Dorket Head Inert Site Environmental Permit Application

Dust Management Plan

Mick George Limited

January 2022

Prepared on Behalf of Tetra Tech Environment Planning Transport Limited.
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1.0 INTRODUCTION

1.1 REPORT CONTEXT

1.1.1 This document has been prepared by Tetra Tech on behalf of the operator, Mick George Limited (Mick George) as part of an environmental permit application for Dorket Head Inert Site (the site).

1.1.2 Mick George seeks to gain a bespoke waste disposal permit and disposal permit for the permanent deposit of inert waste to land at the southern extension at Dorket Head Quarry to facilitate the restoration scheme (Drawing Number DHS 3/10, Revision A) that was approved by Nottinghamshire County Council (NCC) in June 2018 (reference 7/2018/0159NCC).

1.1.3 This document identifies the potential causes and effects of dust from the proposed activities and describes the measures that will be in place to prevent the occurrence of dust at the site.

1.2 REGULATED FACILITY DETAILS

Site Location

1.2.1 The site lies immediately to the south of the quarry workings at Dorket Head Quarry. Dorket Head Quarry is located on the northern edge of Arnold and the B684 Woodborough Lane. Arnold forms the northern district of the Nottingham urban area, with the city centre lying some 7.5km to the south-west. The Ibstock Dorket Head Brickworks is situated to the west of the quarry site which utilises clays that are extracted from the quarry for the manufacture of bricks.

1.2.2 As part of the quarry workings, FCC Recycling (UK) Limited hold an environmental permit (reference EPR/BV4444IQ) to operate a non-hazardous landfill at Dorket Head Quarry to fill the void that has been created from mineral extraction activities.

1.2.3 For identification purposes, Dorket Head Quarry is centred on approximate National Grid Reference (NGR) SK 81389 49495 and the site is centred on NGR SK 59887 46752. The site location and boundary are shown on Drawing Number MGL/B027237/LOC/01.

Site Classification

1.2.4 The regulated facility is an inert landfill.

Site Security

1.2.5 Access to the current quarry site is achieved by an unnamed access road off Woodborough Lane (B684). In terms of the application site, Mick George intend to submit a Non-Material Amendment (NMA) for a change in access. As part of the NMA, it is proposed that access will be off the existing access to Woodborough Lane and immediately on entry through the gates, Mick George will create a new metal surfaced road extending in a generally south eastern direction adjacent the existing clay haul road. The access will then turn to the south west before descending into the quarry. The site office, wheel cleaning and weighbridge (to the extent one is needed) will be located along the length of this new access road.

1.2.6 As part of the mineral extraction and restoration operations, security fencing will be established around areas of the site that will be close to public access areas to prevent unauthorised access. Site gates and any perimeter fencing will be inspected on a daily basis. Any identified damage to the fence or gates that could compromise the site security will be recorded and temporarily repaired as necessary before the end of that working day. Permanent repair or replacement will be undertaken as soon as practicable.

Site Context

1.2.7 The surroundings of the site comprise agricultural land to the north, east and west. To the south of the site is Hobbucks Nature Reserve and a housing estate with the closest residential roads Surgeys Lane, Homefield Avenue, Strathmore Road and Shandwick Close.

1.2.8 The site is not located within an Air Quality Management Area (AQMA).

1.2.9 Details of Dust Suppression are also detailed in the Environmental Statement of the Planning Application (Appendix A). Dust management techniques, as detailed within the assessment and this Dust Management Plan, would be implemented to minimise the effects of any dust emissions.

2.0 DUST SENSITIVE RECEPTORS

2.0.1 Receptors within 1km of the proposed application boundary, including those identified in the Nature and Heritage Screen, have been listed in Table 2 and are shown on Drawing Number MGL/B027237/REC/01. The main pathway for the identified sources would be the atmosphere and as such, atmospheric conditions can affect dispersion rates and hence potential risk. As a result, the location of each receptor in relation to the site may influence the potential impact of the risk, as summarised in Table 1.

Table 1: Location of potential receptors in relation to the proposed activity

ID	Receptor	Direction from Operational Area	Minimum Distance from the Permit Application Boundary (approx. m)
Designated ecological habitats/sites of geological importance e.g. Ramsar, SAC, SPA, SSSI, LNR, NNR, LWS			
1	Red Hill Local Nature Reserve	W	470
2	The Hobbucks Local Nature Reserve	S	Adjacent
Domestic Dwellings			
3	Properties on Surgeys Lane	SW	90
4	Properties on Homefield Avenue	SW	110
5	Properties on Jenned Road	SW	320
6	Properties on Brechin Close	S	220
7	Properties on Strathmore Road	S	230
8	Properties on Shandick Close	S	220
9	Properties on Campbell Gardens	S	225
10	Barn Farm Cottages	NE	820
11	Properties on Mapperley Plains	SE	300
12	Arnold Lodge	N	500
13	Barn Farm Cottages	NE	820
Commercial and Industrial Premises			
14	Howbeck Close/ Mellish Rugby Club	SE	370
15	Ibstock Brick Dorket Head	NW	590
16	Lodge Farm Business Units	NW	880
Schools / Hospitals / Shops/Amenities			
17	Pinewood Infant School	S	580
18	Killisick Junior School	S	590
19	Richard Bonington Primary & Nursery School	SW	780
Highways or Minor Roads			
20	Killisick lane	S	Adjacent
21	Surgeys Lane	SW	90
22	Brechin Close	S	220
23	Shandick Close	S	220
24	Campbell Gardens	S	225

25	Strathmore Road	S	230
26	Jenned Road	SW	320
27	B684 (Woodborough Lane)	N	320
28	B684 (Mapperley Plains)	E	420
29	Nottingham Road	SW	470
30	Calverton Road	W	480
31	Lime Lane	NW	640
Grade II Listed Buildings;			
32	Grade II Listed Building - 42A, Calverton Road	SE	690
Priority Habitats			
33	Priority Habitat Inventory – Deciduous Woodland		Within permit boundary
34	Priority Habitat Inventory – Deciduous Woodland		Within permit boundary
35	Priority Habitat Inventory – Deciduous Woodland		Within permit boundary
36	Priority Habitat Inventory – Deciduous Woodland		Partially within permit boundary
37	Priority Habitat Inventory – Deciduous Woodland	S	Adjacent
38	Priority Habitat Inventory – Deciduous Woodland	E	Adjacent
39	Priority Habitat Inventory – Traditional Orchard	E	230
40	Priority Habitat Inventory – Deciduous Woodland	SE	240
41	Priority Habitat Inventory – No main habitat but additional habitat exists	SE	350
42	Priority Habitat Inventory – Traditional Orchard	SE	440
43	Priority Habitat Inventory – Deciduous Woodland	W	480
44	Priority Habitat Inventory – Deciduous Woodland	N	900
Sensitive land uses e.g. farmland, allotments, commercial fish farms			
45	Dorket Head Farm	NW	760
46	Lodge Farm	NW	900
47	Wood Farm	N	900
47	Stockings Farm	E	980
Surface Water e.g. rivers and streams			
49	Temporary water bodies within wider Dorket Head Quarry	N	50
50	Pond	NW	430
51	Day (Dumble) Brook	E	800
Groundwater (sensitivity)			
According to the Multi-Agency Geographic Information for the Countryside's (MAGIC) website, the site is not located within a Groundwater Source Protection Zone. In terms of aquifers, the MAGIC website shows that the application site overlies a Secondary B aquifer. The MAGIC website indicates that there are no superficial deposits recorded on site.			

2.1 CLIMATE

2.1.1 Rainfall data is available from a rain gauge at Sutton Bonington, located approximately 23km south west of the site (NGR: SK 50625 26428) shown on the Met Office website (Met Office, 2021) from 1981 to 2010 with average monthly rainfall summarised in Table 1 below.

