





Odour Management Plan

Fenix Battery Recycling Ltd



Report produced for Fenix Battery Recycling Ltd

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1.0 INTRODUCTION

WRM have been commissioned by Fenix Battery Recycling (hereby referred to as “Fenix”) to prepare an Odour Management Plan (OMP) for their waste battery recycling facility located on Field Street, Willenhall, West Midlands, WV13 2PN. The battery recycling facility will consist of a site office, three separate buildings, associated processing plant and a dust extraction system, in which the sorting of different batteries by category/chemistry and the subsequent processing of alkaline and lead-acid batteries will take place. Fenix are seeking permission to accept and process up to 22,000 tonnes of non-hazardous and hazardous waste per year. The waste will consist of alkaline and lead-acid batteries, together with the repackaging and consolidation of other batteries as necessary. Treatment will consist of a combination of sorting, shredding, and various methods of processing or repackaging, dependent on the type of waste that is being treated – before the waste is removed from site for onward use, recycling or disposal.

The processing of up to 22,000 tonnes per annum (tpa) of non-hazardous and hazardous waste can inevitably lead to the generation of odour due to the nature of material and the processes involved. Effective operation and management of such facilities is therefore required to minimise the odour emissions from routine operations and minimise the risk from abnormal operational conditions which may result in an increased risk of odour generation at the site. The site is situated within a mixed-use industrial area, with some residential. Immediately east of the site are several industrial units. To the immediate south of the site is a public house. To the west and north of the site are residential areas, with the nearest residential property approximately 10m north north-west of the site boundary. There are a number of sensitive receptors within 250m of the site boundary.

This Odour Management Plan (OMP) has been produced in accordance with Environment Agency (EA) guidance on OMPs¹ and EPR H4 Odour Management².

This OMP is aimed at assisting the operator in effectively managing potential odour releases associated with the physical treatment of wastes at the Fenix site and minimising the risk of abnormal operational conditions, which could result in increased risk of odour generation at the site.

1.1 Current Permitted Activity

At the time of writing, Fenix Battery Recycling (hereon referred to as Fenix) do not currently possess a permit or licence to operate the facility. This OMP forms part of the suite of documents to be submitted with the bespoke permit application.

1.2 Structure of the Odour Management Plan

The structure of the OMP is laid out in accordance with the EA guidance and considers:

- Feedstock Inventory;
- Process Management;
- Evaporation;
- Containment and abatement;
- Dispersion;

¹ Appendix 8 of Application for an environmental permit - Guidance notes on part B3 new bespoke installation permit. EPB3 Version 1, January 2010. Environment Agency.

² Environment Agency Technical Guidance Note H4 – Odour management. March 2011.

- Sensitive Receptors; and
- Incidents and Emergencies.

1.3 Scope

This management plan relates to all activities at the Willenhall plant that have the potential to give rise to offensive odours discernible outside the site boundary.

1.4 Waste Recovery Operations

Fenix undertake battery recycling and treatment operations at the site based upon the category of battery delivered to the site. Depending on their category, batteries undergo one of three possible routes:

- The processing and recycling of alkaline batteries,
- The processing and recycling of lead-acid batteries,
- The sorting, consolidation and repacking of other batteries.

The storing and treating of waste battery materials has the potential to generate malodours from site operations. This odour management plan makes an assessment of likely sources of odour generation and sets out the good site practice and mitigation that is employed to minimise, where reasonably practicable, any odour emitted from site.

The likelihood and frequency of exposure to odour arising from the facility is determined by a combination of the magnitude of release, the prevailing meteorological conditions, and the distance and direction of receptors in relation to the facility. Each of these factors are discussed in the following sections.

1.5 Conceptual Model

The conceptual model for pollutant linkages identified for the release of odours from the anaerobic digestion facility is identified in Figure 1 below.

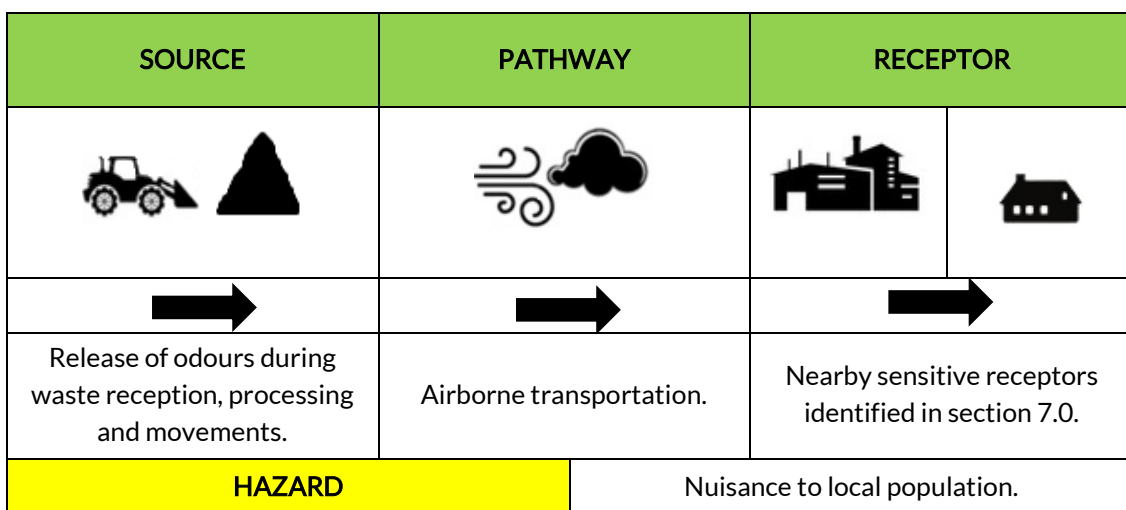


Figure 1 - Conceptual Model for Pollutant Linkages

2.0 FEEDSTOCK INVENTORY

The site operates a waste battery treatment and recycling operation through a variety of treatment techniques consisting of a combination of sorting, shredding, separating and various methods of processing or repackaging. These processes treat materials which have the potential to produce odour. In order to understand the odour potential of the different waste streams that enter these processes, a feedstock inventory has been provided for the various waste types.

