# GAYLES QUARRY
# DUST MANAGEMENT PLAN

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*Report Prepared By:*

**Tim McHale**
**Safety & Environmental Manager**
**Stainton Quarry Limited**
**Stainton Village**
**Barnard Castle**
**Co Durham**
**United Kingdom**

Tel: + 44 (0) 01833 690444

E-mail: staintonquarry@outlook.com

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## 1.0 Introduction

### *1.1 Overview*

Stainton Quarry Ltd currently operate a sandstone quarry at Stainton, Barnard Castle. Stone is quarried to produce dimensional stone products and stone walling for the construction industry. Stone waste and spoil from these processes is crushed and screened to produce aggregates.

Stone reserves are dwindling at Stainton and the business will benefit from acquiring a new sandstone quarry to meet dimensional stone and walling production demands and reduce the need to purchase block from other quarries.

Gayles Quarry is a disused sandstone quarry near Gayles, North Yorkshire. The site holds substantial reserves of quality sandstone. The stone is suitable for use in the production of dimensional stone products and walling.

The block will be exported off site to a new stone cutting plant based in Barnard Castle for the purpose of dimensional stone and walling production

Stainton Quarry Limited will carry out all visual dust monitoring at Gayles. Sampling, data analysis and reporting will be carried out by Northern Environmental Management Services (NEMS)

This report therefore comprises a scheme for the management and monitoring of dust for the operation and mitigation methods for the site.

### *1.2 Site setting*

Gayles Quarry is situated between the villages of Gayles and Kirby Hill on the north facing slope of land that rises away approximately 750m to the southeast of Gayles and approximately 1km west of Kirby Hill. The nearest residential property is Quarry House, situated approximately 100m from the boundary of the site.

Surrounding landscape is undulating in nature and includes scattered settlements, woodland to the west, pastureland to the north and rising moorland to the south. To the east, beyond the existing boundary wall is an unnamed road that links to Slip Inn Bank to the north and Sturdy House Lane to the south.

The nearest highway is the unnamed road to the east which will eventually form part of the site access leading from Sturdy House Lane.

In addition to moorland south of the site there is also an expanse of Ministry of Defence land known as Feldom Range which is in continuous use for military exercises including the use of HGV's, tanks and other military style off-road vehicles.

### *1.3 Planned development*

Stainton Quarry Limited plan to extract approximately 225,000 tonnes of block sandstone and walling stone from Gayles Quarry over a 15 year period.

It is estimated that a maximum of 15,000 tonnes of block sandstone, walling and landscaping stone will be extracted per year. Sandstone blocks will be extracted by mechanical means (tracked excavator) and removed from site for processing. Loose stone will be riddled or screened onsite to produce walling stone or landscaping products.

The site will be worked in phases and progressively restored using stockpiled loose material and overburden from each phase or where necessary using imported material sourced at the time of restoration to minimise stockpiling onsite.

*1.4 Local Liaison Group (LLG)*

A Local Liaison Group (LLG) will be set up to bring together a network of parties that have an interest in the site to facilitate communication and provide a forum for this network to share information and discuss matters that arise.

This LLG shall be composed of representatives from the following groups/bodies:

• the Operator

• the local community – representative from the parish council

• the local minerals planning authority

• other local authority representatives

If required, meetings can be arranged to discuss ongoing operations, proposed changes, community concerns and complaints. Where appropriate, dust monitoring data may be provided to the LLG

In the event of a dust related complaint being received either privately from a local resident or from Mineral Planning Authority, immediate investigation will take place to determine the source of the dust and if mitigation measures are are not fit for purpose or need to be implemented.

Discussion with the LLG may take place and Stainton Quarry Ltd will work alongside members ensure a satisfactory solution is agreed and implimented as soon as possible after the incident.

A programme of constant and consistent monitoring will ensure that risk of complaint is always minimal.

*1.5 Receptors*

Dust receptors can be within or beyond a quarry site boundary.

