TerraConsult

May 2017
Report No 2858/R/002/2

Environmental Permit Variation

Lon Hen Felin Waste Treatment & Transfer Facility

Environmental Risk Assessment

Prepared for:

Gwynedd Skip & Plant Hire Limited

Environmental Permit Variation

Lon Hen Felin Waste Treatment & Transfer Facility

Environmental Risk Assessment

Date: May 2017

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1 INTRODUCTION

1.1 Background

1.1.1 This report has been prepared in response to Question 6 of the 'Application for an Environmental Permit Part C2' form issued by Natural Resources Wales (NRW). The question asks for an environmental risk assessment undertaken using H1 or an equivalent method. This report is a risk assessment undertaken in accordance with H1 where applicable and also provides justification for the use of other more specific risk assessment methodologies. This risk assessment process has been conducted with reference to guidance currently available on www.gov.uk.

1.1.2 Additionally, the NRW guidance document *'Fire prevention and mitigation plan guidance – Waste (Version 1, May 2016)'* requires that any application for a bespoke waste operation requires supporting information in the form of a fire prevention and mitigation plan for the site. This has been compiled and is attached as Appendix A to this assessment.

1.2 H1 - Assessment of environmental risk for accidents, odour, noise, vibration and fugitive emissions

1.2.1 The H1 guidance requires that everyone applying for a new environmental permit (other than a standard permit) or variation to an existing permit should present information in the form of risk assessment tables, one table each for odour, noise, fugitive emissions (including dust, and bio-aerosols) and pests, birds and vermin. Identification of accidents scenarios and their prevention through operational management should also be detailed.

1.2.2 Each table should identify the hazard, the potential receptors and the pathway from the hazard to those receptors. In addition the tables should also include the preventative risk management practices to be employed along with an assessment of the mitigated risk.

2 SCOPE OF THE ASSESSMENT

2.1 Operations

2.1.1 Gwynedd Skip and Plant Hire Limited (the Operator) propose to vary the Permit for their operation at their Lon Hen Felin Treatment & Transfer Station at Caernarfon from its current status as a Standard Rules (ref: SR2008 No7 75kte, EPR/CB3237AP/T001) waste facility to a bespoke waste operations Permit, to allow the existing manual treatment processes undertaken in the operations building to be relocated outside. Additionally, the operator proposes to accept and physically treat incoming 19 12 12 waste within the operations building.

2.1.2 The facility receives and processes predominantly 'skip' wastes comprising non-putrescible Municipal Solid Wastes (MSW) and Commercial and Industrial (C&I) wastes. The maximum throughput is less than 75,000 tonnes per annum. All incoming wastes are deposited within the operations building prior to trommeling followed by manual sorting. The picking line is currently located along the back eastern wall of the operations building, however, it is proposed to relocate this, retaining the trommel within the building, with the sorting line extending outside of the building via access point 2 as shown on the accompanying Site Plan (ref: 2858/1/002).

2.1.3 Recyclates will continue to be removed from the waste mass, however the operator now proposes to shred any non-recyclates within the operations building to be transferred from site for disposal and/or recovery at other facilities.

2.1.4 The site benefits from a 5m high screen surrounding the entirety of the operational area of the site with the exception of the north-eastern area of the site occupied by the workshop. The purpose of this screen is for the prevention of emissions from particulates, windblown litter, odour and noise abatement. The fence also reduces the impact on visual amenity in the vicinity of the site.

2.2 Site Location & Access

2.2.1 The site is located at the Cibyn Industrial Estate in Caernarfon, Gwynedd. The primary access to the site is from Lon Hen Felin to the south of the site, however, this road is linked to the access to the industrial estate which is routed to the A4086 to the north. There is additional access to the north east of the site, however this is predominantly used for plant and vehicle access and not imported waste materials.

2.2.2 The site is centred on an approximate National Grid Reference of SH 49884 62742. The site is predominantly surrounded by other industrial and commercial units that form part of the Cibyn Industrial Estate, and these are identified in greater detail in the following section of this assessment.

2.3 Potential Hazards

Odour

2.3.1 The wastes deposited at the site have minimal potential to generate odour and the risks associated with odour are summarised in Table 2 of this assessment.

2.3.2 Any odour mitigation and management measures are also detailed in Table 2.

Noise & Vibration

2.3.3 Operations are undertaken in accordance with the restraints contained within the extant planning permission. With trommeling and shredding activities to be retained in the operations building, there are no expected increases in noise emissions above those already on site.

2.3.4 Nevertheless, the risks associated with noise and vibration are summarised in Table 3.

Dust

2.3.5 Particulate emissions can arise from the unloading, sorting and transfer of wastes and vehicle movements on site. All incoming waste streams will be deposited within the operations building, along with shredding and trommeling activities. Additionally, the 5m perimeter screen has been purpose built to alleviate emissions of particulates from the site. Stringent conditions relating to fugitive dust emissions are contained in the extant planning permission.

2.3.6 Nevertheless, the risks associated with fugitive dust emissions are detailed in Table 4 below.

Mud

2.3.7 The site is hard surfaced and will continue to be visited only by vehicles which have travelled via the public highway to the site. The risk of tracking dirt onto the highway is thus confined to tracking of any waste spilt on the ground during delivery. Such spillages are immediately cleaned up by the site operatives, who will also routinely sweep up any dust or fugitive materials. In the unlikely event of any dirt being trafficked onto the highway, a road sweeper will be hired to remove it by the end of the day and if practicable all vehicles will be kept clear of the immediate area to prevent further trafficking.

Litter

2.3.8 All wastes, including those that have litter generating potential are delivered inside the operations building, and all shredding and trommeling will also be undertaken within the building. Manual sorting of the waste will be carried out on a covered picking line external to the building as shown on the Site Plan (ref: 2858/1/002). Additionally, the purpose built 5m perimeter screen will prevent any loose windblown debris leaving the site.

2.3.9 Routine inspections will continue to be carried out to ensure that any litter escaping the buildings, external bays or delivery vehicles will be collected on a regular basis to avoid any off site wind-blown litter. The site perimeter is checked daily and cleared of litter as necessary.

Pests and Vermin

2.3.10 The incoming wastes will contain minimal putrescible content, however, regular inspection are undertaken for the presence of pests and vermin in accordance with the site Environmental Management System (EMS). Should any pest or vermin be noted, immediate action will be undertaken in accordance with the EMS that may include instructing pest control contractors, removal of waste and cleaning of surfaces.

Hazard Pathways

2.3.11 When choosing the receptors, the closest and the most sensitive (if different from the closest) have been considered in each direction from the hazard. Account has be taken of the mechanism of transport to the sensitive receptor e.g. proximity to highway access and wind direction for airborne particulates.

Probability of Exposure

2.3.12 Probability of exposure is determined by the distance of the receptor to the site and the likelihood of the hazard reaching the receptor (e.g. frequency of prevailing wind in that direction). This stage of the assessment that exposure has resulted from an uncontrolled emission i.e. without mitigation.

Hazard Receptors

2.3.13 The nearest sensitive receptors to the site are identified in on the accompanying Sensitive Receptor Locations (ref: 2858/1/003). The distance of these receptors to the site boundary, their direction relative to the site and the frequency the wind blows in the direction of the receptor is detailed in Table 1 below.

Table 1: Sensitive Receptors

No.	Receptor	Category	Distance (m)	Direction from Site	Frequency Prevailing Wind Direction (%)
1	Industrial Units	Commercial / Industrial	20	W	7
2	Industrial Units	Commercial / Industrial	20	E	4
3	Industrial Units	Commercial / Industrial	20	N	11
4	Industrial Units	Industrial	25	S	1
5	Bodrual Holiday Cottages	Residential	230	ESE	3
6	Abattoir	Commercial / Industrial	200	S	1
7	Glan Gwna Holiday Park	Recreational	375	S	1
8	Redline Indoor Karting	Recreational	325	SW	6
9	Beacon Climbing Centre	Recreational	450	SW	6
10	Bryn Rhos	Residential	195	NW	11
11	Coed Mawr	Residential	425	NW	11
12	Houses A4086	Residential	450	WNW	10
13	Cae Garw	Residential	370	NNW	6
14	Commercial & Industrial Units	Commercial / Industrial	285	W	7
15	Afon Seiont	Watercourse	375	E	4
16	A4086 Llanberis Road	Highway	115	N	11
17	Afon Seiont SSSI	Designated Land	1800	W	7

* See Drawing No 2858/1/002: for location of receptors
*Wind direction information taken for the Caernarfon station from www.windfinder.com

2.3.14 The site is located within the predominantly industrialised area of the Cibyn Industrial Estate, with the closest residential receptors located at the Bodrual Holiday Cottage to the east and beyond the A4086 Llanberis Road to the north. The Afon Seiont Site of Special Scientific Interest (SSSI) is located 1.8km to the west of the facility. Following consultation with Gwynedd County Council's Biodiversity Unit, it is confirmed that there are no Local Wildlife Sites within the vicinity of the site which could be impacted upon by the proposed activities.

3 RISK ASSESSMENTS & ACCIDENT MANAGEMENT PLANS

3.1 Risk Assessments

3.1.1 The specific risk assessments completed for Odour, Noise and Dust Fugitive Emissions are detailed in Tables 2 to 4 below. In many cases there is an interrelationship between these specific risk assessments and meteorological conditions, where relevant this has been identified. The pathway is determined by the location of the receptor relative to the site, the distance from the site boundary (m) and the frequency (likelihood) the prevailing wind will blow in the direction of the receptor as determined by historical windrose data (as taken from **www.windfinder.com**) for the Caernarvon weather station located approximately 2km to the west of site.

3.1.2 The risk assessment tables represent the risk of exposure to a hazard before mitigating controls are put in place. The probability of exposure is therefore not necessarily a reflection of the severity of the impact on the receptor, which may not be sensitive to the hazard. The severity of the unmitigated consequence presumes the receptor has been exposed to the hazard. However, if the receptor is unlikely to be exposed, then the overall unmitigated risk is low and vice versa. The mitigated risk is the residual risk presented by the hazard after control measures have been instigated. This is the most realistic representation of the risk as effective controls will be maintained under the requirements of the environmental permit, planning consent and management procedures set out in the Operator's Environmental Management System (EMS).

