as the operator, administers the LLF. Agenda/Minutes from the meetings and the Terms of Reference are available online.

Runcorn ERF undertakes regular Local Liaison Meetings in order to maintain effective communication with the local community.

As outlined in Section 5.1 above, Viridor respond to odour complaints promptly and keep complainant informed of the outcome of investigations where possible.

5.3 Pro-Active Odour Monitoring

5.3.1 Monitoring of Ambient Odours

Monitoring of ambient odours from at the Site and surrounding area provides a broad indication of the effectiveness of the odour management as a whole, i.e. odour minimisation and containment. This is an ongoing process and allows for live assessment of odour control effectiveness.

Routine off-Site 'sniff testing' odour surveys are undertaken at a minimum of weekly intervals. The monitoring frequency may be increased or decreased to reflect the perceived odour sensitivity at the Site, as directed by the Operations Manager or EHS Manager.

The odour surveys will be undertaken as follows:

- Perceived odours will be scored using the intensity scale presented in VDI 3940⁶, transposed within the EA's H4 Odour Management guidance and presented in Table 5-1Table 5-1. A numerical value between 0 (no odour) and 6 (extremely strong odour) is assigned. A 'description' for each odour intensity level is provided by the EA⁷;
- The assessor will stand still and breathe deeply facing upwind for a minimum period up to 5 minutes. If odour is detected, but can only barely be detected in this manner, the corresponding odour 'intensity' is recorded as '2' (faint);
- If odour is detectable whilst walking or breathing normally, the intensity is recorded as '3' (distinct) or greater; and
- Monitoring is undertaken at the established locations as outlined in drawing 'ERF-RUN-OPS-SHE-DWG-001 - Odour Monitoring Plan'. The off-Site monitoring locations have been identified as key sensitive receptors following a review of the Site's locale.

⁵ <https://www.viridor.co.uk/energy/energy-recovery-facilities/runcorn-erf/runcorn-community/>

⁶ Verein Deutscher Ingenieure (VDI), 2006, "Measurement of Odour Impact by Field Inspection - VDI 3940".

⁷ Environment Agency (EA), "Frequently asked questions, Landfill Sites, updated 30 January 2020.

**Table 5-1
 Odour Intensity Scale**

Level	Odour Intensity	EA description
0	Not Perceptible	No odour
1	Very Weak	Need to inhale into the wind to smell anything
2	Weak	You can detect an odour when you inhale normally
3	Distinct	There is clearly an odour in the air as you leave your car or enter the area
4	Strong	A bearable odour but strong, you could stay in the area for some time
5	Very Strong	Unpleasantly strong, you will want to leave the area quickly
6	Extremely Strong	Likely to cause nausea and a strong need to remove yourself from the odour immediately

Following detection of any off-Site odours (which can be attributed to the Runcorn Site) of an intensity of '3' or greater, a further on-Site inspection will be carried out seeking to trace the source of the perceived odour to ascertain whether it is attributable to Site activities. EHS manager or Operations Manager would be informed so that the appropriate corrective and/or preventative action can be taken.

If it is determined that the perceived odour is not attributable to Site activities, the assessor will attempt to trace back the odour plume to identify and record the third-party odour source.

Observations including time, date, weather conditions, odour emission type, location, intensity, extent and sensitivity will be recorded on the Odour Survey Log Sheet, this will either be uploaded onto Viridor's Monitorpro environmental database or stored on the Runcorn ERF SharePoint Hub page.

Any odour issues identified during the sniff testing will be recorded in the Site logbook.

Meteorological data from the Liverpool Airport recording station (6km to the west of the Site) is utilised to determine local weather conditions. Meteorological data can be a useful tool for investigating off-Site odours observed, odour complaints or to verify community observations.

5.4 Reactive Odour Monitoring

Further sniff testing is undertaken where the routine sniff testing identifies off-Site odours (of an intensity of '3' or higher) which can be attributed to the Runcorn ERF Site process. Sniff testing would be undertaken around the area in which the odour was identified to understand the extent of the off-Site odours. An impartial monitoring company would be commissioned to undertake sniff testing where off-Site odour issues are identified.

Additional sniff testing is undertaken where periods of adverse meteorological conditions (i.e. hot, still days with winds blowing towards nearby receptors), breakdowns or during other abnormal events to evaluate the effectiveness of the control measures in place and the likelihood that odour complaints could be received.

In the event that odour complaints are received, sniff testing would be undertaken at the complainant location, as soon as possible (where the location of the odour complaint is provided).

6.0 Abnormal Events

Table 6-1 below outlined the anticipated 'abnormal events' at the Site and the associated recovery steps to address these events.

Table 6-1
Abnormal Events

Abnormal event	Recovery steps
Unplanned shutdown of incineration activities	During a shutdown, waste deliveries would not be received at the Site. Where possible waste deliveries would be diverted to other sites.
	Engage with specialists (either internally within the business or use of contractors) to ensure remedial actions are undertaken as soon as practicable. Critical infrastructure analysis has been carried out and we hold a stock of critical parts.
	Odour suppressant sprays would be placed into service within the tipping hall and waste bunker as soon as practicable and would remain in service until the extraction system is returned to service.
Power Failure	In the event of power failure, operations would be suspended, and all external doors would be closed manually.
Damage to Vehicular access door	Engage with contractors to undertake remedial actions as soon as possible. In the event that the automation system fails (for opening and closing the door based on vehicle proximity) this would be undertaken manually until repaired.
Flood	<p>The Site is located in proximity to the River Mersey, however it is considered to be at a low risk of flooding (designated as Flood Zone 1). The site has not been flooded historically. However, if the site becomes flooded, this would inhibit effective reception and processing of delivered waste. Material will either be rapidly processed; or where not possible removed from site.</p> <p>Widespread flooding of the site may also prevent the operation of key electrical equipment and vehicular access. Under such extreme conditions no further operations would be undertaken (i.e. opening of doors) and no further waste would be received. Waterlogged material will either be rapidly processed; or where not possible removed from site.</p> <p>Widespread flooding may prevent access to site. In such a situation no further waste would be able to access the site and priority would be given to ensuring the ongoing effective processing of waste.</p>
Staff Shortage	<p>The ERF is operated on a shift basis. This method of operations incorporate many levels of redundancy meaning that the facility will always have personnel on stand-by.</p> <p>Prolonged or short-term staff shortages will therefore not affect the ability of the site to operate effectively.</p> <p>If prolonged, widespread absence occurs, the operators would cease receiving deliveries of waste and suspend operations.</p>

Abnormal event	Recovery steps
Fire	A fire would be handled in accordance with the Site's Fire Prevention Plan. The key principles are prompt responses that contain the fire and attempt to extinguish it, minimise damage to containment and mitigation infrastructure. The EA would be informed of any such occurrence and local residents informed in accordance with the Fire Prevention Plan procedures.

In the event that an accident or incident occurs, the Site Manager or EHS Manager will notify EA as soon as practicably possible using the emergency 24hr phone line (0800 80 70 60). The Operations Manager will also notify the Regulatory Officer should any complaints be received directly to the Site and advise what remedial measures have been undertaken.

In the event of Site emergency, an assessment will be made to determine whether the incident has the potential for off-Site environmental impacts and the Plant Manager or appointed deputy will be notified in line with the categorisation criteria without delay and the Site's Incident Response Plan will be followed.

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