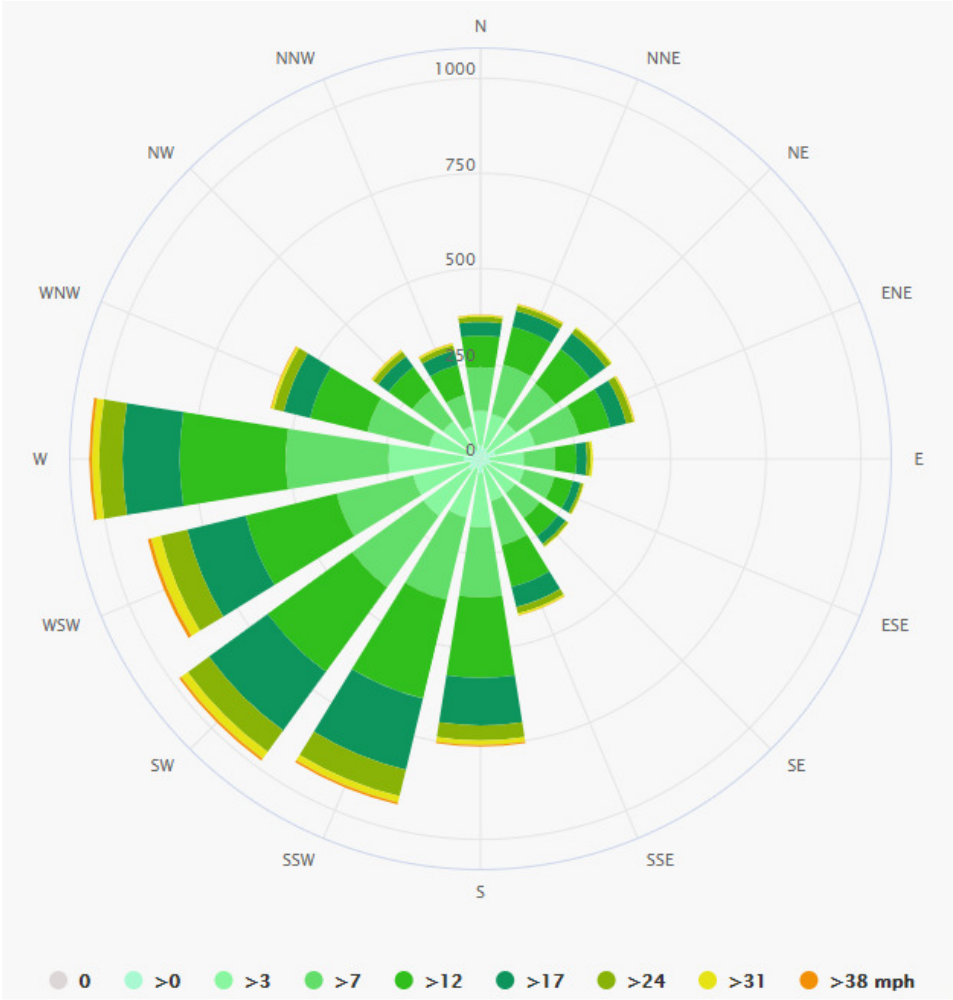
Table 2: Monthly Rainfall Data from Sutton Bonington (1981 - 2010)

Month	Average Rainfall mm (1981 – 2010)
January	52.2
February	38.9
March	43.9
April	48.9
May	44.2
June	60.2
July	54.1
August	55.5
September	51
October	61
November	54.5
December	55.9
Annual Average	620.9

2.2 WIND ROSE

2.2.1 The wind rose data, based on findings recorded at Nottingham/Watnall located approximately 9.5km south west of the site, taken from www.meteoblue.com shows that the prevailing wind direction is from the west. (see **Error! Reference source not found.**).

Figure 1: Wind Direction Recordings at Watnall



3.0 OPERATIONS

3.1 PERMITTED ACTIVIITES

3.1.1 The proposal comprises the importation of inert waste for infilling of the quarry void that would be created following mineral extraction activities at the site.

3.1.2 The works would be completed in accordance with the restoration plan (Drawing Number DHS 3/10, Revision A) that was approved by NCC as part of the planning permission (reference 7/2018/0159NCC).

3.1.3 It is considered that the proposed activities at the site would fall under the following Recovery and Disposal codes shown in Table 3, provided for in Annex II to Directive 2008/98/EC of the European Parliament and The Council of 19th November 2008 Waste.

Table 3: Proposed R/D Codes

R/D Code	Activity Description
D1	Deposit into or on to land (e.g., landfill, etc.)

3.2 OPERATING HOURS

3.2.1 In accordance with Condition13 of the planning permission (reference 7/2018/0159NCC), site operations would be limited to the following hours set out in Table 4.

Table 4: Proposed Operating Hours

Day	Mineral Extraction	Soil and Overburden stripping/replacement	Landfill Operations
Monday - Friday	0700 – 1900	0600 - 1900	0730 – 1730
Saturday	0800 – 1900	0800 - 1300	0730 - 1300
Sunday	No work shall be undertaken on Sundays and Public Holidays		

3.3 WASTE TYPES

3.3.1 Waste is defined as *'Any substance or object the holder discards, intends to discard or is required to discard'* under the Waste Framework Directive (European Directive 2008/98/EC), which repeals the European Directive 75/442/EC as amended.

3.3.2 Permitted wastes accepted at the site will be strictly inert as classified under the Landfill Directive (1999/31/EC) and Council Decision (2003/33/EC) of 19th December 2002 *'establishing criteria and procedures for the acceptance of waste landfills and are set out in Table 2'.*

3.3.3 Inert waste is defined in Article 2 of the Landfill Directive 1999/31/EC as follows:-

'Inert waste' means waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm to human health. The total leachability and pollutant content and the ecotoxicity of its leachate are insignificant and, in particular, do not endanger the quality of any surface water and/or groundwater. Table 2 lists those wastes that may be accepted at the site which do not require Waste Acceptance Criteria (WAC) testing under Council Decision (2003/33/EC), provided that they are inert and from a single source only (mixed loads from more than one site cannot be accepted without testing).'

3.3.4 Table 5 lists those wastes that may be accepted at the site which do not require Waste Acceptance Criteria (WAC) testing under Council Decision (2003/33/EC), provided that they are inert and from a single source only (mixed loads from more than one site cannot be accepted without testing).'

Table 5: Proposed Waste Types

EWC Code	Description
01	**WASTES RESULTING FROM EXPLORATION, MINING, QUARRYING AND PHYSICAL AND CHEMICAL TREATMENT OF MINERALS**
01 04	**Wastes from physical and chemical processing of non-metalliferous minerals**
01 04 08	Waste gravel and crushed rocks other than those mentioned in 01 04 07
01 04 09	Waste sand and clays
17	**CONSTRUCTION AND DEMOLITION WASTES (INCLUDING EXCAVATED SOILS FROM CONTAMINATED SITES)**
17 01	**Concrete, bricks, tiles and ceramics**
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 07	Mixtures of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
17 05	**Soil (including excavated soil from contaminated sites) soil and dredging spoil**
17 05 04*	Soil and stones other than those mentioned in 17 05 03
19	**WASTES FROM WASTE MANAGEMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND PREPARATION OF WATER INTENDED FOR HUMAN CONSUMPTION / INDUSTRIAL WASTE**
19 12	**Wastes from the mechanical treatment of wastes**
19 12 09	Minerals (for example sand, stones)
19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of wastes other than those mentioned in 19 12 11

20	MUNICIPAL WASTES (HOUSEHOLD WASTE AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INLCUDING SEPARATELY COLLECTED FRACTIONS
20 02	**Garden and park wastes**
20 02 02	Soil and stones

NB: The origin of the wastes must be known and they would have low contents (<5% by mass per load of other types of materials (like metals, plastics, soil, organics, wood, rubber, etc).

** This specifically excludes excavated soil from contaminated sites*

3.4 WASTE QUANTITIES

3.4.1 The restoration of the site will require approximately 375,000 m3 of material to be brought to the site. It is proposed that up to 450,000 tonnes of material would be brought to the site each year over a 2 to 3 year period.

3.5 FINAL LANDFORM AND AFTER USE

3.5.1 As detailed on the Restoration Masterplan (Drawing Number DHS 3/10, Revision A) the site will be restored to rich grassland and broadleaved woodland. A Public Rights of Way footpath will also be reinstated and will pass through the site from the southwest to the north east of the site.

3.6 SITE INFRASTRUCTURE

3.6.1 Although the site is situated within the wider Dorket Head Quarry site, Mick George intend to submit a NMA for a change in site access and infrastructure. Such infrastructure will include a weighbridge and a wheel cleaning facility to facilitate the waste activities that are proposed under this environmental permit application.

3.6.2 This weighbridge will be maintained in accordance with the manufacturer's requirements.

3.6.3 The wheel cleaning facility would be checked on a monthly basis and any necessary work would be carried out as soon as practicable. In the event of a breakdown with prolonged downtime, additional road cleaning equipment would be provided. If necessary, a road sweeper would be contracted to clean the site access road.

3.6.4 In terms of waste storage, Mick George do not intend to store any waste on site prior to disposal. Any waste that's accepted in accordance with the waste acceptance procedures (as detailed in the Operating

Techniques document), will be directed to the current working face of the site, where it will be unloaded from the vehicle and used immediately as part of the infilling activities.

3.6.5 As detailed in the Site Masterplan (Drawing Number DHS 3/1), that was approved under planning permission 7/2018/0159NCC, a bund will be placed to the south and south east of the site using topsoil and subsoils that will be stripped from the site. The bund will be formed by Ibstock Brick who have ownership of the site and the wider Dorket Head Quarry site. Despite this, Mick George understand that the bund may be a potential source for dust and therefore intend to implement control measures which are detailed in Table 6 of this document.

4.0 DUST AND PARTICULATE MANAGEMENT

4.1 RESPONSIBILITY FOR THE IMPLEMENTATION OF THE DUST MANAGEMENT PLAN

4.1.1 The Site Manager would be responsible for the implementation of this Dust Management Plan. All site staff would receive instructions on how the plan is to be implemented during toolbox talks on site.

4.1.2 A review of the plan would be undertaken every 12 months to ensure that it is fit for purpose and meets the requirements of current guidance.

4.2 SOURCES AND CONTROL OF DUST – LOCAL CONTRIBUTORS

4.2.1 In terms of other contributors, there is one activity within 1km of the site that may contribute to dust emissions within the area. This activity relates to the current mineral extraction and restoration activities that are currently taking place within the existing Dorket Head Quarry. .

4.3 SOURCES AND CONTROL OF DUST – PROPOSED ACTIVITIES AT DORKET HEAD INERT SITE

4.3.1 The sources and control measures for dust emissions are provided in Table 6 below. These measures would be implemented at all times to control dust on site and to minimise the risk of dust to impact sensitive receptors beyond the site boundary (as detailed in Table 1).