Environmental Accidents

3.1.3 The H1 Guidance requires the completion of an Accident Risk Assessment and Management Plan to the template provided in Table A4 of the guidance. This should assess potential hazards associated with the proposed activity not described in the sections above.

3.1.4 The operations at the site are not considered to require any additional mitigation beyond those already imposed at the site in accordance with the site management systems. These mitigation measures can be summarised as follows:

- No naked flames allowed near to potentially combustible wastes or materials;
- No smoking policy enforced at the site accept for designated areas;
- Waste acceptance procedures to identify potentially hot loads which will be segregated prior to rejection from site;
- Offices and mobile plant fitted with appropriate fire-fighting equipment;
- All appliances and plant appropriately serviced;
- Appropriate security measures implemented to prevent un-authorised site access.

3.1.5 Environmental accident risks are assessed with reference to Table A4 of the H1 Guidance in Table 5 below.

Table 2: Odour Risk Assessment and Management Plan

Hazard/Pathway	Receptor				Probability of exposure	Consequence	Overall Risk	Risk Management	Residual Risk
	No	Dist. (m)	Direc.	Down-wind Freq.					
Odour through the air: from wastes received and site operations	1	20	W	Med	High - proximity to site	High - odour annoyance to workers/visitors (commercial/industrial)	High	All odorous waste types to be stored and initially processed within the Treatment building. Waste unloaded within building. Any highly odorous materials are immediately processed. Outdoor manual sorting undertaken within closed picking line within 5m perimeter screening fence. Olfactory monitoring will be undertaken in accordance with the Odour Management Plan (OMP) All complaints received associated with odour will be recorded and investigated in accordance with the procedures in the OMP.	Low
	2	20	E	Low	High – proximity to site	High - odour annoyance to workers/visitors (commercial/industrial)	High		
	3	20	N	High	High – proximity to site	High - odour annoyance to workers/visitors (commercial/industrial)	High		
	4	25	S	Low	High – proximity to site	High - odour annoyance to workers/visitors (commercial/industrial)	High		
	5	230	ESE	Low	Medium – distance from site, infrequently downwind	High - odour annoyance to residents	High		
	6	200	S	Low	Medium – distance from site, in-frequently downwind	Medium - odour annoyance to workers/visitors (heavy industrial)	Medium		
	7	375	S	Low	Low – distance from site, infrequently downwind	High - odour annoyance to residents (commercial/industrial)	Medium		
	8	325	SW	Med	Medium – distance from site	High - odour annoyance to workers/visitors (recreational)	Medium		
	9	450	SW	Med	Low – distance from site	High - odour annoyance to workers/visitors (recreational)	Medium		
	10	195	NW	High	High – proximity to site, frequently downwind	High - odour annoyance to residents	High		

Hazard/Pathway	Receptor				Probability of exposure	Consequence	Overall Risk	Risk Management	Residual Risk
	No	Dist. (m)	Direc.	Down-wind Freq.					
Odour through the air: from wastes received and site operations	11	425	NW	High	Medium – distant from site, frequently downwind	High - odour annoyance to residents	High		Low
	12	450	WNW	High	Medium – distant from site, frequently downwind	High – odour annoyance to residents	Medium		
	13	370	WSW	High	Medium - distance from site, frequently downwind	High - odour annoyance to residents	Medium		
	14	285	W	Med	Medium – distant from site, relatively frequently downwind	High - odour annoyance to staff and visitors	Medium		
	15	375	E	Low	Low – distant from site, infrequently downwind	Low – watercourse, transient use	Low		
	16	115	N	High	High – proximity to site, frequently downwind	Low – highway, transient use	Medium		
	17	1800	W	Medium	Low – distance from site, in-frequently downwind	Low – SSSI	Low		

Table 3: Noise & Vibration Risk Assessment and Management Plan

Hazard/Pathway	Receptor				Probability of exposure	Consequence	Overall Risk	Risk Management	Residual Risk
	No	Dist. (m)	Direc.	Down-wind Freq. %					
Noise & Vibration: (through the air/ground) from site operations and vehicle movements	1	20	W	Med	High - proximity to site	High - noise annoyance to workers/visitors (commercial/industrial)	High	Vehicle movements associated with the facility are unlikely to be at unsociable hours with no change to those stipulated within the planning permission. Initial waste processing and associated vehicle movements undertaken predominantly within the operations building. All plant, equipment and site vehicles are properly maintained with functioning exhaust silencing where appropriate. Outdoor processing undertaken within covered picking line and within 5m noise attenuation screening fence All events or complaints received associated with noise will be documented in accordance with the EMS. .	Low
	2	20	E	Low	High – proximity to site	High - noise annoyance to workers/visitors (commercial/industrial)	High		
	3	20	N	High	High – proximity to site	High – noise annoyance to workers/visitors (commercial/industrial)	High		
	4	25	S	Low	High – proximity to site	High - noise annoyance to workers/visitors (commercial/industrial)	High		
	5	230	ESE	Low	Medium – distance from site, infrequently downwind	High - noise annoyance to residents	High		
	6	200	S	Low	Medium – distance from site, in-frequently downwind	Medium - noise annoyance to workers/visitors (heavy industrial)	Medium		
	7	375	S	Low	Low – distance from site, infrequently downwind	High - noise annoyance to residents (commercial/industrial)	Medium		
	8	325	SW	Med	Medium – distance from site	High - noise annoyance to workers/visitors (recreational)	Medium		
	9	450	SW	Med	Low – distance from site	High - noise annoyance to workers/visitors (recreational)	Medium		
	10	195	NW	High	High – proximity to site, frequently downwind	High - noise annoyance to residents	High		

Hazard/Pathway	Receptor				Probability of exposure	Consequence	Overall Risk	Risk Management	Residual Risk
	No	Dist. (m)	Direc.	Down-wind Freq. %					
Noise & Vibration: (through the air/ground) from site operations and vehicle movements	11	425	NW	High	Medium – distant from site, frequently downwind	High - noise annoyance to residents	High		
	12	450	WNW	High	Medium – distant from site, frequently downwind	High – noise annoyance to residents	Medium		
	13	370	WSW	High	Medium - distance from site, frequently downwind	High - noise annoyance to residents	Medium		
	14	285	W	Med	Medium – distant from site, relatively frequently downwind	High - noise annoyance to staff and visitors	Medium		
	15	375	E	Low	Low – distant from site, infrequently downwind	Low – watercourse, transient use	Low		
	16	115	N	High	High – proximity to site, frequently downwind	Low – highway, transient use	Medium		
	17	1800	W	Medium	Low – distance from site, in-frequently downwind	Medium – SSSI	Low		

Table 4: Dust and Fugitive Emissions Risk Assessment and Action Plan

Hazard/Pathway	Receptor				Probability of exposure	Consequence	Overall Risk	Risk Management	Residual Risk
	No	Dist. (m)	Direc.	Down-wind Freq. %					
Dust & Litter from wastes as received and site operations	1	20	W	Med	High - proximity to site	High – dust/debris annoyance to workers/visitors (commercial/industrial)	High	The waste materials are to be received and initially processed within the operations building. Output and input material likely to generate dust will be managed and dampened as required. Site to be kept tidy and hard standings to be kept clean to minimise dust. Hire of road sweeper will be made if required. Any litter escaping the building is likely to be captured by the 5m perimeter fence and collected on a daily basis. Inspections will be undertaken in accordance with the site EMS.	Low
	2	20	E	Low	High – proximity to site	High – dust/debris annoyance to workers/visitors (commercial/industrial)	High		
	3	20	N	High	High – proximity to site	High – dust/debris annoyance to workers/visitors (commercial/industrial)	High		
	4	25	S	Low	High – proximity to site	High – dust/debris annoyance to workers/visitors (commercial/industrial)	High		
	5	230	ESE	Low	Medium – distance from site, infrequently downwind	High – dust/debris annoyance to residents	High		
	6	200	S	Low	Medium – distance from site, in-frequently downwind	Medium – dust/debris annoyance to workers/visitors (heavy industrial)	Medium		
	7	375	S	Low	Low – distance from site, infrequently downwind	High – dust/debris annoyance to residents (commercial/industrial)	Medium		
	8	325	SW	Med	Medium – distance from site	High – dust/debris annoyance to workers/visitors (recreational)	Medium		
	9	450	SW	Med	Low – distance from site	High – dust/debris annoyance to workers/visitors (recreational)	Medium		
	10	195	NW	High	High – proximity to site, frequently downwind	High – dust/debris annoyance to residents	High		

Hazard/Pathway	Receptor				Probability of exposure	Consequence	Overall Risk	Risk Management	Residual Risk
	No	Dist. (m)	Direc.	Down-wind Freq. %					
Dust & Litter from wastes as received and site operations	11	425	NW	High	Medium – distant from site, frequently downwind	High – dust/debris annoyance to residents	High		Low
	12	450	WNW	High	Medium – distant from site, frequently downwind	High – dust/debris annoyance to residents	Medium		
	13	370	WSW	High	Medium - distance from site, frequently downwind	High – dust/debris annoyance to residents	Medium		
	14	285	W	Med	Medium – distant from site, relatively frequently downwind	High – dust/debris annoyance to staff and visitors	Medium		
	15	375	E	Low	Low – distant from site, infrequently downwind	Low – watercourse, transient use	Low		
	16	115	N	High	High – proximity to site, frequently downwind	Medium – transient use, dust/debris annoyance to drivers	Medium		
	17	1800	W	Medium	Low – distance from site, in-frequently downwind	Medium – dust/debris impact on visual amenity	Low		

Table 5: Water Fugitive Emissions Risk Assessment and Action Plan

Hazard	Receptor	Probability	Consequence	Overall Risk	Risk Management	Residual Risk
Contaminated Water from wastes as received and site operations **Spillages** of liquids on site **Leakages** from vehicles **Firewater** generated following any waste fires	Neighbouring operations	Low – lack of pathway	Medium – human health	Low	Engineered site concrete surface and self-contained drainage system will prevent uncontrolled surface water run-off from site.	Low
	Water course to the east of site. (Afon Seiont)	Medium – surface run-off / shallow groundwater pathways	Medium – aquatic pollution	Medium	Engineered site concrete surface and sealable drainage system will prevent uncontrolled surface water run-off from site. Liquid from operational areas discharged via sump to foul sewer. Sealed surface of site will prevent pathway from existing between surface and groundwater. Spill kit kept on site and site operatives aware of spillage procedures. All site plant/vehicles to be properly maintained.	
	Local Groundwater	Low – site surfaced	Medium – groundwater pollution	Medium	Sealed surface of site will prevent pathway between surface and groundwater. Engineered site concrete surface and sealable drainage system will prevent uncontrolled surface water run-off from site. Run-off from operational areas discharged via sump to foul sewer. Spill kit kept on site and site operatives aware of spillage procedures. All site plant/vehicles to be properly maintained.	