Table 1 below provides an assessment of each potentially odorous material accepted on a regular basis at Fenix, identifying the typical and abnormal compositions of those materials and providing an overall odour potential of that material based upon the likelihood of abnormal compositions being encountered at site.

Table 1 - Assessment of Odour Potential from Primary Feedstock Inventory

Waste Type	Waste Source	Typical Composition	Abnormal Composition	Likelihood	Odour Potential
Lead-Acid Batteries	Automotive Industry	Whole Batteries	Outer casings of batteries damaged. Biological contamination within the waste delivery.	Low likelihood that waste will be damaged or contain biological material.	Low – Damage to battery casings unlikely to cause significant odour issues due to contained nature of each battery. Should damaged or odorous batteries be delivered to site, the contrary material shall be removed or if this is not possible the whole load will be rejected from the site as per the rejection procedure in OP02- Waste Acceptance Procedure. Small proportions of potentially odorous biodegradable material are unlikely to cause significant odour issues or be present within the load.
Alkaline Batteries	Public – Recycling Centres Retail Sector	Whole Batteries	Batteries damaged upon arrival to site. Biological Contamination	Low likelihood that waste will be damaged or contain	Low – Damage to battery casings unlikely to cause significant odour issues as the non-hazardous contents of the batteries have

Waste Type	Waste Source	Typical Composition	Abnormal Composition	Likelihood	Odour Potential
	Commercial		within waste delivery.	biological material.	<p>minimal odour potential. Should excess odour be present, the contrary material shall be removed or if this is not possible the whole load will be rejected from the site as per the rejection procedure in OP02- Waste Acceptance Procedure.</p> <p>Small proportions of potentially odorous biodegradable material are unlikely to cause significant odour issues or be present within the load.</p>
Industrial Batteries	Industrial Sectors	Whole Batteries	<p>Batteries damaged upon arrival to site.</p> <p>Biological Contamination within waste delivery.</p>	Low likelihood that waste will be damaged or contain biological material.	<p>Low – Damage to battery casings unlikely to cause significant odour issues as the non-hazardous contents of the batteries have minimal odour potential. Should excess odour be present, the contrary material shall be removed or if this is not possible the whole load will be rejected from the site as per the rejection procedure in OP02- Waste Acceptance Procedure.</p> <p>Small proportions of potentially odorous biodegradable material are unlikely to cause significant odour issues or be present within the load.</p>

Waste Type	Waste Source	Typical Composition	Abnormal Composition	Likelihood	Odour Potential
Mixed Batteries	Public – Recycling Centres	Whole Batteries	Batteries damaged upon arrival to site. Biological Contamination within waste delivery.	Low likelihood that waste will be damaged or contain biological material.	Low – Damage to battery casings unlikely to cause significant odour issues as the non-hazardous contents of the batteries have minimal odour potential. Should excess odour be present, the contrary material shall be removed or if this is not possible the whole load will be rejected from the site as per the rejection procedure in OP02- Waste Acceptance Procedure. Small proportions of potentially odorous biodegradable material are unlikely to cause significant odour issues or be present within the load.

2.1 Expected Waste Types

Feedstocks will only consist of waste types that are allowed to be processed under the site permit. Waste delivered to the site will be subject to stringent pre-acceptance and acceptance procedures (see FEN-OP02 – Waste Acceptance Procedure). Waste that does not meet the requirements will be rejected from the site.

3.0 PROCESS MANAGEMENT

The following section outlines the treatment and recycling processes at Fenix. The monitoring parameters, critical limits, process controls and records at each stage within the treatment and transfer process for the minimisation of the production of odours are provided herein.

3.1 Waste Reception

Refer to *FEN-OP02 - Waste Acceptance Procedure* for full details of the site's waste acceptance procedure.

The incoming load will enter the site and follow the directional signage to the weighbridge. On entering the weighbridge area, the driver must have the appropriate waste transfer documentation (plus consignment notice for hazardous waste) with the correct details of the waste on board.

The site operative will inspect the supplied waste transfer documentation. When the site operative is satisfied that the documentation is in order, the driver will be instructed to drive on to the weighbridge where the weights will be documented.

The driver will then be instructed to proceed to the waste unloading area, located south of unit 3. Once a load arrives at the waste unloading area, the containers/pallets holding the batteries shall be removed from the vehicle. At this point a high-level visual inspection of the waste is carried out by an appropriately trained site operative to confirm the content and check which reception area the batteries are to be deposited within. The driver will then proceed back to the weighbridge to be weighed out and provided with a copy of the weighbridge ticket, and waste transfer note or consignment note for their records. Dependent on the contents of the load, the batteries are then received in the appropriate reception area. Once in the applicable reception area, a detailed screening/visual inspection process is undertaken to ensure that the waste meets the description given and to make sure that the site does not breach permit conditions by accepting any wastes not featured in the permit. Any waste that is rejected will be loaded back into the vehicle where possible for immediate removal from site. Should the vehicle have already left site, the waste will be stored in the quarantine area (demarcated in reception areas) and arrangements will be made for the waste to be removed. Storage of non-conforming wastes in the waste quarantine area shall not exceed five days.