Whilst dust generation within a minerals site is primarily of concern to its operator, staff and visitors, dust can propagate beyond the site boundary to affect people and properties beyond, unless adequate control measures are in place. It is important to recognise that there may be other dust sources in the vicinity of a quarry (such as road traffic or arable farmland).

The principal dust receptors in the vicinity of Gayles Quarry are Quarry House, Slip Inn Bank, the proposed re-routed public footpath and the unnamed road leading to Sturdy House Lane.
**SEE APPENDIX A**

## 2.0 Potential for emissions

### *2.1 Initial dust assessment*

There is a potential for dust emissions to occur at various stages of the operation, but these can generally be controlled by good practice.

Activities with the potential to create fugitive dust will be the removal (an reinstatement) of overburden, removal of block, riddling/screening, loading, mechanical handling of fines, stockpiling, loading and transportation of materials, mobile plant and vehicle movements, wind scouring of stockpiles and general landform within the site boundary.

Contributing factors in the surrounding area are aggricultural activites, HGV traffic heading to or from other quarries in the area, military vehicle movements however, these activities would be restricted to nearest highways 1.5m away and not directly affecting dust readings in close prximity of the site.

There is a low dust risk associated with most of the activities taking place on site however, the location of the site means that any impact upon the surrounding environment could be reason for complaint from local residents, members of the public and the local authority. Having suitable mitigation measures in place and maintaining these to a high standard are of upmost importance.

Dust is generally produced by mechanical action on materials and is carried by moving air when there is sufficient energy in the airstream. More energy is required for dust to become airborne than for it to remain suspended. Dust is removed through gravitational settling (sedimentation), washout (for example during rainfall or by wetting) and by impaction on surfaces (e.g. on vegetative screening). Dust can be re-suspended where conditions allow, such as from bare ground.

Dust emissions from a minerals site, its propagation and potential impacts can be considered in terms of 'source-pathway-receptor' relationships. Dust can arise from a variety of processes and locations within a site and can be difficult to quantify.
The common pathway for dust propagation is by air. Dust propagation depends on particle size, wind energy and disturbance activities. Large dust particles generally travel shorter distances than small particles. It is often considered that particles greater than 30 µm will largely deposit within 100 metres of sources, those between 10 – 30 µm will travel up to 250 – 500 metres and particles less than 10 µm will travel up to 1 km from sources.

### *2.2 Dust sampling*

Dust will be measured by visual assessment and using directional and depositional sampling. (Sticky pad method).

Directional dust flux is the horizontal passage of dust past a point, usually driven by the wind, and dust deposition is the vertical passage of dust to a surface, driven by deposition velocity.

Site-specific thresholds will be agreed between the site operator and local authority.

**SEE APPENDIX B**

## 3.0 Management and mitigation

*3.1 Site Design Considerations*

• Maintaining the existing vegetation, trees and planted screening bunds around each area of working to reduce wind speeds.

• Location, construction and maintenance of all haul roads, hard standing areas and access roads.

• Stand off distances for processing plant of over 50m to the nearest dust sensitive receptor.

• Managing storage piles to maximum height and locating them in suitable areas of the site.

• Maintaining HGV movements strictly in accordance with planning conditions and along set routes.

• Enforcing strict speed limits throughout all routes on site.

• Design, management and location of bunds reducing wind speeds and dust emissions.

*3.2 Soils & Fines*

• Soil and fines removal activities will be restricted to low risk weather conditions.

• Soil and fines handling shall be limited to short periods of time.

• Small scale plant shall be used to move soil where possible.

• All topsoil would be stored in a mound to a maximum height of 3m and seeded and managed until returned for restoration.

• All subsoil would be stored in mounds to a maximum height of 5 m and seeded and managed until returned for restoration.

• Vehicle speeds will be restricted to 5mph and monitored to ensure speeds are adhered to.

*3.3 Stockpiles*

• Stockpiles shall be limited to a maximum height.