Table 6: Accident Management Plan

Hazard	Receptor	Pathway	Probability	Consequence	Overall Risk	Risk Management	Residual Risk
Fuel / engine oil leak	Surface Water	Site drainage / Runoff	Low	Medium - pollution of surface water	Medium	All vehicles on site will be road worthy and well maintained. Site covered by concrete hard-standing and all surface water is to be effectively managed.	Low
Fire Uncontrolled burning of wastes or site facilities	Surface Water	Site drainage	Low	Medium - pollution of surface water through firewater run-off or leaks from damaged equipment	High	No highly flammable wastes to be accepted, buildings to be well ventilated. Site vehicles and plant subject to regular preventative maintenance in line with site procedures. Site to be operated in accordance with the Fire Management Plan (Appendix A). Internal and external hard-standing containment bund to retain all fire waters. No deliberate burning of waste or other fires to be undertaken at site.	
	Receptors listed in Table 1 above Site personnel/ Visitors	Airborne	Low	High - smoke / odour annoyance High – Site personnel/visitors injury			
Explosion Combustion of Flammable wastes (i.e. wood, paper/cardboard)	Site personnel/ Visitors	Airborne	Low	High - danger of serious injury	Medium	No smoking on site Compressed gases not required and therefore not present for operation of installation. Visual screening of waste to ensure no hazardous materials (gas cylinders) enter waste stream	
	Surface Water	Site drainage	Low	Medium - pollution of water through leaks from damaged equipment			
Vandalism Damage to site vehicles, plant, or buildings.	Groundwater	Site drainage	Low	Medium - pollution of groundwater through leaks from damaged equipment	Low	Site security will prevent access by unauthorised persons.	

4 CONCLUSIONS

4.1.1 The risk assessments detailed in Tables 2 to 5 within this document indicate that site activities are unlikely to cause any disturbance to the surrounding area. Residential and commercial properties in the vicinity of the site are most sensitive to proposed site operations. However given the low noise, dust and odour mitigation measures generated at the site these properties are highly unlikely to be affected by the operation.

4.1.2 The site is located in a relatively industrialised area. However, there are a number of residential properties within 1km of the site. Mitigation measures as detailed within the risk assessments will be utilised to ensure that there are minimal complaints from residential properties and neighbouring businesses.

4.1.3 Accidents such as fire / explosion or leakages may pose a threat to the local environs. However safe site working practices, effective control measures and strict waste acceptance criteria as detailed within the Accident Management Plan make such accidents highly unlikely.

4.1.4 The site design provides an impermeable surface to mitigate the contamination of surface water and ground water. The building benefits from a contained drainage system which has been designed to retain any fire water in the event of a fire incident at the site.

4.1.5 It has been concluded that with the use of appropriate mitigating controls where necessary, the facility will not present a significant risk to surrounding receptors.

DRAWINGS

Appendix A
Fire Management Plan

TerraConsult

May 2017
Report No 2858/R/003-2

Environmental Permit Variation Application

Lon Hen Felin Waste Treatment & Transfer Facility

Fire Risk Assessment & Prevention Plan

(H1 Environmental Risk Assessment Appendix A)

Prepared for

Gwynedd Skip & Plant Hire Limited

TerraConsult

Environmental Permit Application

Lon Hen Felin Waste Treatment & Transfer Facility

Fire Risk Assessment & Prevention Plan

(Environmental Risk Assessment, Appendix A)

Date: May 2017

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2889-CAU-XX-00-DR-6001 Site Drainage Layout Plan

1 INTRODUCTION

1.1.1 Descriptions of the proposed activities are provided in Section 2 of the Environmental Risk Assessment report (ref: 2858/R/002-1), and this document forms the appendices of that report.

1.1.2 A general Site Layout Plan (ref: 2858/1/002) and Internal Layout Plan (ref: 2889-CAU-XX-00-DR-6001) are attached with this report for reference purposes.

1.1.3 This Fire Risk Assessment has been prepared in accordance with the Natural Resources Wales Guidance Document, the "*Fire Prevention and Mitigation Plan Guidance – Waste (version 1, May 2016)"* and document *"ESA Waste 28, Fire Control Guidance, Reducing Fire Risk at Waste Management Sites (October 2014) (Waste 28)".*

2 RISK OF FIRE

Types of Combustible Materials on Site

2.1.1 The wastes received at the site consist predominantly of Commercial & Industrial (C&I) skip wastes and residual Municipal Solid Waste (MSW) also transferred via skip wagons. The site recovers aggregates from the mixed incoming skip waste, and it is proposed to treat incoming 19 12 12 wastes within the building through shredding.

2.1.2 The components of the MSW and C&I received at the site that have the potential to be considered combustible are listed below.

- Paper and Cardboard;
- Green/Garden Waste;
- Wood and timber;
- Textiles; and
- Plastics.

2.1.3 All of the wastes are deposited in the Operations Building (see drawing ref: 2858/1/002) of the treatment building in designated stockpiles that allow for a 'first in, first out' procedure to be operated. This ensures that older wastes are processed through the site plant prior to the newer waste materials.

2.1.4 The incoming wastes are generally processed within 48 hours of deposit at site and transferred from site during that period, but an operating storage limit of 72 hours has been set by the Operator. In the event of plant failure, off-taker shortage or other unforeseen events affecting the process operation, a maximum storage duration of 5 days has been set.

2.1.5 Storage capacity for untreated wastes within the operations building is approximately 2,000 tonnes. The external storage used for the storage of segregated/treated materials are shown on the accompanying Site Layout Plan (ref: 2858/1/002), with storage capacities (totalling 2,600 tonnes) specified for each bay. Waste throughputs (based on 2015 figures) average approximately 3,250 tonnes per month and with corresponding treatment throughput, it is unlikely that this maximum limit could be achieved. Therefore it is considered that stockpiles at the site will be restricted in accordance with the guidance provided in NRW guidance note: Fire Prevention Plans version 1, May 2016). These have been replicated in Table 1 below for reference purposes.

2.1.6 Residual paper, card and plastics are baled and stored in a designated external bay 1 (see drawing 2858/1/002). The storage capacity for the processed and baled materials is approximately 200 tonnes and storage bay maximum dimensions approximately '14m x 14m' which are within the recommended stockpile sizes stated in Table 1 below. Unprocessed wood will be stored in designated bay 4 (18m x 9m) prior to transfer from site for treatment and recovery.

Table 1: Waste Storage Restrictions

Material	Max height (m)	Length/width (m)	Max vol (m^3)	Max area (m^2)	Min separation (m)
Paper, cardboard and rags	5	20	750	235	6
Plastic rubber and other materials	5	20	450	235	6
WEEE	5	20	300	235	6
Processed wood including sawdust, shavings, chips	3	10	150	100	6
RDF and fragmentiser fluff	5	20	450	235	6
Un-processed wood	5	20	750	235	6

- Incoming MSW will be deposited within the waste reception area prior to being shredded and input to the sorting process or transferred from site. The operator will operate a 'first in, first out' policy to ensure that no materials are contained within the storage bays for excessive periods.
- The baled residual paper, card & plastics output will be stored as shown on the Site Layout Plan, in a designated bay with a storage capacity of 200 tonnes.
- Un-processed waste wood will be stored on site until sufficient quantity is present for full loads to be transferred from site for treatment and recovery.

2.1.7 The storage duration for each waste stream is detailed further in Section 3 below.

Causes of a Fire

2.1.8 The potential causes of a fire specific to the proposed activities on this site and the measures employed to prevent them are identified with reference to NRW guidance and 'Waste 28' as summarised below:

- ***arson or vandalism*** – the site is very secure with 5m perimeter solid screen fencing;
- ***self-combustion of stored waste materials*** (e.g. chemical oxidation, microbial decomposition) – Gwynedd Skip Hire operate a 'first in, first out' policy to ensure that all wastes identified are not stored longer than necessary. Waste inputs are continually processed as they are deposited at site. The key components required to cause self-combustion have been reduced significantly;

- ***plant or equipment failure*** – the wastes are not stored near to or subject to machinery which may represent an ignition hazard;
- ***naked lights*** – there will be no naked lights or exposed light bulbs positioned which might make direct or near contact with potentially combustible materials;
- ***discarded smoking materials*** – the operator will enforce a strict no-smoking policy in all waste storage or handling areas;
- ***hot exhausts*** – only mobile plant to a specification suitable for handling this material will be in direct contact with the waste materials;
- ***hot works, e.g., welding, cutting*** – there is limited need for hot works to be carried out on the storage areas. No hot works will be carried out in the vicinity of the stored wastes;
- ***neighbouring sites activities*** – all neighbouring activities are unlikely to present a significant fire risk and in any case have their own fire control measures; and
- ***ignited materials received at the site*** – no ignited loads will be accepted at site.

2.1.9 Any of the causes detailed above has the potential to ignite the flammable waste types stored at the site. The consequences of a fire are discussed below with mitigation measures detailed in a further section.

Effect of a Fire

2.1.10 The effects of a fire may be both immediate and long term, presenting a significant burden for the operator and regulatory agencies. The potential consequences of a fire have been discussed within the accompanying Environmental Risk Assessment and are reviewed below with reference to NRW Guidance and Waste 28:

- firewater run-off transporting pollutants to surface water and groundwater;
- thermal radiation harming nearby properties leading to fire spread;
- creation of hazardous waste by the fire and impacts of firefighting;
- explosions and projectiles harming sensitive receptors and spreading the fire to unaffected areas;
- transport disruption resulting from road and rail closures;
- nuisance from smoke, odour and particulates; and
- threat to life and property.