4.3.2 During periods of prolonged dry weather or high winds, it is considered that the risk of dust emissions would be elevated. During such periods, the weather conditions would be monitored on a daily basis and an assessment would be made on the risk of dust. Following this assessment, if the risk of dust is considered to be high – despite the control measures outlined below – then operations would cease on site until the weather conditions are considered to be more favourable. In the event that operations cease on site as a result of dust, the Environment Agency would be informed as soon as practicable.

Table 6: Dust Emissions Risk Assessment and Management Plan

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	**Receptor**	**Pathway**	**Risk Management**	**Probability of Exposure**	**Consequence**	**What is the overall risk?**
What has the potential to cause harm?	**What is at risk? What do I wish to protect?**	**How can the hazard get to the receptor?**	**What measures would you take to reduce the risk? If it occurs – who is responsible for what?**	**How likely is this contact?**	**What is the harm that can be caused?**	**What is the risk that still remains? The balance of probability and consequence.**
Dust emissions from vehicle movements	Occupiers of domestic dwellings listed in Table 1 above. Users of Commercial and industrial properties listed in Table 1 above. Designated Sites and Priority Habitats listed in Table 1.	Atmosphere	Vehicles delivering waste to the site will be covered or sheeted to prevent the emission of dust. All vehicles delivering waste to the site will be directed to the working waste face, where they will tip their load (as directed by site operatives) and then leave the site. As such, the risk of idling from this process is considered to be low. The site will benefit from an operational wheel wash which will be used by HGVs before they leave the site. This will minimise the risk of dust emissions on the haul road. Site access road will be visually inspected on a daily basis. In the event that visible dust is identified on the access road, water bowser and/or road sweeper will be made available to spray the site access road and clean any deposits from the road. Vehicle speeds will be limited on site and access road to 10mph to prevent re-suspension and entrainment of dust. All equipment and vehicles when not in regular use shall be switched off to minimise the risk of dust emissions that may arise from idling. During dry conditions, water suppression would	Dust could potentially reach the nearby dwellings, commercial and industrial properties and designated sites and priority habitats when a strong wind blows in their direction. Management actions should prevent this happening.	Local nuisance Potential respiratory health risk to public and staff. Smothering.	Not significant due to management techniques employed.

			be applied with a water bowser as necessary to stabilise any loose bare surfaces. The Site Manager or an appropriately trained operator or an appropriately trained operator will undertake a daily visual assessment of dust levels and all site operatives will be vigilant and report any problems to the Site Manager.			
Dust generated during loading/unloading of waste	Occupiers of domestic dwellings listed in Table 1 above. Users of Commercial and industrial properties listed in Table 1 above. Designated Sites and Priority Habitats listed in Table 1.	Atmosphere	The loading/unloading of wastes would be undertaken in a controlled manner to keep dust emissions to a minimum. Extra care would be taken with the deposit of waste during periods of prolonged dry weather or high winds. Drop heights would be minimised as much as practicable to reduce the generation of dust whilst the waste is being handled. Any incoming vehicles that are delivering waste to the facility will be directed to the working waste face, where the waste will be unloaded from the vehicle and will be utilised immediately as part of the infilling activities. As such, there will be no stockpiling of waste which will minimise the risk of dust emissions. The Site Manager or an appropriately trained operator or an appropriately trained operator will undertake a daily visual assessment of dust levels and all site operatives will be vigilant and report any problems to the Site Manager.	Dust could potentially reach the nearby dwellings when a strong wind blows in their direction. Management actions should prevent this happening.	Local nuisance Potential respiratory health risk to public and staff. Smothering	Not significant due to management techniques employed.
Acceptance of dusty wastes	Occupiers of domestic dwellings listed in Table 1 above. Users of Commercial and	Atmosphere	All waste loads would have the potential to cause dust issues and therefore would be assessed visually at the site entrance to confirm that they are suitable to be accepted at the site.	Dust could potentially reach the nearby dwellings when a strong wind blows in their direction. Management actions should	Local nuisance Potential respiratory health risk to public and staff. Smothering	Not significant due to management techniques employed.

	industrial properties listed in Table 1 above. Designated Sites and Priority Habitats listed in Table 1.		In the event that a waste load is identified to be dusty and not suitable for acceptance, the load would be subject to the 'Unauthorised and Rejected Waste' procedure which is detailed in the Operating Techniques (Appendix B of the main application).	prevent this happening.		
Dust from stockpiles screening mounds	Occupiers of domestic dwellings listed in Table 1 above. Users of Commercial and industrial properties listed in Table 1 above. Occupants on recreational areas identified in Table 1. Local Wildlife Sites and Designated sites identified in Table 1. Priority habitats identified in Table 1. Areas of protected species identified in Table 1.	Atmosphere	As noted in Section 3.6, a bund will be placed to the south and south east of the site using topsoil and subsoils that will be stripped from the site (as shown on Drawing Number DHS 3/1). The bund will be formed by Ibstock Brick who have ownership of the site and the wider Dorket Head Quarry site. Topsoils would only be stored in temporary stockpiles/mounds to a maximum height of 3m. Subsoil and soil-forming material storage mounds would be limited to 5m in height. Where topsoils would be stored for more than six months or over winter shall be seeded with grass for three months of their construction, to minimise the effects of wind blow. Stripped areas would be minimised as far as practicable and would be smoothed and compacted to seal the surface. All bunds will be dampened using a water bowser to minimise the risk of dust emissions during windy conditions.	Dust could potentially reach the nearby dwellings when a strong wind blows in their direction. Management actions should prevent this happening.	Local nuisance Potential respiratory health risk to public and staff. Smothering	Not significant due to management techniques employed.
Acceptance of dusty wastes	Occupiers of domestic dwellings listed in Table 1 above. Users of Commercial and industrial properties listed in	Atmosphere	All waste loads would have the potential to cause dust issues and therefore would be assessed visually at the site entrance to confirm that they are suitable to be accepted at the site. In the event that a waste load is identified to be dusty and not suitable for acceptance, the load would be subject to the	Dust could potentially reach the nearby dwellings when a strong wind blows in their direction. Management actions should prevent this happening.	Local nuisance Potential respiratory health risk to public and staff. Smothering	Not significant due to management techniques employed.

	Table 1 above. Occupants on recreational areas identified in Table 1. Local Wildlife Sites and Designated sites identified in Table 1. Priority habitats identified in Table 1. Areas of protected species identified in Table 1.		'Unauthorised and Rejected Waste' procedure which is detailed in the Operating Techniques (Appendix B of the main application).			

4.4 DUST MONITORING

4.4.1 All site personnel shall be trained as to the potential sources and effective mitigation of dust.

4.4.2 Daily visual inspections will be conducted within the site and on the local road network by the site personnel and especially during dry windy conditions to ensure that any dust sources are identified and dealt with promptly. All staff will remain vigilant and be required to identify when potentially dusty conditions are occurring on site. As part of the monitoring process, site personnel will complete the Daily Dust Conditions Log which is provided as Appendix C.

4.4.3 The daily visual inspections will be undertaken during the operating hours detailed in Section 3.2. Mick George do not propose to make any arrangements to monitor dust outside operating hours as it's considered that the risk of dust will be low during this period.

4.4.4 All staff will remain vigilant and be required to identify when potentially dusty conditions are occurring on site. In the event that dust emissions cannot be controlled, activities on site will cease until such point as prevailing conditions change or a more permanent dust control measure has been implemented.

4.4.5 A complaints log will be held on site. In the event of receiving a dust complaint, the name and location of the complainant, the nature of the dust related complaint, the site activity and prevailing weather conditions at the time of the complaint shall be noted.

4.4.6 The site manager shall investigate the complaint and take any remedial action which is deemed appropriate

5.0 REPORTING AND COMPLAINTS PROCEDURE

5.1 PURPOSE OF COMPLAINTS PROCEDURE

5.1.1 A Dust Management Plan should show how the operator would respond to complaints. Any complaints should be investigated promptly and appropriate remedial action should be taken. The complainant and anyone else likely to be affect should be informed of any action taken in response to the complaint.

5.1.2 A procedure has been developed (see

5.1.3 Table **7** below) to ensure that complaints would be handled by Mick George appropriately and consistently and to reassure the Environment Agency and the public that any of their concerns would be acknowledged and acted upon where appropriate. The procedure would be reviewed on an annual basis or in the event of any significant dust issues. Mick George has its own Particulate Matter document which is part of its EMS which is shown in Appendix B.

5.2 COMPLAINTS REPORTING ROUTE

5.2.1 In order to ensure that members of the public are easily able to report any complaints relating to dust emissions from the site, there would be a display board at the site entrance which details the site name, the permit number, the Environment Agency's contact details and Mick George contact details. By providing contact details for the EA as well as the operator, this ensures that the member of public can report their complaint and be confident that it would be received by the appropriate party even if they feel uncomfortable discussing directly with the operator.

5.3 COMPLAINTS RECORDS

5.3.1 Auditable records would be kept of any complaints made and the investigations undertaken. This would provide an ongoing record of the causes incidents which would enable Mick George to identify any patterns which would prompt a review in odour management procedures and control measures.

5.4 COMMUNITY ENGAGEMENT

5.4.1 Mick George Limited would be undertaking regular community liaison group meetings with any interested local parties and any issues with dust can be raised at that time.

