





Emissions Management & Monitoring Plan

Gelliargwelt Farm Quarry



Report produced for Bryn Aggregates Limited

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1.0 INTRODUCTION

This document sets out plans to manage and monitor emissions associated with activities carried out at the quarry by JAW Services Ltd at Gelliargwellt Farm, Gelligaer which is owned and controlled by Bryn Aggregates Ltd (hereon referred to as Bryn Aggregates). Bryn Aggregates extract approximately 100,000 tonnes per annum of blue pennant sandstone which is processed via a conical crusher and grading line to produce an aggregate to PSV68 motorway standard. Sand is also produced for use as a building material, as is pea gravel, via a dust washing plant.

The following activities are carried out under the permit:

- Extraction of 11,000 tonnes per annum of blue pennant sandstone which is produced to the PSV68 motorway aggregate standard;
- Extraction by blasting and digging;
- Extraction of secondary shale which is sent off-site for lower grade uses;
- Processing via a conical crusher and grading line;
- Washing of the dust to make sand; and
- Storage of product (60%) and dust (40%).

This is detailed through a review of potential emissions, management approaches to potential emissions, and finally, a monitoring plan for emissions. It has been produced in accordance with the following documents:

- The Environmental Permitting (England and Wales) Regulations 2016
- Environmental Permitting – General Guidance Manual on Policy and Procedures for A2 and B Installations

2.0 EMISSIONS ASSESSMENT & MANAGEMENT

2.1 Emissions

Table 6 below details the Environmental Risk Assessment for emissions resulting from quarrying operations at Gelliargwellt Farm (taken from Bryn Aggregates-3 - Environmental Risk Assessment). The Risk Assessment identifies possible emissions arising from the quarrying activity, such as crushing, blasting, digging, and storing the material. The magnitude of each risk is reviewed, and risk management activity is detailed, resulting in an assessment of residual risk rating.

Table 1 - Emissions Risk Assessment

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

Pollutant Model			Judgement				Action	
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 needed 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 dust control measures (such as the use of a mist-cannon) will be considered to reduce emissions when blasting. 	Low

Pollutant Model			Judgement				Action	
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 monitor sends an alarm about a breach in the dust levels. Plant and machinery shall be serviced and maintained in line with manufacturers recommendations. Wetting of haul roads if required. 	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 Some of the conveyor machinery have covers to contain the dust particles. Similarly, machine chutes have dust protection covers. Plant and machinery shall be regularly inspected and serviced to ensure they are working correctly and dust suppression mechanisms are adequate. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
							<ul style="list-style-type: none"> 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. 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 Mud on the roads	Staff, residents and nearby protected sites.	High	Med	Med	Medium risk of dust and mud 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. Site speed limit in minimise dust emissions. Roads shall be regularly inspected and kept in good repair. 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
							<ul style="list-style-type: none"> A road sweeper shall be available to ensure that any dust 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
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	<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 	Low

Pollutant Model			Judgement				Action	
Source	Pathway	Receptor	P	C	M	Justification of Magnitude	Risk Management	Residual Risk
						adjacent stream or site clean water lagoon.	<p>laboratory staff. Samples are sent to an accredited laboratory.</p> <ul style="list-style-type: none"> 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. 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								

2.2 Emissions Risk

The point source emission Environmental Risk Assessment identifies eleven possible sources of Medium-magnitude Risks:

- Soil stripping, soil storage and reinstatement activity – dust
- Overburden removal, storage, and reinstatement activity – dust
- Overburden storage activity – dust
- Blasting - dust
- Mineral extraction and handling – dust
- Mineral processing, such as crushing, grading and screening – dust.
- Dust washing plant – dust.
- Site traffic – dust
- Emissions from activity – noise
- Water pollution
- Fire on site

Risk abatement actions have been identified to ensure that these sources of emissions are reduced to Low Risk.

2.3 Potential Environmental Impacts

An AQIA was completed by The Airshed Consultants (Version 5.0, issued 29/06/2020). Air quality impacts have been assessed against Welsh air quality objectives for PM10 and PM2.5. Impacts from the proposed operations have been predicted using ADMS 5.2, an advanced dispersion model widely used in the UK for environmental impact assessment. Dispersion conditions take account of local topographical conditions, 5 years of hourly sequential meteorological data from St Athan and site-specific meteorological data.