Receptors

2.1.11 Sensitive receptors within 1 km of the site are identified in Table 2 below, with the Afon Seiont Site of Special Scientific Interest (SSSI) located 1.8km away included for reference purposes. The site is located within an immediate area predominantly occupied by industrial and commercial units and activities. There are a small number of residential properties situated in the locality of the facility, and the only watercourse being the 'Afon Seiont', located 375m to the

east of the site. The potential hazards associated with a fire at the installation and likely pathways to identified receptors are listed in Table 2 below.

2.1.12 The surface water drainage at the site consists of a series of drains to collect clean surface water run-off which is directed off site to sewer as shown on the accompanying Drainage Layout Plan (ref: 2889-CAU-XX-00-DR-6001). Water suspected of contamination is directed through the consented point to foul sewer. The system contains shut off valves that can prevent discharge from site should a spillage occur, or to prevent the escape of firewater.

Table 2: Sensitive Receptors

No.	Receptor	Category	Distance (m)	Direction from Site	Frequency Prevailing Wind Direction (%)
1	Industrial Units	Commercial / Industrial	20	W	7
2	Industrial Units	Commercial / Industrial	20	E	4
3	Industrial Units	Commercial / Industrial	20	N	11
4	Industrial Units	Industrial	25	S	1
5	Bodrual Holiday Cottages	Residential	230	ESE	3
6	Abattoir	Commercial / Industrial	200	S	1
7	Glan Gwna Holiday Park	Recreational	375	S	1
8	Redline Indoor Karting	Recreational	325	SW	6
9	Beacon Climbing Centre	Recreational	450	SW	6
10	Bryn Rhos	Residential	195	NW	11
11	Coed Mawr	Residential	425	NW	11
12	Houses A4086	Residential	450	WNW	10
13	Cae Garw	Residential	370	NNW	6
14	Commercial & Industrial Units	Commercial / Industrial	285	W	7
15	Afon Seiont	Watercourse	375	E	4
16	A4086 Llanberis Road	Highway	115	N	11
17	Afon Seiont SSSI	Designated Land	1800	W	7

* See Drawing No 2858/1/003: for location of receptors
*Wind direction information taken for the Caernarfon station from www.windfinder.com

2.1.13 If a fire were to occur at the site the fire / smoke emissions are likely to result in an impact in terms of:

- Damage to buildings from explosions or projectiles resulting from the fire;
- Degradation of health to the public, workers in nearby factories or emergency services;
- Physical prevention of access to buildings, businesses or shipping downwind of the fire due to fire or smoke hazard. The degree of this impact will decrease with distance from the fire;
- Disruption to normal business operations due to employees / customers being unable to reach places of work;
- Degradation or despoilment of goods resulting from smoke ingress to materials stored in the dock area or infiltration of smoke into the ventilation systems of adjacent warehouses or factories;

- Potentially hazardous travelling conditions (loss of visibility) arising on transport links downwind of the fire.
- Loss of amenity to domestic receptors downwind of the fire.

2.1.14 A summary of these impacts and how they may affect specific receptors is detailed in Table 3.

Table 3: Relevant Hazard and Pathway

Receptor Location		Hazard	Pathway
1.	Industrial Units	Explosions and projectiles harming sensitive receptors and spreading the fire to unaffected areas; transport disruption resulting from road and rail closures; and nuisance from smoke, odour and particulates. Pollution of water courses from firewater.	Airbourne / Site Drainage
2.	Industrial Units		
3.	Industrial Units		
4.	Industrial Units		
5.	Bodrual Holiday Cottages		
6.	Abattoir		
7.	Glan Gwna Holiday Park		
8.	Redline Indoor Karting		
9.	Beacon Climbing Centre		
10.	Bryn Rhos		
11.	Coed Mawr		
12.	Houses A4086		
13.	Cae Garw		
14.	Commercial & Industrial Units		
15.	Afon Seiont		
16.	A4086 Llanberis Road		
17.	Industrial Units		

3 RISK REDUCTION

Preventing Fire - Procedures

3.1.1 The installation is operated in accordance with the Operator's certified Environmental Management System (EMS).

3.1.2 The principle objectives of the EMS are to ensure the efficient and safe operation of the site through the implementation of procedures that ensure define staff roles and responsibilities supported by provision of appropriate training.

3.1.3 The EMS includes procedures that:

- control the source of ignition such as naked flames, space heaters to ensure adequate distance is maintained from stockpiles of combustible materials;
- ensure staff and contractors follow safe working practices when undertaking hot work;
- ensure staff, contractors and visitors are trained or inducted on correct safety and fire prevention procedures;
- defines a regular maintenance and inspection programme for all site areas including machinery and good housekeeping including maintaining levels of dust, fibre and litter to a minimum.

3.1.4 There is a no-smoking policy enforced across the site except for designated smoking areas located away from any waste storage or handling areas and other potential points of ignition.

3.1.5 Site security will include CCTV and out of hours security personnel attendance.

Fire Procedures – Equipment and Infrastructure

3.1.6 All site vehicles are fitted with fire extinguishers and dust filters.

3.1.7 Portable fire extinguishers are provided at strategic locations around the site and within the operations building as shown on the Site Layout Plan (2858/1/002).

3.1.8 Waste stockpiles will be visually inspected on a regular basis (increasing in summer months), temperature will be monitored in accordance with "ESA Waste 28, Fire Control Guidance 'Reducing Fire Risk at Waste Management Sites"(section 5.5.6 and 6.2.2) if deemed necessary. In the event of detection of an increase in temperature within a waste stockpile the following actions will be undertaken:

- If safe to do so the waste will be relocated to a quarantine area a minimum of 10 m distance from the waste stockpile;
- Alternatively surrounding waste will be relocated to create a minimum 10 m distance to the identified hotspot; and

- Following isolation the waste will be drenched with water to reduce temperature.

3.1.9 Water hose lines are located at strategic locations around the site as detailed on the Site Layout Plan.

Fire Procedures - Waste Storage

3.1.10 It is the intention of Gwynedd Skip Hire to store potentially flammable waste within segregated bays as detailed in section 2. It is anticipated that incoming wastes will remain on site for only a short period of time prior to off-site transport and in any event no materials, particularly unprocessed wood and baled card, paper & plastics will be stored for a period of greater than five days. This allows for regular inspection of all site surfaces.

3.1.11 Details of storage capacities and indicative durations material will be on site are shown in Table 4 below. Additionally, it has been highlighted within the table if a particular waste type presents a potential self-combustion risk, as listed within the current NRW guidance.

Table 4: Segregated/Processed Waste Storage

Bay No.	Internal/External	Waste Type	Self-Combustion Risk	Storage Capacity (tonnes)	Max Storage (days)
1	External	Baled Paper, Card & Plastics	High	200	5
2	External	Residual Inorganic Fines	Low	1200	5
3	External	Mixed Aggregates	Low	800	5
4	External	Un-Processed Wood	High	400	5
-	Operations Building	Mixed C&I/MSW	Medium	4000	5
-	Asbestos Skip	Asbestos	Low	20	5

3.1.12 The operator will continue to operate a ‘first in, first out’ policy which will ensure that incoming wastes are managed in such a manner that ensures older wastes are processed or transferred from site prior to incoming wastes.

3.1.13 If a fire is detected in a single bay or stockpile, if safe to do so and under direction from the site manager or nominated fire officer the operator will attempt to remove any flammable wastes from the adjoining bays/stockpiles and place them in an unoccupied bay or other location isolated from the other bays. These wastes will be kept under observation in case they also begin to combust. The wastes will be removed only from the outer face of the stockpile working from the corner furthest from the bay on fire. The removal of the waste will be

undertaken in a manner which minimises risk of collapse onto the mobile plant driver.

4 CONTAINING AND MITIGATING THE EFFECT OF THE FIRE

Fire Water

4.1.1 The operations building benefits from an impermeable concrete surface with enclosed drainage. Additionally, all external operational areas within the site boundary also benefit from concrete hard-standing with a self-contained surface water drainage system to collect run-off.

4.1.2 The surface water drainage at the site consists of a series of drains to collect clean surface water run-off which is directed via and oil separator to sewer as shown on the accompanying Drainage Layout Plan (ref: CL(19)01). The system contains shut off valves that can prevent discharge from site should a spillage occur, or to prevent the escape of firewater.

Water Supply

4.1.3 The site benefits from numerous water supply hose reels, specifically installed for fire management purposes.

Storage

4.1.4 All wastes are to be stored in segregated bays (where applicable) so as to limit the possibility of fire occurrence and to mitigate any potential effects of fire as detailed in Section 2 above.

Action Plan

4.1.5 The operator's EMS details the Emergency Action plan for dealing with emergency incidents including managing fire risk. It is this document that will be used to ensure appropriate response management.

4.1.6 In summary, in the event of an outbreak of fire, all or some of the following actions will be undertaken as appropriate, referenced in the EMS.

- Any outbreak of fire at the site shall be treated as an emergency. Where is it safe to do so and without endangering the safety of persons, immediate action shall be taken to extinguish the fire using on site fire extinguishers / water supplies.

- If the fire cannot be controlled on site then the Fire & Rescue Service is to be contacted by telephone immediately. All fires should be reported.

- The Site Manager is to be contacted immediately by telephone and informed of the situation.

- The area of fire must be evacuated without generating panic. All site personnel must make their way to the fire assembly points. Site personnel must ensure that no persons or vehicles re-enter the affected area.

- A check shall be conducted to ensure that all persons present on the site are safe and accounted for as required for Fire Emergencies. Using clock cards and/or staff and visitor signing in sheets.

- The Site Manager is to contact NRW by telephone and in writing, as soon as reasonably practicable but within 24 hours, after the outbreak of a fire to advise them of the incident and of the action taken.

- Upon the outbreak of fire the receipt of waste at the site is to be suspended and not resumed until authorised by the Site Manager.

- Communication with local businesses and residents identified in the sensitive receptor table above will be undertaken in the event of a fire to reduce any environmental damage and risks to human health associated with smoke and dust.

- Collected fire water to be retained as described above. Any retained firewater will be removed from site by tanker if necessary.

- Site operations will not be recommenced until deemed safe to do so by the Local Fire Authority and NRW.