WASTE RECEPTION				
Potential Odour Issue	Monitoring	Critical Limits	Process Controls	Records
Delivery of waste batteries that are damaged and therefore odorous.	Visual Inspection.	N/A	A visual inspection for damaged and odorous materials takes place for all loads deposited at site. Should the waste not meet the acceptance limits set out in OP02-Waste Acceptance Procedure, the load will be rejected in line with the waste rejection procedure.	Duty of Care Transfer Note.
Delivery of highly odorous material.	Olfactory Inspection.	Elevated odour during sniff checks.	Reject load and inform waste supplier.	Duty of Care Transfer Note.

3.2 Waste Treatment

Control of waste treatment will be managed according to Fenix's operating systems waste treatment procedure (refer to EPR-OP03 - Waste Treatment Procedure). Following inspection and acceptance of each waste load, the waste can be subjected to one of three different treatment options:

- the processing and recycling of alkaline batteries,
- the processing and recycling of lead-acid batteries,
- the sorting, consolidation and repacking of other batteries.

3.2.1 Alkaline Batteries

Alkaline batteries received at site are sorted and subsequently loaded into a hopper and automatically fed by a conveyor into the shredder unit. Once shredded, the batteries are transferred up an inclined conveyor to a vibratory dual screen sieve to separate off coarse and fine fractions (black mass) into dedicated containers.

The residual fraction is conveyed under an electro-magnet to remove the steel fraction from the residual fraction. The remaining fraction consists of non-magnetic materials such as aluminium caps, paper, and plastic. These materials then go through an air separator to remove the aluminium caps. The remaining plastic/papers are collected as a light fraction and stored ahead of transfer to a third party company for recycling.

All fractions obtained from the treatment process are then sent for final recovery to appropriately licensed facilities for final recovery.

3.2.2 Lead-Acid Batteries

The lead-acid battery process consists of two sub-lines which are designed to separately process wet filled or dry filled batteries.

Both types of batteries first undergo pre-process preparation where cable/connectors are removed. Dry filled batteries are also drilled at this stage to release hydrogen. For processing of wet filled batteries, battery acid is removed, process saws are then used to release the lead plates and a conveyor then takes the remaining plastic casing to the granulator. For processing of the dry filled batteries, a guillotine is used to remove the ends of the batteries and release the lead plates. A separate conveyor to the one in the wet filled battery line then takes the remaining plastic casing the granulator. Once either plastic is granulated, the material is washed and then sent off site to a third-party company for recycling.

3.2.3 Sorting and Separation

Other batteries that are not processed on site through the alkaline or lead-acid battery process but are able to be accepted onto site under the conditions of the Environmental Permit shall, in the first instance, be sorted and separated by category and chemistry. The separated batteries will then be repackaged and sent to suitably licensed facilities for final recycling or disposal.

WASTE TREATMENT					
Treatment Type	Potential Odour Issue	Monitoring	Critical Limits	Process Controls	Records
Alkaline Battery shredding and separation.	Release of gases (ammonia) and particulate matter during the mechanical breakdown of the batteries.	External monitoring of flue on Alkaline process line dust extraction system and carbon filter on a 6-monthly basis by third party company.	Dust - 5mg/Nm ³ Ammonia- 1mg/Nm ³	<p>The alkaline battery processing line is located within an enclosed building with roller shutter doors that are only opened when required.</p> <p>The alkaline processing line is fitted with a CFE-4 modular dust collector which is designed to prevent emissions to air. There are six dust extraction points on the alkaline processing line that serve to contain both dust and odours generated during the shredding and separation process:</p> <ol style="list-style-type: none"> 1. Above the shredder hopper at the start of the line. 2. At the bottom of the enclosed inclined conveyor system following the shredding process. 3. At the top of the enclosed inclined conveyor before the vibratory separator. 4. Above the twin-screen vibratory separation unit. 5. Above the magnetic separator at the end of the processing line. 6. On air separation equipment. <p>Each extraction point is kept under slight negative pressure and the system is designed to handle 12,000m³ of air per hour.</p> <p>Separated black mass and plastics are collected within a sealed system with no emission points to air. The plastics collection box is fitted with a fill level and temperature sensor.</p> <p>The stack for the dust extraction module is also fitted with a carbon filter to absorb any ammonia gas generated from the alkaline battery</p>	Odour Check Sheet.