Baseline levels of PM10 and PM2.5 are predicted to comply with the annual mean Limit Values at all sensitive receptors considered within the study area. Impacts on the adjacent Nelson Bog SSSI are predicted to be insignificant.

3.0 DUST EMISSIONS

The Risk Assessment above shows that emissions of dust is the most prevalent concern from the activities undertaken on site. This section details the dust management systems employed on site and details the dust monitoring undertaken.

3.1 Dust Management

3.1.1 *Soil stripping*

There is potential for high levels of airborne and wind-blown dust propagation from soil stripping, storage and reinstatement. Unacceptable dust emissions from these activities will be controlled by minimising working of soil in very dry, windy conditions, by reducing drop heights at material transfer points and controlling vehicle speeds. Additional control measures, such as the use of water sprays or wetting down with a water bowser, is completed where there is a risk of wind-blow across the site boundary towards off-site receptors. The frequency of these measures is determined by the weather conditions and site activities.

3.1.2 *Overburden removal*

There is potential for moderate to high levels of dust emissions during overburden handling, storage and replacement, although it can usually be worked at a higher moisture content than soils, thus reducing the risk of unacceptable dust emissions from this aspect of site operations.

As with soils, working of overburden, quarry waste and inert backfill materials near the site boundary shall be minimised in very dry, windy conditions. Drop heights shall be minimised at material transfer points (e.g. during loading and tipping). Operations will be suspended when the dust monitor indicates a breach of the limit at the boundary..

Additional measures such as the use of water tanker and bowser will be considered where there is a risk of wind-blow across the site boundary.

3.1.3 *Blasting*

As blasting is infrequent and takes place within the quarry void, it is unlikely to result in significant dust emissions beyond the quarry. However, careful planning must be undertaken as certain conditions could increase the likelihood of dust impacts from blasting. The quarry face is sprayed with water prior to blasting.

Additional dust control measures, such as the use of a water tanker during the blasting process itself, will also be considered to reduce emissions.

3.1.4 *Mineral extraction*

There is a low risk of airborne dust propagation emissions from mineral extraction by hydraulic excavator but additional control measures, such as wetting down with a water bowser, will be used if there is a risk of visible dust from the extraction being blown over the site boundary towards the off-site receptors.

3.1.5 Crushing, grading and dust washing

The crushing, grading and screening process is one with a degree of risk of dust emissions. A number of management techniques are employed to control these releases. The processing line itself contains in-built water sprays. These are used at the control of the site operators should dust emissions be detected. The conveyors present on this line also feature edge protection and conveyor covers whilst the chutes feature dust containment skirts.

In addition to these in-built controls, all rock/stone drop heights shall be minimised and a mist-cannon can be used at the discretion of the operator. The processing line is also positioned close to the base of the quarry face.

The dust washing plant uses water to help separate the sand from the pea gravel in the fine material. The use of water reduces the risk of dust emissions. However, reduced drop heights are also employed to reduce the risk.

Finally, all mineral processing equipment shall be serviced and maintained as per the manufacturer's guidance.

3.1.6 Site traffic

There is a high risk of mud and dust emissions from transport on unpaved roads unless appropriate mitigation measures are applied.

Mobile plant with upward or sideways exhausts will be used and all site haulage will keep to designated routes around site. Vehicles leaving the site shall be sheeted and be checked for loose deposits before joining Gelligaer Road. Vehicles will also need to go through the wheel wash facility. Any spillages shall be cleared as quickly as possible by appropriate means to prevent unnecessary track-out onto the public highway.

A water bowser will be used for damping down roads around the quarry in dry weather conditions. Unmade access roads will be kept in good repair and vehicle speed limits will be determined by the Site Manager according to the site and weather conditions pertaining at the time.

A powered road sweeper shall be available to ensure that any track-out onto Gelligaer Road is cleared immediately and dust from HGV traffic from the access road is kept to a minimum.

All mobile plant on site shall be serviced and maintained as per the manufacturer's guidance.

