Dust Emissions Management Plan

Shellingford Quarry

January 2026

Multi-Agg Ltd

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Table of Contents

List of Tables

List of Figures

1 Introduction

1.1 Overview

Multi-Agg Ltd (herein Multi-Agg) is seeking consent to vary the existing EPR Permit EPR/BP3095EU at Shellingford Quarry to add a deposit for recovery activity to accommodate infilling within the adjacent western quarry extension area with imported inert waste. The additional deposit for recovery activity associated with the Permit variation will be limited to the western quarry excavation area that is adjacent to the inert landfilling area covered by existing EPR Permit EPR/BP3095EU.

Multi-Agg extract and process limestone at Shellingford Quarry and planning permissions for the development of the western extension area was approved in 2020.

As part of the application, the Environment Agency (EA) require submission of a Dust Emissions Management Plan (DEMP) for the proposed operations.

DustScanAQ (DS) was instructed by GWP Consultants LLP on behalf of Multi-Agg to produce a DEMP to be submitted with the application. DS are familiar with the operations at Shellingford Quarry and carried out the dust and air quality assessment submitted with the planning application for the western extension in 2018[1]. DS also produced a technical note in response to a Regulation 25 request for real-time fine particulate matter monitoring to summarise the results in 2019[2] and produced a summary report in 2021 for additional monitoring carried out in March and April 2021[3].

This DEMP report has been put together to detail the appropriate management, mitigation and monitoring for the proposed importation of inert waste and associated infilling activities.

1.2 Site setting

Shellingford Quarry is located in a mostly open location, approximately 500 m west of the western edge of Stanford in the Vale and approximately 250 m east of the village of Shellingford. White Horse Business Park is also located immediately south of the current site and east of the extension area.

The site is situated within open farmland and the nearest high sensitivity receptors to the extension area are those in Shellingford on Church Street approximately 230 m to the south west, and the property approximately 250 m to the north on the corner of Fernham Road.

Access to the site is via a haul road off the A417. The site falls within the outer Impact Risk Zone to Fernham Meadows SSSI and both the quarry and the extension area are within a Conservation Target Area. The site lies 175 m south of Shellingford Quarry SSSI, although this is designated for its geological interest.

[1] ZELSS.AQA.Final
[2] 190305 JB TN
[3] ZELSS_PM10_2021A_Final

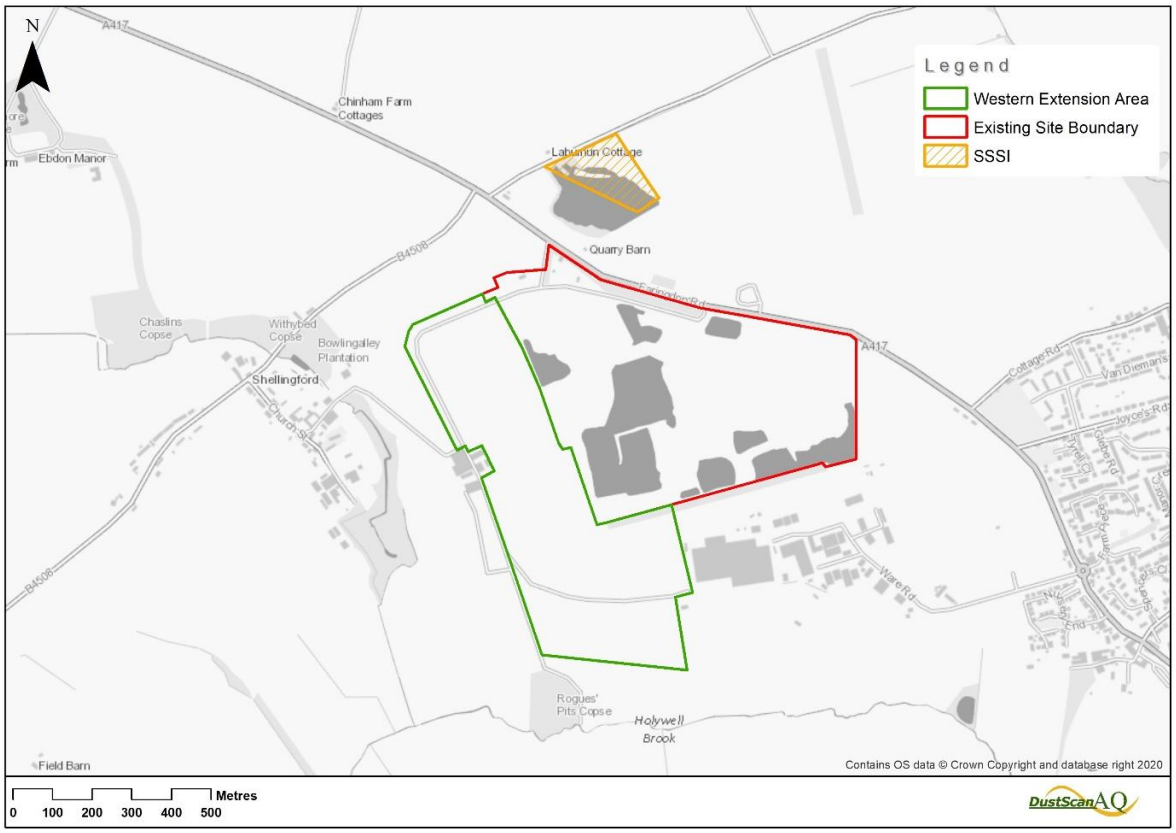


Figure 1.1: Site setting

1.3 Planned development

Multi-Agg propose to import inert waste for infilling the western extraction area at Shellingford Quarry (Appendix A) to achieve the restoration landform. The extension is limited to the southwest and west of the existing quarry. The site will be worked progressively in a phase-by-phase basis with the first phase in the north of the extension area and the final phase (phase 6) will be in the southeast of the extension area. The total amount of material imported is anticipated to be 1,600,000 m^3 over an approximate 20 year period.

The western working extraction site covers an area circa 28 ha in size. The site will be resorted back to agricultural use. In addition to imported material, indigenous quarry waste (soil, overburden, interburden and crushing/screening fines) will be used for infilling.