4.1.7 Table 5 below provides relevant contact details for individuals to be used in the event of a fire on site.

Table 5: Emergency Contact Details

Company	Position	Name	Telephone Number	Email
Gwynedd Skip & Plant Hire Limited	Site Manager	Rhys Morgan	07876 458206	Rhys@gsphltd.co.uk
	Compliance & Office Manager	Amy Edwards	01286 674280	amy@gsphltd.co.uk
Natural Resources Wales	Environment Officer	Rhys Thomas	03000 65 3765	Rhys.Thomas@cyfoethnaturiolcymru.gov.uk
Natural Resources Wales	Incident Switchboard	-	03000 650003	enquiries@naturalresourceswales.gov.uk
Fire and Rescue Service	Emergency	-	999	-
	General Enquiries	-	01745 535250	www.nwales-fireservice.org.uk

Drawings

Appendix B
Odour Management Plan

TerraConsult

May 2017
Document Ref: 2858/R/004/2

LON HEN FELIN WASTE TREATMENT AND TRANSFER FACILITY

ODOUR MANAGEMENT PLAN

Prepared for

Gwynedd Skip & Plant Hire Limited

LON HEN FELIN WASTE TREATMENT AND TRANSFER FACILITY

ODOUR MANAGEMENT PLAN

Date: May 2017

Carried Out For:

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DOCUMENT INFORMATION AND CONTROL SHEET

Document Status and Approval Schedule

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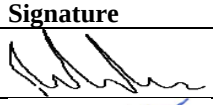
1	Issued to NRW	May 2017	**Prepared By:** R. Barlow		04/05/2017
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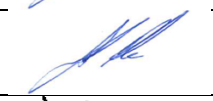
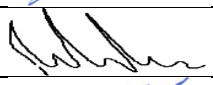
			Authorised By: J. Baxter		05/05/2017
2	Issued to NRW	May 2017	**Prepared By:** R. Barlow		16/05/2017
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1 INTRODUCTION

1.1 Background

1.1.1 Gwynedd Skip & Plant Hire Limited operate a waste treatment and transfer facility located at Lon Hen Felin on Cibyn Industrial Estate near Caernarfon. An Environmental Risk Assessment has been completed for the operations at site, however, in order to provide additional assurance with regards to odour, an Odour Management Plan (OMP) has been produced to support the current permit variation application being determined by Natural Resources Wales (NRW).

1.1.2 The site is primarily used for the physical processing of incoming skip waste from commercial / industrial premises and householders.

1.1.3 All incoming wastes are deposited within the confines of the operations building for initial sorting. The facility can process up to 75,000 tonnes of waste per annum. Inside the building the incoming materials are fed into a trommel followed by the manual sorting, covered conveyor that extends out of the building, with underlying designated storage bays as shown on the Site Layout Plan (ref: 2858/1/002). In addition, small quantities of inorganic fines will be stored in designated bays prior to being transferred from site, also as shown on the Site Layout Plan. Residual non-recyclates and proposed incoming 19 12 12 wastes will be processed through shredding prior to transfer from site for recovery and/or disposal at other waste facilities.

1.2 Reference to the Guidance

1.2.1 This Odour Management Plan (OMP) has been prepared in accordance with the following guidance documents:

- *An industry guide for the prevention and control of odours at bio-waste processing facilities – The Composting Association 2007*
- *European Commission Waste Treatment Industries BREF (August 2006) and,*
- *H4 – Horizontal Odour Guidance.*

1.2.2 Current regulatory guidance suggests a Source → Pathway → Receptor model be adopted with an emphasis on implementing effective and robust controls for odour abatement at the earliest stages possible (i.e. at source). The guidance acknowledges that assessment and control of odour can be difficult due to dispersal and the episodic nature of odour events. Assessments therefore are usually based on conservative worst case scenarios and are not a reflection of the preventative operational practices at the site.

1.2.3 The 'H4' guidance provides a regulatory framework by which a permitting officer can ensure an installation's compliance by the provision of specific conditions. H4 states that the Best Available Technique (BAT) is often site-

specific and can be determined by the controls necessary to meet benchmark odour concentrations at ground level at sensitive receptors.

1.2.4 This document provides a summary of the physical and management controls that will be employed to minimise odour release. It provides a site-specific assessment of the potential sources of odour, the pathways odour can take from the site and the receptors it is likely to impact. The potential release points of odour are identified, as are the management systems to prevent and control fugitive odour emissions. Monitoring and reporting systems are also described, as are emergency contingency plans.

1.3 Appraisal of Applicable Monitoring Techniques

1.3.1 The applicable monitoring techniques in this context are interpreted as the daily odour monitoring methodologies (olfactory) up and down wind of the site. Monitoring of operational control measures are listed separately. These have been reviewed in the context of the most recent guidance (i.e. H4) and updated accordingly.

1.4 Operational Control Measurers and Monitoring Techniques

1.4.1 The operational control measures and monitoring techniques to be implemented are detailed in this management plan and consider the odour source term identification process in Section 2.

1.5 Contingency Plans

1.5.1 Contingency plans for the potential odour source hazards are detailed in Section 5 below. These are based on current operational practices at the site and are subject to regular review by appropriately qualified personnel.

2 ODOUR SOURCE TERM CHARACTERISATION

2.1 Odour Source

2.1.1 The following sources of odour are considered in this section of the assessment:

- Odours from stored wastes in the building (prior to processing or transfer);
- Odours from the wastes stored following treatment; and
- Odours from waste processes during segregation.

2.1.2 Each of the above hazard source terms are described in greater detail below in the context of specific sources, and potential release points.

2.2 Waste Reception

2.2.1 Table 1 summarises the odour potential of each waste stream on site, the relative odour risk that waste stream may present to receptors and odour mitigation in terms of residence times. Further detail on each waste stream is provided below the table.

2.2.2 Mixed skip wastes from demolition and excavation projects will constitute the principal element of the materials received at the facility, however, the operator proposes to import 19 12 12 wastes from other facilities for shredding and transfer from site Residual materials separated from the incoming skip wastes will contain the fraction of the municipal waste and consists of the following materials:

- paper and card;
- plastics;
- residual amounts of putrescible materials;
- metals; and
- textiles.

2.2.3 The site is currently permitted to accept biodegradable kitchen and canteen waste, however, these particular waste streams are not currently accepted at the site. Should this become a commercially viable option for the operator to undertake these collections, the OMP will be reviewed and updated accordingly. The odour generation potential of the currently accepted wastes is considered low on account of the non-putrescible nature of the waste. The odour generation potential is also linked to the age of waste prior to collection.

Table 1.Individual Waste Stream Odour Potential

Waste Stream	Odour Potential	Reason	Approximate Proportion of Waste Received	Compositional Consistency of Waste Stream	Priority
Mixed Skip Wastes	Low to Medium	Waste stream contains residual materials present in the incoming C & I skip wastes consisting predominantly of dry recyclables e.g. paper / textiles may degrade, but not to same extent as food waste. No existing canteen/food waste collection contracts.	75%	Variable composition	High
Incoming 19 12 12	Low to Medium	Waste stream contains similar component residual materials present in the incoming C & I skip wastes consisting predominantly of dry recyclables e.g. paper / textiles however may have undergone some degree of sorting prior to arrival at site. No existing canteen/food waste collection contracts	25%	Variable composition	High

2.2.4 The Chartered Institute of Wastes Management (CIWM) and the Waste Resources Action Programme (WRAP) commissioned a review[1] that considered the odour generation potential of stored residual MSW. The review indicates that the volatile organic compounds (VOCs) from domestic waste generally peaked at one week whilst other compounds such as ammonia continued to increase over a 14 day storage period. Weather and storage conditions were also found to affect odour production. Overall, the review indicated that some odorous compounds may diminish and some increase between 7 to 14 days. The review reports typical odours that may be generated from residual MSW include those linked to microbial decomposition of the organic fraction and those associated with packaging materials and household products such as detergents. In general typical odour compounds are reported to include:

- VOC's including chlor-organics,
- hydrogen sulphide (rotten eggs),
- mercaptans (rotten vegetation e.g. cabbage) and
- amines (fishy smell).

[1]Scoping Study of Potential Health Effects of Fortnightly Residual waste Collection and Related Changes to Domestic Waste Systems, Final Report, July 2009

Additionally it has been reported that alkanes, alkybenzenes and terpenes have been responsible for undesirable odours from kerbside waste containers[2].

2.2.5 The CIWM/WRAP review indicates that composition of the odorous chemicals change with time, some diminish whilst others increase, however overall it is recognised that the longer the storage time the greater the odour generation potential. In addition it is also understood that the warmer the waste the greater the odour production potential. The volume of waste stored and the depth of waste (which may result in anaerobic conditions and heat) are all factors that influence odour generation. These issues are all addressed in this report.

Commercial and Industrial Wastes

2.2.6 Wastes may also be accepted from trade deliveries from private companies within the surrounding area, however, it is considered that these will consist of similar composition to that of the operator's incoming materials i.e. predominantly demolition and excavation contracts and householder skip loads.

Summary

2.2.7 The components of odorous compounds in the building are likely to vary depending on proportion of the incoming wastes accepted, however, the percentage of residual putrescible wastes is considered to be negligible. Odour tends to consist of a complex mix of chemicals in gaseous form, as described above wastes of the nature to be accepted exhibit accepted exhibit the following typical odours: VOC's including chloro-organics, hydrogen sulphide (rotten eggs), mercaptans (rotten vegetation e.g. cabbage) and amines (fishy smell).

2.2.8 The age of waste received and storage temperature will influence odour type and generation. It is recognised that in general increased odours are linked to longer storage of municipal type waste. However only a minority of odorous compounds appear to increase consistently with longer storage, therefore targeting particular odorous compounds is difficult. It is considered that actions aimed at reducing storage times, limiting stockpile sizes, minimising temperature, limiting evaporative losses and controlling odorous inputs are preferable and more practical control methods.

2.2.9 A summary of the activities carried out in the waste reception area of the building and how they might influence the odour potential of specific waste streams is detailed in Table 2.

