Dust Risk Assessment	
Brighton Wharf, Brighton & Hove	
Job number:	J0317
Document number:	J0317/1/F1
Date:	13 May 2019
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1 Introduction

1.1.1 Air Quality Assessments Ltd (AQA) has been commissioned by CEMEX to undertake a dust risk assessment for the proposed redevelopment at Brighton Wharf.

1.1.2 Additional parking will be provided on site; however, this will accommodate existing traffic and will not lead to an increase in traffic on local roads.

1.1.3 This report describes the existing conditions in the area with regard to dust (including PM_{10}) and assesses the likely impact that emissions from the operation of the proposed development will have on local air quality and the amenity of receptors close to the application site. The main pollutants of concern are dust and fine particulate matter (PM_{10}).

1.1.4 There is also the potential for construction activities to impact upon existing properties. The main pollutants of concern related to construction activities are dust and PM_{10}.

1.1.5 The assessment has been prepared taking into account all relevant local and national guidance and regulations. The references used in this assessment are shown in **Section 10**.

2 Legislation, Planning Policy and Guidance

2.1. Legislation

EU Limit Values

2.1.1 The European Union's Directive on ambient air quality and cleaner air for Europe (European Parliament, Council of the European Union, 2008) set legally binding limit values for PM_{10}. The Air Quality Standards Regulations 2010 (The Stationary Office, 2010) implement the EU Directive limit values in English legislation. Achievement of the limit values is a national obligation rather than a local one.

2.1.2 The limit values are the same as the objective values (see **Table 1**); however, the compliance dates differ, and the limit values apply at all locations (apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway). The PM_{10} limit values applied from 2005

Clean Air Strategy

2.1.3 The Clean Air Strategy (Defra, 2019a) provides an overview of the actions that the government will take to improve air quality and promises new legislation that will tackle air pollution.

2.1.4 Part IV of The Environment Act 1995 required the UK Government to prepare an Air Quality Strategy. The original Air Quality Strategy (Defra, 2007) set out air quality standards and objectives intended to protect human health and the environment.

2.1.5 Standards are the concentrations of pollutants in the atmosphere, below which there is a minimum risk of health effects or ecosystem damage; they are set with regard to scientific and medical evidence. Objectives are the policy targets set by the Government, taking account of economic efficiency, practicability, technical feasibility and timescale, where the standards are expected to be achieved by a certain date.

2.1.6 The original Air Quality Strategy also described the system of Local Air Quality Management (LAQM), introduced in Part IV of the Environment Act 1995, which requires every local authority to carry out regular review and assessments of air quality in its area. Where an objective has not been, or is unlikely to be achieved, the local authority must declare an Air Quality Management Area (AQMA), and prepare an action plan which sets out appropriate measures to be introduced in pursuit of the objectives.

2.1.7 The objectives for PM_{10}, as prescribed by the Air Quality (England) Regulations 2000 and the Air Quality (England) (Amendment) Regulations 2002 (The Stationary Office, 2000; The Stationary Office, 2002), are shown in **Table 1**. The objectives for PM_{10} were to have been achieved by 2004 and continue to apply in all future years thereafter.

Table 1: The Objectives for PM_{10}

Pollutant	Concentration Measured As	Objective
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3

2.1.8 The objectives apply at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective. Examples of where the objectives should apply are provided in the Local Air Quality Management Technical Guidance issued by the Department for Environment, Food and Rural Affairs (Defra) (Defra, 2016). The annual mean PM_{10} objective should apply at the building façades of residential properties, schools, hospitals, care homes etc.; it should not apply at the building façades of places of work, hotels, gardens or kerbside sites. The 24-hour mean PM_{10} objective should apply at all locations where the annual mean objective applies, as well as the gardens of residential properties and hotels.

2.2. Planning Policy

National Policies

2.2.1 The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how these should be applied (Ministry of Housing, Communities & Local Government, 2019). It provides a framework within which locally-prepared plans for development can be produced. It states that the purpose of the planning system is to contribute to the achievement of sustainable development and includes an overarching environmental objective:

"to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

2.2.2 The NPPF states that:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development."

2.2.3 The NPPF is supported by Planning Practice Guidance (PPG) (DCLG, 2014). The PPG states that:

"Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with EU Limit Values. It is important that the potential impact of new development on air quality is taken into account in planning

where the national assessment indicates that relevant limits have been exceeded or are near the limit".