It is anticipated that the site will continue to operate 5 ½ days a week; 07:00 to 18:00 Monday to Friday and 07:00 to 13:00 on Saturday. No operations will take place on Sundays or on bank or public holidays.

The importation of inert material to infill will not affect existing site operations such as mineral extraction, handling and processing extracted material and storage and stockpiling.

1.3.1 Details of imported waste

The proposed waste types that will be imported to Shellingford Quarry for placement under the deposit for recovery activity in the western extension area are set out in Table 1.1.

The waste will be Landfill Directive inert Waste Acceptance Criteria (WAC) compliant i.e. the waste will comply with the leaching values for waste acceptable at landfills for inert waste set out in Section 2.1.2 of 'Council Decision of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC'.

Table 1.1: Waste types imported to Shellingford Quarry

Waste types	
Exclusions **Wastes having any of the following characteristics shall not be accepted:** **Consisting solely or mainly of dusts, powders or loose fibres** **Hazardous wastes** **Wastes in liquid form**	
Waste Code	**Description**
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOIL FROM CONTAMINATED SITES)**
17 01	**concrete, bricks, tiles and ceramics**
17 01 01	Concrete (2)
17 01 02	bricks (2)
17 01 03	tiles and ceramics (2)
17 01 07	mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06 (2)
17 05	**soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 04	soil and stones (excluding topsoil and peat) other than those mentioned in 17 05 03 (1)
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION AND WATER FOR INDUSTRIAL USE**
19 12	**wastes from the mechanical treatment of waste (for example sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 09	minerals (for example sand, stones) from the treatment of waste aggregates that are otherwise naturally occurring minerals – excludes fines from treatment of any non-hazardous waste or gypsum from recovered plasterboard (2)
20	**MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES) INCLUDING SEPARATELY COLLECTED FRACTIONS**
20 02	**garden and park wastes (including cemetery waste)**
20 02 02	soil and stones (excluding topsoil and peat) (1)

(1) For the purposes of waste acceptance, soil includes naturally occurring sands and clays

(2) Selected construction and demolition waste (C & D waste): with low contents of other types of materials (like metals, plastic, organics, wood, rubber, etc). No C & D waste from constructions, polluted with inorganic or organic dangerous substances, e.g. because of production processes in the construction, soil pollution, storage and usage of pesticides or other dangerous substances, etc., unless it is made clear that the demolished construction was not significantly polluted.
No C & D waste from constructions, treated, covered or painted with materials, containing dangerous substances in significant amounts.

If it is unsure whether the waste fulfils the definition of inert waste, or is uncontaminated, then testing of the waste must be undertaken to confirm compliance with the criteria for inert waste as specified in The Landfill (England and Wales) Regulations 2002 as amended. The origin of all waste must be known.

2 Potential for emissions

2.1 Disamenity dust

'Dust' is generally regarded as particulate matter up to 75 µm (micron) diameter and can be considered in two categories. Fine dust, essentially particles up to 10 µm, is commonly referred to as PM_{10} and is measured to agreed standards and forms part of the Air Quality Objectives (AQO).

Coarser dust (essentially particles greater than 10 µm) is generally regarded as 'disamenity dust' (or 'nuisance') and can be associated with annoyance, although there are no official standards (such as AQO) for dust annoyance[4].

Although it is a widespread environmental phenomenon, dust is also generated through many human activities. This includes at minerals sites and surface mines, and also by heavy industry, waste management, construction and demolition, agriculture (especially arable farming) and road transport.

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 Fine particulate matter PM_{10} and $PM_{2.5}$

Fine dust, essentially particles up to 10 µm, is commonly referred to as PM_{10}. Particles essentially up to 2.5 µm are commonly referred to as $PM_{2.5}$. PM_{10} and $PM_{2.5}$ are measured to agreed standards and, through the National Air Quality Strategy (NAQS) objectives to be achieved for a range of pollutants, forms part of the Air Quality Objectives (AQO). The AQOs for PM_{10} are 50 µg/m^3 averaged over 24 hours, not to be exceeded more than 35 times per year and 40 µg/m^3 as an annual mean. The annual mean objective for $PM_{2.5}$ is 20 µg/m^3. Currently, there are no 24 hour objectives for $PM_{2.5}$.

[4] The expression 'disamenity dust' has been recently promoted as a suitable expression for 'nuisance' dust, *i.e.* generally visible particulate matter' rather than specifically and in a legal sense to statutory nuisance, as defined in Section 79 of the Environmental Protection Act 1990

Baseline PM_{10} monitoring was undertaken as part of an addendum to the 2018 DAQA. Monitoring was undertaken west of the site at Church Farm towards the properties in Shellingford and at Shellingford School for one month from 29 March to 29 April 2019. The average PM_{10} concentration for the study period was 8.47 µg/m^3 at Shellingford School and 12.73 µg/m^3 at Church Farm. The maximum 24-hour average PM_{10} concentrations recorded were 29.89 µg/m^3 for Church Farm and 20.97 µg/m^3 for Shellingford School. It should be noted that the quarry was not operating for the majority of these periods, with the highest values during each 24-hour period recorded between 12:45 and 15:45 on Sunday 07/04/2019.

Further monitoring was undertaken in March and April 2021 at the same locations for PM_{10} and $PM_{2.5}$. The average PM_{10} concentrations for the study period were 12.19 µg/m^3 for Church Farm (lower than the baseline period's 12.7 µg/m^3), and 9.66 µg/m^3 for Shellingford School (similar to the baseline's 8.5 µg/m^3). The maximum 24-hour average PM_{10} concentrations recorded were 29.68 µg/m^3 for Church Farm (08:00 04/04/2021 to 08:00 05/04/2021) and 23.83 µg/m^3 for Shellingford School (03:00 03/04/2021 to 03.00 04/04/2021). It should be noted that the quarry was not operating for the majority of these periods, with the highest values during each 24-hour period recorded on a Saturday afternoon and Sunday, indicating that increases were due to regional background concentrations, with higher concentrations of PM_{10} reported throughout southeast England during this period[5].