Controls

2.2.10 Control systems and management controls relating to the stockpiles are discussed in Section 3 below.

Table 2.Odour Potential of Waste Streams at Waste Reception

[2]Statheropoulos M., Agapiou A., Pallis G. (2005) A study of volatile organic compounds evolved in urban waste disposal bins. Atmospheric Environment 39:4639–4645

Waste Stream	Deposit of waste in Reception Area	Loader transfer of waste into bays or shredder
Mixed Skip Wastes	**Low to Medium** • Odour which may have built up in vehicle will be released on deposit of wastes; • Deposit of wastes on floor may cause any bags / containers to split releasing odour; • Odorous wastes may taint other non-odorous material in the vehicle / building; • Unless tainted by odorous waste streams, odour potential should be low.	**Low to Medium** Waste will be disturbed when excavated from pile and when deposited but not agitated excessively (compared to shredding)
Incoming 19 12 12	**Low to Medium** • Odour which may have built up in vehicle will be released on deposit of wastes; • Deposit of wastes on floor may cause any bags / containers to split releasing odour; • Odorous wastes may taint other non-odorous material in the vehicle / building; • Unless tainted by odorous waste streams, odour potential should be low	

Potential Release Points

2.2.11 Waste is to be directly discharged into the building. The building has a designed capacity of approximately 2,000 tonnes for processed and unprocessed wastes. It is very unlikely that this amount of waste will be deliberately accumulated in the reception area however and it is the operator's aim to process all accumulated waste as soon as practicable. The priority will be to process the MSW waste first and any similar I&C waste. MSW will not be retained in the building for longer than 72 hours total (including processing and storage times prior to dispatch) to allow for weekends, bank holidays or mechanical breakdowns.

2.2.12 Any odours generated from the building may be released when the doors are opened to allow ingress/egress of waste delivery vehicles or when vehicles exit the building to take waste off site. Odours may also be released from other access and personnel doors associated with adjacent areas of the building. Other potential odour emission points include gaps in the building infrastructure that may be associated with ventilation, services entering the building or result from structural defect of damage.

2.3 Mechanical Treatment

Source Characterisation

2.3.1 The wastes subject to mechanical treatment are likely to have a similar odour generation potential at this point when compared to its initial delivery to the site, due to the predicted short storage time in the reception area. A summary of how the waste treatment activities might influence the odour potential of specific waste streams is detailed in Table 3.

Table 3.Odour Potential of Waste Streams during Treatment

Waste Stream	Treatment Activity		
	Size reduction in Shredder	**Separation via conveyor in Eddy Current Separator**	**Fines Generation**
C&I ,19 12 12 Residual Putrescible	**High** Shredding action maximised potential for odorous components to be mobilised into the air Mixing odorous / non-odorous waste may reduce MSW odour potential by dilution or absorption of odorous liquids into dry waste	**Medium / High** Potentially odorous compounds may be mobilised from shredded waste in eddy separator. Odorous waste may get mixed with low odour waste reducing the overall odour potential Aeration of waste may dry it and reduce odour release potential	**High** Generally non-odorous recoverable material removed from stockpile. If stockpile of fines grows too large or retained for excessively long periods, anaerobic conditions may develop and create significant odour potential
C&I Non-Putrescible	**Low** If not mixed with odorous waste	**Low** If not mixed with odorous waste	**Low** Majority of residual material likely to be recovered or recycled and unlikely to contribute to quantity of odorous fines

2.3.2 Wheeled loading shovels operating within the building will load waste from the reception area onto a centrally located shredder. The shredded material would then be deposited within the western quadrant of the building prior to transfer from site. All separated ferrous and non-ferrous metals attracted would be stored in separate storage bays adjacent to the conveyor and be removed for recycling. Any fines materials resulting from the process will be removed from site for recovery or disposal.

2.3.3 Mixed C & I waste will be loaded onto the covered manual picking conveyor for physical separation of wood, plastics, cardboard and rubble materials. These non-putrescible materials will be stored in designated enclosed bays prior to removal from site for recovery purposes.

2.3.4 The mechanical processing of the waste may allow increased odour emissions resulting from increased surface area and splitting of previously sealed bags and shredding materials. The initial shredding and bag splitting processes are likely to generate the most significant odour during the mechanical treatment process.

Potential Release Points

2.3.5 It is not proposed to install any physical full height separation between the mechanical treatment area, reception area and product storage area. The potential release points are identified as the main vehicle access doors and associated personnel doors to the reception area, treatment area and product storage area.

Controls

2.3.6 Control systems and management controls relating to mechanical waste treatment are discussed in Section 3 below.

2.4 Storage of Products and Processed Wastes

Source Characterisation

2.4.1 Further to the screening and processing of the received materials, segregated metals and residual fines from mechanical separation process will be stored within the building awaiting transportation. A summary of how the waste treatment activities might influence the odour potential of specific waste streams is detailed in Table 4.

Table 4.Odour Potential of Waste Streams after Treatment

Waste Stream	Deposit of separated materials into HGVs	Transit of HGVs from building and off site
C&I derived fines	**Low / Medium** Disturbance of fines stockpile from MSW may result in odorous emissions if the stockpile has built up over long periods of time, however, fines material tends to be from non-putrescible source. Fines stockpile will be removed when there is sufficient material to fill a HGV, usually within 24 hours but no longer than 72 hours since last cleared.	**Low** All material loaded into HGVs and sheeted / covered when the vehicle leaves the building
Baled Plastics, Paper & Card	**Low** Light material (plastics, paper) should have low odour potential as dry material.	**Low** All material loaded into HGVs and sheeted / covered when the vehicle leaves the building
Shredded 19 12 12	**Low / Medium** Disturbance of shredded materials may result in odorous emissions if the stockpile has built up over long periods of time, however, material tends to be from non-putrescible source. Stockpiles will be removed when there is sufficient material to fill a HGV, usually within 24 hours but no longer than 72 hours since last cleared.	**Low** All material loaded into HGVs and sheeted / covered when the vehicle leaves the building

2.4.2 Residues from the screening undertaken inside the building may include inert fine material. The accumulated fines material will be removed from site when there is sufficient volume to fill a HGV but all stockpiles will be normally be removed within 24 hours but no later than 72 hours of the previous stockpile being cleared. Any waste stockpile containing a high proportion of putrescible wastes will be identified and its removal expedited.

2.4.3 The separated metals, wood and hardcore stockpiles are not considered to present a significant odour risk due to the low putrescible content of the waste.

Potential Release Points

2.4.4 The treated materials are stored within the building and, as such, are open to release odour into the atmosphere. Odours from the building may be released when the doors are opened to allow ingress/egress of waste delivery vehicles or when vehicles exit the building to take waste off site. Odours may also be released from other access and personnel doors associated with adjacent areas of the building. Other potential odour emission points include gaps in the building infrastructure that may be associated with ventilation, services entering the building or result from structural defect of damage.

Controls

2.4.5 Control systems and management controls relating to waste receipt and storage are addressed in Section 3 of this management plan.

3 ODOUR MANAGEMENT AND CONTROL

3.1 Waste Receipt, Storage and Treatment

Receipt

3.1.1 Control of incoming wastes will be managed according to the operator's site management systems and waste acceptance procedures. The waste acceptance protocols aim to identify malodourous waste which will be rejected and redirected to a suitable facility for alternative treatment or disposal.

3.1.2 Every effort will be made to identify malodours waste prior to delivery to site. All incoming loads will be weighed at the weighbridge and the appropriate waste acceptance procedures undertaken. Records of received wastes will be made and retained, appropriate documentation in accordance with the Duty of Care Regulations will be completed. The following records will be retained for each load of waste delivered:

- Date and time of delivery
- Vehicle details (registration)
- Description (including any associated strong odours);
- Origin (if known)
- Quantity

3.1.3 The waste acceptance protocols aim to identify malodourous waste which will be rejected and redirected to a suitable facility for alternative treatment or disposal. A waste acceptance check will be undertaken at the weighbridge with an additional visual check being undertaken at the point of discharge and during the processing of the waste. If the document checks at the weighbridge show that the wastes are not permitted, the load will be rejected.

3.1.4 After passing over the weighbridge, all waste delivery vehicles will discharge waste into the waste reception building. Any non-conforming wastes identified following deposit will be placed in a quarantine area (see Site Layout Plan) pending removal from the site to a suitable permitted facility. This will be actioned as soon as is practicable ideally within 24 hours but no later than 72 hours after receipt.

3.1.5 A record will be made of wastes found not to be permitted this may include: waste type, deliverer, date of receipt and the producer. Following rejection, the operator will inform NRW and direct the waste for alternative treatment or disposal. Actions will be undertaken to identify the origin of the waste and site management system reviewed to prevent re-occurrence of the issue. Any associated odour issues will be addressed as soon as practicable.

3.1.6 Operations staff will be vigilant for malodorous wastes and daily olfactory odour checks will be undertaken as detailed in Section 6.2 below. Doors will be checked daily to ensure effective operation and building infrastructure will be

checked daily for integrity. Daily checks will be made of the waste stored in the building, which will consider odour, storage time and stockpile size. Procedures will be employed so that stockpile age can be determined and to allow the oldest wastes to be treated in advance of the more recent deposits should odour issues be identified.

3.1.7 The site will be subjected to a strict housekeeping regime which assists with the aim of proactive management and associated environmental compliance. Daily inspections will be undertaken into the fabric of the development, as well as operational practices which will be controlled by the Environmental Management System. Daily checks are reinforced and supported by weekly supervisor and monthly manager inspections. All damage and faults are to be reported to the Site manager for action.

3.1.8 Routine cleansing of the relevant areas of the site, such as waste storage bays and receptacles will be undertaken at appropriate frequencies (weekly). These will be arranged to ensure there is no disruption to the continuity of operations. Given that the cleanliness of site forms part of our daily, weekly and monthly inspections cleaning will be undertaken as required, but monthly as a minimum.

3.1.9 In addition to the above, staff will be instructed to ensure that all external areas of the site are clear of any litter or other wastes.

Treatment

3.1.10 Controls relating to the receipt of waste as detailed above will reduce the risk of excessively odorous materials entering the treatment process of the facility. However, staff will remain vigilant for malodourous waste within the treatment process at each stage. Any malodourous waste noted within the treatment process will be identified and if possible removed from the output stockpile prior to removal from site.

