

FUGITIVE EMISSIONS RISK ASSESSMENT AND MANAGEMENT PLAN

1.0 Introduction

- 1.1 A risk assessment has been undertaken to determine if the fugitive emissions anticipated from the operational activities may have an effect on any sensitive receptors located close to the proposed Cardiff Waste Management Resource Centre.
- 1.2 Risks have been considered during the operational phases of both the proposed Hazardous Waste Transfer Station Installation Activity and Non-Hazardous Waste Transfer Station Operation.
- 1.3 **Table 1** includes a list of the receptors that have been identified through a desktop assessment of the locality.

Table 1: Identified potential receptors within 1000m of the facility.

Receptor	Approximate distance from the operational area	Direction from the facility
Commercial/industrial Properties	Adjacent up to 1000m	All Directions
Network Rail operated mainline railway	Adjacent	N
Cardiff HWRC	220m	S
Residential Areas of Rumney	50m	N
Residential Areas of Pengam	825m	W
Residential Areas of Tremorfa	990m	SW
Parc Tredelerch	40m	W
Rumney Hill Gardens	860m	NW
Allotments	490m	NE
Rhymney River	590m	W, SW
Rhosog Fach Reen	235m	S, SE

- 1.4 The assessment of risks from the facility arising from fugitive emissions have been considered with reference to the following guidance documents:
- H1 Environmental Risk Assessment Part 1: Simple assessment of environmental risk for accidents, odour, noise and fugitive emissions.

2.0 Site Setting

- 2.1 The facility is located c. 3.7km northeast of Cardiff city centre, to the south of Rumney in the County of Cardiff as illustrated on **Drawing Reference Number BF5023/09/01**. The site is approximately centred at National Grid Reference: ST 22019 78619. The area surrounding the proposed site area have a long and established agricultural, residential and transport infrastructure history with the first residential developments commencing between 1919-1920 and the mainline railway present since 1881.
- 2.2 The site is accessed via an existing tarmacked road that junctions with Lamby Way located to the south of the site. Lamby Way is ultimately accessed from the A4232 which connects the site to the M4.

- 2.3 Currently, the site largely comprises of undeveloped open areas comprising of vegetated areas. The land surrounding the site is mainly comprised of an industrial estate and railway lines (to the north) which consists of the Network Rail operated mainline railway between Cardiff and London Paddington. Parc Tredelerch Lake, the Rhymney River are located to the east of the proposed site and the Rhosog Fach Reen is located to the south. In addition to this, residential areas of Rhymney are situated to the north. Relevant receptors are included in **Table 1** above and visually depicted in **Drawing Reference Number BF5023/09/05**.
- 2.4 The nearest residential receptors to the site are located c. 50m north of the site and extend northwards from the northern side of the mainline railway.
- 2.5 The site is secured by security fencing, CCTV and lockable security gates which are kept secure outside of operational hours.
- 2.6 The site is located within 1km of four Sites of Scientific Interest (SSSIs); Gwent Levels, Rumney Quarry, Rumney River Section and the Severn Estuary, with the Severn Estuary; designated a Ramsar Site, a Special Area of Conservation (SAC) and a Special Protection Area (SPA), located c.1km to the south and east-southeast of the proposed site boundary. No other statutory sites are located within 1km of the proposed site.
- 2.7 The site is not located within 1km of a designated as AQMA (Air Quality Management Area) as stated by DEFRA. The closed AQMA Stephenson Court AQMA – Cardiff City Council) is located c.3km to the southwest of the proposed site.
- 2.8 A review of dominant wind directions indicate that the prevailing wind blows in from the West/West-Southwest
- 2.9 The site is not located within a Nitrate Vulnerable Zone (NVZ) as designated by DEFRA and Natural Resources Wales.
- 2.10 Risks have been considered during the operational phases of both the Hazardous Waste Transfer and the Non-Hazardous Waste Transfer Activities at Lamby Way.

3.0 Methodology

3.1 The scoring methodology employed in the H1 Guidance is used as a framework for assessing the risk from various scenarios identified. The scoring system attributes a nominal score to the likelihood and consequence of an identified scenario, and then uses a matrix to identify whether the risk is acceptable. The scoring system is outlined below:

Likelihood categories

Category	Description	Score
Extremely unlikely	Incident occurs between once per 100 years and once every 1000 years	1
Very unlikely	Incident occurs between once per 50 years and once every 100 years	2
Unlikely	Incident occurs between once per 10 years and once every 50 years	3
Somewhat unlikely	Incident occurs between once per 5 years and once every 10 years	4
Fairly probable	Incident occurs between once per year and once every 5 years	5
Probable	Incident occurs at least once per year	6