• Stockpiles shall be located in the plant site area or if necessary areas protected from prevailing winds and a suitable distance away from sensitive receptors.

• Stock piles shall be sprayed with water during dry conditions and prevailing north / easterly winds.

• Stockpiled material washed and screened where possible to remove dusty fractions prior to external storage.

*3.4 Loading / Unloading*

• Drop heights shall be kept to a minimum

• Loading and unloading will occur in areas protected from wind, a suitable distance from sensitive receptors and only carried out in suitable weather conditions.

• Vehicles shall be level loaded and easy sheet applied before moving away from loading area.

*3.5 Haul Roads*

• A 5mph speed limit is in place throughout the site.

• Water bowser and mechanical brush will be utilised on all haul roads and hard standing areas during dry and windy conditions. This activity will also extend to paths and roads in the village of Stainton.

• All HGV's leaving the site carrying any loose material will be sheeted to minimise airbourne fugative dust. Vehicles will be inspected to ensure sheet is in position prior to leaving the site and/or loading areas.

• Water bowser and mechanical brush will be used during dry and windy conditions.

• Wheel wash facilities will be available and used regularly.

*3.6 Weather conditions*

During dry windy conditions, if any operations are identified as causing or likely to cause visible dust emissions across site boundaries, or if abnormal emissions are observed within the site, site operations will be halted or modified until effective remedial actions can be taken and/or the weather conditions giving rise to the emissions have moderated.

A trigger system will be adopted to identify those weather conditions when there is an increased or high risk of wind-blown dust.

Wind will be visually monitored by use of a wind sock.

A weather station will be utilised to give instant and site-specific data and assist with completing environmental observation logs.

Online weather data will be reviewed on a regular basis allowing site manager to forwardly plan daily activities in accordance with conditions.

*3.7 Soil stripping, soil storage and reinstatement*

There is potential for high levels of airborne and wind-blown dust propagation from soil stripping, storage and reinstatement although these are generally short-term, transient operations.

Soils will be removed progressively according to operational phasing and transported by dump truck for storage in screening bunds or used directly for restoration.

Unacceptable dust emissions from soil stripping, storage and reinstatement can be controlled by minimising working of soil in very dry, windy conditions, by reducing drop heights at material transfer points and controlling vehicle speeds.

This is especially important when soil is being worked at the site boundary or close to any receptors.

Soil storage bunds will be stabilised by seeding and maintained appropriately.

Additional control measures, such as the use of water sprays or wetting down with a water bowser, will be considered where there is a risk of wind-blow across the site boundary towards off-site receptors.

*3.8 Overburden removal, storage and reinstatement (including inert fill)*

Overburden will be used to form screening bunds and in site restoration.

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.

The risks of dust emissions from quarry waste and inert material will vary according to the nature of the materials handled. There is a relatively low risk of dust emissions from freshly excavated subsoil whereas there can be a high risk of wind-blow from dry, unconsolidated materials.

As with soils, working of overburden, quarry waste and inert backfill materials near the site boundary will be minimised in very dry, windy conditions.

*3.9 Wind scouring of exposed surfaces and stockpiles*

Dust emissions from exposed surfaces will be minimised during operating hours by wetting down surfaces with a water bowser as necessary, especially in periods of dry, windy weather. This will 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 will be managed to maintain a smooth profile to minimise the

spreading of loose materials and will be disturbed as little as possible to encourage the formation and stabilisation of a surface crust.

It may also be necessary to wet down stockpiled materials to reduce the risk of wind-blow from exposed surfaces.

*3.10 Maintenance*

Effective control of airborne dust emissions requires the maintenance and proper operation of all plant and equipment, including fixed and mobile dust extraction and suppression equipment.

A programme of planned maintenance will be carried out on all plant and equipment in accordance with the manufacturers' recommendations to ensure that it operates at optimum efficiency. Stocks of essential spares and consumable items will be held at the site or kept readily available for use at short notice.