Figure 2: Reporting Route

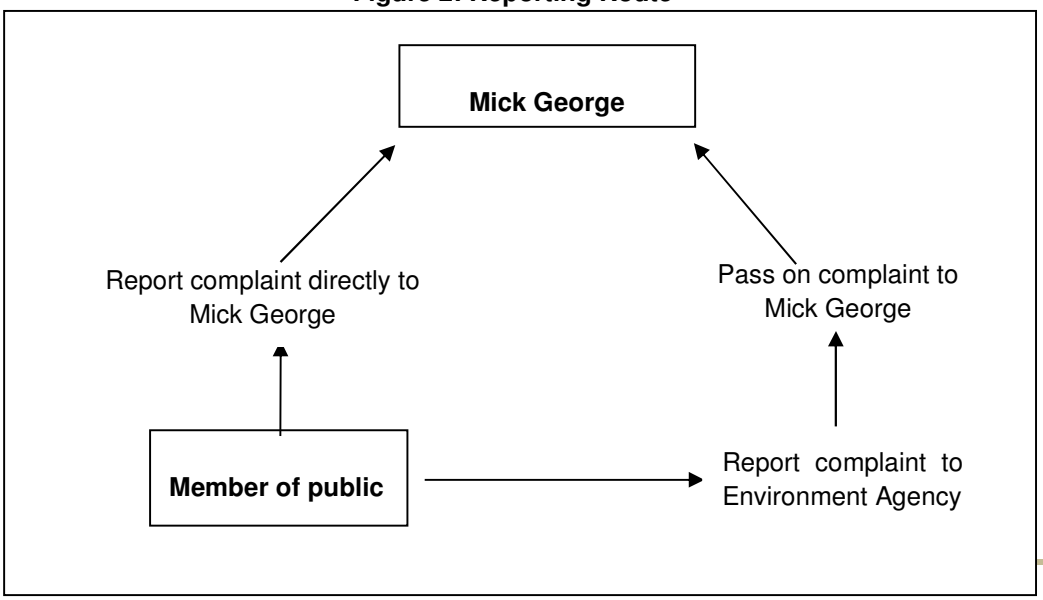


Table 7: Complaints Procedure

	Action	Person responsible for ensuring action is carried out	Timescale for Action Completion
1.	The Site Manager will be notified of the complaint and will make the appropriate managerial staff and site operatives aware of the complaint. The Environment Agency will also be notified of the complaint. The complaint shall be formally recorded using the Complaint Report sheet contained within the site's Environmental Management System	Site Manager	Within two working days of receipt of the complaint.
2.	The complaint would be investigated by:- a) Checking the monitoring records to see whether the complaint corresponds to the monitoring records. b) Checking the Site Diary and waste acceptance records to see if any particularly dusty waste was accepted. c) Checking the Site Diary to see whether the complaint corresponds to any operational issues at	Site Manager	Within one working day of receipt of the complaint.

	the site. If the cause of the complaint is established, it would be recorded within the Complaint Record Sheet (Appendix D). If no particular cause is identifiable then this would also be recorded.		
3.	If a number of complaints are received about a particular incident, then it might be necessary to increase the frequency of dust monitoring.	Site Manager	Within one working day of receipt of the complaint.
4.	The Site Manager would instigate any necessary reviews of procedures and would implement any required changes.	Site Manager	Within seven working days of receipt of the complaint.
5.	If appropriate, the complainant and the Environment Agency would be informed of any corrective actions taken.	Site Manager	Within seven working days of receipt of the complaint.
6.	A follow up audit on the corrective actions implemented shall be undertaken to ensure the complaint is not made again in the future and that the preventive procedure is effective.	Site Manager	Within two weeks of receipt of the complaint.
7.	Once the follow up audit has been completed, the Site Manager would ensure that the complaint and any action taken and the effectiveness of that action are recorded in the Environmental Management System. This record shall also note any amendments to procedures, both environmental and health & safety, which may be required following the investigation. The record shall be kept in the site office at all times or if it is an electronic record it would be accessible from the site.	Site Manager	Within two weeks of receipt of the complaint.

DRAWINGS

MGL/B027237/LOC/01 - Site Location and Environmental Permit Boundary

MGL/B027237/REC/01 – Receptor Plan

DHS 3/10 (Revision A) – Restoration Masterplan

DHS 3/1 – Site Masterplan

APPENDIX A

Environmental Statement Excerpt

CONTENTS

INTRODUCTION

10.1 This chapter of the ES considers the impact of the proposed southerly extension to the quarry on the local air quality environment.

10.2 The scope of the assessment has been agreed during the EIA Scoping Process[1] (refer to Chapter 4 above). The Scoping Opinion (Reference: F000665) included the following comments relating to air quality:

"*Air quality: The focus of the air quality assessment on dust emissions and their control is appropriate but other potential air quality impacts have not been mentioned. Odour emissions from landfill operations at Dorket Head have historically been a concern and it is anticipated that residents will require assurances on the potential magnitude of odour releases from future landfill operations proposed in this planning application. Whilst it is acknowledged that the inert character of the waste stream would control odour emissions, the ES should explore the potential for odour releases from the development sought planning permission including the potential for the disturbance of waste previously deposited at the site and gas collection infrastructure*."

10.3 It is important to note that there will be no non-hazardous (biodegradable) landfill operations associated with the Southern Extension; and as such, the restoration of the Southern Extension would not result in the release of any odorous emissions. The risk of odour from the disturbance of previously deposited waste is considered to be highly unlikely given that imported inert waste would be placed against the intact cap with no disturbance of previously restored areas. Furthermore, there would also be a suitable standoff distance between excavation operations associated with the Southern Extension and the existing landfill areas. Emissions of odour have therefore been scoped out of this assessment and have not been considered further.

10.4 The scope of this assessment has been agreed during pre-application discussions with Gedling Borough Council (GBC)[2,3]. The following aspects of the assessment were agreed:

- a review of the site location with respect to sensitive properties and other sensitive receptors;
- a review of baseline conditions (including data sourced from Local Air Quality Management (LAQM) reports and dust monitoring conducted by Ibstock Brick);
- an assessment of dust impacts (nuisance, health and ecological effects) using the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Mineral Dust Impacts for Planning; and
- a review of the existing dust controls and monitoring scheme on site and recommendations, where required.

[1] Proposed Southern Extension to Dorket Head Quarry – Regulation 15 Request for a Scoping Opinion. SLR Consulting, October 2017.
[2] Email correspondence between SLR Consulting and Brendan Cox, Scientific Officer – Public Protection at GBC, on 5th December 2017.
[3] Email correspondence between SLR Consulting and Brendan Cox, Scientific Officer – Public Protection at GBC, on 12th December 2017.

10.5 A record of dust complaints for the last three years was requested during pre-application discussions with GBC[4]. GBC stated in that in the past three years, there have been no formal complaints made regarding dust emissions.

RELEVANT AIR QUALITY LEGISLATION AND GUIDANCE

UK Legislation

Air Quality Strategy

10.6 The United Kingdom Air Quality Strategy (UK AQS) 2007 for England, Scotland, Wales and Northern Ireland[5] sets out the Government's policies aimed at delivering cleaner air in the United Kingdom (UK). It sets out a comprehensive strategic framework within which air quality policy will be taken forward in the short to medium term, and the roles that Government, industry, the Environment Agency (EA), local government, business, individuals and transport have in protecting and improving air quality.

Air Quality Standards

10.7 The Air Quality Standards Regulations 2010 seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, and also transpose the Fourth Daughter Directive within the UK. The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2010 No. 1001 Regulation 14 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.

10.8 The UK AQS is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution. For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. The UKAQS includes more exacting Objectives for some pollutants than those required by EU legislation. This assessment refers to UK Air Quality Standards, as compliance with these standards will also ensure that the less demanding EU Air Quality limit values would also be met.

10.9 The Air Quality Strategy defines 'standards' and 'objectives' in paragraph 17:

'For the purposes of the strategy:

- standards are the concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on assessment

[4] Email correspondence between SLR Consulting and Brendan Cox, Scientific Officer – Public Protection at GBC, on 5th December 2017.
[5] The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, DEFRA. July 2007.

of the effects of each pollutant on human health including the effects on sensitive subgroups or on ecosystems;

- objectives are policy targets often expressed as a maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedences, within a specified timescale.'

10.10 The air quality Standards and Objectives considered within this assessment are presented within Table 10-1. Locations where these Standards and Objectives apply are detailed in Table 10-2.

Table 10-1
Relevant Air Quality Strategy Standards and Objectives

Pollutant	Standard ($\mu g/m^3$)	Measured as	Equivalent percentile
Particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}) (gravimetric)	40	Annual mean	-
	50	24 hour mean	90.41th percentile of 24-hour-means
Particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$) (gravimetric)	25	Annual Mean	-

Table 10-2
Relevant Public Exposure

Objective Averaging Period	Relevant Locations	Objectives should apply at:	Objectives should not apply at:
Annual mean	Where individuals are exposed for a cumulative period of 6 months in a year	Building facades of residential properties, schools, hospitals etc.	Facades of offices Hotels Gardens of residences Kerbside sites
24-hour mean	Where individuals may be exposed for eight hours or more in a day	As above together with hotels and gardens of residential properties	Kerbside sites where public exposure if expected to be short term
1-hour mean	Where individuals might reasonably expected to spend one hour or longer	As above together with kerbside sites of regular access, car parks, bus stations etc.	Kerbside sites where public would not be expected to have regular access

Planning Policy

10.11 The relevant planning policy considerations have been considered in Chapter 5 above. Those relevant to this assessment are set out in Appendix 10/1.