Consequence categories

Category	Description	Score
Minor	<ul style="list-style-type: none"> nuisance on site only (no off-site effects) no outside complaint 	1
Noticeable	<ul style="list-style-type: none"> noticeable nuisance off-site minor breach of Permitted emission limits, but no environmental harm one or two complaints from the public 	2
Significant	<ul style="list-style-type: none"> severe and sustained nuisance major breach of Permitted emissions limits with possibility of prosecution numerous public complaints 	3
Severe	<ul style="list-style-type: none"> hospital treatment required public warning and off-site emergency plan invoked hazardous substance releases into water course with ½ mile effect 	4
Major	<ul style="list-style-type: none"> evacuation of local populace temporary disabling and hospitalisation serious toxic effect on beneficial or protected species widespread but not persistent damage to land significant fish kill over 5 mile range 	5
Catastrophic	<ul style="list-style-type: none"> major airborne release with serious offsite effects site shutdown serious contamination of groundwater or watercourse with extensive loss of aquatic life 	6

Risk assessment matrix

Likelihood	Consequence					
	Minor	Noticeable	Significant	Severe	Major	Catastrophic
Extremely unlikely	1	2	3	4	5	6
Very unlikely	2	4	6	8	10	12
Unlikely	3	6	9	12	15	18
Somewhat unlikely	4	8	12	16	20	24
Fairly probable	5	10	15	20	25	30
Probable	6	12	18	24	32	36

Risk scores

Magnitude of risk	Score
Acceptable	6 or less
Acceptable if reduced as much as reasonably practical	8 to 12
Unacceptable	15 or more

4.0 Hazard Identification and Risk Assessment

4.1 **Table 2** provides an assessment of the potential fugitive emissions arising from site operations and an outline of the management procedures in place to control the risks to an acceptable level.

Table 2: Fugitive emissions risk assessment matrix

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
Dust emissions from vehicle movements; and Particulates from waste storage and treatment	Airborne.	Residential properties to the north, east and east northeast associated with Rumney as well as commercial & industrial properties within 1000m of the site.	Somewhat unlikely	4	Noticeable	2	8	Acceptable if reduced as much as reasonably practical.	<ol style="list-style-type: none"> 1. All vehicles hauling waste or re-packaged materials will be sheeted/netted or enclosed. 2. Vehicles will be supervised during loading to ensure that they are not overfilled. 3. Regular sweeping of the hard surfaces will ensure that dust release from the site is minimised. 4. Hardstanding installed on trafficked routes to prevent tracking of dusts on vehicles. The main entrance way comprises concrete. 5. Wastes will arrive on site within packaging and/or sealed containers and will leave the site packaged which will severely reduce the potential for dust emissions. 6. Daily routine inspection of the site for aerial emissions will be performed as part of the management procedures. 7. No residential receptors are located downwind of the proposed site.

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
Mud and debris from vehicle movements.	Tracked by vehicles and washed by rainfall as suspended solids.	Residential properties to the north, east and east northeast associated with Rumney as well as commercial & industrial properties within 1000m of the site. Fugitive emissions to surrounding land.	Somewhat unlikely	4	Minor	1	4	Acceptable	<ol style="list-style-type: none"> 1. Vehicles will be supervised during loading to ensure that they are not overfilled. 2. All vehicles hauling waste will be sheeted or fully enclosed. 3. Vehicles will be checked for mud prior to being dispatched. 4. All haul routes have sealed surfaces either concrete or tarmac. Other areas of operations are covered with hardstanding and all treatment is conducted upon impermeable concrete surfacing. 5. Daily inspection of the site for mud and debris will be performed as part of the management procedures. 6. A road sweeper will be used to clean affected haul routes, in response to the identification of dust/litter build up by the Technically Competent Manager (or Nominated Deputy) during daily site inspections.

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
Scavenging animals and birds.	Airborne and over land.	Residential properties to the north, east and east northeast associated with Rumney as well as commercial & industrial properties within 1000m of the site.	Somewhat unlikely	4	Minor	1	4	Acceptable	<ol style="list-style-type: none"> 1. Waste types accepted for processing are generally not of the type that could attract scavengers. 2. All vehicles hauling waste will be sheeted/netted or fully enclosed. 3. Strict compliance with waste acceptance procedures will be required at all times. 4. Good housekeeping will be promoted in order to keep storage areas as clean as possible. 5. Daily inspection of the site for scavenging animals and birds will be performed as part of the management procedures. 6. Regular visits from a registered pest controller can be programmed, if required.