The average $PM_{2.5}$ concentrations measured during the study period were 5.83 µg/m^3 for Church Farm and 3.95 µg/m^3 for Shellingford School, both significantly lower than during the baseline period (8.6 and 6.6 µg/m^3 respectively). The maximum 24-hour average $PM_{2.5}$ concentrations recorded were 12.29 µg/m^3 for Church Farm (02:00 04/04/2021 to 02:00 04/04/2021) and 10.66 µg/m^3 for Shellingford School (03:00 03/04/2021 to 03.00 04/04/2021). As with PM_{10}, it should be noted that the quarry was not operating for the majority of these periods.

The difference in concentrations between the two monitors indicates that concentrations at Church Farm, on the boundary of the western extension area, are up to 2.5 µg/m^3 higher for PM_{10} and up to 1.9 µg/m^3 higher for $PM_{2.5}$ compared to Shellingford Village, as a long-term average. However, it should be noted that the continued farming operations at Church Farm, such as vehicle movements on the unpaved farmers track adjacent to the monitor, also have the potential to generate dust and therefore the higher concentrations at Church Farm are not necessarily due to any quarry activity. Indeed, given that concentrations at both monitors were similar or less than baseline levels, this indicates that the quarry western extension had no discernible impact on PM_{10} or $PM_{2.5}$ levels during this monitoring period.

It can also be summarised that Shellingford Quarry had no discernible impact on concentrations of PM_{10} or $PM_{2.5}$ during this period, with the highest measured concentrations due to regional events, overall concentrations similar to baseline levels and no relationship between higher concentrations and winds from towards the quarry site, even during dry conditions.

[5] Using data from https://uk-air.defra.gov.uk/

Consequently, it is unlikely that operations associated with restoration would have significant impacts on PM_{10} and $PM_{2.5}$ concentrations in the locality and lead to an exceedance of an AQO. Therefore, this DEMP concentration on issues relating to visible 'disamenity' dust, although it will be revised as necessary and in accordance with any changes to the AQO.

2.3 Dust sources

There is a potential for dust emissions to occur at various stages of the operation, but these can generally be controlled by good practice. The specific site activities associated with the proposed importation of inert waste and associated that could give rise to dust are:

- Mobile plant (both on-site and off-site vehicle movements);
- Handling (tipping) imported inert waste;
- Soil, inert waste and on-site waste reinstatement; and
- Wind scouring of exposed surfaces.

Other dust sources in the locality include a local household waste recycling centre immediately north of the site. The site is very small and dust generation is considered to be minimal. The nearest receptors to the southeast of the waste handling site (and approximately southeast of Shellingford Quarry) are over 500 m and given the size of the operations, cumulative impacts are anticipated to be negligible.

Chinham Farm Quarry, operated by Hills Quarry Products, is a small quarry located approximately 960 m northwest of Shellingford Quarry, however there are no receptors located directly in between the two quarries that could experience cumulative dust impacts. There are no other significant activities within 1 km of the site boundaries. Other sources of dust may be present, such as agricultural land and road traffic, which also have a potential to contribute to dust emissions in the surrounding area. Dust generation from agricultural activities tends to be short-lived.

2.4 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).

As determined in the 2018 AQA, the principal dust receptors in the vicinity of the Shellingford Quarry western extension area are set out in Table 2.1 and Figure 2.1, together with the minimum distance (in metres) to the planned working areas, the principal direction (or directions) to the receptor from the phase of quarry workings and the sensitivity level of the receptor, as set out in the IAQM guidance.

Table 2.1: Principal dust receptor locations, Shellingford Quarry extension area

Receptor	Dust source location	Minimum distance (m)	Direction/s to dust source (degrees)	Sensitivity
Western edge of White Horse Business Park	Phase 5	20	195 - 345	Medium
Quarry Cottage	Existing plant site	200	135 - 195	High
Quarry Cottage	Phases 1 - 2	240	165 - 225	High
Shellingford C of E Primary School	Phases 1 - 2	230	015 - 075	High
Glebe House	Phases 1 - 2	230	015 - 105	High
Timber Yard Cottages	Phases 1 - 2	260	015 - 105	High
Church Colt	Phases 1 - 2	290	015 - 105	High
Church Farm House	Phases 1 - 2	290	045 - 105	High
Shellingford House	Phases 1 - 2	300	045 - 105	High
Home Farm House	Phases 1 - 2	325	045 - 105	High
Orchard Cottage	Phases 1 - 2	345	075 - 105	High
Ford Cottage	Phases 1 - 2	330	075 - 105	High

The distances shown in Table 2.1 are the minimum between each potential receptor and the closest stage of site operations and thus can be considered to represent a ‘worst case’ evaluation.