General Nuisance Legislation

10.12 Part III of the Environmental Protection Act (EPA) 1990 (as amended by the Noise and Statutory Nuisance Act 1993) contains the main legislation on Statutory Nuisance and allows Local

Authorities and individuals to take action to prevent a statutory nuisance. Section 79 of the EPA defines as a potential Statutory Nuisance amongst other things, smoke, fumes, dust and smells emitted from industrial, trade or business premises so as to be prejudicial to health or a nuisance. It also defines as a nuisance accumulation or deposit which is prejudicial to health.

10.13 In contrast to suspended particulate matter, there are no UK or European statutory standards that define the point at which deposited dust causes annoyance or disamenity. 'Nuisance' is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred.

Other Relevant Guidance

The Mineral Industry Research Organisation (MIRO)

10.14 A 'Good Practice Guide' issued on behalf of MIRO was released in 2011. The purpose of the Guide is to assist in the identification, control and management of dust arising from the extractive industries. The guidance provides a useful reference for available methods of mitigation and monitoring.

IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning

10.15 The IAQM released the document '*Guidance on the Assessment of Mineral Dust Impacts for Planning*'[6] in June 2016. Designed specifically for the planning process, the guidance is based upon the judgement of the IAQM Minerals Working Group. The IAQM guidance provides an effective methodology in the absence of any other guidance for the assessment of dust from mineral sites, as presented in Appendix 10/2.

DEFRA Local Air Quality Management Technical Guidance

10.16 The Department for Environment, Food and Rural Affairs (DEFRA) technical guidance LAQM.TG(16) was published for use by local authorities in their LAQM review and assessment work. The document provides key guidance in aspects of air quality assessment, including screening, monitoring, use of monitoring data, use of background data and detailed modelling of traffic emissions that are applicable to air quality assessments.

ASSESSMENT METHODOLOGY

PM_{10}

10.17 The generation of suspended dust particles as a result of the Southern Extension has (in the absence of mitigation) the potential to impact on human health. The IAQM guidance states that if the background PM_{10} concentration is below 17µg/m^3, then it is considered there is little risk of the Process Contribution (PC) from site activities to cause an exceedence of the annual mean AQO

[6] IAQM (2016) *Guidance on the Assessment of Mineral Dust Impacts for Planning.* Institute of Air Quality Management, London

for PM_{10}. As such, if the PM_{10} background concentrations are below 17µg/m^3, impacts on PM_{10} concentrations can be screened out of the assessment.

10.18 Where the PM_{10} background concentration exceeds 17µg/m^3, the IAQM guidance states that PC should be estimated and total Predicted Environmental Concentration (PEC) used to assess the potential significance of effects on the surrounding receptors.

Disamenity Dust

10.19 The IAQM method is a qualitative risk based approach established on the source-pathway-receptor conceptual model, i.e. the hypothetical relationship between the source (S) of the pollutant, the pathway (P) by which exposure might occur, and the receptor (R) that could be adversely affected. The key steps are:

- **Assess Site Characteristics and Baseline Conditions:** A review of baseline conditions (including PM_{10} background concentrations and any existing dust deposition data), a description of site activities to inform the Source Term, characterisation of the site setting in terms of the location and sensitivity of representative receptors, and meteorological conditions (wind patterns and rainfall).
- **Estimate Dust Impact Risk:** The Dust Impact Risk for each representative receptor is determined from the Source Term (residual dust risk after embedded mitigation) and Pathway. The 'pathway effectiveness' is based upon the distance of the receptor from the dust source and the frequency at which it is downwind from the source (factoring out the frequency of wet days).
- E**stimate Likely Magnitude of Effect:** The risk predicted at each receptor is considered together with the sensitivity of that receptor, to give the likely magnitude of the effect that will be experienced.

Air Quality Significance Criteria

10.20 Following the determination of the likely magnitude of effects at each individual receptor, the 'overall' significance of dust impacts arising from the site is determined. The assessment of significance for dust impacts is undertaken qualitatively and the criteria applied can be 'Insignificant', 'Adverse' or 'Beneficial'. The magnitude will be judged as 'Negligible', 'Slight', 'Moderate' or 'Substantial'.

SITE SETTING AND BASELINE AIR QUALITY

Sensitive Receptors

10.21 The term 'sensitive receptors' includes any persons, locations or systems that may be susceptible to changes in abiotic factors as a consequence of the development. These have been identified as human receptors and ecological receptors sensitive to dust emissions.

Human Receptors

10.22 The IAQM Guidance states that the majority of impacts from fugitive dust emissions are experienced within 400m of the dust generating activity. A desk study was undertaken to identify sensitive receptors within 400m of the area encompassing the Southern Extension and the existing quarry site. This is because some activities associated with the Southern Extension, such as clay stockpiling, will take place within the areas outside of the proposed extension area. It should be noted that this is a worst-case assessment of relevant receptors as large areas of the quarry have now undergone restoration and will no longer present a risk of future dust generation.

10.23 The receptors considered in the assessment of dust amenity impacts are presented within Table 10-3 and on Drawing DHS 10/1. Where these are referenced within the report text, they are referred to as R1 – R44.

Table 10-3
Human Sensitive Receptors

Receptor		NGR (m)		Sensitivity to Dust
		X	Y	
R1	Residential - Brechin Close	459833	346434	High
R2	Residential - Shandwick Close	459989	346392	High
R3	Residential - Campbell Gardens	460113	346361	High
R4	Residential - B684	460380	346475	High
R5	Residential - B684	460382	346499	High
R6	Residential - B685	460419	346421	High
R7	Residential - Helmsoale Close	459881	346336	High
R8	Residential - Shandwick Close	460016	346325	High
R9	Residential - Killisick Lane	459824	346274	High
R10	Residential - Howbeck Road	459895	346279	High
R11	Residential - Howbeck Road	460013	346262	High
R12	Residential - Campbell Gardens	460146	346314	High
R13	Residential - Campbell Gardens	460072	346284	High
R14	Residential - Homefield Avenue	459549	346686	High
R15	Residential - Surgey's Lane	459576	346715	High
R16	Residential - Surgey's Lane	459470	346751	High
R17	Residential - Surgey's Lane	459408	346805	High
R18	Residential - Surgey's Lane	459361	346709	High
R19	Residential - Jenned Road	459330	346792	High
R20	Residential - Surgey's Lane	459393	346675	High
R21	Residential - Catriona Crescent	459452	346636	High

Receptor		NGR (m)		Sensitivity to Dust
		X	Y	
R22	Residential - Surgey's Lane	459336	346566	High
R23	Residential - Catriona Crescent	459424	346533	High
R24	Residential - Homefield Avenue	459510	346580	High
R25	Residential - Homefield Avenue	459471	346466	High
R26	Residential - Boyd Close	459563	346366	High
R27	Residential - Merton Road	459649	346329	High
R28	Residential - Merton Road	459738	346280	High
R29	Residential - Arnold Lodge	460410	347139	High
R30	Residential - Arnold Lodge	460439	347172	High
R31	Residential - Jenned Road	459274	346928	High
R32	Residential - Calverton Road	459223	346773	High
R33	Residential - Calverton Road	459187	346696	High
R34	Residential - Craster Drive	459193	346828	High
R35	Residential - Shotton Drive	459170	346922	High
R36	Residential - Pegswood Drive	459097	346967	High
R37	Residential - Lynemoute Court	459085	346893	High
R38	Residential - Pegswood Drive	459010	346937	High
R39	Residential - Lodge Farm	459126	347550	High
R40	Residential - Dorket Head Farm	459497	347637	High
R41	Residential - The Ranch	460795	346907	High
R42	Residential - Barn Farm Cottages	460886	346886	High
R43	Agricultural Field	459875	347350	Low
R44	Agricultural Field	459334	347227	Low

Ecological Receptors

10.24 There are no statutory ecological designations (e.g. Sites of Special Scientific Interest) within 400m of the Southern Extension or the existing quarry. However, the Hobbucks Local Nature Reserve (LNR) is located directly adjacent to the Southern Extension.

10.25 The IAQM Guidance states that LNRs which have specific sensitivities to dust should be considered as a 'low' sensitivity receptor. The ecological assessment has indicated that the Hobbucks LNR is also located adjacent to historic areas of quarrying and that no discernible effects have previously been observed. From this, it can be implied that the Hobbucks LNR does not have any specific sensitivities to dust.

Baseline Air Quality

Local Air Quality Management

10.26 As required under Section 82 of the Environment Act (1995) (Part IV), GBC has conducted an ongoing exercise to review and assess air quality within their area of administration. This process has indicated that concentrations of PM_{10} and $PM_{2.5}$ were below the relevant AQOs at locations of relevant public exposure.

Automatic Monitoring Data

10.27 The UK Automatic Urban and Rural Network (AURN) is a countrywide network of air quality monitoring stations operated on behalf of DEFRA. Monitoring data for AURN sites is available from the UK Air Information Resource website (UK AIR)[7]. There are no nearby AURN monitoring locations representative of PM_{10} and $PM_{2.5}$ concentrations at the Southern Extension or the existing Site. In addition, GBC does not conduct any automatic monitoring of PM_{10} or $PM_{2.5}$ concentrations.

