

Dust Management Plan Manor Farm, Haddiscoe

September 2023

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1. Purpose

This Dust Management Plan has been developed in support of the following Planning Applications:

- FUL/2022/0056 - Land off Crab Apple Lane, Haddiscoe, Norfolk, NR14 6SJ

Extraction of Sand and Gravel with low level restoration to meadow species rich grassland with an ephemeral water body.

If permitted this Dust Management Plan will be incorporated into the site ISO14001 documented environmental management system which is subject to third party certification. This allows Breedon to demonstrate compliance with regulations and objectives and enables continuous improvement in environmental performance. The plan closely follows the guidance contained in Appendix 6 of the Institute of Air Quality Management Guidance on the assessment of mineral dust impacts for planning¹.

2. Identification of Potential Dust Release Points

The potential sources of dust at Haddiscoe are most easily classed by the size of the emission area.

Potential Sources of Dust		
Point Sources	Loading/Unloading	In dry conditions materials will be damped down which will help reduce any potential emissions.
	Processing plant	The processing plant has the potential to generate point source emissions of dust although this is well controlled with containment and suppression.
Line sources	Haul roads	Vehicle movements on haul roads have the highest potential for dust emission. All roads are conditioned with water to reduce potential emissions.
	Access Road	The entrance road is mostly concrete and conditioned with water regularly as required. A road sweeper is used twice weekly on the quarry entrance.
Area sources	Restoration	Soil handling during restoration is managed carefully to ensure the risk of dust emissions is minimised.

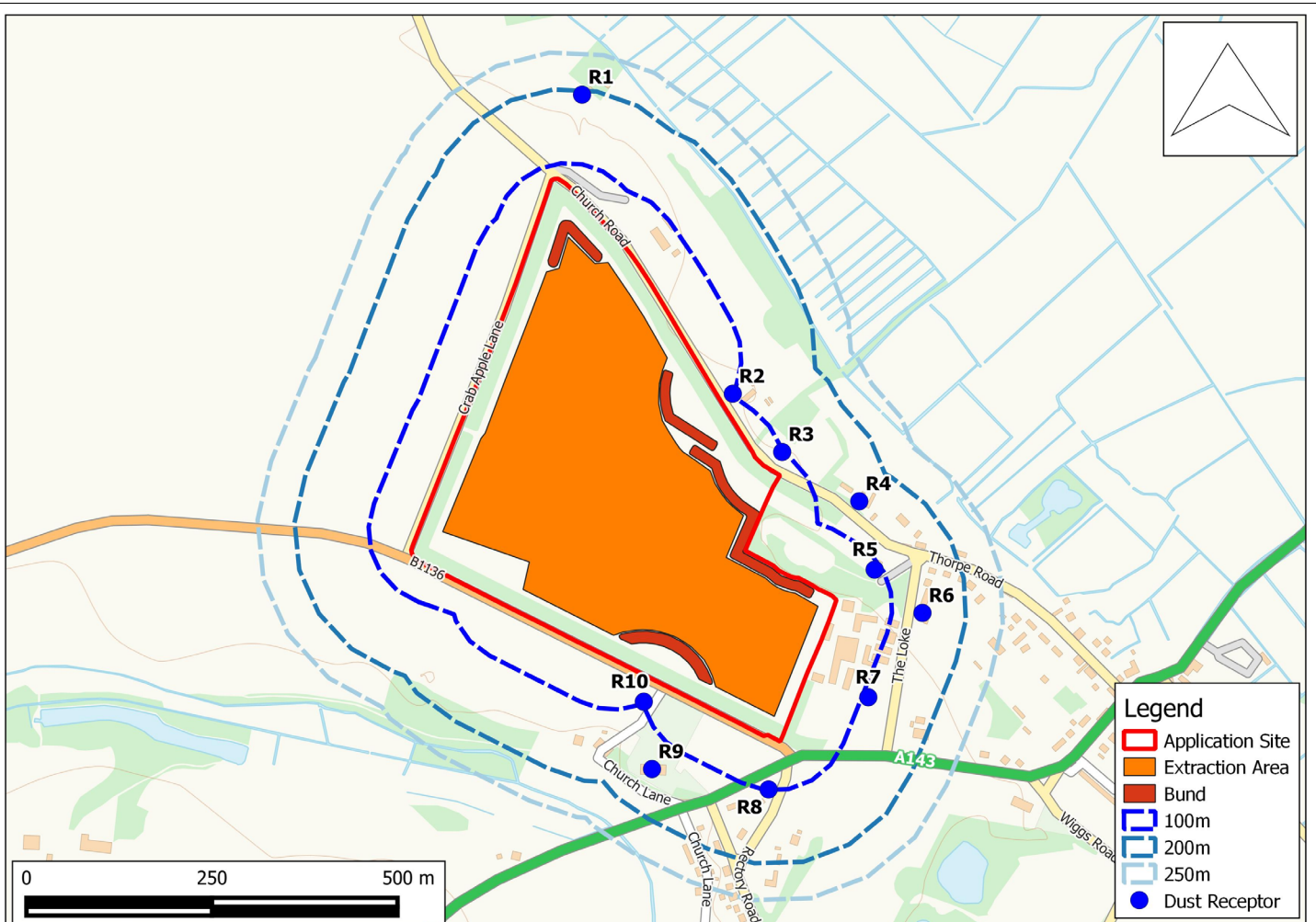
¹ Institute of Air Quality Management 'Guidance on the Assessment of Mineral Dust Impacts for Planning' (May 2016 (v1.1))