3.1.7 Wind scouring of stockpiles

Dust emissions from exposed surfaces shall be minimised during operating hours by wetting down surfaces with a water bowser as necessary, especially in periods of dry, windy weather. This shall also be undertaken at the end of the working day if conditions are expected to continue to be dry and windy to prevent dust emissions outside of operating hours.

Where practicable, stockpiles shall be managed to maintain a smooth profile to minimise the spreading of loose materials and shall be disturbed as little as possible to encourage the formation and stabilisation of a surface crust. Greening of longer term stockpiles to be retained for a longer period of time shall take place.

3.1.8 Site management and training

The Site Manager shall be responsible for the satisfactory working of the whole site and for ensuring full compliance with the emissions management and monitoring plan.

Staff at all levels will receive the necessary training and instruction in their duties relating to all operations and the potential sources of dust emissions. Particular emphasis shall be given to plant and equipment malfunctions and abnormal conditions.

The Site Manager will ensure that customers and suppliers are aware of the need to comply with the provisions of this plan so far as they are relevant to their activities on site. They shall also be made aware of the haulage routes around site.

3.2 Dust Monitoring

The following approach is detailed for emissions monitoring based on the Process Guidance Note (PGN) 3/08 (12) Statutory guidance for quarry processes (Defra, 2012) and AEA Technology, 2011: Good practice guide: control and measurement of nuisance dust and PM10 from the extractive industries. Dust has been identified as the most significant environmental impact from the operation, therefore the management of this is important in the daily site activities.

Environment Agency Technical Guidance Note M17 sets out custom-and-practice criteria for dust disamenity which have been developed based on the mass of dust or dust soiling, coverage, or loss of reflectance. These criteria are used in the monitoring plan.

3.2.1 DustScan

Directional dust is monitored using DustScan (sticky pad) directional dust samplers. Being cylindrical, the samplers collect dust from 360° around the sampling head and, as set out below, the data are reported in discrete 15° intervals (i.e. 0 – 15°, 15 – 30° and so on).

Dust settlement is also monitored using DustScan DustDisc samplers. This sticky pad deposited dust monitor collects dust falling out of the air and depositing onto a horizontal surface. The samplers are installed in accordance with best practice guidance (including M17) and the supplier's instructions and are located away from nearby obstructions to ensure a clear air flow to the monitoring head.

Monitoring is undertaken over weekly or fortnightly intervals. The frequency of dust monitoring shall be determined by the Site Manager. Weekly sample changeovers will be utilised when there is an increased potential for dust propagation.

3.2.2 PM₁₀ and PM_{2.5} Monitoring

In addition to the above dust monitoring, Bryn Aggregates have agreed with Caerphilly County Borough Council (CCBC) to assess PM10/PM2.5 concentrations using a Turnkey Osiris real-time dust monitor. CCBC have their own login for the monitor and the live data is also publicly available via the Bryn Group website.

The data is recorded every minute and the monitor sends an alarm when the limits are breached for 10 consecutive minutes, or the hourly and daily limits have been exceeded.

The data is summarised into a report on weekly basis and sent to the Operator who stores this on site. Copies of the report are available to CCBC on request. If dust complaints are received, the data from the corresponding period will be investigated.

The monitors are compliant with the Environment Agency MCERTS certification scheme and includes an anemometer to collect wind speed and direction data. The monitor's location was determined by Airshed, based on the point on site that has the highest risk of dust emissions.

3.2.3 Reporting

Directional dust monitoring results will be reported as AAC%, EAC% and Risk over 15° arcs. The dust monitoring results will be tabulated and presented graphically in a 360° 'dust rose' indicating the strength and direction of dust propagation at that location. Depositional dust monitoring results will be tabulated and reported as AAC%, EAC% and Risk.