WASTE TREATMENT					
Treatment Type	Potential Odour Issue	Monitoring	Critical Limits	Process Controls	Records
				<p>processing line. The location of the stack is shown on the site layout plan (Drawing number ER0004).</p> <p>Monitoring of dust and ammonia shall be undertaken in line with MCERTS standard on the flue on a 6 monthly basis to ensure the continued efficacy of the extraction system.</p> <p>Daily odour checks take place around the site boundary.</p>	
Wet-Filled Lead-Acid Battery drainage, plate extraction and separation.	Release of SO ₂ from acid storage tanks following battery drainage.	External monitoring of scrubber exhaust which serves the acid storage tanks on a 6-monthly basis by third party company.	SO ₂ - 0.1 mg/Nm ³	<p>The two acid storage tanks are vented via a vertical packed tower wet scrubber system to the atmosphere. This provides passive odour abatement of any displaced air during tank filling. Both tanks are fitted with a single vent that pulls clean air across the scrubber and removes the displaced contaminated air via the Venturi effect.</p> <p>The scrubber will be turned on during hours of operation, allowing for the passive abatement of SO₂ and other gases when tanks are being filled.</p> <p>Monitoring shall be undertaken in line with MCERTS standard on the SO₂ extraction on a 6 monthly basis to ensure the continued efficacy of the scrubber system.</p> <p>The processing line is also fitted with localised dust extraction on the process saws, however these are not considered as a source of odour as air will be contained within the building and the nature of the process. The dust extraction is fitted to each cutting station and</p>	Odour Check Sheet.

WASTE TREATMENT					
Treatment Type	Potential Odour Issue	Monitoring	Critical Limits	Process Controls	Records
				the dust which is captured is deposited into a sealed drum.	
Dry-Filled Lead-Acid Battery venting, plate extraction and separation.	No odour emissions	N/A	N/A	Hydrogen gas is not odorous in its normal state and therefore it is determined that there are no necessary process controls required to mitigate odour.	N/A

3.3 Waste Storage

Once the alkaline and lead-acid batteries have been processed, the components are stored in dedicated storage areas or containers within the specific processing building prior to dispatch from site for 3rd party recycling. Whole industrial and mixed batteries are sorted and stored according to chemistry and composition within dedicated storage bays and containers within unit 3 prior to dispatch from site for 3rd party recycling.

All storage areas are located within enclosed buildings that are fitted with roller shutter doors that shall only be open when required.

WASTE STORAGE					
Treatment Type	Potential Odour Issue	Monitoring	Critical Limits	Process Controls	Records
Sorted batteries and component parts.	Incompatible wastes stored together leading to short-circuiting or chemical reactions.	N/A	N/A	<p>Batteries are stored according to chemistry and composition to ensure no non-compatible wastes are in contact, preventing issues relating to short-circuiting that may release odour.</p> <p>Separated components are stored within appropriately sealed containers to prevent potential odour emissions prior to removal from site.</p> <p>Daily odour checks take place around the site boundary.</p>	Odour Check Sheet.

3.4 Site Infrastructure

The waste battery processing facility has infrastructure to control emissions from site at various stages of the process, namely surface water management and air from process units.

3.4.1 Integral Drainage System

All treatment activities and storage of wastes are undertaken in fully enclosed buildings or tanks. All operational areas are constructed from impermeable concrete to prevent contamination to surface and groundwater. The site has a drainage system in place for the management of foul and surface water generated on site which directs water to the local sewer network. Furthermore, rainwater falling on building roofs is collected via gullies, spouting and down-pipes. The rainwater is then either discharged to the sewer or captured for recirculation in the process. A Drainage Management Plan has been provided in support of the application (FEN-C04).

DRAINAGE SYSTEM					
Treatment Type	Potential Odour Issue	Monitoring	Critical Limits	Process Controls	Records
N/A	Blocking of drains leading to pooling of surface waters on concrete surfacing.	Visual Assessment.	Particulate blockages.	Daily site inspections are made to ensure that no drains are blocked by loose material. Where identified, material is swept up immediately and disposed of accordingly.	Daily Check Sheet.

3.4.2 Odour Abatement Systems

The facility is equipped with a number of odour abatement technologies to limit odour generation and the subsequent impact of odour on the surrounding area. Please note, as battery processing is not synonymous with olfactory issues odour is not necessarily the main reason for the majority of these abatement systems. Abatement included at the site can be summarised as follows, but is discussed in greater detail in section 5.0 below:

- Dust extraction system with carbon filter
- Passive wet scrubber system

ODOUR ABATEMENT SYSTEMS					
Treatment Type	Potential Odour Issue	Monitoring	Critical Limits	Process Controls	Records
N/A	Carbon filter not working correctly.	Odour level checks.	Detection of odour.	Stop processing of alkaline batteries through the processing line and empty spent carbon media from the vessel, replace with fresh carbon and recommission.	Odour Check Sheet. Daily Check Sheet.
N/A	Wet scrubber system not working correctly.	Odour level checks.	Detection of odour.	Stop processing of wet-filled lead-acid batteries and ascertain why the system is not working correctly. Undertake appropriate maintenance measures and recommission. System is maintained and serviced in line with the manufacturers recommendations.	Odour Check Sheet. Daily Check Sheet.

3.4.3 Performance Monitoring

The performance of the odour abatement systems employed on the site shall be monitored as per manufacturers guidelines.

3.5 Internal Odour Assessment and Monitoring

The Site Manager will ensure that regular inspections are made of the site and its perimeter in order to identify any sources of odour and to establish whether any odours are discernible. Findings will be recorded in the Daily Check Sheet.

The checks above are made in line with on-site olfactory monitoring with reference to the protocol in Appendix 1 of the H4 Technical Guidance Note, with the Daily Check Sheet being completed to record results. The odour assessor may not be subject to significant waste treatment odour in the 30 minutes prior to the assessment. This is to ensure that the assessor is not suffering from odour fatigue and will be sensitive to waste odours. An appropriate time to do this may be at the start of the day.

