TerraConsult

February 2017
Report No 2858/R/002/1

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: February 2017

Prepared for:

Gwynedd Skip & Plant Hire Ltd
Lon Hen Felin
Cibyn Industrial Estate
Caernarfon
Gwynedd
LL55 2BD

Telephone: 01286 677481
Facsimile: 01286 678873

Prepared by:

TerraConsult Ltd
Bold Business Centre
Bold Lane
Sutton
St. Helens
WA9 4TX

Telephone: 01925 291111
Facsimile: 01925 291191
Email: mailbox@terraconsult.co.uk

CONTENTS

.

LIST OF TABLES

DRAWINGS

APPENDICES

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 manual treatment external to the operations building. As part of these changes, the Operator intends to produce Refuse Derived Fuel (RDF) from the residual non-recyclates which are currently transferred from site for disposal in landfill.

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 generate RDF from any appropriate non-recyclable materials generated by this process as opposed to transferring from site to landfill which is the current procedure.

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

February 2017
Report No 2858/R/003-1

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: February 2017

Prepared for:

Gwynedd Skip & Plant Hire Limited
Lon Hen Felin
Cibyn Industrial Estate
Caernarfon
Gwynedd
LL55 2BD

Telephone: 01286 677481
Facsimile: 01286 678873

Prepared by:

TerraConsult Ltd
Bold Business Centre
Bold Lane
Sutton
St. Helens
WA9 4TX

Telephone: 01925 291111
Facsimile: 01925 291191
Email: mailbox@terraconsult.co.uk

CONTENTS

DRAWINGS

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 produce Refuse Derived Fuel (RDF) from the residual MSW remaining at the end of this process.

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' 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 The storage capacity for the processed and baled RDF 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. 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 RDF 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) – the RDF has been treated to remove organic fines and the majority of moisture, and Gwynedd Skip Hire operate a 'first in, first out' policy to ensure that all wastes identified are not stored longer than necessary. MSW feedstocks 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 the RDF or other 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 (including RDF) 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 RDF 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 RDF	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 Fox	01286 674280	a.fox@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