DEFRA Mapped Background Concentrations

10.28 Background pollutant concentration data on a 1km x 1km spatial resolution is provided by DEFRA through the UK Air Information Resource (AIR) website and is routinely used to support LAQM and Air Quality Assessments. Mapped background concentrations of PM10 and PM2.5 for 2017, based upon the 2015 base year DEFRA update, were downloaded for the grid squares containing the Southern Extension and the receptors presented within Table 10-3, as presented within Table 10-4.

Table 10-4
DEFRA Mapped Background Concentrations

NGR Grid Square (m)	2017 Mapped Background Concentrations (µg/m^3)	
	PM_{10}	$PM_{2.5}$
459500, 346500	15.3	9.22
460500, 346500	14.8	9.64
460500, 347500	15.9	10.2
459500, 347500	16.6	10.7

10.29 As indicated in

10.30 Table 10-4, background concentrations of PM_{10} and $PM_{2.5}$ are predicted to be 'well below' the relevant AQOs (40µg/m^3 and 25µg/m^3 respectively). In addition, they are below the screening threshold of 17µg/m^3 referred to in paragraph 10.17 above.

[7] DEFRA, UK-AIR website, http://uk-air.defra.gov.uk/, accessed December 2017.

Disamenity Dust Monitoring

10.31 Monitoring of disamenity dust has been undertaken at the quarry since 2008, in accordance with Condition 31 of the planning permission dated the 8th December 2003, which states:

"Condition 31: Within six months of this determination a scheme of measures for monitoring dust emissions from the site shall be submitted and approved in writing with the Mineral Planning Authority. The dust monitoring scheme shall include the provision for the establishment and location of monitoring stations, the method and frequency of sampling and reporting of the results to the Mineral Planning Authority."

10.32 The dust monitoring is currently conducted by Vibrock Limited and consists of measuring dust deposition and surface soiling rates at three locations in proximity to the quarry boundary to assess dust levels on local receptors using Frisbee Deposit Dust Gauges. The monitoring locations are illustrated on Drawing DHS 10/2.

10.33 Results are compared to the benchmarks for the protection of amenity derived from Environment Agency, Government sponsored best practice guidance, and IAQM guidance on dust monitoring, specifically the limit value for dust deposition the 'custom and practice' of 200mg/m^2/day (averaged over a monthly period).

10.34 A summary of the measured deposition rates and surface soiling for monitoring results since 2008 are presented in Figure 10-1.

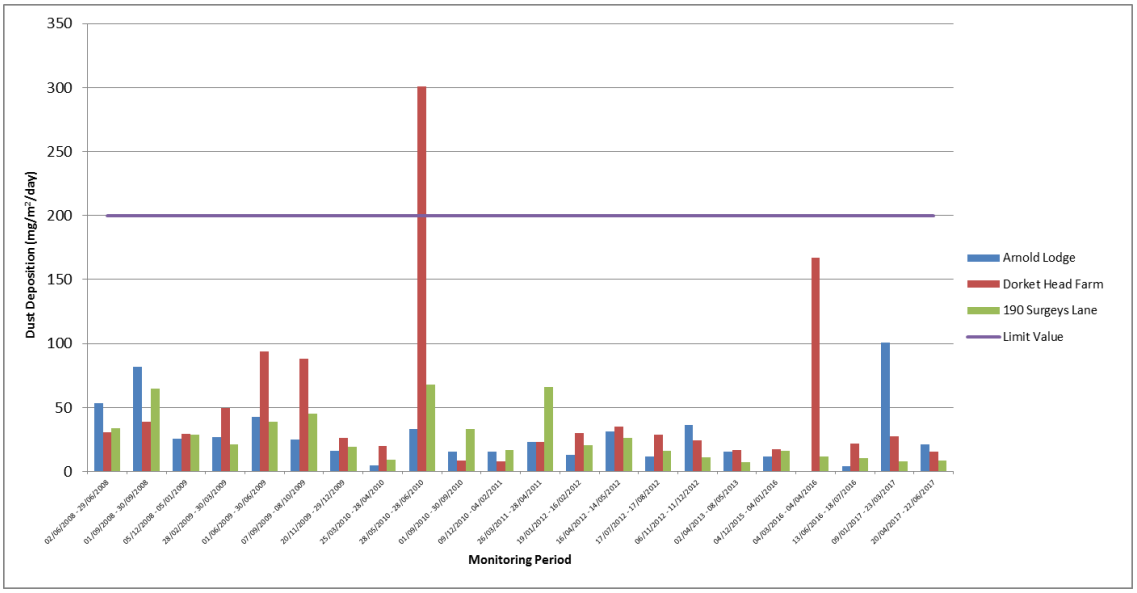


Figure 10-1
Summary of Dust Monitoring Results

10.35 As indicated in Figure 10-1, the monitored dust deposition rates have been consistently below the custom and practice limit value, with the exception of one anomaly in May 2010. The Vibrock report attributed this spike in reading to the presence of adjacent farming activities and vehicle movements on an adjacent farm track.

Dust Complaints

10.36 A record of dust complaints for the last three years was requested during pre-application discussions with GBC[8]. GBC stated in that in the past three years, there have been no formal complaints made regarding dust emissions.

Meteorology – Dispersion of Emissions

10.37 The most important climatic parameters governing the release and dispersal of fugitive emissions from the proposed development are wind speed, direction and rainfall:

- wind direction determines the broad direction of dispersal;
- wind speed affects ground level concentrations by increasing the initial dilution of pollutants in the emission. It will also affect the potential for dust entrainment; and

10.38 The most representative meteorological observation station to the site is the Nottingham Watnall meteorological station, located approximately 9.3km west of the site. A 5-year average wind rose is presented in Figure 10-2.

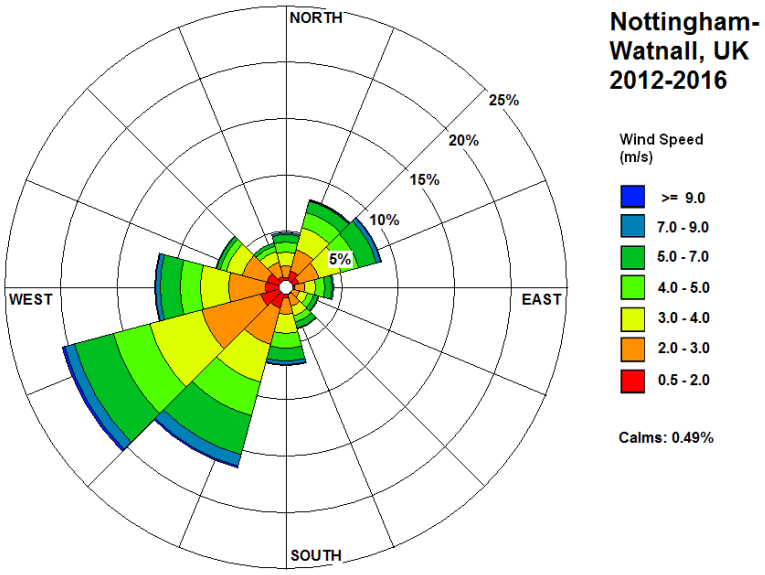


Figure 10-2
Wind Rose of Nottingham Watnall Meteorological Observation Station (2012 - 2016)

[8] Email correspondence between SLR Consulting and Brendan Cox, Scientific Officer – Public Protection at GBC, on 5th December 2017.

ASSESSMENT OF DUST EFFECTS AND SIGNIFICANCE OF PROPOSALS

10.39 The potential risk of dust effects and the overall significance from the proposed Southern Extension is presented below. Impacts have been assessed in combination with impacts arising from ongoing operations across the Site in order to provide a cumulative assessment.

PM_{10}

10.40 As indicated in Table 10-4, background concentrations of PM_{10} for the grid squares containing the Southern Extension and the identified receptors are below the screening threshold of 17µg/m^3. The Process Contribution from on-site activities is therefore unlikely to cause significant impacts exceedence of the annual mean AQO for PM_{10}, in accordance with IAQM guidance.

10.41 As such, impacts PM_{10} concentrations have been screened out in accordance with the IAQM guidance and no further consideration is needed in the context of this assessment.

Disamenity Dust

Source Term

10.42 A full description of the proposed site activities has been provided within Chapter 3 above. Table 10-5 provides a description of the relevant site activities which may give rise to fugitive dust emissions, in accordance with the IAQM Guidance.

Table 10-5
Description of Dust Generating Site Activities

Site Activity	Description
Site Preparation and Restoration	Stripping of topsoil, subsoil and overburden Restoration using imported inert materials
Mineral Extraction	Extraction of clay deposits
Materials Handling	Loading of excavated clay into dump trucks for transport to stockpile area Loading of stockpiled material onto conveyor for off-site transportation
On-Site Transportation	Transport of topsoil, subsoil, overburden and excavated clay to stockpile area Transport of plant, equipment and machinery Transportation across paved and unpaved haulage routes
Minerals Processing	N/A (none on site)
Stockpiles and Exposed Surfaces	Stockpiling of topsoil, subsoil, overburden and excavated clay

Site Activity	Description
Off-site Transportation (associated with importation of materials for restoration)	Transport of excavated clay to brickworks via underground conveyor Transport of imported inert materials for restoration via public road network

Environmental Design and Existing Dust Control

10.43 The incorporation of designed in dust control measures into the assessment have been addressed in two sections:

- operational mitigation measures: mitigation measures that currently apply to day to day quarry operations (and will also be applied at the southern extension); and
- environmental design mitigation measures (such as aspects of site phasing, layout, and other specific design measures).