2. Location of Sensitive Receptors

Residential

Proposed Haddiscoe Quarry is located to the west of the village of Haddiscoe. The proposed quarry area is located directly to the south of Church Road and Thorpe Road, east of Crab Apple Lane, north of Loddon Road and west of The Loke. The nearest sensitive premises to the proposed site are R1 Low Farm - Residential, R2 Windmill Cottage – Residential, R3 The Boundaries – Residential, R4 Willow Barn – Residential, R5 2 Gravel Pit Lane – Residential, R6 4 The Loke – Residential, R7 Manor Farm – Residential, R8 Polperro - Residential and R9 St Mary's Church – Church., R10 1 Church Lane - Residential.

Location of the representative dust sensitive receivers



Ecology

Devils End Meadow County Wildlife Site (CWS) lies some 140-170m south of the proposed Haddiscoe Quarry. In addition to sensitive residential properties dust can be damaging to hydrologically sensitive habitats e.g. clogging leaf stomata; desiccation and loss of flush communities and, c) altering the surface chemistry on which lichens depend. Changes in the dust environment can also have a displacement effect upon fauna. The proposed quarry operations will be to the north of the CWS. The CWS is comprised of grassland with wet ditches, a small area of wet woodland and an area of dry woodland, lying along the Landspring Beck.

Weather Conditions

Wind rose data has been reviewed for the area. A 10-year average wind rose from Norwich meteorological station shows that the prevailing wind direction is from the southwest which would transport any potential emissions from the proposed Haddiscoe north eastwards.

The table below identifies representative potential dust sensitive receivers and their bearing from the proposed quarry along with the resultant likely wind frequencies are detailed below. The prevailing wind data show that, for approximately 67% of the time, wind speeds are likely to be below 5 m/s, when dust is unlikely to become suspended in the air.

Analysis of average rainfall data for the area shows that, over the 30 year period from 1981 to 2010, an average of 160-170 days will be wet days, i.e., rainfall will be greater than 0.2 mm (Met Office, 2022). Therefore, for approximately 45% of the time, daily rainfall will be greater than 0.2 mm, when there will be natural dust suppression.

	Indicative Receptor	Dust Sensitivity	Bearing from Haddiscoe	Frequency of wind >5m/s towards receptor (percentage of time)	Frequency of wind >5m/s towards receptor on dry days (percentage of time)
1	R1 Low Farm	High	north	6	3
3	R2 Windmill Cottage	High	North north east	25	13

3	R3 The Boundaries	High	North north east	25	13
4	R4 Willow Barn	High	North east	19	10
5	R5 2 Gravel Pit Lane	High	East north east	19	10
6	R6 4 The Loke	High	East	11	6
7	R7 Manor Farm	High	East	7	4
8	R8 Polperro	High	South east	3	2
9	R9 St Mary's Church	Medium	south	6	3
10	R10 1 Church Lane	High	South	7	4
11	CWS	Medium	South	6	3

4. Routine Dust Control Measures

4.1 Soil Stripping and Handling

Soil and overburden will be removed using a hydraulic excavator with dump trucks being used to take the material to temporary storage/screen bunds or place the soil directly on to a previously worked area for final restoration. A second hydraulic excavator will be used for bund formation. The soil storage mounds will be created to the heights shown on the plans and profiled using the excavator and will be grass seeded to bind the soil to prevent any wind-blown dust arising and wind erosion.