All site personnel will be responsible for reporting any odour problems immediately to the Site Manager or the next level of management if the manager is not available.

The Site Manager will be informed immediately of any findings of odour attributed to the site and will authorise remedial measures to be taken.

Any odours found to be present onsite will be recorded and their source investigated. Steps will be taken to mitigate the sources of odours using the strategies to control odour as outlined above. The internal monitoring procedure, including a survey of odour reports will be re-assessed on a yearly basis, unless the number of odour incidents warrants additional reviews.

3.6 Housekeeping

Good housekeeping practices on site will minimise the potential for odour releases. These will include:

- The appropriate storage of waste at the end of each working day;
- Regular inspection of drainage system and cleaning when deemed necessary;
- General housekeeping and inspection procedures maintained; and
- Ongoing maintenance of site plant and machinery.

3.7 Active Odour Management

Due to the nature of the wastes processed on site and the odour abatement systems implemented, active odour management is not seen to be required.

3.8 General Measures

In an effort to mitigate against the release of odour from site activities the following measures will be implemented:

- Unmanaged and unmonitored stockpiles will be avoided at all times; and
- Access roads around the site will be dampened down or swept during periods of dry weather.

3.9 Contingency Planning

In the event that odour is proven to be from the site and found to be causing a problem, as determined by the investigation of off-site complaints or during routine on-site monitoring, action will be taken to determine the source and the following courses of action will be taken.

It is deemed unlikely that the proposed wastes will be malodorous to such a degree that any particular waste cannot be accepted. However, if a particularly malodorous waste stream arrives on site it will be quarantined and sent for off-site disposal as soon as practical and in any case no longer than 24 hours. The acceptance of the specific waste type will be put on hold pending further investigations.

4.0 EVAPOURATION

Evaporation from the waste processing activities is unlikely to be significant given the composition of the material and the sealed liquid storage tanks utilised on site. The site drainage system will transfer any surface water to the public sewer, so the risk of evaporation is seen to be minimal.

5.0 CONTAINMENT AND ABATEMENT

All the waste treatment activities at the site are undertaken within enclosed processing buildings. The only point in the process not within the enclosed buildings is the waste offloading activity as part of waste reception.

5.1 Dust Extraction System

The alkaline processing line is fitted with a CFE-4 modular dust collector which is designed to prevent emissions to air. The system is fitted with four 19.5m² filter cartridges, providing a total surface area of 78m². The system is self-cleaning and self-monitoring through a 240-volt control panel, which can be used to monitor the condition of the filters and manually clean the filters if required.

There are six dust extraction points connected to the alkaline processing line via flexible 200mm hoses that serve to contain both dust and odours generated during the shredding and separation process:

1. Above the shredder hopper at the start of the line.
2. At the bottom of the enclosed inclined conveyor system following the shredding process.
3. At the top of the enclosed inclined conveyor before the vibratory separator.
4. Above the twin-screen vibratory separation unit.
5. Above the magnetic separator at the end of the processing line.
6. Above the air separation equipment.

Each extraction point is fitted with a 200mm balancing valve to regulate air flow above a minimum of 0.24m³/minute and keeps the system under slight negative pressure. The fan outlet is ducted to atmosphere via the nearest wall/roof, it will be turned upwards and will terminate with a high velocity cowl, allowing for better vertical dispersion above the building boundary.

5.2 Carbon Filter

Adsorption is a heterogeneous reaction in which gas molecules are retained on a solid surface which prefers specific compounds to others, they are therefore able to remove specific compounds from the gas stream.

Granular activated carbon (GAC) is the most common adsorbent with a wide efficiency range and not restricted to polar or non-polar compounds and can be impregnated with oxidants such as potassium permanganate or with sulphur compounds, thereby improving retention of heavy metals.

The stack for the dust extraction module shall be fitted with a carbon filter prior to the high velocity cowl to absorb any ammonia gas generated from the alkaline battery processing line and therefore treat any potential odours. The filter is maintained following manufacturer's guidance and continuous monitoring occurs to determine the performance of the carbon filter. The location of the stack is shown on the site layout plan (Drawing number ER0004).

5.3 Wet Scrubber

The two acid storage tanks associated with the wet-filled lead-acid battery processing line are vented to atmosphere via a vertical packed tower wet scrubber system. This provides passive odour abatement of any displaced air during tank filling. Both tanks are fitted with a single vent that pulls clean air across the scrubber and removes the displaced contaminated air via the Venturi effect. The system is a counter-flow design that allows any contaminated air to flow upwards through the column, with recirculating liquid spraying downward across the packing media and eliminator plates. Any gaseous contaminants within the air displaced from the acid storage tanks are absorbed or neutralised due to the solubility levels or chemical reaction, preventing any malodours escaping and causing a nuisance. The scrubber will be turned on during hours of operation, allowing for the passive abatement of SO₂ and other gases when tanks are being filled.

The scrubber shall be maintained following manufacturer's guidance which will identify when a media change may be required. Monitoring shall be undertaken in line with MCERTS standard based on the SO₂ extraction on a 6 monthly basis to ensure the continued efficacy of the scrubber system.

6.0 DISPERSION

The following section identifies the prevailing weather conditions onsite, particularly the wind strength and direction, in order to predict the path of the likely aerial dispersion of odours generated onsite.