Operational Mitigation Measures

10.44 Measures currently in place on site include those implemented in accordance with the conditions set out within the current planning permissions as part of the existing operations as well as best practice, are presented in Table 10-6.

Table 10-6
Existing Operational Control Measures / Dust Management

Activity	Dust Control Measures
Site Preparation and Restoration (including infilling operations)	Minimise drop heights during transfer of material. Water supply and sprays to be available and easily accessible during all soil stripping / reinstatement activities, and used as required during dry / windy weather conditions. Minimum use of heavy machinery across in-situ, undisturbed or restored areas of soil. Loading / unloading of material to be undertaken within the void and away from the site boundary where possible. Minimise areas exposed to wind erosion, stripping and restoration to be undertaken in distinct small areas. Soil replacement activities planned to take into consideration seasonal weather variations and seeding practises for restoration scheme. Avoid handling of soils during adverse weather conditions. Temporary cessation of soil stripping during periods of dry and windy weather.
Mineral Extraction	Material of inherently high moisture content and therefore low dust potential (clay). Extraction methods include use of a bulldozer and 360° hydraulic

Activity	Dust Control Measures
	excavator to load dump trucks.
Materials Handling	Drop heights of excavated materials into dump trucks are minimised Excavated mineral transferred directly to plant site (avoid double handling of material wherever possible). Water suppression to be available at all times in areas of material handling and stockpiling of mineral.
On-site Transportation	Use of water bowsers/spray systems to dampen haul roads. No plant/vehicles shall cross any area of unstripped topsoil or subsoil or areas of loosened ground, except where unavoidable for the purposes of undertaking permitted operations. Speed limit usually controlled to 10mph. Vehicles are fitted with upswept exhausts. Haul roads are maintained to remove pot holes and dips which trap dust and cause plumes.
Stockpiles and Exposed Surfaces	Use of water bowsers/spray systems to dampen stockpiles. Temporary seeding of any exposed areas. Seeding of bunds. Stockpiles not to exceed heights of 3m for topsoil and 5m for subsoil. Storage mounds which remain in situ for more than six months or over winter shall be seeded with grass for three months of their construction and thereafter maintained free from weeds.
Off-site Transportation (associated with importation of materials for restoration)	Wheel wash facility located close to site entrance. Access track between wheel wash facility and site entrance is metalled.
General	Dust filters fitted where appropriate on all plant and machinery. Conduction of dust monitoring scheme. All operations to be temporarily suspended at times when operations on site give rise to unacceptable levels of dust emissions, such as adverse weather conditions.

Environmental Design Measures

10.45 There is a degree of existing woodland surrounding the proposed extension which provides an effective natural screen to dust dispersion. It is understood that the mature perimeter hedge of approximately 4m in height running along the southern boundary of the Southern Extension will be retained, providing a degree of screening between the Southern Extension and the residential receptors to the south, (located in northern Arnold, e.g. R1 – R3.). There is also an existing 10m wide deciduous tree belt located between the stockpile area and the public highway to the north, which would limit dust dispersion in this direction in the spring and summer months. A 30m wide

belt of deciduous woodland planted on the restored area of landfill is also located to the south western section of the Site, which would assist in reducing dust emissions from the northern sections of the Southern Extension (Phase 3 and northern sections of Phase 1) to residential receptors to the south west.

10.46 In terms of designed-in mitigation measures, a 6m and 3m high mound surrounds the stockpile and soil storage areas respectively, which creates a degree of screening to the dispersion of dust originating from the these locations. A soil storage mound (to be grass seeded upon formation) would also be located to the south of the Southern Extension to supplement the natural screening afforded by the perimeter hedge. All extraction-related operations at the proposed extension would additionally be at a lower elevation than the receptors to the south, and as such the working face itself would provide a degree of protection.

10.47 Many aspects inherent to the design of the existing quarry reduce the requirement for off-site transportation, thereby minimising dust emissions that would result from HGVs travelling to and from the site, from trackout for example. Most notably, all excavated clay is transferred to the brick works via a conveyor system, and all excavated topsoil, subsoil and overburden will be stored on site and utilised during restoration works, therefore eliminating the need for off-site for disposal. Where possible, overburden is placed directly into the quarry void as part of ongoing restoration works in order to reduce the double handling of this material. The only offsite transportation required would be related to the importation of inert materials during restoration.

10.48 The quarry itself is currently operational and so an established quarry infrastructure is already in place. There is therefore no requirement for the establishment of infrastructure associated with the proposed extension, avoiding any dust emissions from a 'construction phase' of the proposed extension.

Summary of Residual Source Emissions Magnitude

10.49 The residual source emission magnitude of site activities relating to both the proposed Southern Extension, in combination with all other parts of the existing quarry which will be working concurrently, have been determined as presented in Table 10-7. The mitigation measures previously identified have been taken into account when determining the source emission magnitude of each site activity, in line with the IAQM Guidance.

Table 10-7
Residual Source Emission Magnitude

Activity	Dust Control Measures	Residual Source Emission
Site Preparation and Restoration (including infilling operations)	Topsoil, subsoil and overburden would be stripped using a hydraulic excavator (such as a CAT 375 or similar). Screening bunds would be created using top soils and subsoils which would be seeded immediately along the southern boundary of the proposed extension between areas of retained woodland. Where possible, overburden would be placed	Medium

Activity	Dust Control Measures	Residual Source Emission
	directly within the quarry void as part of the progressive restoration works. Total working area approximately 6 ha, but would be worked in three phases. Felling of trees would be undertaken on a phased basis Restoration material includes stripped soils placed on imported inert waste. Soils would then be cultivated and seeded, followed by areas of woodland planting.	
Mineral Extraction and Materials Handling	Total working area of proposed extension approximately 6 ha, but would be worked in three phases. Clay is extracted on a 'campaign' basis lasting between 6-8 weeks per year, usually during summer months when ground is drier (and resulting lower rainfall levels). Extraction methods include use of a bulldozer and 360° hydraulic excavator to load dump trucks. Extraction operations would be located behind a working face at a lower ground level and so shielded from properties to the south. Material of inherently high moisture content and therefore low dust potential (clay).	Small
On-site Transportation	Material of high moisture content and therefore low dust potential (clay). Use of an appropriately sized excavator to load extracted material into dump trucks. Use of a water bowser. Single dump truck and excavator are used to transfer stockpiled clay to box feeder serving the conveyor system. Can avoid clay removal from clay stockpile during certain holidays – brickworks site can store up to 3 days clay.	Small
Stockpiles and Exposed Surfaces	Use of articulated dump trucks (such as Volvo A40 or similar) to transport topsoil, subsoil, overburden and clay extracts to stockpile area. Use of unpaved haul roads. Length of on-site haul roads approximately 800m from southern edge of extension to clay stockpile.	Medium

Activity	Dust Control Measures	Residual Source Emission
	Speed limit of 10mph. Haul roads are dampened down using a water bowser and vehicles are not permitted to cross dusty surfaces unless absolutely necessary.	
Off-site Transportation (associated with importation of materials for restoration)	No stockpiles within the application site boundary: stockpile of clay from the southern extension would be located in the existing stockpile area to the north of the site away from the majority of receptors. Stockpile area <2.5 ha Stockpile area is surrounded by a 6m high mound and soil storage area is surrounded by 3m high mound. A screen mound and a 10m wide tree belt separates the stockpiles from Woodborough Lane. Material (clay) is of high moisture content and readily forms a crust - low dust potential. Stockpiles are long term (annual) with a daily material transfer.	Small
General	Excavated material is transported to the brick works via a conveyor system – no need to transport material off-site by road. HGV movements are only required for the importation of inert waste for restoration. Site entrance is hard surfaced and kerbed for approximately 65m. Wheel wash facility located 65m west of the site access	Small

5.2.4 IAQM Assessment of Disamenity Dust Impacts

10.50 The IAQM assessment has been undertaken using a worst case scenario for dust emissions from the Southern Extension, by assuming that all activities are undertaken across the entire area of the existing quarry (i.e. the existing approved areas of operation in addition to the proposed extension), as shown on Drawing DHS 10/1. This method over-estimates the potential for dust generation (for example, extraction activities would be limited to a small working area within a single phase rather than occupy the entire area of the Southern Extension), however it does ensure that the potential cumulative effects of various activities occupying different areas of the site simultaneously are taken into account.

10.51 Offsite transportation has been assessed in terms of trackout. In lieu of further guidance, the area potentially affected by trackout has been assumed to be 50m surrounding the first 500m of the

site access road, in line with the IAQM guidance[9]. The impact of dust generation from this source has been undertaken separately.

10.52 Following determination of the residual source emission magnitude of each site activity, the pathway effectiveness and the magnitude of effect of potential dust deposition at each receptor has been determined. Table 10-8 and Table 10-9 present a summary of predicted impacts for onsite and offsite activities respectively.

