



Environmental Risk Assessment

Gelliargwelt Farm Quarry



Report produced for Bryn Aggregates Ltd

Provided by Walker Resource Management Ltd (WRM)

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1.0 INTRODUCTION

Walker Resource Management Limited (WRM) are acting consultants for Bryn Aggregates Limited (hereon referred to as Bryn Aggregates) who have commissioned WRM to produce an Environmental Risk Assessment in line with operational activities associated with the operation of the crushing and grading and dust washing processes at the quarry at Gelliargwellt Farm, Gelligaer, Hengoed.

1.1 Assessment Process

The Guidance “Risk assessments for your environmental permit” produced by the Environment Agency and DEFRA gives 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 people or parts of the environment that could be harmed by the activity and carry out risk assessments for:

- Dust
- Noise
- Water pollution
- Fire.

2.0 ENVIRONMENTAL MANAGEMENT

| Pollutant Model | | | Judgement | | | | Action | |
|-------------------------------------------------------------------------------|-------------------|----------------------------------------------------|-----------|-----|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Source | Pathway | Receptor | P | C | M | Justification of Magnitude | Risk Management | Residual Risk |
| Emissions from soil stripping, soil storage and reinstatement activity - dust | Aerial dispersion | Staff, local residents and nearby protected sites. | High | Med | Med | High levels of airborne and wind-blown dust emissions can arise from soil stripping, storage and reinstatement, although these are generally short term, transient operations. | <ul style="list-style-type: none"> Air emission monitoring completed at four points throughout the day, Monday-Saturday. Dust monitors operating 24/7 which alarms when the limits are breached and is actioned appropriately. Routine checks of plant and machinery and staff training on dust suppression techniques. Plant and machinery shall be serviced and maintained in line with manufacturers recommendations. The site uses a Mist Cannon to suppress dust levels that has a maximum ground coverage of 20,000m³ from its location. Soil storage bunds shall be stabilised by appropriate seeding and maintenance. Emissions shall be minimised through the soil being transported by dump truck for storage in screening bunds or used directly for restoration. Emissions shall be controlled by minimising working the soil in very dry, windy conditions and reducing drop heights at material transfer points. Wetting of haul roads and working area with water tankers as required or hourly in very dry conditions. | Low |
| Emissions from overburden removal, storage, | Aerial dispersion | Staff, local residents and nearby | High | Med | Med | Risks of dust emissions shall vary depending on the nature of materials handled: | <ul style="list-style-type: none"> As above, dust emissions can be controlled using a Mist Cannon. Dust monitors operating 24/7 which alarms when the limits are breached and is actioned appropriately. | Low |

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| Source | Pathway | Receptor | P | C | M | Justification of Magnitude | Risk Management | Residual Risk |
| and reinstatement activity - dust | | protected sites. | | | | <ul style="list-style-type: none"> Low risk from freshly excavated subsoil. High risk of wind blow from dry, unconsolidated materials. Wind conditions | <ul style="list-style-type: none"> Drop heights shall be minimised at material transfer points, during loading and tipping. Wetting of haul roads and working area with water tankers as required or hourly in very dry conditions. Weather conditions shall be monitored daily and operations shall be suspended when the wind conditions would result in dust being transported towards the off-site receptors. Plant and machinery shall be serviced and maintained in line with manufacturers recommendations. | |
| Emissions from overburden storage activity - dust | Aerial dispersion | Staff, local residents and nearby protected sites. | High | Med | Med | Risks of dust emissions shall vary depending on the nature of materials handled: <ul style="list-style-type: none"> Low risk from freshly excavated subsoil. High risk of wind blow from dry, unconsolidated materials. Wind conditions | <ul style="list-style-type: none"> Stockpiles shall be managed to maintain a smooth profile to minimise spreading of loose materials and encouraged to be disturbed as little as possible to encourage the formation of a surface crust. Stockpiles shall be wetted down to reduce the risk of wind-blow from exposed surfaces. Dust monitors operating 24/7 which alarms when the limits are breached and is actioned appropriately. Temporary greening of storage pile of soil to stop wind blow and water erosion. | Low |
| Emissions from blasting - dust | Aerial dispersion | Staff, local residents and nearby protected sites. | High | Med | Med | High levels of airborne and wind-blown dust emissions can arise from blasting although it only occurs approximately once a month and is a | <ul style="list-style-type: none"> The rock face is wetted prior to and during blasting via a tractor and tanker. Blast holes packed with 10mm stone rather than dust. Additional control measures (such as the use of a mist-cannon) will be considered to reduce emissions when blasting. | Low |