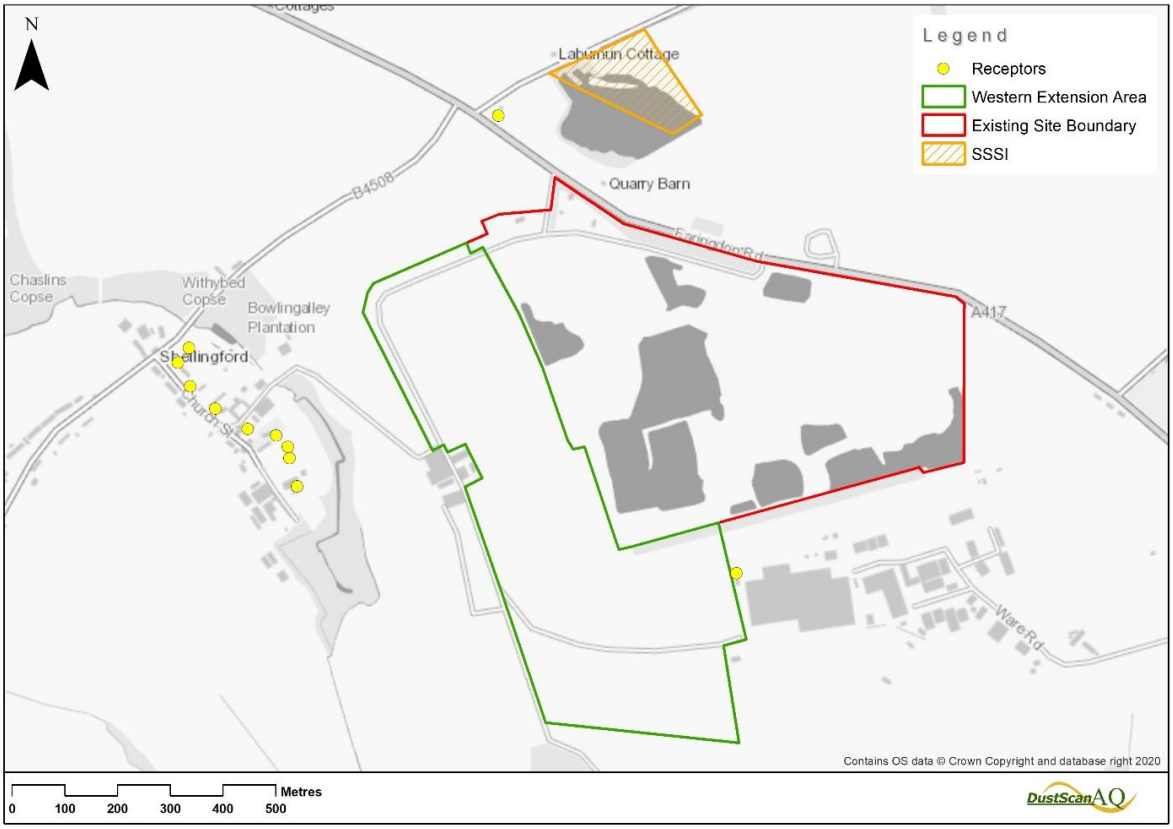


Figure 2.1: Site location and location of receptors

3 Dust and air quality impacts

3.1 Summary

Section 2.2 above states that Shellingford Quarry had no discernible impact on concentrations of PM_{10} or $PM_{2.5}$ during monitoring periods. With regards to dust nuisance impacts, dust monitoring was previously carried out in 2016 in accordance with the methodology described in Section 5.2 to obtain baseline data for the 2017 Dust and Air Quality Assessment produced by DS for the planning application for the western extension. Dust monitoring results were consistently low in accordance with the risk criteria set out in Table 5.1 suggesting low dust emissions were travelling from the site towards receptors in Shellingford. The dust monitoring was undertaken in the summer months, typically most dusty time of the year, and whilst site operations were ongoing. Therefore, it was found that dust management on site was working well to limit dust propagation towards nearby receptors.

Following a review of historical dust and PM_{10}/$PM_{2.5}$ monitoring and proposed operations, it was concluded that providing the operator continues to use appropriate mitigation measures, the proposed extraction of material, importation of inert waste and infilling can be carried out without causing adverse impacts to local air quality or dust disamenity.

4 Dust management

Standard good practice on dust control is set out in various publications, including PGN 3/08(12)[6] which sets out at Section 4 a summary of best available techniques for dust control at minerals sites. In accordance with good practice guidance, potentially unacceptable dust emissions from minerals sites can be addressed through a dust management plan[7].

4.1 General requirements

Unacceptable dust emissions can be mitigated by ensuring that routine checks of plant and machinery are carried out and that regular staff training is provided.

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.

Should visible dust be generated, the source/s of the dust will be identified, and the necessary corrective action will be taken. The nature of corrective actions will vary depending on the source or sources of dust; further details are outlined in Section 4.3. Each event, its cause and the action taken will be recorded in the site logbook.

Site personnel will be empowered to take appropriate action whenever visible dust emissions are observed, or appear likely to occur, as a result of any operation or process on the site.

4.2 Weather conditions

Weather conditions can have a significant effect on the potential for dust propagation from a minerals site. Wind speed, wind direction and precipitation are of particular importance and dust can be carried from a source towards receptors (such as nearby homes and other businesses) according to the strength and direction of wind.

Precipitation is recognised to suppress dust and 0.2 mm of antecedent rainfall is considered sufficient to suppress windblown dust for a number of hours.

A trigger system will be adopted to identify those weather conditions when there is an increased or high risk of wind-blown dust. Suggested weather trigger levels are detailed in Table 4.1.

[6] Process Guidance Note (PGN) 3/08 (12) *Statutory guidance for quarry processes* (Defra, 2012)
[7] AEA Technology, 2011: *Good practice guide: control and measurement of nuisance dust and PM_{10} from the extractive industries*

Table 4.1: Weather conditions and corresponding dust 'risk' conditions

Wind speed		Precipitation		
m/s	**Beaufort Scale**	**Dry**	**Showers**	**Heavy Rain**
> 6	4+ Dust and loose paper raised. Small branches begin to move.	**Red**	**Amber**	**Green**
2 – 6	2 – 3 Wind felt on exposed skin. Leaves rustle. Wind vanes begin to move.	**Amber**	**Green**	**Green**
< 2	0 – 1 Smoke drift indicates wind direction. Leaves and wind vanes are stationary.	**Green**	**Green**	**Green**

Interpretation of the weather trigger levels will be on the basis of:

- Red: All exposed areas of loose bare ground will be inspected and will be dampened down with the water bowser throughout the day. Reduce or suspend operations if dust emissions cannot be adequately controlled;
- Amber: Loose bare ground within 100 m of the site boundary will be inspected and the water bowser will be used to dampen down as necessary, and
- Green: no action necessary.

As an overriding requirement, during dry windy weather, i.e. 'red' conditions as defined in

Table 4.1, if any operations are identified as causing or likely to cause visible emissions across the site boundaries, or if abnormal emissions are observed within the site, the Site Manager will immediately modify, reduce or suspend those operations until either effective remedial actions can be taken or the weather conditions giving rise to the emissions have moderated.

A wind rose for Brize-Norton (the nearest available reporting station to Shellingford Quarry with sufficient data), approximately 14 km north of the site for 'dry' hours winds (for 2014 – 2018) is presented at Figure 4.1.

The wind rose shows the predominant wind direction for the area is from the southwest. There are no receptors to the northeast of the quarry, which would be at greatest risk given the predominant wind direction. The receptors are located to the east, south and west of the quarry.