3.1.11 Routine inspections and cleaning of the shredding and sorting equipment on site will be undertaken in order to identify and remove potentially odorous materials.

Storage

3.1.12 The proposed storage capacity of wastes prior to treatment allows for the storage of up to 5 days of waste delivery, however it is likely wastes will not be retained in the reception area for longer than 72 hours maximum to allow for mechanical breakdown or bank holidays. The mechanical treatment line will have a capacity that will allow the treatment of the maximum daily delivered tonnage within the planned daily operational period. Therefore the facility will have capacity to treat all delivered waste each day whilst providing for down time (e.g. maintenance / breakdown). Should plant maintenance or repair be required, any stockpiled waste will be treated on the basis to take account of odour generation potential this is likely to result in the oldest waste being treated first. The maximum storage time for wastes prior to treatment will be 72 hours. If wastes stored on-site prior to treatment present an excessive odour risk, contingency

measures will be implemented as detailed in Section 6.7 and 6.8 and the associated action plan in Table 3.

Evaporation Minimisation

3.1.13 Evaporation from warm wet waste may mobilise airborne odorous chemicals. Evaporative losses will be minimised by limiting total storage times to a maximum of 72 hours total, managing stockpile sizes and additional controls such as fine mist sprays may be used if deemed necessary. If necessary, a suppression system will be employed in specific areas on a risk based approach as required. Potential areas of deployment include stockpiled wastes in the reception area and mechanical processes identified as having a high odour generation potential. Excessive wetting down of the wastes will be avoided.

Air Management

3.1.14 The reception area may operate localised fine water sprays to reduce dust emissions and evaporative odour generation. The delivery doors to the reception hall will be kept closed when no access/egress is required. No further air treatment technologies or point source emissions are proposed for operation of the facility.

3.2 Drainage

3.2.1 Drainage infrastructure will be inspected, maintained and repaired as necessary. Routine maintenance includes flushing through pipework, checking the manhole chambers and interceptors and periodic emptying of the process water holding sump. Tanks and drainage infrastructure will be cleaned / jetted as necessary and no less frequently than annually in any case.

3.2.2 In the unlikely event that odour should become an issue as result of the onsite drainage system, a full review of the infrastructure will be conducted and cleaning and inspection frequencies adjusted accordingly.

4 ODOUR PATHWAY CHARACTERISATION

4.1 Overview

4.1.1 The principle mechanism for the transit of odorous emissions from site operations to adjacent sensitive receptors is via ambient air. The distance and direction that these emissions will be carried is determined by the following factors:

- Source Related Pathways;
- Meteorological Conditions; and
- Topography.

4.2 Source Related Pathways

4.2.1 The pathway an odorous emission takes from a site may depend on the specific source term and / or location it arises from. For example, odour arising from the tipping hall may follow a different route to that issuing from a bio-filter. The nature of the source related pathway could also influence the scale of the resulting impact on a sensitive receptor.

4.3 Meteorological Conditions

Wind Direction

4.3.1 The prevailing wind direction will determine which receptors will be affected and at what frequency

4.3.2 The main controlling factor in determining the pathway of odour is the ambient meteorological conditions. This is fundamental to the transportation of odour to sensitive receptors. The main controlling factor in determining the pathway of odour is the ambient meteorological conditions. This is fundamental to the transportation of odour to sensitive receptors.

Wind Velocity

4.3.3 Wind velocity will affect the distance an odour emission will travel. Conversely, increased wind speed could also beneficially improve dispersal. Those receptors closest to the installation are still at the highest risk of a negative impact however.

Air Temperature

4.3.4 Warm air may carry odours upwards by convection for their dispersal away from the site. However, warm weather will encourage the onset of biodegradation of exposed or temporarily stored wastes and therefore increase odour potential.

4.4 Adverse Weather Conditions

4.4.1 Unusual weather conditions may increase the risk of odour emissions from the site as existing countermeasures may not be as effective. Site staff will be vigilant to unusual trends in the meteorological data or forecasts which may

indicate strong winds or extremes of temperature which may cause a potential problem. The types of weather conditions that may impact on odour generation and emissions and appropriate contingency actions are detailed in section 5 below.

5 ODOUR RECEPTOR CHARACTERISATION

5.1 Identification of Receptors

5.1.1 Locally sensitive receptors can be characterised as follows:

- Domestic dwellings or workplaces;
- Public rights of way;
- Locally Sensitive Sites

Sensitivity of Receptors

5.1.2 The sensitivity of each receptor is based on the impact of unmitigated fugitive emissions to air (i.e. odour) from the facility. For example, a school or dwelling would have a high sensitivity, a retail showroom would have a medium sensitivity and a scrap yard or farm would be of a low sensitivity. This is determined by:

- Immediate locality (e.g. heavy industry or countryside);
- Frequency of receptor use or periods of occupancy;
- Who or what uses the receptor (children at school, wildlife in a SSSI);
- Any pollution contributed by the receptor itself.

Domestic Dwellings or Workplaces

5.1.3 There are both domestic dwellings and commercial/industrial premises within 1000m of the site and these are summarised below in Table 5. Locations of these receptors are also shown on the Sensitive Receptor Location Plan (ref: 2858/1/003).

Public Rights of Way

5.1.4 A number of public highways are located around the proposed site, the use of highways is transitory and as such human exposure to potential odours tends to be for short periods of time. A public footpath runs adjacent to the site along the western and northern boundary. The risk of odour to the users of adjacent public highways is considered to be low.

Locally Sensitive Sites

5.1.5 The site is located within an area which has been significantly altered by agriculture, historical and recent industrial development. The nearest sensitive sites are the Afon Seiont watercourse and SSSI, with the latter being located 1.8km distant.

Table 5. Sensitive Receptors

No.	Receptor	Category	Distance (m)	Direction from Site	Frequency Prevailing Wind Direction (%)
1	Industrial Units	Commercial / Industrial	20	W	7
2	Industrial Units	Commercial / Industrial	20	E	4
3	Industrial Units	Commercial / Industrial	20	N	11
4	Industrial Units	Industrial	25	S	1
5	Bodrual Holiday Cottages	Residential	230	ESE	3
6	Abattoir	Commercial / Industrial	200	S	1
7	Glan Gwna Holiday Park	Recreational	375	S	1
8	Redline Indoor Karting	Recreational	325	SW	6
9	Beacon Climbing Centre	Recreational	450	SW	6
10	Bryn Rhos	Residential	195	NW	11
11	Coed Mawr	Residential	425	NW	11
12	Houses A4086	Residential	450	WNW	10
13	Cae Garw	Residential	370	NNW	6
14	Commercial & Industrial Units	Commercial / Industrial	285	W	7
15	Afon Seiont	Watercourse	375	E	4
16	A4086 Llanberis Road	Highway	115	N	11
17	Afon Seiont SSSI	Designated Land	1800	W	7

* See Drawing No 2858/1/002: for location of receptors
*Wind direction information taken for the Caernarfon station from www.windfinder.com

6 COMMUNITY ENGAGEMENT, REPORTING & CONTINGENCIES

6.1 Overview

6.1.1 Prevention will be viewed as the most effective means of controlling odour before an impact occurs. The Source → Pathway → Receptor model determined above allows for the identification of the critical control points where odour can arise, how it can travel to a receptor and the likely impact.

6.1.2 It is intended the odour management system will mitigate any potential odour impacts of the installation on the identified receptors. Should complaints be received, a procedure will be in place to effectively deal with the issue in a sensitive, efficient and auditable manner.

6.1.3 The controls for each source term are detailed in previous sections of this report. The management of those controls will be based on the on-going monitoring regime at site. The monitoring regime can work as an early warning system to potential problems (e.g. meteorological monitoring) or a diagnostic tool to establish the cause of an odour event (e.g. perimeter monitoring).

6.2 Monitoring

Off-Site Olfactory

6.2.1 The Site Manager will be responsible for ensuring 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. This will include odour arising from vehicles arriving at site and from the facility itself. Due to the potential for de-sensitisation to odours, odour monitoring will only be carried out by site personnel who do not work within facility building i.e. office or weighbridge staff. These personnel will be the most suitable to detect any fugitive odour outside the facility. Personnel nominated for odour monitoring will avoid entering the building except in an emergency or if they are wearing suitable face mask / respirators.

6.2.2 Off-site olfactory monitoring will also be carried out if required, with reference to the protocol in Appendix 1 of the H4 Technical Guidance Note, with an odour assessment form being completed. 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.

6.2.3 The following information will be recorded during each round of monitoring:

- Name of assessor and position at facility e.g. weighbridge clerk etc;
- Nature of any problem identified including location / source, date, time, duration, prevailing weather conditions and likely cause;
- Onsite activities and operational condition at the time of the monitoring visit (this should include any of the abnormal events detailed in Section 6.8 below);

- Records of the likely source of any odour even if it is not from the facility;
- Details on the corrective action taken, realistic timeframes for remedial works and any subsequent changes to monitoring and operational procedures.

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

Process Monitoring

6.2.5 Process monitoring is discussed in earlier sections of this report.

6.3 Complaints Process

6.3.1 Any complaints received at the Facility or via the Regulatory bodies including Natural Resources Wales (NRW) and Local Authority, will be recorded and will instigate further olfactory monitoring at the location of the complaint and on site to determine the extent and location of the odour, the odour causing materials and / or process itself. Where possible, as much information and detail about the complaint will be recorded, whether this is from the relevant authority or complaint direct to site. This information will assist in the investigation and determining the source of the odour.

6.3.2 All complaints and queries will be logged in accordance with the integrated management system as soon as in practicably possible. All complaints logged will be subject to investigation and complainants responded to within 48 hours of receipt. All responses will be through trained and experienced staff.

6.3.3 In the event that an odour complaint is received, additional monitoring will be undertaken at the nearest sensitive receptors. The person conducting the survey shall make note of any odours at each monitoring point including those not of obvious waste facility site origin.

6.3.4 Complaints regarding odour from the facility will be investigated in accordance with the protocol, and appropriate records maintained which may include:

- Complaints received including name and contact details of complainant (if known), and complainants description of the odour;
- Nature of problem including date, time, duration, prevailing weather conditions and cause of the problem;
- Onsite activities and operational condition at the time of the complaint;
- Records of the likely source of the odour even if it is clearly not from the facility;
- Details on the corrective action taken, and any subsequent changes to monitoring and operational procedures;
- NRW will proactively be informed by the operator of the complaint and the operator will confirm to the best of its knowledge the information described above.