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| Source | Pathway | Receptor | P | C | M | Justification of Magnitude | Risk Management | Residual Risk |
| | | | | | | generally short term, transient operations. | | |
| Emissions from mineral extraction and handling – dust | Aerial dispersion | Staff, local residents and nearby protected sites. | Med | Med | Med | Low risk of airborne dust propagation emissions from mineral extraction by hydraulic excavator, but dust could be blown over the site boundary towards the off-site receptors. | <ul style="list-style-type: none"> As above, dust emissions can be controlled using a Mist Cannon. Weather conditions shall be monitored daily and operations shall be suspended when the wind conditions would result in dust being transported towards the off-site receptors. Plant and machinery shall be serviced and maintained in line with manufacturers recommendations. Dust monitors operating 24/7 which alarms when the limits are breached and is actioned appropriately. | Low |
| Emissions from mineral processing, such as crushing, grading and screening – dust. | Aerial dispersion | Staff, local residents and nearby protected sites. | Med | Med | Med | Medium risk of dust emissions from the crushing and grading of stone on site. | <ul style="list-style-type: none"> Daily weather monitoring - extra care taken to minimise emissions during dry, windy conditions. Dust suppression system on the crushing and screening plant. Mist cannon in use during mineral processing operations. Drop heights (e.g. crusher front end) shall be minimised Dust monitors operating 24/7 which alarms when the limits are breached and is actioned appropriately. Some of the conveyor machinery have covers to contain the dust particles. | Low |

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| Source | Pathway | Receptor | P | C | M | Justification of Magnitude | Risk Management | Residual Risk |
| | | | | | | | <ul style="list-style-type: none"> Similarly, machine chutes have dust protection skirts. Plant and machinery shall be regularly inspected and serviced to ensure they are working correctly and dust suppression mechanisms are adequate. All vehicles are fitted with air filters and regularly cleaned, filters changed as required and servicing of air conditioning units. | |
| Emissions from dust washing plant – dust. | Aerial dispersion | Staff, residents and nearby protected sites. | Low | Med | Med | Medium risk of dust emissions from dropping of material through the machine. As water is involved in washing material this will reduce dust emissions. | <ul style="list-style-type: none"> Molson washing line specifically designed for material washing activity. Drop heights shall be minimised. Clean water from settlement pond recirculated through the plant. Dust monitors operating 24/7 which alarms when the limits are breached and is actioned appropriately. Plant and machinery shall be regularly inspected and serviced to ensure they are working correctly, and dust suppression mechanisms are adequate. | Low |
| Emissions from site traffic – dust and mud | Aerial dispersion | Staff, residents and nearby protected sites. | High | Med | Med | Medium risk of dust emissions from transport on unpaved roads. | <ul style="list-style-type: none"> Mobile plant with upward or sideways exhausts should be used and haulage shall keep to designated haul routes. Vehicles leaving the site shall be sheeted and checked for loose deposits before leaving. Spillage procedure in place to ensure any spillages are cleared up efficiently. Water tanker used to dampen down roads around the site in dry weather. All vehicles must use the wheel wash to ensure no transfer of dust and mud onto the roads offsite. | Low |

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| Source | Pathway | Receptor | P | C | M | Justification of Magnitude | Risk Management | Residual Risk |
| | | | | | | | <ul style="list-style-type: none"> • Site speed limit in minimise dust emissions. • Roads shall be regularly inspected and kept in good repair. • A road sweeper shall be available to ensure that any dust and mud from the site on to the access roads is kept to a minimum. | |
| Emissions from activity – noise | Aerial dispersion | Staff, local residents. | High | Med | Med | <p>Blasting and drilling activities only take place around once a month.</p> <p>Noise impact assessment indicated that based on a worst case 1hr daytime period, proposed noise level limits should be met at all NSPs, except for Green Acres bungalow (which is under the control of Bryn Group).</p> | <ul style="list-style-type: none"> • Bund provides acoustic screening to the entire extent of the north-eastern and south-eastern boundaries. • Noise levels controlled following good practice guide, BS 5228-1:2009. A summary of practical measures is summarised below: • Plant and vehicles are maintained in line with manufacturers recommendations, silencers and bearings shall be checked. • Equipment shall be switched off when not required and engines shall not be revved unnecessarily. • Use of noisy plant and vehicles shall be limited. • Reversing beepers shall be minimised as far as is reasonably practicable and maintaining site safety. E.g. setting beeper noise volume relative to background noise. • Mist Cannon, dust suppression system has an optional built in silencer. • Drop height of material shall be minimised. | Low |
| Emissions from activity – vibration. | Aerial dispersion | Staff, local residents. | Med | Low | Low | Vibration emissions important to consider during blasting activities. | <ul style="list-style-type: none"> • The subcontractor undertaking the blast activity shall design the blast accordingly to reduce vibration. • Plant and machinery shall be serviced and maintained in line with manufacturers | Low |