Key Performance Indicators (KPIs) will be used to assess site performance. The following KPIs will be applied:

- Stage 1 KPI - Where the dust deposition 'risk' reaches 'High' levels, samples will be analysed using gravimetry to determine deposition rate expressed as mg/m²/day. Some sites apply the 'custom and practise' threshold of 200 mg/m²/day as a means of assessing performance, in the absence of any recognised limit values for visible/nuisance dust.
- Stage 2 KPI - Where the dust deposition 'risk' reaches 'Very High' levels, samples will also be analysed by gravimetry and in addition will be characterised using optical light microscopy to indicate dust composition including the relative proportion of material that could be associated with site operations. Reference samples of materials handled and processed onsite have been provided for comparison.

The KPIs will be reviewed and updated if required. Additional characterisation work using optical light microscopy or/and other analytical techniques may be advised at a later stage for further investigation. Bryn Aggregates complete an annual report and the highest sample result and complaints are investigated in detail.

The Osiris monitor has been set up with an alert trigger. Trigger levels have been agreed with the Local Authority. The dust and PM₁₀/PM_{2.5} monitoring results will be summarised weekly and available on request to CCBC.

An annual dust report to summarise data, with reference to site activities, key weather data from an onsite weather station, any dust characterisation work and any complaints received is also completed.

4.0 WATER EMISSIONS

4.1 Water emissions management

Surface water in the quarry is directed to the quarry sump located on the floor of the quarry. The surface water consists of rainwater and clean water used in the mobile bowser, fog cannon or sprinkler system. The surface water is then pumped from the quarry sump into one of the settlement ponds located to the southwest of the quarry. The purpose of the settlement ponds is to enable any solids in the surface water to settle out before the clean water is transferred into a clean water lagoon for site use or discharged into the un-named adjacent water course. This is a permitted activity regulated by NRW.

4.2 Groundwater monitoring

Groundwater monitoring will be progressed every month with levels recorded, and groundwater samples collected, where possible, from each of the eight monitoring boreholes. Each monitoring borehole is inspected visually during each monitoring visit and any defects are recorded. Bryn Aggregates have commissioned an appropriately accredited laboratory to visit the site as required to complete all water monitoring and sampling.

4.3 Groundwater Quality Sampling

Groundwater samples will be collected from each borehole by trained staff members of an accredited laboratory using best environmental practices to minimise cross contamination risks and will be placed inside laboratory supplied containers. Samples will be kept in a cool box with freezer packs to preserve their integrity. Groundwater samples are then forwarded to an accredited laboratory on the day of collection for scheduled analysis.

4.4 Groundwater Analysis

Groundwater quality samples collected will be scheduled for the following suite for analysis as follows:

- pH;
- Electrical Conductivity;
- Biological Oxygen Demand;
- Chemical Oxygen Demand;
- Dissolved Oxygen;
- Total Organic Carbon;
- Alkalinity;
- Ammonia;
- Chloride;
- Fluoride;
- Nitrate;
- Sulphate, sulphide and total sulphur;
- Metals: Al, As, B, Ca, Cd, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Pb, Zn;
- Total Petroleum Hydrocarbons by GC-FID;
- Speciated Polyaromatic Hydrocarbons (PAH) by GC-MS

All monitoring will be carried out by the laboratory with dedicated and clean sampling equipment. The water samples collected will be analysed at a suitably accredited laboratory.

4.5 Surface Water Monitoring

Surface water monitoring will be carried out every month by trained staff members of an accredited laboratory with levels, and flow rates manually measured and recorded, with water samples collected, where possible, from each of the eight monitoring positions. Additionally, data shall be collected from the 2no. Teledyne ISCO 2150 flow meters installed in the identified streams across the Site.

4.6 Data Collection

Manual Data to be collected:

- Depth of surface water measured by an electronic water level meter or hand tape as appropriate;
- Approximate channel shape;
- Channel top width (m);
- Channel base width (m);
- Flow rate (m/s);
- Silt level (m) at base of channel.

Surface water samples shall be collected at each monitoring point using best environmental practices to minimise cross contamination risks and will be placed inside laboratory supplied containers.

Samples shall be kept in a cool box with freezer packs to preserve their integrity.

Surface water samples are then forwarded to an accredited laboratory on the day of collection for scheduled analysis.