4.2 Extraction

Each phase will be worked using a long reach excavator. The phased extraction would ensure that no more than 2.5ha of mineral surface is exposed at any one time. The exposed minerals will be coarse sand/gravel with a low dust potential. The bunds constructed to the north and south of the extract area will form a barrier to the dispersion of dust from the exposed surfaces, along with the retained planting. The sand and gravel will predominately be worked dry as existing but depending on the water table level some lower horizons may be worked wet. The water table is generally below the deepest sands and gravels to be extracted within the phases. The loading shovel and excavator will run on the exposed gravels below ground level. The internal haul roads, mobile dry-screening plant and associated stockpiles do not remain in a fixed position for long enough for a permanent sprinkler system to be practicable. They will therefore be sprayed with water, from a bowser as and when necessary in dry weather conditions. As extraction activities are below ground level this will provide some screening from prevailing winds. The stockpile in the lorry loading and turning area will remain in place for the duration of the mineral extraction phase. The stockpile will be located more than 200m from the closest dust sensitive receptors. Screened sand will be stockpiled within the active quarry face prior to use for restoration and all of these stockpiles will be located more than 100m from dust sensitive receptors.

4.3 Processing

Any mineral extracted from Haddiscoe would be processed in the processing plant at Norton Subcourse. Mineral from the extraction area will be screened at the working face in a mobile screener then taken by dumper truck along the haul road where it will be loaded into HGVs.

4.4 Loading/Unloading

The stockpile in the lorry loading and turning area will remain in place for the duration of the mineral extraction phase. The stockpile will be located more than 200m from the closest dust sensitive receptors. All outgoing HGVs are required to have sheeted loads, to avoid the spillage of material or creation of dust outside the site. Within the site, internal haulage is restricted to clearly delineated routes, generally on a prepared surface and at low level where possible. All site vehicles are maintained in accordance with the manufacturer's instructions and are fitted with upswept exhausts and radiator cowls. Site haulage speeds are controlled to minimise possible dust entrainment. Appropriate instruction is issued to all vehicle drivers.

Mud and debris has the potential to be carried out of the site boundary onto public roads by the wheels of vehicles leaving the site. The site entrances and access roads are inspected daily to check whether it is clean and tidy. The main haul road has been routed away from dwellings. In very dry weather the main haul road will be kept moist, using water near the site entrance when required. Due to the distance of the haul road from residential properties, dust would be very unlikely to have any significant effect on them. A road sweeper typically sweeps the site entrance twice a week to prevent a build-up of dust and dirt and additional damping of the access road is undertaken if the daily inspection indicates it is necessary. A high standard of housekeeping will be maintained and any spillages that may give rise to dust emissions will be cleaned up promptly, normally using wet handling methods. Vehicle exhausts will be directed above the horizontal to prevent exhausts blowing onto road surfaces.

4.5 Restoration

At the advancing face the restoration materials (from within the site – no importation of material) will be deposited in a deposition area which will be located no less than 10 metres behind the working face. The restoration materials will then be spread out by a bulldozer and secondary inspected by the machine operator to ensure compliance with the permitted material types at the site. If required, the deposited material will be damped down with water.