| Pollutant Model | | | Judgement | | | | Action | |
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| Source | Pathway | Receptor | P | C | M | Justification of Magnitude | Risk Management | Residual Risk |
| | | | | | | The distance from blast points to sensitive receptors is likely to decrease compared to existing quarrying operation, therefore magnitude may increase and will need to be accounted for within blast design activities. | recommendations to ensure vibration is not caused by faulty machinery. | |
| Water pollution | Surface runoff | Nearby water streams, such as the Nelson Bog SSSI | Med | Med | Med | Surface water is collected in quarry sump and treated within settlement lagoons to reduce levels of contamination, before being discharged via a pipe to adjacent stream or site clean water lagoon. | <ul style="list-style-type: none"> Settlement lagoons ensure particles settle out before water is discharged. Surface water and groundwater monitoring completed every month by accredited laboratory, which involves groundwater sampling from each monitoring borehole by a suitably trained member of laboratory staff. Samples are sent to an accredited laboratory. Results from the surface water and groundwater monitoring shall be recorded into a database and reviewed against existing baseline monitoring data and compliance levels. Where results have changed or exceeded the baseline conditions and compliance levels, the number and frequency of monitoring rounds will be re-evaluated in consultation with NRW and the necessary corrective action agreed. During the sampling visit the monitoring boreholes are inspected visually and any defects are recorded. | Low |

| Pollutant Model | | | Judgement | | | | Action | |
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| Source | Pathway | Receptor | P | C | M | Justification of Magnitude | Risk Management | Residual Risk |
| | | | | | | | <ul style="list-style-type: none"> Practical maintenance is carried out at the time of the routine monitoring. | |
| Fire on site | Aerial dispersion. | Staff, local residents and nearby protected sites. | Low | Med | Med | Low - Fires can be deliberate or accidental, however the likelihood of a fire occurring is minimal due to the aforementioned prevention methods and deterrents. | <ul style="list-style-type: none"> Follow manufacturers guidance and instructions on machinery operation. Follow manufacturers guidance and instructions on associated plant maintenance. Regular plant servicing. | Low |
| P = Possibility C = Consequence M = Magnitude | | | | | | | | |

3.0 ACCIDENT MANAGEMENT

3.1 Emergency Contracts

| | |
|---------------------------------|---------------|
| Emergency Services | 999 |
| Local Police | 101 |
| Natural Resources Wales Hotline | 0300 065 3000 |
| Health and Safety Executive | 0845 345 0055 |
| Fuel Supplier (Certas Energy) | 0345 6004040 |
| Local Authority | 01443 815588 |

3.2 Company Contacts

| | Operational hours | Out of Hours |
|------------------|--------------------------------------------------|---------------------------------------------------|
| Bryn Aggregates | Name: Jen Price Contact No.: 07507 195517 | Name: Night watchman Contact No.: 07850 205079 |
| JAW Services Ltd | Name: Michael Evans Contact No.: 01443 478747 | Name: Michael Evans Contact No.: 07494 447062 |

3.3 Environmental Accident Management Plan

| Pollutant Model | | | Judgement | | | | Action | |
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| Source | Pathway | Receptor | P | C | M | Justification Magnitude of | Consequences | Actions to be taken |
| Plant Failure (Hydraulic Leaks, Damaged equipment) | Potentially polluting liquids flow onto quarry floor. | Groundwater, Environment | Low | Med | Low | Low - Very little likelihood of occurrence. All equipment subject maintenance regime. | Potentially polluting liquids flow onto quarry floor. | <ul style="list-style-type: none"> - Inform site manager - Monitor leak - Spill kit to clean up any oil. - Monitor external areas to ensure no further contamination. - Record incident - Inform Local Authority or NRW if necessary. - Review Operations and Management System |
| Severe Weather | Flooding. Wind damage. Ice/frost. | Plant & Equipment Site Conditions | Low | Med | Low | Low – Flooding is unlikely to cause damage to equipment. | Damage to plant and equipment | <ul style="list-style-type: none"> - Cease operations if required. - Assess damage. - Mitigate any pollution caused. - Inform site manager. - Inform Local Authority or NRW if necessary. - Repair damage. - Record incident. |

| Pollutant Model | | | Judgement | | | | Action | |
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| Source | Pathway | Receptor | P | C | M | Justification Magnitude of | Consequences | Actions to be taken |
| Arson/ Vandalism | N/A | Plant & Equipment Site Conditions | Low | Med | Low | Low - Site to be as secure as possible. All plant to be locked when not manned. All doors and gates locked outside working hours. The site has no public access. | Damage to equipment Fire Litter | <ul style="list-style-type: none"> - Assess damage. - Mitigate any damage/pollution caused. - Inform site management. - Inform Police. - Inform Local Authority or NRW if required. - Record incident. |
| Fire | Spread from source of ignition | Staff, local residents, site buildings and nearby protected sites. | Low | Med | Med | Low - No ignition sources permitted near flammable material. No fuel stored on site. | Potential for severe damage to properties and potential loss of life from fire/smoke | <ul style="list-style-type: none"> - Raise alarm on site. - Ensure personnel are alerted evacuated and accounted for from danger area. - If safe, switch off electricity/gas supplies. - Call 999. - Inform site management. - Liaise and follow instructions of emergency team making them aware of any hazards on site. |
| P = Possibility C = Consequence M = Magnitude | | | | | | | | |



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