6.3.5 The operator will ensure that the complainant has all the relevant contact details of the site (i.e. the Site Manager) and the officer responsible at NRW. The operator will be in regular contact with the complainant and NRW whilst the cause of the odour is being investigated and remediated.

6.3.6 An evaluation of the effectiveness of the techniques used will be carried out on completion of any remedial measures or if the complaints persist. Records of the above will be retained by site for future reference.

6.4 Means of Contact

6.4.1 The facility will be readily contactable to outside organisations and to members of the public. The site signage board (placed in a readily visible location) contains the necessary contact details for both the site operations and NRW. The company website also contains the necessary contact details for each individual site. Contact details are also made available through the local community liaison groups.

6.4.2 As part of the facility development, a community engagement plan will be fully developed, identifying all sensitive receptors and formulating a communications plan The community engagement plan will detail the complaints management and reporting procedures, to include, but not limited to:

- Immediate neighbours will be given information regarding the point and method of contact for the Facility in the event an odour has been detected or they want to discuss any activities at the Facility;
- The neighbours will be advised that any complaints / concerns will be addressed immediately following identification / notification and contingency action implemented; and
- The neighbours will be advised of any corrective action and a follow up call carried out if required.

6.5 Complaint Screening

6.5.1 As part of each odour complaint received, these will be objectively assessed against the wider environment to ensure that the source of the emission is traced back to the correct source. As discussed earlier in this OMP, it is essential that the source is correctly identified in order that mitigating measures can be applied effectively and correctly. The complaint will also be assessed against previous records to place the nature of the complaint into context.

6.5.2 If patterns in complaints emerge, community groups or individuals (subject to their agreement) will be called upon to act as an additional odour monitoring resource.

6.6 Complaint Investigation

6.6.1 In the event that odour is found to be causing a problem at the Facility, as determined and confirmed by investigation into off site complaints or during routine monitoring; measures will be taken to determine the source, and the following courses of action as detailed below shall be taken;

- Additional olfactory monitoring as detailed above to identify the extent of the plume and potential cause for the odour i.e. waste material and / or process activity;
- Examination of the operational activities at the Facility at the time of the odour complaint or odour identification;
- Examination of the meteorological conditions at the time of the complaint or odour identification;
- Carry out a review of the operational procedure and process controls and instigate any control measures immediately following identification of the problem; and
- Further olfactory monitoring will be carried out to ensure the issue has been addressed and to monitor the effectiveness of any control measures undertaken.

6.6.2 It is the operator's experience that complaints submitted to regulatory authorities can be made long after the actual odour event or delayed in their relay to the Permit holder for action, thereby making some investigations difficult due to the often transitory nature of odour or changing meteorological conditions. All complaints will be investigated, however, direct calls to site from complainants will allow for an immediate response and review.

6.7 Contingency and Emergency Plans

6.7.1 A contingency plan exists as part of the proposed alternative arrangements for the disposal and treatment of wastes should plant become inoperative in full or part for any significant length of time. These arrangements are not repeated in this section which considers contingencies relating to odour only.

6.7.2 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 as detailed below shall be taken.

Malodorous Waste

6.7.3 It is deemed unlikely that the proposed wastes will be malodourous 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 (ideally within 24 hours) and in any case no longer than 72 hours. The acceptance of the specific waste type will be put on hold pending further investigations.

6.8 Abnormal Events

6.8.1 The OMP assumes that the facility will be running under expected operational conditions. There are however a number of circumstances which that could result in an odorous emission from the site if not appropriately considered in advance.

Temperature Inversions

6.8.2 The conditions that can facilitate a temperature inversion (warm odorous air trapped beneath a layer of cold air under still conditions) can be predicted by simple regard to weather forecasts and/or the site meteorological data. If such conditions look possible, particular scrutiny will be given to ensuring that doors remain open for the minimal duration required. Olfactory monitoring (detailed in Section 6.3 above) will focus on the down-flow boundaries of the site to monitor for the early signs of low level odour movement.

Strong Winds

6.8.3 Wind pressure effects on the building from strong winds can induce positive pressure on the upwind side of a building and negative pressure on the downwind side.

6.8.4 The facility design will ensure the integrity of the building is maintained in all weather conditions. The external skin of the building is likely to comprise of a proprietary steel cladding construction with all joints and edges sealed by fasteners or other sealants where required for weather-proofing purposes. All openings for personnel access and egress will be provided with doors and all other openings for vehicular access will be provided with powered doors where regular/frequent access is required.

6.8.5 All penetrations to the building for process plant or mechanical and electrical services will also be sealed for weather-proofing and this will also prevent potential fugitive odour release via these pathways.

6.8.6 Daily visual inspection of the infrastructure will be undertaken and recorded. Additional inspection for damage resulting from high wind events will also be undertaken and contingency actions identified below considered should high wind conditions result in escape of likely escape of significant odours.

Snow / Ice

6.8.7 Severe cold weather may result in disruption to waste deliveries and removal of materials from site. Disruption to collection rounds may result in waste delivered to site that has been stored at the point of production for longer than anticipated. However the corresponding colder temperatures are likely to compensate for the increased storage time and result in waste with similar odour generation potential as would normally be expected. Inability to remove processed waste from site as a result of severe weather conditions is likely to coincide with the inability to deliver waste to the site. As a result the most likely scenario is a short term need to store processed waste. The storage plan for doing this is detailed in the tables below.

Hot Conditions

6.8.8 The warmer the waste the greater the potential to generate odour therefore an increase in ambient air temperature may result in increased odour from incoming wastes and wastes stored in the building. Daily inspections will be undertaken of the waste stored to ensure waste delivered to the site is processed as soon as practical and stockpiles of waste awaiting treatment are kept to an operational minimum. During prolonged periods of hot weather inspection frequency will be increased, the surface area of stored waste will be kept to a minimum and if any fixed dust/odour suppression sprays are installed, consideration may also be given to siting localised spray suppression on stored waste.

Power Failures

6.8.9 Power failures can have a negative impact on the operation of power doors and spray systems. In the event of a power cut notification will be completed and submitted to NRW. This will record the duration of the power failure, and if applicable, the management systems that were non-operational. If the power cut is attributed to a problem with the national supply, then the supplier will be notified as soon as possible. If the problem relates to issues with the electrical supply on the site premises, then a suitably qualified contractor will be brought onto site without delay to make necessary repairs or make appropriate replacements to relevant equipment.

6.8.10 Contingency actions for the both power failure and plant breakdown are identified in Table 6.

Table 6. Contingency Action Plan

ISSUE	PERIOD	MITIGATION PLAN
Facility not available as the delivery location. E.g. complete power failure / storage capacity full. Actions for waste deliveries	1 day	Direct deliver to alternative facility. Address mechanical failure issue
	Up to 72 hours	As above
	1 week	As above
	1 month	As above
	3 months or longer	Identify alternative long term delivery point – potentially temporary transfer station.
Facility not available as the delivery location E.g. complete power failure / storage capacity full. Actions for waste already on site	1 day	Contain waste on site within facility. i.e. delivery doors closed, remove processed wastes. Address mechanical failure
	Up to 48 hours	As above Risk assess odour generation and impact resulting from removal of waste compared to anticipated recommencement of operations.
	Up to 72 hours	Direct deliver to alternative facility. Address mechanical failure issue
	1 week / month	As above
	3 months or longer	Identify alternative long term delivery point.

ISSUE	PERIOD	MITIGATION PLAN
Facility available as delivery site but not for processing waste e.g. failure of mechanical sorting equipment	1 day – 3 days	Receive waste and store in building, capacity for storage of 5 days-worth of waste but limited to 3 days retention. Address mechanical failure issue
	1 month	Implement Medium term solution i.e. transfer to 3rd party for treatment and/or Transfer to other permitted facility.
	3 months or longer	Prioritise replacement of mechanical equipment to mitigate scale of impact
Off-taker not available for processed recyclate or shredded materials	1 day	Store material at facility
	Up to 72 hours	Store material utilising waste reception area
	1 week	Store material utilising waste reception area – does not apply to fines which will still be removed no later than 72 hours after previous batch
	1 month	Implement Medium term solution i.e. transfer to 3rd party for treatment, storage.
	3 months or longer	Implement Long term solution i.e. establish new off-taker.

Implementation of the Contingency Plan and/or Emergency Plan

6.8.11 Unscheduled unavailability should only take place due to unscheduled maintenance, emergency situations and for Health and Safety reasons such as a fire at the site. In such cases the plant staff will initially inform the plant manager who will in turn inform service managers, the Authority and NRW. Site staff will implement measures to store or divert wastes as required.

Operator's Experience with contingency/emergency situations

6.8.12 The operator is experienced in developing contingency plans for other long-term contracts which have worked effectively on previous occasions.

6.8.13 The operator has a policy of continuous review of emergency and contingency procedures and this has allowed experience from this incident to be used to improve procedures across the operator's operations.

6.8.14 The operator's experience in operating a significant number of waste facilities, together with managing complex long-term contracts offering similar services, means that the operator is able to offer the benefit of experience in and knowledge of logistical planning to ensure that service continues effectively with minimal disruption.

Review and Update of Contingency and Emergency Plans

6.8.15 The Contingency Plan and Emergency Plan will be reviewed following any incident where they have had to be followed. They will be updated as necessary with any lessons learned.

6.9 Records and Reviews

6.9.1 A daily record relating to the management and monitoring of odour will be maintained. It will include the following details:

- The results of inspections and olfactory monitoring carried out by installation personnel;
- Weather conditions including atmospheric pressure, wind speed and wind direction;
- Problems including date, time, duration, prevailing weather conditions and cause of the problem;
- Complaints received including address of complainant; and
- Details of the corrective action taken, and any subsequent changes to operational procedures.

6.9.2 The Odour Management Plan will be reviewed on an annual basis with the scheduled review of the Site Management System (SMS) or with every major decrease, or alteration to the odour generated at site (i.e. a change to odour source term, pathways or receptors).