

ENVIRONMENTAL RISK ASSESSMENT

Environmental and sustainability solutions provided to
BRYN RECYCLING LTD

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1.0 INTRODUCTION

The Environmental Risk Assessment has been produced in support of an application for a Bespoke Environmental Permit and sets out the considerations that are relevant to the recovery of inert waste material by Bryn Recycling Ltd (hereon referred to as Bryn Recycling). This document provides a full environmental risk assessment for the proposed deposit of waste for recovery at Gelliargwellt Farm, Hengoed.

Bryn Recycling propose to recover 420,000m³ of inert waste materials. The inert waste material will be permanently recovered on largely agricultural land to the west of the Material Recycling Facility (MRF) at Gelliargwellt Farm. This bespoke environmental permit application seeks to enable Bryn Recycling to use this waste material to extend the materials processing and storage yard at the existing Materials Recycling Facility and for the creation of a screening bund surrounding the southern and southwestern boundaries of this storage yard. These operations will enable higher recycling rates from the material being received at the MRF.

This document has been produced in conjunction with the following documents:

- Non-Technical Summary
- Environmental Permit Management System
- Fugitive Emissions Management Plan
- Accident Management Plan
- Dust Management Plan
- Environmental Setting & Site Design Report
- Site Condition Report
- Waste Recovery Plan

1.1 Reason for Application

The extension of the materials processing and storage yard at the existing Materials Recycling Facility and the creation of a screening bund surrounding the southern and southwestern boundaries of this storage yard would enable higher recycling rates from material being received at the MRF.

The materials that will be used within this proposed development are wastes that have been brought to site directly by small local landscaping contractors or utility companies via the MRF. These wastes will not contain any hazardous materials. The recovery of discarded material is justifiable as it diverts waste that may normally be destined for disposal at a landfill

site. Furthermore, the operations satisfy the aims of the Waste (England and Wales) Regulations 2011 by moving waste up the hierarchy.

1.2 Assessment Process

The Guidance “Risk assessments for your environmental permit” produced by the Environment Agency and DEFRA outlines a five-step process for assessing the site activity and the risk to local amenity to successfully produce an Environmental Risk Assessment:

1. Identify and consider risks for your site, and the sources of the risks.
2. Identify the receptors (people, animals, property and anything else that could be affected by the hazard) at risk from your site.
3. Identify the possible pathways from the sources of the risks to the receptors.
4. Assess risks relevant to your specific activity and check they’re acceptable and can be screened out.
5. State what you’ll do to control risks if they’re too high.

This risk assessment will identify the potential human and environmental impacts that could result from the activity of waste deposit for recovery. Risk assessments will be carried out for the following hazards:

- Odour;
- Fugitive emissions (including dust and pests);
- Noise;
- Fire;
- Surface Water Runoff; and,
- Groundwater Contamination.

Table 1 (below) presents the potential risks on site, the links between source, pathway and receptor and provides an assessment of the residual risk after the implementation of the proposed risk management strategy.

Sector Guidance Note 2.8¹ page 76, point 8, states that there should be an accident plan in place which identifies the likelihood of consequences of accidents and identifies the actions required to prevent accidents and mitigate any consequences. Assessment of potential

¹ Environment Agency. Guidance for the Recovery and Disposal of Hazardous and Non-Hazardous Waste. Sector Guidance Note S5.06

accidents at the facility and the consequential effects on sensitive receptors have been accounted for in this document.

