

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 waste facility.
- 1.2 Table 1 includes a list of the receptors that have been identified through a desk top assessment of the locality.

Table 1: Identified potential receptors within 500m of the facility

Receptor	Approximate distance from the facility	Direction from the facility
Residential Property "Ty Hen" (unoccupied)	260m	NW
Fuel Station	300m	N
Residential property (Awelfan)	330m	NW
Small tributary of the Afon-y-Bantwen	280m	SE
Residential Property "Llety-Dau-Filwr"	290m	SE
Residential Properties "Bronhafod", "Falcondale" and "Avalon"	305m	E
Coedgain Farm	420m	N
Unnamed Ponds	450m	N
Unnamed tributary of the Nant y Pibwr	465m	NW/N

- 1.3 The assessment of risks from the facility arising from fugitive emissions have been considered with reference to the following guidance documents:
- PPG 2- Above Ground Oil Storage Tanks
 - PPG26 - Storage and handling of drums and intermediate bulk containers; and
 - General Natural Resources Wales Guidance

2.0 Site Setting

- 2.1 The site under consideration is Nantycaws Residual Waste Material Recycling facility (RWMRF) Materials Recycling Facility and Nantycaws 'Clean' Materials Recycling Facility located at Llanddarog Road, Nantycaws, Carmarthen SA32 8BG. The two facilities are situated adjacent to one another within the wider Nantycaws Waste Management site. The National Grid Reference (NGR) is 247312, 217627.

- 2.2 The site consists of previously undeveloped land that was utilised for agricultural purposes. In recent years, the area to the west of the site has been utilised as a temporary car park to serve the wider waste management facility and is currently occupied by the Residual Waste 'Dirty' Materials Recycling Facility (RWMRF) building. The area to the east (the area occupied by the "clean" MRF), previously consisted of rough grassland which had regenerated upon superficial soils.
- 2.3 Wastes accepted at the RWMRF are limited to inert and non-hazardous wastes (predominantly from Household, Commercial and Industrial sources), which are permitted to be treated via manual and/or mechanical sorting, separation, screening, baling, shredding, crushing, compaction and bulking of permitted wastes for the purposes of recovery or disposal. Please note, at present, crushing and shredding is not conducted at the site. Further to this, the RWMRF also accepts non-hazardous bulky and separate clinical waste bulking and transfer (clinical waste is not permitted to be utilised within the RDF process). The manufacture of RDF at the RWMRF is produced via the use of suitable materials from the mechanical processing of wastes or via the processing of other permitted wastes. The RDF feedstock is treated in order to extract recyclate from the waste stream and to improve and facilitate handling. This treatment does not directly and intentionally change the nature of the waste in a way that improves its quality as fuel. The 'Clean' MRF accepts co-mingled non-hazardous Household, Commercial and Industrial waste streams which are stored and treated (e.g. via separation, sorting, bailing and bulking) prior to onward transfer offsite further processing.
- 2.4 The land use surrounding the site is predominantly rural in nature interspersed with farm properties and small villages, as well as the busy A48 dual carriageway. The village of Nantycaws is situated c. 1.3km to the North West, with Llanddarog situated c. 2.9km to the south east. The wider site is bounded by a combination of steel palisade gates, fencing and in places landscaped hedge lines.
- 2.5 The site is not located within 1km of a European site, SSSI or Ramsar site.
- 2.6 The site is located within the administrative area of Carmarthenshire County Council. It currently has no designated AQMA's (Air Quality Management Areas) within the vicinity of the site.
- 2.7 The site is not located within a Nitrate Vulnerable Zone (NVZ) for surface and ground water and has not been designated by DEFRA and Natural Resources Wales.

2.8 Risks have been considered during the operational phases of the Materials Recycling Facilities that are situated at the site.