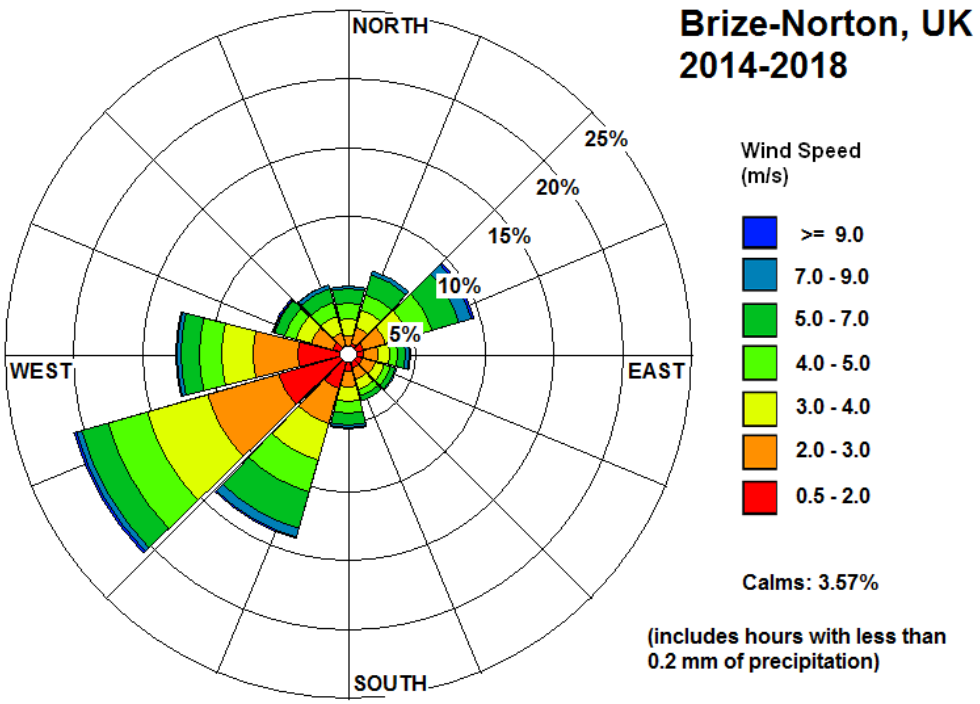


Figure 4.1: 5-year average wind rose, Brize-Norton 2014 – 2018

4.3 Process controls

As summarised in Section 3.1, the site can be operated in a manner unlikely to impact dust disamenity and local air quality providing appropriate control measures are implemented.

Specific control measures for the dust sources identified in Section 2.3 that could be associated with the proposed importation of inert waste and infilling are set out below.

4.3.1 Mobile plant (both on-site and off-site vehicle movements)

The greatest risk of dust from mineral workings is often considered to be associated with site traffic and there is a high risk of dust emissions from transport on unpaved roads unless appropriate mitigation measures are applied.

As a general rule, mobile plant with upward or sideways exhausts will be used and all site haulage will keep to designated haul routes.

Vehicles leaving the site will be sheeted and be checked for loose deposits that could fall onto the public highway. Any spillages will be cleared as quickly as possible by appropriate means to prevent unnecessary track-out onto the public highway. All HGVs leaving the site will pass through the wheel wash and wheel spinner before joining the A417. The haul road between the spinner and the A417 has been tarmacked, further reducing the potential for track-out onto the public highway. These additional mitigation measures shall further reduce track-out of material onto the public highway and reduce the potential for dust generation from the haul road itself.

Daily inspections of the haul road and A417 shall be carried out to check for any spillages and ensure the wheel-wash is working. All drivers shall be aware of the procedures for managing track out and should report any incidents. Any track-out or spillage incidents will be documented, and an investigation will be carried out to determine the cause and appropriate measures will be put in place to address this. This may include maintenance or improvements to the wheel wash if this is deemed to not be performing as intended.

A tractor and water bowser will be used for damping down internal haul roads around the quarry. The frequency of use of the water bowser will be determined by the Site Manger and will depend on site and weather conditions. As a general rule, the water bowser will be used more frequently in warmer, drier conditions when there is an increased risk of internal haul routes ‘drying-out’ and dust emissions from mobile plant movement.

Unmade access roads will be kept in good repair and all vehicles will keep to the site speed limit of 10 mph. All vehicles on-site will be operated in accordance with the Anti-idling Policy set out in Appendix C.

All plant within the quarry is less than 3 years old and have engines which comply with the latest European Stage V non-road emissions standards. The transport used on-site are all Scania XT models with Euro 6 diesel engines with an ad-blue system. If Multi-Agg need to replace any mobile plant, all new plant will have the latest Euro 6 diesel engines.

Regular visual monitoring of the haul road, access and the A417 shall also take place to ensure that any spills are identified as soon as practicable.

A powered road sweeper will be available to ensure that any track-out onto the A417 is cleared immediately.

Adoption of an effective road sweeper and use of the wheel wash will ensure that dust from HGV traffic from the access road is kept to a minimum.

4.3.2 Handling (including tipping) imported inert waste

The risk of airborne dust propagation emissions from imported deposit for recovery activity' will depend on the type and nature of the material. HGVs transporting inert waste to site will be covered whilst using the public highway and site access road.

Visible dust emissions from tipping will generally be short-lived. Tipping will be avoided near the site boundary closest to off-site receptors. Imported material will be checked prior to tipping. Dry, friable material will be wetted down prior to tipping in dry, windy conditions. Drop heights at any transfer points will be minimised (although there will be no transfer points associated with the deposit for recovery activity). Waste consisting of solely or mainly dusts, powders or loose fibres will be rejected from site. Full details of any rejected waste consignments will be noted and an incident report will be entered into the site diary. In addition, a rejected load form will be completed and the site/customer will be informed.

Additional control measures, such as wetting down with a water bowser, will be used for imported material where there is a risk of wind-blow across the site boundary towards offsite receptors.

4.3.3 Soil, imported inert waste and on-site waste reinstatement

There is the potential for high levels of airborne and wind-blown dust propagation during reinstatement.