2.0 ENVIRONMENTAL MANAGEMENT

P = Probability C = Consequence M = Magnitude

Table 1 - Environmental Risk Assessment

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
Airborne dust particulates and microorganisms during the movement, handling and deposition of waste.	Aerial dispersion	Local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m). The general public using nearby footpaths to the north and south of the site. Greenhill Primary school located 765m NE of the site. Tourist attractions such as Colliers Adventure Farm (S, 1km), Llancaiach Fawr Manor (W, 830m) and Parc Penalta (SE, 1km).	Med	Med	Med	<p>Med - Dusts and powders are not permitted waste types on this site, however, dust may arise from the movement of soils and other inert waste. There is the potential for dust exposure for people near the site. The nearest sensitive receptors are approximately 500m away.</p> <p>Potential harm inflicted by airborne dust particulates and microorganisms include respiratory issues and allergic reactions in humans due to inhalation of dust and exposure to</p>	<ul style="list-style-type: none"> The site has a Dust Management Plan (<i>BRY_B01_Dust_Management_Plan</i>) which details the preventative measures in place for reducing dust and the actions to be taken when there is a dust issue. The site will be kept clean and dust suppression will be used when required. Material will be assessed prior to receipt. Materials will be handled carefully by trained operatives. Daily site inspections. Speed limit for vehicles on site. The Site Manager will carry out a daily visual assessment of dust emission within the site and a continuous dust monitor is used to monitor dust emissions. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
						pathogenic microorganisms.		
Airborne dust particulates from the transport of waste materials.	Aerial Dispersion	Local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m). The general public using nearby footpaths to the north and south of the site. Greenhill Primary school located 765m NE of the site. Tourist attractions such as Colliers Adventure Farm (S, 1km), Llancaiach Fawr Manor (W, 830m) and Parc Penalta (SE, 1km).	Med	Low	Low	Low - Limited potential for frequent and long-term exposure for residents close to the site due to location of facility. Potential harm inflicted by airborne dust particulates and microorganisms include respiratory issues and allergic reactions in humans due to inhalation of dust and exposure to pathogenic microorganisms.	<ul style="list-style-type: none"> The site has a Dust Management Plan (<i>BRY_B01_Dust_Management_Plan</i>) which details the preventative measures in place for reducing dust and the actions to be taken when there is a dust issue. Dust generation attributable to vehicle movements will be controlled by the use of water sprinklers on the site access roads. Vehicles carrying waste to site are sheeted until the point of deposition at the quarry site. Waste carried between the MRF site and the deposit for recovery site is done so in dumper trucks which shall be dampened prior to transport if required. During dry weather action will be taken to remove dust from the road. The Site Manager will carry out a daily visual assessment of dust emission within the site and a continuous dust monitor is used to monitor dust emissions. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
Fugitive releases of litter.	Aerial dispersion or spillage.	Local wildlife in ecological receptors, such as, Coed Gelliau'r-gwellt SINC, Waun Rydd SINC, Nelson Bog SSSI, the Ancient Semi Natural Woodland to the immediate west of the site, and Parc Penalta. Local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m). The general public using nearby footpaths to the north and south of the site. Greenhill Primary school located 765m NE of the site. Tourist attractions such as Colliers Adventure Farm (S, 1km), Llancaiach Fawr Manor (W, 830m) and Parc Penalta (SE, 1km).	Low	Med	Med	Potential harm inflicted through fugitive releases of litter include nuisance, loss of amenity and danger to wildlife.	<ul style="list-style-type: none"> Waste is inspected on delivery and rejected if the waste is not of the permitted EWC code or is contaminated, as detailed in the Waste Acceptance Procedure. Daily site inspection and removal of litter. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
Waste, mud and litter on local roads caused by vehicle movements.	Spillage from waste carrying vehicles or mud from vehicle tyres.	Local drivers and nearby roads.	Med	Med	Med	Med – potential to cause a hazard on the roads, risking the safety of drivers in the area.	<ul style="list-style-type: none"> Daily site inspection and cleaning of access roads around the site as necessary. Wheel wash used to clean wheels prior to departure from site. Main road is dampened if required. 	Low
Odour during the movement, handling and deposition of waste.	Aerial dispersion	Local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m). The general public using nearby footpaths to the north and south of the site. Greenhill Primary school located 765m NE of the site. Tourist attractions such as Colliers Adventure Farm (S, 1km), Llancaiach Fawr Manor (W, 830m) and Parc Penalta (SE, 1km).	Low	Low	Low	Low – all waste being delivered on site is inert or soil waste so the odour will be low. The distance between the site and the nearest sensitive receptors mitigate the potential consequence of creating a public nuisance for the local population.	<ul style="list-style-type: none"> Daily site inspection. A detailed Waste Acceptance Procedure (BRY-OP02 Waste Acceptance) will be followed to ensure that only appropriate waste materials are accepted onto site. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
Noise and vibration from vehicle movements around site.	Aerial dispersion / ground	Local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m). The general public using nearby footpaths to the north and south of the site. Greenhill Primary school located 765m NE of the site. Tourist attractions such as Colliers Adventure Farm (S, 1km), Llancaiach Fawr Manor (W, 830m) and Parc Penalta (SE, 1km).	Low	Low	Low	Low – the equipment required to transport and handle the waste generates low noise. The distance between the site and the nearest sensitive receptors mitigate the potential consequence of creating a public nuisance for the local population.	<ul style="list-style-type: none"> Regular maintenance of plant and machinery. Works will be carried out during operational hours, 07:00 – 18:00 Monday to Friday and on Saturday between 07:00 and 13:00. 	Low