3.0 Methodology

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

Likelihood categories

Category	Description	Score
Extremely unlikely	Occurs less than once in a million years	1
Very unlikely	Occurs between once per million and once every 10,000 years	2
Unlikely	Occurs between once per 10,000 years and once every 100 years	3
Somewhat unlikely	Occurs between once per hundred years and once every 10 years	4
Fairly probable	Occurs between once per 10 years and once per year	5
Probable	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 	4

	<ul style="list-style-type: none"> hazardous substance releases into water course with ½ mile effect 	
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 below 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 processing.	Airborne	Properties to the south, east and north west, wider Nantycaws waste management facility and agricultural land within 500m of the site.	Very unlikely	2	Noticeable	2	4	Acceptable.	<ol style="list-style-type: none"> 1. All vehicles hauling waste will be sheeted or enclosed. 2. Vehicles will be supervised during loading to ensure that they are not overfilled. 3. All site vehicles are fitted with silenced exhausts, venting upwards. 4. Hardstanding installed to prevent tracking of dusts on vehicles. 5. Majority of wastes stored are not major generators of particulate emissions. 6. All MRF processes will occur internally. Residual waste transferred between the 'clean' MRF and RWMRF will be carried out via enclosed conveyor. 7. The waste streams will be generally non dust generating, however, water can be used to dampen down if required particularly dusty waste streams if encountered. 8. Discharge heights from any loading operation will be kept as low as possible. 9. Daily inspection of the site for aerial emissions will be performed 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)
Mud and debris from vehicle movements.	Tracked by vehicles and washed by rainfall as suspended solids.	Properties to the south, east and north west, wider Nantycaws waste management facility and agricultural land within 500m of the site.	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. Jet wash facilities will be available if necessary and undertaken in an appropriate external location. 4. Vehicles will be checked for mud prior to being dispatched. 5. All haul routes have impermeable hardstanding surfaces, either concrete or bituminous, or semi permeable aggregate. 6. A cattle grid is located at the site exit, further minimising the risk of mud and debris being carried onto public highways. 7. Daily inspection of the site for mud and debris will be performed as part of the management procedures. 8. A road sweeper will be used to clean affected haul routes, where necessary.