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
Litter from waste transport vehicles; Litter from waste storage area; Litter from weighbridge office	Airborne.	Residential properties to the north, east and east northeast associated with Rumney as well as commercial & industrial properties within 1000m of the site.	Somewhat unlikely	4	Minor	1	4	Acceptable	<ol style="list-style-type: none"> 1. Types of waste accepted are unlikely to lead to litter issues. 2. All vehicles hauling waste will be sheeted/netted or enclosed. 3. Non-conforming wastes will be hand or mechanically extracted and stored within a concrete bunker or enclosed container. 4. Strict compliance with waste acceptance procedures will be required at all times. 5. The site operator will maintain site in a clean and tidy manner by a combination of appropriate site management practices such as inspections with subsequent regular sweeping and litter collection. 6. Good housekeeping will be promoted in order to keep storage areas as clean as possible. 7. Daily inspection of the site for windblown fraction will be performed as part of the management procedures including the site boundary fence (where necessary).

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
Noise and vibration.	Noise through the air and vibration through the ground.	Residential properties to the north, east and east northeast associated with Rumney as well as commercial & industrial properties within 1000m of the site.	Somewhat unlikely	4	Minor	1	4	Acceptable	<ol style="list-style-type: none"> 1. All machinery used on site will be operated and maintained in accordance with manufacturers' recommendations; 2. Site activities will be restricted to sociable hours when background noise levels are appreciably higher; 3. Any static processing plant noise sources will be housed within appropriate sound proofed cladding. 4. Site located within established industrial area. Noise levels will not be appreciably higher than those currently experienced at the site. 5. Further noise mitigation measures can be applied if found to be necessary.

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
<p>Infestations in incoming waste loads; and</p> <p>Infestations in stored waste.</p>	Airborne and overland.	Residential properties to the north, east and east northeast associated with Rumney as well as commercial & industrial properties within 1000m of the site.	Somewhat Unlikely	4	Minor	1	4	Acceptable	<ol style="list-style-type: none"> 1. Waste types accepted for processing are generally not of the type that could contain infestations. 2. Incoming loads of waste will be visually checked at either the site entrance/weighbridge or during off-loading in the recycling area. Infested wastes will be rejected or stored in enclosed receptacles in the quarantine area. 3. First in, first out principles will be employed to prevent excessive waste storage times. 4. Daily inspection of the site for infestations will be performed as part of the management procedures 5. Regular visits from a registered pest controller can be programmed, if required.

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
Odour	Airborne.	Residential properties to the north, east and east northeast associated with Rumney as well as commercial & industrial properties within 1000m of the site.	Somewhat unlikely	4	Noticeable	2	8	Acceptable if reduced as much as reasonably practical	<ol style="list-style-type: none"> 1. Waste types accepted for storage, treatment, re-packaging and onward transfer arrive in packaging and/or sealed containers and are stored within internal storage bays. This arrangement prevents the release of potential odours from accepted wastes. 2. All vehicles hauling waste will be sheeted or fully enclosed. 3. Incoming loads of waste will be visually checked at either the site entrance/weighbridge or during off-loading in the recycling area. Odorous wastes will be rejected or stored in the quarantine area and removed as early as possible. 4. First in, first out principles will be employed to prevent excessive waste storage times. 5. Daily olfactory of the site for odour will be performed (as appropriate) as part of the management procedures.

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
Contaminated Surface Water	Run off from storage areas.	Infiltration to surrounding land. Groundwater. Parc Tredelerch, Rhymney River and Rhosog Fach Reen.	Very Unlikely	2	Significant	3	6	Acceptable	<ol style="list-style-type: none"> 1. Materials will arrive, be stored and be transferred off-site within packaging. During storage at the proposed site, all waste will be located within storage bays isolated from the site wide Sustainable Drainage System. Each storage bag will be equipped with a dedicated drainage system and isolated storage tank into which any liquid generated within the storage bay will be collected and subsequently tankered off-site for treatment and/or disposal and a suitable licenced facility. 2. Surface water run-off collected within Sustainable Drainage System servicing the external site areas will pass through a series of fuel interceptors prior to discharge into public surface water drain. 3. The Sustainable Drainage System servicing the external areas of the site is fitted with a flow control valve at the consented discharge point which will be shut in the event if there is a risk of firewater being discharged from the site. 4. All concreted areas will be maintained in a safe condition to provide impervious surface that facilitates everyday cleaning and adequate storage. 5. Highest risk operations will be undertaken over impermeable surfacing with dedicated drainage storage tanks. 6. Spill kits, absorbent granules are available for immediate deployment. 7. Surfaces will be inspected and maintained at regular intervals and any defects or damage will be repaired. 8. Good housekeeping will be promoted in order to keep storage areas as clean as possible.

5.0 Conclusion

- 5.1 It is concluded that the proposed Waste Transfer Station activities, and associated emissions, are unlikely to have any effect on the receptors within 1km of the proposed waste activity site boundary.
- 5.2 Fugitive emissions, incorporating the control measures stated in the above table, are therefore not considered to be a risk from this site.