Any malfunction or breakdown leading to abnormal emissions will be dealt with promptly and operations will be modified or suspended until normal working can be restored. All such malfunctions and the actions taken will be recorded in the site logbook.

*3.11 Site management*

The Site Manager will exercise, either personally or by delegation to suitably trained and responsible staff, day-to-day control of the site. They will be responsible for the satisfactory working of the whole site and for ensuring full compliance with the dust management and monitoring plan.

Staff and management will receive the necessary training and instruction in their duties relating to all operations and the potential sources of dust emissions. Focus will 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.

Specifically, an information sheet summarising the requirements in respect of road transport will be handed to drivers employed by external hauliers. The drivers will be asked to sign for the sheet, acknowledging that they have read and understood the requirements.

Any member of staff who fails to comply with the provisions of the dust management and monitoring plan will be re-trained as necessary and may also be subject to disciplinary action. External hauliers failing to observe the requirements in respect of vehicle operations will be asked to leave the site.

General matters and the management of the site can affect the likelihood of significant dust emissions.

These include:
• the use of clean water for dust suppression to avoid re-circulating fine material;
• high standards of house-keeping to minimise track-out and wind-blown dust; and
• effective staff training in respect of the causes and prevention of dust.

## 4.0 Monitoring

Dust emissions at Gayles Quarry will be monitored routinely by visual means and by fixed dust monitoring equipment at key locations when required.

### *4.1 Visual*

All activities with the potential to cause either airborne or wind-blown dust emissions will be monitored appropriately. This will include a visual assessment of any potential impacts at downwind receptors.

Regular visual inspections of the surrounding highway will be undertaken with particular attention given to the junction to Sturdy House Lane.

Should visible dust be generated, the source/s of the dust will be identified, and the necessary corrective action will be taken. Each event, its cause and the action taken will be recorded in the Environmental Observation Log. **SEE APPENDIX C**

### *4.2 Dust monitoring*

Directional dust samples will be collected at appropriate locations over fortnightly intervals or more frequently if site activity is closer to receptors.

The purpose of this monitoring is to evaluate the direction and quantity of dust flux towards off-site receptor locations.

A more intensive programme of monitoring will take place during initial site set-up activities (haul roads, bund works) which will determine eventual location of monitoring locations and assist in bund construction and location.

Dust will be further controlled on and off site by regular monitoring. An environmental log is completed on a daily basis. Visual inspection of airbourne dust around working areas, dust suppression, weather conditions including wind speeds and direction and if it is dry, wet etc are all observed and findings recorded in the enviromental observation log. (See example Rev EO0.02)

A dust suppression log is completed each time the water bowser and/or road sweeper are used. This log records date, time, process, location where used and reason and used in conjunction with the environmental observation log provides a written record of all activities taking place on site which have the potential to cause a dust issue and relating mitigation measures applied each time.

The Quarry Manager shall monitor dust potential by:

• Identifying and monitoring the intensity of potential dust generating activities and locations.

• Monitoring and recording weather condition during dust sensitive periods using in-house weather station.

• Responding to potential and actual dust problems by implementing mitigation measures.

• Ceasing operations when major impacts cannot be avoided.

*4.3 Methodology*

Analysis and reporting of dust monitoring samples will be carried out by NEMS at intervals agreed with NYCC

*4.4 Dust monitoring Locations*

Directional dust monitors will be located at or near the site boundary between the active site operations and nearby receptors, according to the current stage of operation.

The suggested approximate dust monitoring locations are shown in Appendix B.

*4.5 Response*

The results of the dust monitoring programme will be used to evaluate dust control measures in place at Gayles and may be utilised to determine if mitigation measures are suitable or require improvement. All data will be made available to the local authority upon request and will be reviewed in relation to any relevant community response or complaint records.

A record will be kept of the findings and of any actions which are subsequently taken.
The suitability of the dust monitoring regime will be reviewed over time.