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.	Properties to the south, east and north west, wider Nantycaws waste management facility and agricultural land within 500m of the site.	Very unlikely	2	Minor	1	2	Acceptable	<ol style="list-style-type: none"> 1. The majority of waste is stored within a building, with doors that only open for access/egress. Some specified waste (predominantly inert materials) and wastes covered by an S2 Exemption (baled recycle) stored within an external open fronted building, however these materials have limited potential to attract scavenging animals and birds. 2. All vehicles hauling waste will be sheeted 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 waste processing; and Litter from reception/ office buildings.	Airborne.	Properties to the south, east and north west, wider Nantycaws waste management facility and agricultural land within 500m of the site.	Very unlikely	2	Minor	1	2	Acceptable	<ol style="list-style-type: none"> 1. All vehicles hauling waste will be sheeted or enclosed. 2. The majority of waste will be stored within a building; therefore types of materials with windblown elements will be stored within a secure fashion. Some baled recycle and "specified wastes" (predominantly inert waste) will be stored externally within an open fronted building in line with the Permit/ S2 Exemption attributed to the site. However, wastes stored within the open fronted building will have limited potential to become windblown. 3. All waste treatment activities are conducted internally. 4. The residual waste/recyclable conveyor belt system between the 'clean' MRF and RWMRF will be sufficiently covered to reduce the issue of windblown litter and general fugitive emissions. 5. Non-conforming wastes will be hand or mechanically extracted and stored within an enclosed receptacle. 6. Strict compliance with waste acceptance procedures will be required at all times. 7. Good housekeeping will be promoted in order to keep storage areas as clean as possible. 8. Daily inspection of the site for windblown fraction will be performed 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)
Noise and vibration.	Noise through the air and vibration through the ground.	Properties to the south, east and north west, wider Nantycaws waste management facility and agricultural land within 500m of the site.	Extremely unlikely	1	Noticeable	2	2	Acceptable	<ol style="list-style-type: none"> 1. All machinery used on site will be operated and maintained in accordance with manufacturers' recommendations; 2. Waste processing will take place inside a building where the doors only open to allow access/egress. 3. Site plant equipment is fitted with manufacturers silencing equipment. 4. Plant will be maintained in accordance with manufacturer's recommendations. 5. Main static process plant contained within appropriate attenuation housing. 6. Site located within a rural setting distant from any sensitive receptors. Waste management operations in this area have been long established. 7. The site has its own dedicated access road leading from the A48, which does not directly pass any potentially sensitive receptors. 8. Speed limits are imposed for vehicles travelling on site. 9. Further noise mitigation measures will 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.	Properties to the south, east and north west, wider Nantycaws waste management facility and agricultural land within 500m of the site.	Unlikely	3	Minor	1	3	Acceptable	<ol style="list-style-type: none"> 1. Incoming loads of waste will be visually checked at either the site entrance or during off-loading in the storage areas. Infested wastes will be rejected or stored in enclosed receptacles and await inspection by Natural Resources Wales. 2. All waste materials with the potential for becoming infested will be stored within an appropriate location, within a building. 3. Storage times will also be strictly limited. 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)
Odours.	Airborne.	Properties to the south, east and north west, wider Nantycaws waste management facility and agricultural land within 500m of the site.	Unlikely	3	Noticeable	2	6	Acceptable	<ol style="list-style-type: none"> 1. All vehicles hauling waste will be sheeted or fully enclosed; 2. All waste with the potential to become odourous will be stored within a building. 3. Particularly malodourous wastes will be removed from site immediately and sent directly to landfill. 4. Accepted waste types will be no more odorous than the waste types accepted at the adjacent operational landfill. 5. The waste reception floor will be swept and cleaned at the end of each working day. 6. Daily inspection of the site for odour will be performed as part of the management procedures. 7. Odour masking agents can be used, if necessary. 8. An Odour Management Plan has been prepared for the site and is included within Appendix 7.

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 and processing areas.	Groundwater and Surface water courses Vertical Seepage	Somewhat Unlikely	4	Significant	3	12	Acceptable if reduced as much as reasonably practical.	<ol style="list-style-type: none"> 1. All waste processing and storage areas are sited on impermeable hardstanding with sealed drainage. There will be no point source, or fugitive emissions that will cause pollution. 2. Drainage from internal RWMRF processing areas will be directed towards a sealed sump. Drainage in the Clean MRF is to a low point and non-hazardous liquid is removed utilising absorbent materials. 3. All external manoeuvring areas surface waters will be drained via oil interceptors to existing surface water outlets. 4. Spill kits and absorbent granules are available throughout the site ready for immediate deployment. 5. Good housekeeping will be promoted in order to keep storage areas as clean as possible. 6. Impermeable pavements and infrastructure will be inspected regularly. 7. Daily inspection of the site for spillages / leaks etc. will be performed.

Hazard	Pathway	Receptor	Likelihood	Score	Consequence	Score	Overall score	Acceptability of risk	Justification for acceptability (description of risk management measures)
Fire	Airborne – transport of smoke	Properties to the south, east and north west, wider Nantycaws waste management facility and agricultural land within 500m of the site.	Unlikely	3	Severe	4	12	Acceptable if reduced as much as reasonably practical.	<ol style="list-style-type: none"> 1. Fire prevention measures will be employed at the site as part of an Accident Management Plan. 2. No waste materials will be burned on site. 3. Fire fighting equipment will be made available if necessary. 4. A Fire Prevention and Mitigation Plan is included within Appendix 10, which incorporates activities at both the RWMRF and 'Clean' MRF.

5.0 Conclusion

- 5.0.1 It is concluded that the waste facilities activities, and associated emissions, are unlikely to have any effects on the receptors within 500 metres of the waste facility boundary.

