# Environmental risk assessment to include the storage, treatment and recycling of inert and non-hazardous waste

**Standard Facility:** Waste Operation: Storage, treatment and recycling of inert and non-hazardous waste

**Location:** Minffordd Quarry / Aggregate Recycling, Penrhyndraeth, Porthmadog, LL48 6HP

**Location of environmentally sensitive sites (km / m):** Coedydd Derw a Safleoedd Ystlumod Meirion / Meirionnydd Oakwoods and Bat Sites SSSI & SAC and Ysby ty Bron y Garth SSSI (40m south), Morfa Harlech Nature Reserve (1.25km south east), Glaslyn SSSI & SAC (40m south)

**Risk assessment carried out by:** MPG

**Date:** 20-Jan-25

| Data and information | | | | Judgement | | | | Action (by permitting) | |
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| **Receptor** | **Source** | **Harm** | **Pathway** | **Probability of exposure** | **Consequence** | **Magnitude of risk** | **Justification for magnitude** | **Risk management** | **Residual risk** |
| **What is at risk? What do I wish to protect?** | **What is the agent or process with potential to cause harm?** | **What are the harmful consequences if things go wrong?** | **How might the receptor come into contact with the source?** | **How likely is this contact?** | **How severe will the consequences be if this occurs?** | **What is the overall magnitude of the risk?** | **On what did I base my judgement?** | **How can I best manage the risk to reduce the magnitude?** | **What is the magnitude of the risk after management? (This residual risk will be controlled by Compliance Assessment).** |
| Local human population | Releases of particulate matter (dusts) and micro-organisms (bioaerosols). | Harm to human health - respiratory irritation and illness. | Air transport then inhalation. | Medium | Medium | **Medium** | Permitted waste types do not include dusts, powders or loose fibres but the treatment activities has the potential to produce particulate matter so a medium risk is estimated. | Daily visual dust monitoring, pre-emptive monitoring of weather forecasts, internal roads etc. when deemed necessary. Suspension of operations if daily dust monitoring determines unacceptable dust levels at the site boundary. Maintenance and cleaning of plant and equipment in accordance with manufacturer guidelines. The Site is not within an AQMA. Dampen down stockpiles if necessary. A wheelwash is installed to prevent any material being tracked into or out of the site. Site is within boundaries of active quarry, any mobilised dust from The Site may be deposited in quarry where it would have no impact, or, the quarry itself is likely to be a much larger source of dust, meaning the addition of the aggregate recycling would have a negligible additional impact. | **Low** |
| Local human population | As above | Nuisance - dust on cars, clothing etc. | Air transport then deposition | Medium | Low | **Low** | Nearest residential property at the entrance to the wider site, not in path of prevailing wind direction. | As above. | **Low** |
| Local human population and the environment. | Climate Change | Potential for increased likelihood of dust generation. | Air transport then inhalation / deposition. | Low | Medium | **Medium** | Summer daily maximum temperature may be around 6°C higher compared to average summer temperatures now. Drier summers, potentially up to 34% less rain than now. | As above. Proposed risk management / mitigation measures are considered sufficient to allow for changes due to climate change. No special mitigation required. | **Very low** |
| Local human population, livestock and wildlife. | Litter | Nuisance, loss of amenity and harm to animal health | Air transport and / or spillage | Medium | Medium | **Medium** | Local residents often sensitive to litter, however permitted waste types have low litter potential. Protected species and habitats to the south of the main road, within the river and on the banks of the river. | As above. Waste types very unlikely to produce litter. Any litter would be cleared as needed. Potential litter automatically removed and transported off site. Boundary checks will be carried out as part of site daily checks. | **Low** |

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| Local human population | Waste, litter and mud on local roads | Nuisance, loss of amenity, road traffic accidents. | Vehicles entering and leaving site. | Medium | Medium | **Medium** | Road safety, local residents often sensitive to mud on roads. | The nature of the waste has low potential for creating mud. The site is surfaced and a road sweeper would be employed if muddy conditions on site. A wheelwash is installed to prevent any mud being tracked into or out of the site.Wider site has controls on mud and wheel washing | **Low** |
| Local human population | Odour | Nuisance, loss of amenity | Air transport | Low | Medium | **Medium** | Local residents often sensitive to odour. Permitted waste types have low odour potential. | Odour controls not considered necessary due to waste types and processes. | **Low** |
| Local human population and local heritage considerations | Noise and vibration | Nuisance, loss of amenity, loss of sleep. | Noise through the air and vibration through the ground. | Medium | Medium | **Medium** | Local residents often sensitive to noise and vibration. Listed buildings and historic monuments within 500m of the Site. | Noise would be difficult to discern from quarry operations. NIA found there to be low impact at nearby receptors. | **Low** |
| Local human population | Scavenging animals and scavenging birds | Harm to human health - from waste carried off site and faeces. Nuisance and loss of amenity. | Air transport and over land | Low | Medium | **Medium** | Permitted wastes unlikely to attract scavenging animals and birds but may become nesting / breeding sites. | No mitigation required, wastes very unlikely to attract scavenging animals and birds. Nevertheless, should scavengers be identified, appropriate pest control specialists would be employed by the operator. | **Very low** |
| Local human population | Pests (e.g. flies) | Harm to human health, nuisance, loss of amenity | Air transport and over land | Low | Medium | **Medium** | Permitted waste unlikely to attract pests. | As above. | **Very low** |
| Local human population and local environment | Flooding of site | If waste is washed off site it may contaminate buildings / gardens / natural habitats downstream. | Flood waters | Low | Medium | **Medium** | Permitted waste types are inert so only a medium magnitude risk is estimated. Site is within an area at low risk to flooding. | Site is within area at low risk of flooding. Plant and equipment not particularly vulnerable to flooding as can be moved to other areas of wider site. | **Very low** |
| Local human population and / or livestock after gaining unauthorised access to the waste operation | All on-site hazards: wastes; machinery and vehicles. | Bodily injury | Direct physical contact | Medium | Medium | **Medium** | Site is secure. Permitted waste types are inert so only a medium magnitude risk is estimated. | EMS (as well as any HSE requirements) requirements are adhered to. Appropriate training and PPE is provided to all staff. | **Low** |