Unacceptable dust emissions from reinstatement can be controlled be minimising working with soil, inert waste and quarry waste in very dry, windy conditions, by reducing drop heights at transfer points (although there will be no transfer points associated with the recovery activity) and controlling vehicle speeds. Extra precaution will be taken working near the site boundary. Operations shall be suspended when wind conditions are likely to result in visible dust being carried towards off-site receptors.

Additional control measures, such as the using the water bowser, will be used where there is a risk of wind-blow across the site boundary towards off-site receptors. Operations will be suspended if visible dust emissions being carried towards off-site receptors cannot be controlled.

4.3.4 Wind scouring of exposed surfaces

Dust emissions from exposed surfaces will be minimised during operating hours by wetting down surfaces with a water bowser, 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.

There will not be any stockpiles associated with the importation of inert material for infilling.

4.3.5 Other general controls

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.

The water supply to the wheel-wash and water bowser will be protected against frost to ensure its availability at all times.

4.4 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.

4.5 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 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 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 haulers. 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 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.

4.6 Other consideration

Clean water supply for the bowser will be sourced from the rainwater storage lagoons. The storage lagoons provide more than enough water for the water bowser and wheel-wash.

In the event of a water shortage, dust suppression throughout the site will be a priority. If in extreme circumstances where there is not enough water in the lagoons, mains water will be utilised and some or all site operations will be suspended so as not to cause adverse dust impacts beyond the site boundary.

5 Monitoring

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

5.1 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 inspections of the surrounding highway will also be undertaken, in particular the A417.

A daily site inspection will be carried out by the Site Manager (or other suitably qualified person). The current weather conditions will be recorded, and the Site Manager will determine the appropriate control measures to deploy to reduce dust emissions e.g. use of the tractor and water bowser to dampen down haul roads.

The visual monitoring locations will vary depending on the current phase of the infilling activities; however; visual assessments will include any potential impacts at downwind receptors, particularly when working close to the site boundary and/or in dry, windy conditions.

In addition to the daily inspection by the Site Manager, all staff working at the site will be responsible for monitoring and reporting visible dust emission at all times. Staff will be provided with radios to contact the Site Manager or Supervisor to update them on the current site conditions.

In order to avoid disamenity impacts at off-site receptors, if site operations are causing visible dust emissions across the site boundary towards a sensitive receptor, these identified operations will be reduced or suspended until the emissions can be controlled or conditions improve.

There are no arrangements to carry out visual monitoring outside of operating hours. However, a 24/7 contact number will be made available to local residents to report any complaints or concerns in the unlikely event that dust impacts occur outside of operating hours.

5.2 Dust monitoring

Directional dust samples will be collected at appropriate locations over weekly or fortnightly intervals only when site activity is closest to receptors, with suggested monitoring locations shown in Figure 5.1.

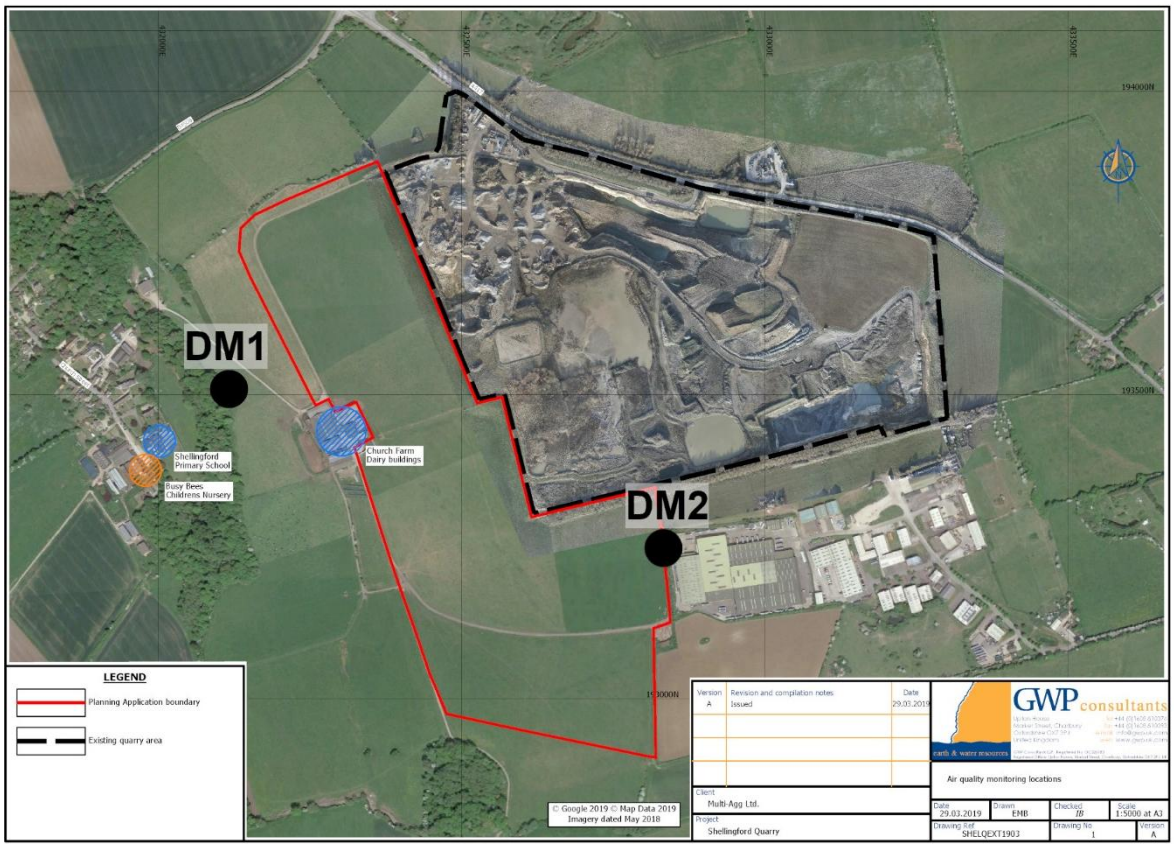


Figure 5.1: Dust monitoring locations

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

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 this management plan.

5.2.1 Methodology

Directional dust will be monitored at the designated locations at or near the site boundary 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).

The samplers will be installed in accordance with best practice guidance (including M17) and the supplier's instructions and will be located away from nearby obstructions to ensure a clear air flow to the monitoring head.