The wind data for Willenhall has been collated over the last 30 years. The data is illustrated in figure 2, showing the prevailing wind direction is towards the south west. Wind data is collected manually by site staff on a daily basis as part of the routine monitoring on site.

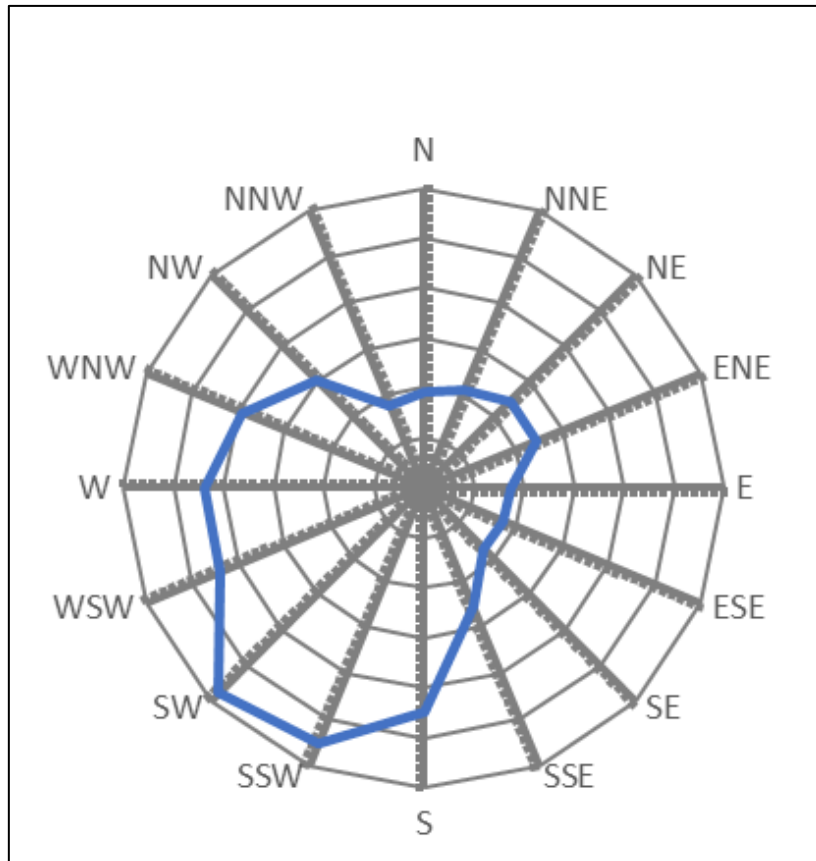


Figure 2 - Windrose showing the wind direction at 30 years.

7.0 SENSITIVE RECEPTORS

There are a number of potential sensitive receptors within 250m of the facility. The site is located within a mixed-use industrial area, with some residential. Immediately east of the site are several industrial units. To the immediate south of the site is a public house. To the west and north of the site are residential areas, with the nearest residential property approximately 10m north north-west of the site boundary.

Table 2 - Distance to Nearest Identified Sensitive Receptors

Reference	Receptor	Distance
1	A & J Tyre Shop	15m
2	LoveMoneyVehicles Used Car Dealer	20m
3	Residential Cluster (Round Croft)	10m
4	Jeffreys Doors & DIY Store	25m
5	Gilberts Public House	30m
6	"The Keys" GP Surgery	40m
7	The Falcon Inn Public House	50m
8	Residential Cluster (Croft Street)	50m
9	Salvation Army Church	60m
10	"Tiny Talents" Pre-School & Nursery	65m
11	Residential Cluster (North of Wolverhampton Street)	65m
12	Unnamed Industrial Unit	80m
13	St Stephen's Church	95m
14	Residential Block (Gomer Street)	80m
15	Residential Cluster (South of Wolverhampton Street)	135m
16	Bhandal Dental Practice	190m
17	5 Star Support Services	195m
18	Residential Cluster (South of New Road)	210m
19	Angling Direct Fishing Tackle	240m
20	Vantage Pharmacy	180m
21	Pirate Pizza	185m
22	Colossus Gym & Fitness Centre	230m
23	Retail Cluster (Wolverhampton Street)	215m
24	Willenhall Chart Community Centre	180m
25	Croft Pharmacy	180m
26	Croft Surgery	195m

Reference	Receptor	Distance
27	Residential Cluster (Gomer Street)	150m
28	Wedge Group Offices	240m
29	Willenhall War Memorial Garden	245m
30	Residential Cluster (South of Pinson Road)	105m
31	Residential Cluster (North of Pinson Road)	100m
32	Willenhall Memorial Park	170m
33	Residential Cluster (Park Avenue)	180m
34	Pinson Convenience Store	195m
35	Residential Cluster (St Stephen's Avenue)	80m
36	Residential Cluster (East of Pinson Street)	130m
37	Residential Cluster (Pinson Street/Wolverhampton Street)	165m
38	The Garage Willenhall	185m
39	The Locksmith House Museum	205m



Figure 3 - Map Identifying Local Sensitive Receptors

7.1 Dispersal Control

There are a number of sensitive receptors within close proximity of the site, the closest being 10m away. Although weather data shows that near the facility, the wind blows predominantly from the southwest, the site is located in an area of heavy urbanisation, so the buildings should break up the wind reducing the distance odour travels.

Given the dedicated odour controls and operational procedures, no additional restrictions will be implemented based upon wind direction and/or strength. Should a revision of the OMP identify that this should be implemented than an investigation into appropriate controls will be made and documented.