Any potential revision to the dust sampling locations will be discussed with the local authority and if required, all members of the LLG before implementation.

Results will be summarised and evaluated in regular dust summary reports when required, with reference to site activities and any dust complaints. These summary reports can be made available to the LLG for discussion during liaison meetings.

**SEE APPENDIX D**

## 5.0 Emergency response

An emergency response procedure, to be followed in the event of a major dust emission,

will be kept at the site office.

For the purposes of emergency response, major dust emissions will be defined as including:

• visible dust crossing the site boundaries;

• persistent fugitive dust from mineral processing;

• persistent fugitive dust when loading or tipping soils, minerals or inert waste;

• persistent fugitive dust from transport or plant movements; and

• persistent wind-blown dust.

The contact details of key personnel and organisations will be listed in the procedure.

## 6.0 Complaints

All complaints regarding dust emissions will be recorded and reported to the Site Manager, who will investigate the circumstances and ensure that the necessary corrective measures are taken.

In the event of a complaint from a member of the public regarding dust emissions from the site, a record will be kept and made available to the local authority as required. Additionally, details of any complaints received and corrective action taken will be made available to the LLG for discussion.

All complaints will be investigated and the complainant kept informed throughout the investigation. The local authority will be kept informed of the results of any subsequent investigation.

In the event of any dust complaint substantiated after consultation with the MPA, the effectiveness of the dust management and monitoring plan will be reviewed.

## 7.0 Review and update

The continuing effectiveness of this dust management plan will be reviewed in consultation with and at a frequency determined by the local authority.

Reviews will consider the compliance records, complaints history, monitoring records and any recent sensitive developments on neighbouring land.

*Reviews of the plan will also be undertaken in the event of:*

• changes to regulations

• dust complaints from nearby residents or businesses; or

• consistently high results from the directional dust receptors.

• changes to site layout, fixed/mobile plant or equipment

The plan will be amended as necessary, including any changes to the monitoring methods and control measures which may be agreed.

**APPENDIX A**

**DUST RECEPTOR LOCATIONS**

# AWAITING SITE PLAN

**APPENDIX B**

**DUST MONITORING LOCATIONS**

# AWAITING SITE PLAN

## APPENDIX C

## ENVIRONMENTAL OBSERVATION LOG

**GAYLES QUARRY**

Environmental Observation Log Rev. 0.001 Mar 22

| Environmental Observation Log | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Activity** | | | | | | | **Week Commencing** | | | | | | | |
| **Item** | **Monday** | | **Tuesday** | | **Wednesday** | | **Thursday** | | **Friday** | | **Saturday** | | **Sunday** | |
| Time of Assessment | | | | | | | | | | | | | | |
| Observer's Position | | | | | | | | | | | | | | |
| Airborne Dust | | | | | | | | | | | | | | |
| Dust Suppression | | | | | | | | | | | | | | |
| Wheel wash active | | | | | | | | | | | | | | |
| Further actions | | | | | | | | | | | | | | |
| **Weather** | am | pm | am | pm | am | pm | am | pm | am | pm | am | pm | am | pm |
| Dry/Damp/Wet | | | | | | | | | | | | | | |
| Wind Direction | | | | | | | | | | | | | | |
| Wind Speed | | | | | | | | | | | | | | |
| Comments | | | | | | | | | | | | | | |
| Signed | | | | | | | | | | | | | | |
| Date | | | | | | | | | | | | | | |
| Signed Manager/Supervisor | | | | | | | | | | | Date | | | |

## APPENDIX D

## DUST SUPPRESSION LOG

Dust Suppression Rev 0.001 Mar 22

# GAYLES QUARRY

### DUST SUPPRESSION LOG

| DATE | TIME | PROCESS | LOCATION | REASON FOR SUPPRESSION | INSPECTED BY |
|---|---|---|---|---|---|
| 16/08/2022 | 10:30:00 | Water bowser | Site access road | V. dry conditions/strong winds | T. McHale |
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