The dust gauges are of modular design to facilitate easy exchange by site personnel. The samples will be collected at fortnightly or weekly intervals and sent to DustScanAQ for processing.

The directional dust monitoring data is reported as Effective Area Coverage (EAC%, the darkness or potential soiling of dust) and Absolute Area Coverage (AAC%, a dust presence test irrespective of colour) over 15° arcs as specified above. Therefore, for each arc a single

%EAC value and a single %AAC value is returned. From this, it can be seen that the data are reported as discrete (non-overlapping) values for each arc around the cylinder.

The directional dust monitoring data shall be assessed in accordance with the 'impact risk' matrix in Table 5.1.

Table 5.1: Directional dust annoyance 'risk' matrix for use with directional dust samplers

EAC: Dust soiling	AAC: Dust coverage				
	Level 0: <80%/interval	Level 1: 80 to <95%/interval	Level 2: 95 to <99%/interval	Level 3: 99 to 100%/interval	Level 4: 100% over 45°/interval
Level 0: <0.5%/day	Very Low	Very Low	Very Low	Low	Medium
Level 1: 0.5 to <0.7%/day	Low	Low	Low	Medium	High
Level 2: 0.7 to <2.0%/day	Medium	Medium	Medium	High	High
Level 3: 2.0 to <5.0%/day	High	High	High	High	Very High
Level 4: ≥5%/day	Very High	Very High	Very High	Very High	Very High

5.2.2 Locations

The 2017 DAQA identified a number of potential dust receptors in the vicinity of the western extension area and, as shown in Section 2.4, these may be considered in relation to the operations at the site.

As with other pollutants, the propagation and effects of 'disamenity' dust can be considered in terms of source-pathway-receptor relationships. From above, a number of potential dust sources have been identified within the site and a number of potential receptors beyond it, and the pathway between source and receptor is by air.

The suggested approximate dust monitoring locations at and around the extension area are therefore illustrated in Appendix A. Monitoring location DM1 will be used to assess impacts towards Shellingford when operations are undertaken nearby and monitoring location DM2 will be used when site operations are undertaken at the east of the extraction area to assess emissions towards White Horse Business Park.

5.3 $PM_{10}/PM_{2.5}$ monitoring

Notwithstanding the findings of the 2017 DAQA, baseline monitoring and Statutory Guidance, which demonstrates that further PM_{10} and $PM_{2.5}$ monitoring is not required, Oxfordshire County Council (OCC) at their Committee on 19 October 2020 have stipulated that twice annual PM_{10} and $PM_{2.5}$ monitoring must be carried out. As such, two Turnkey Osiris real-time dust monitors shall be used twice-yearly to measure concentrations of particulate matter (PM_{10} and $PM_{2.5}$) at two locations, as shown in Appendix A. These

locations were previously used for the baseline particulate matter study and the monitoring carried out in 2021. Monitoring shall be carried out for one month during summer (between June and September), with a second month of monitoring taking place approximately six months later.

The monitors are compliant with the Environment Agency MCERTS certification scheme and can also include an anemometer to collect wind speed and direction data. Further details regarding the monitoring instrument have been provided in Appendix B.

5.3.1 Reporting

Directional dust monitoring results will be reported as AAC%, EAC% and Risk over 15° arcs, as specified above. 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.

All dust monitoring results will be issued to Multi-Agg and will be made available to the Environment Agency (EA) and OCC.

Dust and particulate matter results will be summarised and evaluated in regular dust summary reports when required, with reference to site activities and any dust complaints.

5.4 Response

The results of the dust monitoring programme will be used to evaluate site dust control at Shellingford Quarry. As set out below, results of the dust monitoring programme will be reported to OCC and EA as requested, and the dust monitoring data will be reviewed in on an annual basis. Where a dust complaint or community response has been received, the dust monitoring data for the period in question shall be reviewed at the time the complaint was received; in relation to where the complaint(s) was received from and the site operations and weather conditions at the time. If the investigation concludes the site was responsible for the dust complaint, corrective actions shall be taken to mitigate the risk of repeated incidents.

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, methods or trigger levels will be discussed with OCC/EA before implementation.

6 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.

7 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 (outlined in Section 4.3) are taken. A 24/7 contact number and email will be made available to residents to report any complaints or concerns.

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 EA as required.

All complaints will be investigated as soon as possible and within 5 working days., and the complainant kept informed throughout the investigation. All complaints will be logged in the format described in Appendix D. The EA will be kept informed of the results of any subsequent investigation.

In the event of multiple complaints associated with different operations, site operations will be reduced or suspended until the investigation into the complaints is complete.

In the event of repeat complaints for the same operations, the operation/source of concern will be reduced or suspended until a further investigation has been carried out to identify the reason for repeated failure to control dust emissions. Following the outcome of the further investigation, additional control measures will be adopted.

In the event of any dust complaint substantiated after consultation with the EA, the effectiveness of the DEMP will be reviewed and updated.

7.1 Local Liaison Group (LLG)

A Local Liaison Group (LLG) has been set up at the request of OCC. The purpose of this LLG is threefold:

- to bring together a network of parties that have an interest in the site and its operations;
- to facilitate communication between these interested parties; and
- to 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 – Multi-Agg Ltd;
- the local community – representative from the parish meeting;
- the local planning authority – OCC;
- the local county councillor; and
- the Environment Agency.

The LLG shall meet regularly to discuss ongoing operations, proposed changes, community concerns and received complaints. Where appropriate, dust monitoring data may be provided to the LLG.

8 Review and update

The continuing effectiveness of this dust management and monitoring plan will be reviewed annually. The reviews will take into account the compliance records, complaints history, monitoring records and any recent sensitive developments on neighbouring land.