Table 10-8
IAQM Dust Assessment – Dust Impact Risk and Magnitude of Effect (Onsite Activities)

Receptor	Sensitivity	Pathway Effectiveness	Site Preparation & Restoration and On Site Transportation			Mineral Extraction, Materials Handling and Stockpiles & Exposed Surfaces		
			Residual Source Emission Magnitude	Dust Impact Risk	Magnitude of Dust Effects	Residual Source Emission Magnitude	Dust Impact Risk	Magnitude of Dust Effects
R1-R42	High	Ineffective	Medium	Negligible Risk	Negligible Effect	Small	Negligible Risk	Negligible Effect
R43	Low	Moderately effective	Medium	Low Risk	Negligible Effect	Small	Negligible Risk	Negligible Effect
R44	Low	Ineffective	Medium	Negligible Risk	Negligible Effect	Small	Negligible Risk	Negligible Effect

10.53 As indicated in Table 10-8, the predicted magnitude of effect for all on-site activities is considered to be **negligible** at all receptor locations. This outcome is in line with the results from the dust monitoring scheme.

Table 10-9
IAQM Dust Assessment – Dust Impact Risk and Magnitude of Effect (Trackout)

Receptor	Sensitivity	Pathway Effectiveness	Residual Source Emission Magnitude	Dust Impact Risk	Magnitude of Dust Effects
R43	Low	Moderately Effective	Small	Negligible Risk	Negligible Effect

10.54 As shown in Table 10-9, the magnitude of dust effects from trackout impacts is considered to be **negligible**.

Overall Significance of Impact

10.55 On the basis of the IAQM assessment, it is considered that, taking into account the operational dust control and the environmental designed-in measures of the Existing Site, the Southern Extension (in combination with all operations which will be running concurrently) is predicted to result in a **negligible** impact at all receptors. As such, the overall impact of the scheme is considered to be **not significant**.

[9] IAQM, Guidance on the assessment dust from demolition and construction, v1.1, 2016.

10.56 All potential dust impacts from the proposed development are considered to be reversible i.e. the risk of impact will cease on completion of the extraction and restoration activities at the site, with no significant impacts on local air quality during the operation or following completion of the development.

MITIGATION MEASURES

Operational Controls

10.57 Taking into account the existing dust controls associated with the consented operations and the natural screening afforded by surrounding woodland, the predicted effects on health and disamenity from the Southern Extension are considered to be **negligible** at all sensitive receptors.

10.58 Additionally, the level of dust control incorporated into the current quarry operations is considered to be of a high standard for industry best practice, confirmed by the monitoring results to date. Providing that current working practices and dust control measures continue across the Southern Extension, no additional mitigation measures are considered to be required as part of the proposed scheme.

Dust Monitoring Scheme

10.59 The current, approved monitoring scheme (as shown in Drawing DHS 10/2) has been reviewed with regard to the methodology, criteria and monitoring locations in light of the proposed Southern Extension.

10.60 The dust monitoring results indicate that current dust control on site is of a high standard, with rates of dust deposition remaining well within the custom and practice criteria. Further evidence to support this is the absence of complaints relating to dust generation from the quarry made to GBC during the previous three years.

10.61 The Southern Extension would bring dust generating activities closer to residential receptors to the south. However, as shown in Figure 10-2, the majority of winds are from the south-western sectors and as such, winds from the direction of the site would, for the majority of the year, not head towards the receptors located south of the proposed extension. The current monitoring locations are considered to be well placed and representative of dust impacts in the surrounding area of both the existing quarry and the Southern Extension. As such, no additional monitoring locations are required as a result of the extension.

RESIDUAL EFFECTS

10.62 Residual effects are those impacts that cannot be reasonably mitigated. As previously discussed, appropriate dust mitigation and management measures are implemented as part of the existing site operations. Such measures are generally accepted by regulatory bodies and the minerals industry as providing effective control against the impacts of airborne dust.

PM_{10}

10.63 Impacts on PM_{10} concentrations have been screened out of this assessment in accordance with the IAQM Guidance, due to the low background concentrations. As such, the residual effect of PM_{10} concentrations as a result of the proposed extension (in combination with all operations to be undertaken concurrently) is considered to be **not significant** with no requirement for any additional mitigation measures. Measures to reduce the generation of disamenity dust would however, also reduce the generation of PM_{10}.

Disamenity Dust

10.64 Assuming the continued implementation of the existing control measures and management at the existing Site and application of these measures to the Southern Extension, the overall residual effect of the proposed extension (in combination with the revised restoration scheme) is considered to be **not significant** without the requirement for any additional mitigation measures.

CONCLUSIONS

10.65 A qualitative dust impact assessment has been undertaken in order to assess predicted impacts as a result of dust emissions from the proposed development, in combination with operations which will be running concurrently, in line with the IAQM document *Guidance on the Assessment of Mineral Dust Impacts.*

10.66 The assessment of PM_{10} effects on human health concluded that air quality would remain well within the national air quality standards, with no significant effects predicted.

10.67 With regard to disamenity effects from deposited dust, the overall significance of effect of the proposed activities is predicted to be **negligible** in accordance with IAQM guidance at all receptor locations. The assessment takes into account a range of existing dust controls implemented in accordance with conditions of the current Planning Permissions as well measures that are incorporated into the proposed working scheme. The results of the IAQM assessment are considered to be validated through the evidence provided from the long-term dust monitoring scheme on site.

10.68 As such, the Southern Extension is considered unlikely to cause any adverse effects with regard to dust or air quality. This is primarily based upon the high standard of dust management in operation at the site. The overall residual impact of the site on PM_{10}, suspended dust and deposited dust is considered to be not significant.

10.69 All potential dust impacts from the proposed development are considered to be reversible i.e. the risk of impact will cease on completion of the extraction and restoration activities at the site, with no significant impacts on local air quality during the operation or following completion of the development.

APPENDIX B

MGL Particulate Matter Management and Monitoring document from EMS

PARTICULATE MATTER MANAGEMENT AND MONITORING

1.0 OPERATIONAL MEASURES

1.0.1 As part of the Environmental Permit Application, a Dust Action Plan has been included in the Operating Techniques and approved by the Environment Agency, with mitigation measures detailed below.

1.1 Management Responsibility

1.1.1 The site manager will have responsibility for ensuring that nuisances and hazards arising from the site due to dust are minimised. All site operatives will be vigilant and report any issues directly to the Site Manager who will investigate the issue and instigate any required corrective action.

1.2 Vehicle Speed Limits

1.2.1 Speed limits will be imposed and enforced for all vehicles using the installation to prevent re-suspension and entrainment. The speed limit will be determined by local conditions and may vary.

1.3 Sweeping of the Highway

1.3.1 The highway will be swept with a mechanical road sweeper as and when conditions dictate to minimise emissions of mud and dust.

1.4 Static Water Sprays

1.4.1 Static water sprays are not generally required but may be deployed in specific areas if problems arise.

1.4.2 Use of water to dampen access roads and operational areas can be applied by use of a tractor and bowser unit.

1.5 Seeding of Earth Bunds, Stockpiles and Surfaces

1.5.1 If necessary, bare earth surfaces will be seeded to provide protection against wind erosion and associated dust emissions.

2.0 DUST MONITORING PLAN

2.1 Monitoring of Meteorological Conditions

2.1.1 The site manager will use the Meteorological Office weather forecast to predict weather conditions such as prolonged dry, hot spells, which may rise to high levels of dust, and ensure the necessary precautionary measures are in place.

2.2 Visual Monitoring

2.2.1 All personnel employed on site will undertake visual monitoring for the dust throughout the working day. Any problem that is observed 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.

2.3 Quantitative Monitoring

2.3.1 Additional quantitative monitoring at the filling area, the installation boundary or at sensitive receptors will only be carried out in circumstances where complaints have been received, corrective action has not resolved the problem, and where such monitoring will assist in determining the source/cause and what further action may be appropriate.

3.0 DUST ACTION PLAN

3.1 If significant volumes of dust are being noted at the installation during routine visual monitoring, the following action will be taken:

3.2 Dust Generation during Vehicle Monitoring

- Establish cause of emissions;
- If problem is caused by a particular activity, cease until a suitable method statement detailing how the operation will be carried out has been prepared and implemented; and
- If dust is caused by general trafficking and operations, arrange for the area to be sprayed with water.

3.3 Dust Generation during Site Construction

- Establish cause of the problem and implement revised procedures to minimise emissions. This may involve the use of water sprays during excavation activities or the temporary relocation of work away from receptors pending a change in wind direction or other weather conditions

4.0 RECORDS

4.1 A record relating to the management and monitoring of dust will be maintained in the site file. It will include the following details: -

- A record of all dust events including date, time, and cause of the problem;
- A record of all complaints; and
- Details on the corrective action taken and any subsequent changes to operational procedure
- The results from asbestos monitoring undertaken.

APPENDIX C

Daily Dust Conditions Log

Daily Dust Conditions Log

Date:

Name:

Observations:

Actions:

Signature:

APPENDIX D

Complaint Record Sheet

Dust complaint report form	Date:	Ref. No.
Name and address of complainant		
Tel no. of complainant		
Time and date of complaint		
Date, time and duration of offending dust		
Weather conditions (e.g., dry, rain, fog, snow)		
Wind strength and direction (e.g. light, steady, strong, gusting)		
Complainant's description of dust		
Has complainant any other comments about the offending dust?		
Any other previous known complaints relating to installation (all aspects, not just dust)		
Any other relevant information		
Potential dust sources that could give rise to the complaint		
Operating conditions at the time offending dust occurred		
Action taken:		
Final outcome:		
Form completed by	Signed	