4.7 Surface Water Analysis

- pH;
- Electrical Conductivity;
- Biological Oxygen Demand;
- Chemical Oxygen Demand;
- Dissolved Oxygen;
- Total Organic Carbon;
- Alkalinity;
- Ammonia;
- Chloride;
- Fluoride;
- Nitrate;
- Sulphate, sulphide and total sulphur;
- Metals: Al, As, B, Ca, Cd, Cr, Cu, Fe, Hg, K, Mg, Mn, Na, Ni, Pb, Zn;
- Total Petroleum Hydrocarbons by GC-FID;
- Speciated Polyaromatic Hydrocarbons (PAH) by GC-MS

4.8 Data Reporting

The surface water and groundwater monitoring data shall be recorded into a database and reviewed on receipt by a suitably qualified person. The results from the surface and ground

water quality results will be screened against existing baseline monitoring data and compliance levels.

Where baseline conditions/compliance levels are shown to have changed/exceeded, the number and frequency of monitoring rounds will be re-evaluated in consultation with NRW. Further contingency actions may be applied if required.

5.0 NOISE EMISSIONS

It has been identified that activities on site have the potential to cause noise disamenity. Management techniques include making sure that all mineral processing equipment is serviced and maintained as per the manufacturer's guidance. Additionally, the crushing, grading and screening line shall be located close to the quarry face. Finally, soil bunds have been constructed around the boundaries of the site to help prevent noise being emitted beyond the site boundary.

5.1 Noise Monitoring

A noise impact assessment has been completed by Hunter Acoustics who are members or associate members of the Institute of Acoustics and the company is also a member of the Association of Noise Consultants. Hunter Acoustics have given advice and undertaken noise impact assessments on several large quarry/recycling/industrial schemes for over 20 years.

Hunter Acoustics undertook monitoring analysis using the proprietary NoiseMap Five (5.1.6) computer modelling package, in conjunction with procedures of BS 5228: Parts 1 & 2 2009 'Code of Practice for assessing noise and vibration on construction and open sites'.

5.2 Historical monitoring assessments

Continuous noise monitoring was carried out at three locations around the site from 1230hrs on 20th April 2010 until the following day to determine the existing background noise levels. Monitoring also took place at another monitoring site on 0700hrs on 2nd June 2011 to 1600hrs on 3rd June 2011. Data including Lmax, Leq and L90 was logged at consecutive 5-min periods over the monitoring periods. More updated assessments have been completed and can be made available to the CCBC on request.

5.3 Results

Noisemap models indicate 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).

6.0 RECORDS & REPORTING

Records shall be kept of all inspections, tests, and monitoring. Records shall be kept by Bryn Aggregates for at least six years and will be readily available for the regulator to examine. Results of emissions monitoring shall be forwarded to Caerphilly County Borough Council upon request.

6.1 Adverse Monitoring Results & Corrective Action

Any adverse results from monitoring activity shall be investigated by Bryn Aggregates as soon as the monitoring data has been obtained. Bryn Aggregates shall:

- Identify the cause and take corrective action;
- Clearly record the nature and extent of the problem, along with remedial action taken; and,
- Re-test to demonstrate compliance at the earliest possible opportunity and inform the council or NRW of the steps taken and the re-test results.

6.2 Staff Training

All operatives shall receive training to mitigate release of emissions, please see Section 6.5 in the Environmental Management System for the specific training modules.

6.3 Machinery and Plant Maintenance

Bryn Aggregates shall ensure that the site operator maintains the plant and machinery at the frequencies suggested by the technology suppliers to mitigate the release of emissions.

7.0 EMISSION COMPLAINTS

Bryn Aggregates shall implement any necessary action in response to any complaints or concerns expressed by interested parties, including operatives, customers, clients and regulatory authorities regarding emissions or other negative externalities relating to quarry operations. Bryn Aggregates shall record the following:

- Name and contact details of the person who expressed concern or made a complaint;
- Specific subject(s) of the concern or complaint;
- The source / location of where the complaint comes from;
- Date and time the complaint was communicated to quarry staff and name of the person to whom it was communicated;
- Nature and date(s) of any actions and checks and who carried them out;
- Nature and date of any response to the person who expressed a concern or made the complaint; and
- Name of the person who communicated the response.

Records of complaints shall be retained and made readily available to the regulator.



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