Scavenging animals and birds.	Air	Staff that work on site. Local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m). The general public using nearby footpaths to the north and south of the site. Greenhill Primary school located 765m NE of the site. Tourist attractions such as Colliers Adventure Farm (S, 1km),	Low	Low	Low	<p>Low – permitted waste types are such that they are unlikely to attract scavenging animals and birds.</p> <p>Potential harm inflicted by scavenging animals and birds include public nuisance and increased risk of zoonotic diseases transmission.</p>	<ul style="list-style-type: none"> Waste checks on delivery. Daily site inspections. As part of the whole site activities (farming, MRF and AD plant), pests are controlled. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
		Llancaiach Fawr Manor (W, 830m) and Parc Penalta (SE, 1km).						
Pests (e.g. flies)	Air	Staff that work on site. Local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m). The general public using nearby footpaths to the north and south of the site. Greenhill Primary school located 765m NE of the site. Tourist attractions such as Colliers Adventure Farm (S, 1km), Llancaiach Fawr Manor (W, 830m) and Parc Penalta (SE, 1km).	Low	Low	Low	Low – insects are unlikely to increase as the waste permitted to be brought onto site is inert general fill and so will not attract insects. Potential harm inflicted by pests like flies include public nuisance.	<ul style="list-style-type: none"> Waste checks on delivery. Daily site inspections. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
Contamination of groundwater from waste recovered.	Water	Groundwater in local area impacting environmental receptors, such as, Coed Gelliau'r-gwellt SINC, Nelson Bog SSSI and also local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m).	Low	Med	Med	Low – the bedrock beneath the site is classified as having a medium Groundwater Vulnerability and has intermediate permeability. The Superficial Aquifer is secondary undifferentiated, meaning it is only a minor aquifer. The waste permitted is also inert and non-hazardous so the risk to groundwater is low. Furthermore, the site is situated outside any Groundwater Source Protection Zones. Potential harm from this pollutant includes negatively impacting local drinking water quality and contamination of local ecological receptors such as the woodland at Coed Gelliau'r-gwellt	<ul style="list-style-type: none"> The waste storage yard extension shall have a drainage system with impermeable concrete when completed. Any surface water that may interact with the wastes is contained within the drainage system, mitigating the risk of this water percolating through the topsoil, superficial deposits and finally entering the groundwater. The site's waste acceptance procedure ensures that only non-hazardous, inert waste is accepted on site. See Hydrogeological Risk Assessment for further details. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
						SINC or the terrestrial flora of the Nelson Bog SSSI through root uptake.		
Additional surface runoff during/following movement, handling and deposit of waste.	Water	Local groundwater, local residents, visitors to the local area, and wildlife disruption in ecological receptors, such as Coed Gelliau'r-gwellt SINC and Nelson Bog SSSI.	Low	Med	Med	<p>Low - The proposed development will create surface water runoff from the extended MRF storage area. However, the extended storage area features its own surface water storage lagoon.</p> <p>Potential harm from this pollutant includes contamination of local ecological receptors such as the woodland at Coed Gelliau'r-gwellt SINC or the terrestrial flora of the Nelson Bog SSSI.</p>	<ul style="list-style-type: none"> The site's waste acceptance procedure ensures that only non-hazardous, inert waste is accepted on site. The site has a drainage system in place and the storage area is constructed with an impermeable concrete base. Any surface water that may interact with the wastes is contained within the drainage system, mitigating the risk of this water entering waterways/groundwater without prior treatment. To combat the runoff from the hillslope, prior to the import of material under the Waste Recovery permit a new appropriately sized southern surface water attenuation lagoon will be constructed with appropriately placed temporary drainage channels directing surface water runoff from the works area to the lagoon. The 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
							location and number of these channels will vary as the works progress. <ul style="list-style-type: none"> This information is presented in more detail in the Construction Environmental Management Plan. See Hydrogeological Risk Assessment for further details. 	
Flooding of site during deposit/following movement, handling and deposit of waste.	Water	Neighbouring sites (Bryn Aggregates, Bryn Power etc) and environmental receptors, such as Coed Gelliau'r-gwellt SINC and Nelson Bog SSSI.	Low	Low	Low	Low – the site is in a flood zone 1 so the risk of flooding is low. The site is also located on a hill so is unlikely to flood. The permitted waste is non-hazardous so would not cause pollution if washed offsite. Potential harm from this pollutant includes disruption for neighbouring facilities and contamination of ecological receptors such as the woodland at Coed Gelliau'r-gwellt SINC or the terrestrial flora of the Nelson Bog SSSI.	<ul style="list-style-type: none"> Ensure drainage system is properly maintained. Further information is presented in the Construction Environmental Management Plan. See Hydrogeological Risk Assessment for further details. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
Fire on site	Aerial dispersion	Staff, neighbouring sites (Bryn Aggregates, Bryn Power etc) and local residents located in Pen y Bryn (E, 1.2km) and Gelligaer (NE, 650m).	Med	Med	Low	<p>Med - Fires can be deliberate or accidental however the waste being deposited is largely inert and does not burn.</p> <p>Potential harm from fires on site include disruption for neighbouring facilities, damage to local infrastructure if the fire spreads, and threat of serious injury or death for any local human receptors.</p>	<ul style="list-style-type: none"> Follow manufacturer guidance and instructions on plant maintenance. Manually controlled mains water dousing system. Site inspections to identify faulty equipment and other fire hazards. 	Low
P = Possibility C = Consequence M = Magnitude								