7.2 Community Engagement

Fenix will strive to engage the local authority. If an action is being considered that may cause temporary odour, outside of the normal operational procedures identified previously, then before such action is taken the Site Manager will be informed. The EA and neighbours who may be affected will be contacted to advise them of the operation being undertaken, and that any increase in odour will be of a temporary nature.

All complaints are recorded and actioned in accordance with the complaints procedure. Feedback is given to any complainants on the findings of odour investigations when/if they are known. A summary is provided of any remedial measures taken to rectify odour problems and ensure that the problem has been suitably resolved.

7.3 Responsibilities

The overall responsibility for the site shall remain with the Companies' directors. Day to day operational responsibility for the site, implementing this OMP and ensuring that training in odour assessment is provided to staff carrying out the assessments is maintained by the site's competent persons or COTC holders (Certificate of Technical Competence holders), in this case the Site Manager.

In the event of an odour incident, the odour accident plan will come into force which will initially deal with the accident, the causes and consequences of the accident, and then mitigate any potential odour issues which may have resulted from the accident.

7.4 Procedures When Odours Arise

There is an external complaints procedure to ensure any odour issues are dealt with quickly and effectively.

7.4.1 External Complaints Procedure

Any complaints relating to the odour of the site will be taken seriously and channelled through a senior member of staff, in this case the Site Manager. Staff taking note of the complaint will use the appropriate Odour Complaint Form (see appendix A). Once the complaint is taken, the Site Manager will investigate the complaint and the site activities and respond to the complainant in writing outlining any findings and actions taken to mitigate the source of odours.

Should odour complaints continue over a period of 48hrs then the emergency response action will be implemented.

The complaints procedure, including a survey of the complaints to date will be re-assessed by the Operations Manager and the Site Manager on a yearly basis, unless the number of complaints warrants additional reviews.

7.4.2 Response to Complaints

Receipt of a single 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 investigation shall be initiated into the cause of the complaint; this will involve as necessary:

- An olfactory survey as outlined below;
- 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.

7.4.3 Detection of Distinct Odour During Olfactory Survey

Detection of a "distinct odour" or stronger (3-6 on odour scale (see appendix A)) will initiate a more extensive olfactory survey to determine the extent of the odour plume. The Site Manager (or trained operative) 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 waste treatment facility until an odour is perceived; and
- Assessment points perpendicular to the plume axis and equidistant from the waste treatment facility will then be monitored, subject to access requirements.

An investigation will be initiated into the cause of the odour. This shall involve as necessary:

- A review of the site activities on site and other nearby potential sources 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.

7.4.4 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;
- Quantity of each waste type stored on site;
- Update of OMP if new procedures are created;
- Consider removal from site of material responsible for unacceptable offsite impacts;
- Consider ceasing the reception of further material on site until issue resolved; and
- Activities that are necessary to bring the process back under control shall not be suspended without detailed consideration of risks.

7.4.5 Reporting

Exceedance of the offsite odour control level will be investigated (as described above) and recorded in accordance with current procedures. This includes recording the following:

- Nature of the incident;
- Date of occurrence/s;
- Results of the investigation;
- Details of responses/ action plans implemented; and
- The event will be marked within the site diary.

The report will be made available to the Environment Agency upon request

7.4.6 Review of Control Mechanisms

A full review of the Odour Management Plan, taking note of all the internal odour reports and external complaints will be made on an annual basis, or as necessary after an odour incident in order to assess the site's operational procedure and odour control management plan. Findings from the review will then be incorporated into an updated plan which will replace this original OMP.

8.0 INCIDENTS AND EMERGENCIES

In accordance with the requirements of Environment Agency's Technical Guidance Note H4, types of failure or abnormal events considered to have the potential to result in an odour impact have been considered. These have been identified as abnormal meteorological conditions and failure of aspects of the waste treatment process during any of the process stages previously described. Failure and abnormal event scenarios with response requirements are summarised below.

8.1 Machinery Breakdown

Breakdown of equipment, which may result in a delay in processing the material received. Given that the odours associated with the wastes accepted at the facility originate from the treatment processes, delays in processing are unlikely to result in an increased magnitude of odour impacts at receptor locations. This is dependant on the length of the breakdown and the prevailing meteorological conditions as the waste reception area is located outside.

A- Machinery Breakdown	
Mitigation Measure	The potential failure would be minimised through routine maintenance of equipment, servicing in accordance with manufactures guidelines and provision of adequate spares and service level agreements to replace plant or machinery (or source hire equipment) as required.

8.2 Staff Absence

Short-term staff shortages (such as a few days illness) will not affect the ability of the site to operate effectively as other staff members can be reassigned to critical operations. The magnitude of impacts will depend on the length of the absence, the number of staff absent at any one time and the seniority of the staff member, but could potentially result in elevated odour concentrations at receptor locations, should process controls not be managed effectively.

B - Staff Absence	
Mitigation Measure	In the event of prolonged absence of staff members, temporary staff will be recruited and appropriately trained to fulfil non-critical roles whilst other more experienced staff members are reassigned. If widespread illness occurs amongst staff members (such as food poisoning), the delivery of waste batteries to the site will be suspended until sufficient staff are present to operate the site. If prolonged, widespread absence occurs, the operator would contact alternative operators for emergency assistance.