Emission Source	Residual risk of emission after mitigation
<p><i>Soil Stripping and Handling</i></p> <ul style="list-style-type: none"> • Soil removal will be restricted to low risk meteorological periods. • Vehicle speeds will be restricted. • The duration of the activity will be minimal. • Disturbed surfaces will be re-seeded as soon as is practicable. • Screening bunds will be created to provide protection from winds. 	Small
<p><i>Extraction</i></p> <ul style="list-style-type: none"> • Material will be excavated damp. • Typical moisture content of sand and gravels are in the range of 5-8 per cent. 	Small
<p><i>Stockpiles</i></p> <ul style="list-style-type: none"> • Stockpiles will be sprayed with water to maintain moisture content if required. • Stockpiled material washed and screened to remove dusty fractions prior to external storage. • Stockpiles will be located in areas protected from prevailing winds. • The storage areas are located away from sensitive areas. 	Small
<p><i>Loading/Unloading of Aggregates</i></p> <ul style="list-style-type: none"> • Drop heights will be kept to a minimum wherever practicable. • The materials handled will be damp. • Excavators will work within the void and in an area protected from prevailing winds. 	Small
<p><i>Restoration</i></p> <ul style="list-style-type: none"> • Restored areas will be grassed/planted as soon as possible. 	Small
<p><i>Haul road</i></p> <ul style="list-style-type: none"> • Vehicle speeds will be restricted. • Unsurfaced roads will be damped down when required using a water bowser. • Loading and unloading will occur in areas protected from wind. • Drop heights will be minimised. • All vehicle loads will be sheeted, and loads inspected to ensure no potential spillages. • A water bowser and sprays will be available to moisten material if required. 	Small
<p><i>Vehicle Movements and Housekeeping</i></p> <ul style="list-style-type: none"> • Vehicle exhausts will be directed above the horizontal. • A road sweeper will be regularly used at the site entrance and along Crab Apple Lane. • Training will be provided to all employees. • Site procedures and daily records will be maintained. 	Small

5. Additional Dust Control Measures

This Dust Management Plan will be incorporated into the site procedures and will be revised as necessary to ensure that it remains appropriate to the activities occurring at the site and that any change in conditions relating to dust management are dealt with as part of those revisions. In particular, the monitoring procedures and compliance actions will be updated as required by the procedures specified within it.

The site will undertake regular visual dust monitoring to ensure this work instruction is being closely followed. The objective of the visual dust monitoring will be to determine whether dust has been transported off-site in such quantity or concentration that a nuisance may occur and if immediate further actions are required to be taken.

The results of all visual dust monitoring observations, along with remedial actions implemented and details of who carried out the monitoring will be recorded. All personnel employed on-site will be

aware of and will undertake visual monitoring for dust throughout the working day. Daily monitoring in the form of a visual assessment will be undertaken at the site.

Any problem observed, i.e. raised clouds of dust, will be reported to the Site Manager (or the next level of management if they are unavailable), who will be responsible for investigating the cause and implementing any necessary remedial action. All personnel who will undertake particulate observations will have received appropriate training, guidance and instruction in how to carry out the task.

Effective preventative maintenance will also be undertaken on all plant and equipment concerned with the control of emissions to the air and spares and consumables will be available at short notice in order to rectify breakdowns rapidly.

Should any dust related problems arise, action will be undertaken in accordance with the details in this Plan. In response to any need to verify visual dust monitoring the Site Manager (or appropriate) will undertake an immediate review and if necessary will engage independent consultants to undertake physical dust monitoring.

6. Action/Trigger Measures

In line with Breedon normal site practices, all machinery and equipment will be maintained and visual checks for emissions carried out daily to ensure that all equipment functions correctly. A daily site diary is kept on site and will be available for inspection. Daily comment will be made about weather conditions on site when necessary. Daily checks will be carried out to ensure that there are no visible emissions across the boundary. A copy of the Breedon dust prevention work instruction in Appendix 1 will be closely followed.

The results of all dust monitoring observations, along with remedial actions implemented and details of who carried out the monitoring will be recorded. All personnel employed on-site will be aware of and will undertake visual monitoring for dust throughout the working day. Daily monitoring in the form of a visual assessment will be undertaken at the Site. The aim is to prevent any visible airborne emission from any part of the process.

Any problem observed, i.e. raised clouds of dust, will be reported to the Site Manager (or the next level of management if they are unavailable), who will be responsible for investigating the cause and implementing any necessary remedial action. All personnel who will undertake particulate observations will have received appropriate training, guidance and instruction in how to carry out the task.

7. Cessation of Activities

During any 'adverse weather conditions' or when there is a likelihood of dust emissions as a result of breakdown or failure of dust control measures this will result in the quarry manager/site manager instructing a cessation of activities that may result in dust emissions. Activities will be stopped until either the circumstances have changed, or other appropriate measures have been put in place to allow the operations to re-commence without emissions of dust that could lead to complaint.

During the screening bund construction and removal, consideration will be given to meteorological conditions at the time of the works, and additional water suppression will be used if visible dust emissions occur during works close to sensitive dust receptors. Bund construction/removal will be paused if water suppression does not control dust emissions during the works.