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| Local human population and local environment. | Arson and / or vandalism causing the release of polluting materials to air (smoke or fumes), water or land. | Respiratory irritation, illness and nuisance to local population. Injury to staff, firefighters or arsonists/vandals. Pollution of water or land. | Air transport of smoke. Spillages and contaminated firewater by direct run-off from site and via surface water drains and ditches. | Medium | Medium | **High** | Permitted waste types do not include sludges or liquids and are inert. Therefore liquid spillages are unlikely. Other wastes are not flammable and unlike to become a target for arson or vandalism. | EMS adhered to. Site security is in place. No combustible waste. | **Low** |
| Local human population and local environment | Accidental fire causing the release of polluting materials to air (smoke or fumes), water or land. | Respiratory irritation, illness and nuisance to local population. Injury to staff or firefighters. Pollution of water or land. | As above. | Medium | Medium | **Medium** | As above. | As above. | **Low** |
| All surface waters close to and downstream of site. | Spillage of liquids, leachate from waste, contaminated rainwater run-off from waste e.g. containing suspended solids. | Acute effects: oxygen depletion, fish kill and algal blooms | Direct run-off from site across ground surface, via surface water drains, ditches etc. | Low | Medium | **Medium** | Type of waste does not have any potential for leaching; however, there is the possibilty of accidental vehicle spills and suspended solids. | Implementation of strict waste acceptance criteria will ensure that only permitted waste types are accepted and stored on the Site. The type of waste accepted does not have any potential for leaching. An emergency spill procedure is in place for any accidental spills of potentially polluting liquids. | **Very low** |
| All surface waters close to and downstream of site. | As above | Chronic effects: deterioration of water quality | As above. Indirect run-off via the soil layer | Low | Medium | **Medium** | Waste types are inert so harm is likely to be temporary and reversible.Watercourse within 125m of permit boundary | As above. | **Low** |
| Groundwater | As above | Chronic effects: contamination of groundwater, requiring treatment of water or closure of borehole. | Transport through soil/groundwater then extraction at borehole. | Low | Medium | **Medium** | Waste types are inert so harm is likely to be temporary and reversible.Hard standing surfaces and connection with wider quarry drainage system designed to manage surface water run-off. Site is on superficial and bedrock aquifers.Site has a permitted abstraction license. | As above. Site has sealed surface. | **Low** |
| Local human population and local environment. Site staff (flash floods). | Climate Change | Increased run-off, flash floods. Site drainage system is overwhelmed. | Flood waters. | Low | Medium | **Medium** | The biggest rainfall events are up to 20% more intense than current extremes (peak rainfall intensity). At its peak, the flow in watercourses could be 30% more than now, and at its lowest it could be 65% less than now. | Emergency measures would suspend operations, unlikely to require other procedures. | **Low** |
| Protected sites - European sites and SSSIs | Any | Harm to protected site through toxic contamination, nutrient enrichment, smothering, disturbance, predation etc. | Any | Medium | Medium | **Low** | Waste operations generally have the potential to cause harm to and deterioration of nature conservation sites, though wastes types and operations unlikely to have direct or significant impacts. Nearest SSSI is Ysbyty Bron y Garth (see note 1) (30m south of site), followed by Glaslyn (see note 2) (40m south of site), which also surrounds the wider quarry site. Morfa Harlech SSSI / Pen Llyn a'r Sarnau SAC (see note 3) is approximately 1.25km southeast of The Site with another area of the SSSI some 1.4km south of The Site. Meirionnydd Oakwoods and Bat Sites SAC (see note 4) is approximately 40m south of The Site. However, site is within a large quarry site, so only a low risk is attributed. | Environmental Management System (EMS) and Dust and Emissions Management Plan (DEMP) in place for the Site, therefore no specific mitigation is required for the SSSIs and SAC. Site is within significantly larger quarry site, so any additional impacts are likely to be negligible to zero. | **Low** |

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| Local human population and all surface waters close to and downstream of site. | Serious Fire | Nuisance, harm to human health, loss of amenity, deterioration of water quality | Air transport then inhalation or deposition. Direct run off of fire water across site to surface waters. | Low | High | **Medium** | Waste fires are not common but approximately 300 fires pa linked to waste activities. Impact on health and amenity can be significant for many days or weeks. Permitted waste types are unlikley to self-ignite or self-combust. | No special mitigation required - wastes are non-combustible. | **Low** |
| All surface waters close to and downstream of site. | Serious Fire | Loss of amenity, deterioration of water quality | Direct run off of fire water across site to surface waters. | Low | High | **Medium** | Waste fires are not common but approximately 300 fires pa linked to waste activities. In event of fire, fire water can be produced for days/ weeks. Contaminated firewater run-off can kill fish and aquatic life. Permitted waste types are unlikley to self-ignite and are not self-combustable. | As above. | **Low** |

**Note 1: Limited information, considered to be designated for bat habitat**
**Note 2: Salt marsh and estuarine habitats, several nationally rare and scarce plant species**
**Note 3: Sand dune systems and petalwort**
**Note 4: Deciduous woodland and bat habitats**