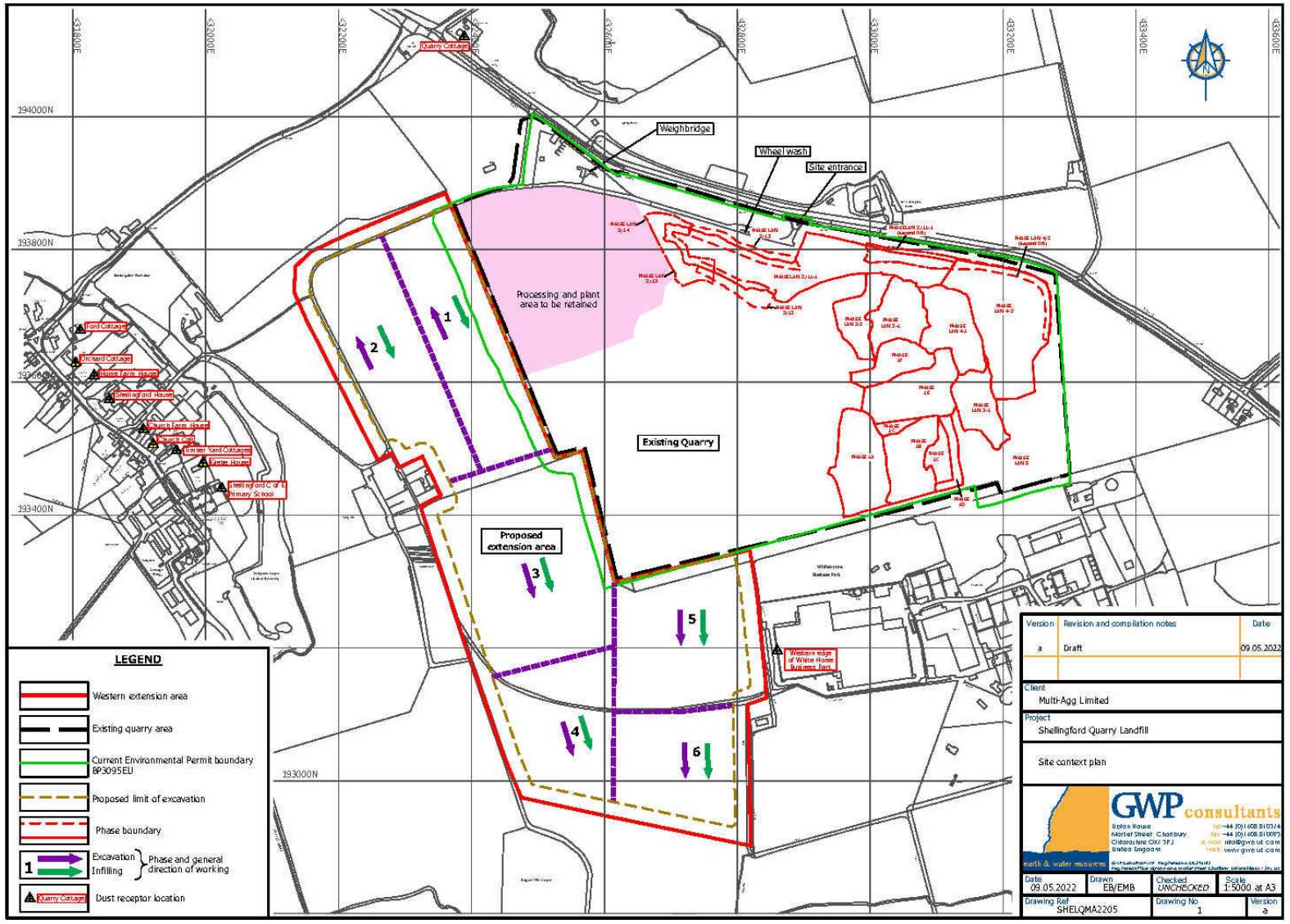
Reviews of the plan will also be undertaken in the event of:

- Changes to the AQO for PM_{10} and/or $PM_{2.5}$;
- Dust complaints from nearby residents or businesses;
- Significant changes to site operations; or
- Introduction of new receptors within close proximity to the site.
- Consistently high results from the directional dust risk criteria in the direction of sensitive receptors; or
- Consistently high or low results from the twice-yearly PM_{10} and $PM_{2.5}$ monitoring.

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

DustScanAQ
January 2026

Appendix A: Site layout plan



Appendix B: Addendum to DSAQ

Appendix C: Anti-idling policy

JCS TRANSPORT CONSULTANCY

EARTHLINE LTD

Engine Idling

Purpose
The purpose of this procedure is to minimise vehicle emissions that negatively impact on the environment and health, the company is committed to reducing vehicle idling times at depots, in stationary traffic queues and at any other times unnecessary idling takes place. The company actively encourages drivers to reduce levels of idling.

Scope
This procedure applies to all management and drivers who have a responsibility for driving company vehicles.

Procedure
Engine idling is the running of an engine which is not required for the examination or operation of machinery other than that used for driving the vehicle. The Highway Code states that you must not leave a parked vehicle unattended with the engine running or leave a vehicle engine running unnecessarily while the vehicle is stationary on a public road.

We will ensure drivers follow these anti-idling rules:

- Don't leave an unattended vehicle's engine running
- Do not leave the engine running during loading and unloading (except where specific machinery requires it)
- Don't leave the engine running in the depot
- Don't leave the engine running when you are parked up, or when you are on a break
- Do not leave the engine running during loading and unloading
- Cab heaters are provided for cold starts and defrosting – use them rather than the engine to warm the cab
- If you anticipate being stationary for more than one minute in traffic, consider turning your engine off

Signed .....

Malachi Chambers – Transport Manager

Dated ..... 26/6/20 .....

 Earthline Ltd JCS – 001 v2.2 12th June 2020 74

Appendix D: Proposed complaints log format, Shellingford Quarry

Customer Details	
Name	
Address Postcode	
Contact Details	
Tel	
Email	
Date	
Complaint Ref No.	
Complaint Details	

Investigation Details	
Investigation carried out by	
Position	
Date & time investigation carried out	
Weather conditions	
Wind direction and speed	
Investigation findings	
Feedback given to Environment Agency and/or local authority	
Date feedback given	
Feedback given to public	
Date feedback given	

Review and Improve	
Improvements needed to prevent a reoccurrence	
Proposed date for completion of the improvements	
Actual date for completion	
If different insert reason for delay	
DEMP update required?	
Date of DEMP update	

Closure	
Site manager review date	
Site manager signature to confirm no further action required	