8. Complaint/Incident Procedure

The site complaints procedure will ensure that any nuisance being caused to residents is dealt with effectively. A register of complaints is kept on-site to record all concerns made either directly to the Site Manager or via the regulatory authorities. Any problem observed, i.e. raised clouds of dust, will be reported to the Site Manager (or the next level of management if they are unavailable), who is responsible for investigating the cause and implementing any necessary remedial action. All personnel who will undertake observations on dust emissions will have received appropriate training, guidance and instruction in how to carry out the task. Each complaint is investigated, and the Site Manager reports the findings and the action taken to the Minerals Planning Authority (and any other relevant regulatory authority) within two weeks of any dust complaint received together with the findings of the investigation and any corrective action taken.

9. Roles and Responsibilities

At Manor Farm, Haddiscoe, as at all Breedon sites, the site manager/quarry manager is responsible for ensuring effective dust control and this relies on good site operational controls such as:

- monitoring weather conditions during dust sensitive periods;
- identifying and monitoring the intensity of potential dust generating activities;
- responding to potential and actual dust problems;
- planning contingency measures; and
- ceasing operations when major impacts cannot be avoided.

Dust Management is incorporated into the site procedures and is continually revised as necessary to ensure that it remains appropriate to the activities occurring at the site and that any change in

conditions relating to dust management are dealt with as part of those revisions. In particular, the monitoring procedures and compliance actions are updated as required by the procedures specified within it.

Staff at all levels receive necessary training and instruction in their duties relating to the control of all operations and the potential sources of dust emissions. Emphasis is given to dealing with plant malfunctions and abnormal conditions. Site staff inform the Site Manager/Quarry Manager whenever visible dust emissions are observed or appear likely to occur, as a result of any site operation. The continuing effectiveness of this dust management scheme is reviewed regularly.

Appendix 1 – Breedon Dust Prevention Work Instruction

DUST PREVENTION – PROCESSING, HANDLING, STORAGE & TRANSPORTATION

Purpose - To ensure adequate control of the level of dust generated whilst processing, handling transporting and storing aggregate materials.

<p>Dust Control General</p> <ul style="list-style-type: none"> Dust levels should be monitored to enable dust control measures to be used to prevent off-site emissions. Observations will be made of wind speed and direction. All incidents/abnormal emissions must be recorded along with details of any corrective action. Dust control should be carried out in accordance with the requirements of the permit and records maintained
<p>Plant and Conveyors</p> <ul style="list-style-type: none"> In dry conditions or when screening and handling dusty materials water suppression sprays should be used Minimise drop heights where practicable Where dust collection systems are fitted, the collector should be emptied regularly, taking care to avoid dust emissions Conveyor dust covers, wind boards and dust netting should be intact. Torn netting should be replaced promptly. (Not required with this proposal) Blowers, belt -scrapers or other devices should be fitted to clean conveyors to prevent build-up of spillage. Spillage should be cleared promptly. (No conveyors in this proposal) Under-trays and chutes may be fitted to collect material dropping from conveyors. The height of free-fall of material from the under-tray should be minimised. . (No conveyors in this proposal) Monitor for spillage and accumulations of material which could give rise to airborne dust and clean these up promptly Monitor the amount of dust being generated, recording observations in the logbook and inform your manager if necessary
<p>Vehicle movements</p> <ul style="list-style-type: none"> Ensure loads entering and leaving site are covered Enforce speed restrictions to minimise potential for generation of dust Ensure that dusty material are tipped in a controlled manner, minimising drop heights where practicable If necessary ensure vehicle wheels/ bodies are cleaned on site to prevent mud tracking on to the public highways Damp down haul routes to suppress dust Regularly inspect haul routes for integrity and repair if required.
<p>Yards and Stockpiles</p> <ul style="list-style-type: none"> Where fitted, sprinkler systems should be used to dampen yards and stockpiles during dry weather. Ensure that yard areas and roadways are swept regularly to prevent build-up of loose materials If fitted, timer controls should be adjusted to prevent the yard drying out between applications of water. Sprinkler heads should be maintained, and the effectiveness of the system should be checked regularly to ensure adequate coverage of the yard. Obstruction of sprinkler heads should be avoided. Where sprinklers are not available, yard areas should be dampened with a hose whenever there is a likelihood of dusty emissions or at the first sign of visible dust rising from the yard.