8.3 Flooding

If the site becomes flooded, this will inhibit effective control over deliveries of the feedstock material. The facility does not lie within a flood zone designation, with the nearest flood zone

located over 200m to the west of the site. The annual probability of a flood event occurring at the site is therefore <0.1%.

C - Flooding	
Mitigation Measure	In a flooding situation no further material would be able to access the site and priority would be given to ensuring the on-going effective processing of material. Where waste is saturated with floodwaters, the Site Manager will make an assessment if the waste can be processed through the facility, or if the waste needs to be disposed of from site to a suitably licensed waste management facility.

8.4 Fire

There is a small chance that a fire may occur on site due to the nature of the waste and the treatment processes utilised. As with all fires the immediate response would be the responsibility of the Fire Brigade and odour would not be the primary concern.

D - Fire	
Mitigation Measure	Depending on the severity of the fire, site critical equipment may have been damaged and no further reception or processing of material would be undertaken until agreed with the EA. If equipment will be inoperable for extended periods of time, consideration will be given to the removal of material from site until repairs are effectuated.

8.5 Adverse Meteorological Conditions

The facility is robust and designed to withstand weather, however extreme weather events including extreme temperature, wind, rainfall etc. could affect the operations of the facility. The forecasted weather will be reviewed daily to help determine if any action is required to ensure the process remains in operation.

8.5.1 Snow/Ice

Sever cold weather may result in disruption to waste deliveries and removal of materials from site. Disruption to deliveries may result in waste delivered to site that has been stored at the point of production for longer than anticipated. Likewise, waste may need to be stored on site longer than anticipated.

E- Snow/Ice	
Mitigation Measure	Cold temperatures are likely to increase storage times and reduce odour potential. Inability to remove waste from site will coincide with inability to deliver waste to site, therefore material quantities on site should remain the same.

8.5.2 Hot Weather

Warmer temperatures have a greater potential to generate odour therefore may result in increased odour from incoming and stored wastes. Given the nature of the wastes accepted and processed on site, and the fact that odour releases are associated with the waste treatment process, high temperatures are unlikely to increase the magnitude of odour impacts.

F- Hot Weather	
Mitigation Measure	Inspections will be undertaken of the untreated stockpiled waste. During prolonged periods of hot weather inspections frequency will be increased. Localised spray suppression will also be considered as a mitigation measure.

8.6 Site at Full Capacity

The site will operate in line with the permitted tonnage per annum. During periods where the site is operating close to or at capacity, resources may be stretched which may lead to odour generation if materials are not processed in a timely manner within the process controls. Given the nature of the wastes accepted and processed on site, operating at full capacity is unlikely to increase the magnitude of odour impacts.

G- Site at Full Capacity	
Mitigation Measure	In the event that the site reaches its maximum capacity, the Site Manager will divert any further incoming waste from the site to alternative facilities able to process the same types of waste. This will continue until such a time when the site can resume operations within its normal operating capacity.

8.7 Odour Accident Management Plan

Procedures are in place as identified in the table below for the management of odour incidents. The identified accidents, potential for occurrence and anticipated consequences have been discussed. A set of actions to be taken in order of priority is presented and is to be carried out by the site operatives and management.

Table 3 - Odour Accident Management Plan

Accident Type	Potential Occurrence	Consequences	Actions
Plant or Equipment failure	Seldom. Stringent preventative maintenance procedures in place to ensure all machinery remains functioning.	<ul style="list-style-type: none"> If material is not processed or a long period the storage capacity of the site may be reached. 	<ul style="list-style-type: none"> Inform management. Establish time frame for repairs to be undertaken. Hire or source an alternative piece of equipment. If no replacements are available divert waste to another site. If no replacements are available cease accepting material. Inform the EA if necessary. Record and review the incident.

Accident Type	Potential Occurrence	Consequences	Actions
Fire - contaminated water and polluting smoke	Extremely rare.	<ul style="list-style-type: none"> • Potentially polluting liquids flowing onto the impermeable surface where they will have the potential to generate odours. • Polluting smoke. • Wind dispersal of pollutants. 	<ul style="list-style-type: none"> • Raise alarm on-site. • Ensure personnel evacuated and accounted for from danger area. • Ensure all staff are alerted. • Call fire service and other emergency services as required. • Inform site management. • If necessary, inform EA. • Post member of staff at entrance to site to direct emergency services. • Liaise and follow instructions of emergency team making them aware of any hazards on-site. • Prevent fire waters causing pollution on-site. • Excess water should be removed from site to prevent odours. • Record and review incident.

APPENDIX A – ODOUR COMPLAINT FORM

Date:		Ref No.	
Name, address and phone number of complainant.			
Time and date of complaint.			
Date, time and duration of offending odour.			
Weather conditions (e.g., dry, rain, fog, snow).			
Wind strength and direction (E.g. Light, steady, strong, gusting).			
Complainant's description of odour -What does it smell like -Intensity (use intensity scale) -Duration -Constant or intermittent			
Has complainant any other comments about the offending odour.			
Any other previous known complaints relating to installation (all aspects, not just odour).			
Any other relevant information.			
Potential odour sources that could give rise to the complaint.			
Operating conditions at the time offending odour occurred.			
Action taken			
Final outcome			
Form completed by (signed):		Date	
Intensity Scale	1: Very faint odour	3: Distinct Odour	5: Very Strong Odour
0: No Odour	2: Faint Odour	4: Strong Odour	6: Extremely Strong Odour



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