2.2.4 The PPG goes on to state that:

"Whether or not air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to generate air quality impact in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife)."

2.2.5 The PPG makes clear that:

"… dust can also be a planning concern, for example, because of the effect on local amenity."

2.2.6 The PPG also sets out the information that may be required in an air quality assessment, stating that:

"Assessments should be proportional to the nature and scale of development proposed and the level of concern about air quality."

2.2.7 It also provides guidance on options for mitigating air quality impacts, and makes clear that:

"Mitigation options where necessary, will depend on the proposed development and should be proportionate to the likely impact."

Regional Policies

2.2.8 The West Sussex Joint Minerals Local Plan includes Policy M18: Public Health and Amenity, which states (West Sussex County Council & South Downs National Park Authority, 2018):

"Proposals for mineral development will be permitted provided that:

(a) lighting, noise, dust, odours, vibration and other emissions, including those arising from traffic, are controlled to the extent that there will not be an unacceptable impact on public health and amenity[54]; and

(b) the routes and amenity of public rights of way are safeguarded, or where temporary or permanent re-routeing can be justified, replacement routes of comparable or enhanced amenity value are provided."

2.2.9 The Joint Minerals Local Plan also includes Policy M22: Cumulative Impact, which states:

"Proposals for minerals development, including the intensification of use, will be permitted provided that an unreasonable level of disturbance to the environment and/or to residents, businesses and visitors will not result, either individually or as a cumulative effect (simultaneously and/or successively) alongside other development and allocations. Planning conditions may be used to co-ordinate working, thereby reducing the cumulative impact."

Local Policies

2.2.10 Policy SU9 Pollution and Nuisance Control, retained from the Brighton & Hove Local Plan 2005, states that (Brighton & Hove City Council, 2005):

"Development that may be liable to cause pollution and / or nuisance to land, air or water will only be permitted where:

a. human health and safety, amenity, and the ecological well-being of the natural and built environment is not put at risk;

b. it does not reduce the planning authority's ability to meet the Government's air quality and other sustainability targets; and

c. it does not negatively impact upon the existing pollution and nuisance situation.

All proposed developments that have a potential to cause pollution and / or nuisance, will be required to incorporate measures to minimise the pollution / nuisance and may invoke the need for an Environmental Impact Assessment. Where appropriate, planning conditions will be imposed and / or a planning obligation sought in order to secure the necessary requirements.

Planning permission will only be granted for development on a site adjacent to an existing pollution / nuisance generating use and / or within an air quality 'hotspot' or potential 'hot spot' where:

i. the effect on the proposed development, its occupiers and users will not be detrimental; and

ii. the proposed development will not make the pollution and / or nuisance situation worse and where practicable, helps to alleviate the existing problem(s).

In applying this policy, particular attention will be given to a proposal's location and its impact on other development, land uses and nature conservation."

2.2.11 The Brighton & Hove City Plan Part One includes the following relevant policies related to air quality (Brighton & Hove City Council, 2016).

2.2.12 Strategic Objective SO22 states that:

"*Across the city apply the principles of healthy urban planning and work with partners to achieve an equality of access to community services (health and learning), to opportunities and facilities for sport and recreation and lifelong learning. Ensure pollution is minimised and actively seek improvements in water, land and air quality and reduce noise pollution."*

2.2.13 The Adur Local Plan includes Policy 28: Transport and Connectivity, which states (Adur District Council, 2017):

"In order to secure significant improvements to transport and mobility in Adur, new development should: …

Ensure new development contributes to the mitigation of air pollution, particularly in Air Quality Management Areas. Air quality assessments may be required. Where practical, new development should be located and designed to incorporate facilities for electric vehicle charging points, thereby extending the current network.

2.2.14 The Adur Local Plan also includes Policy 34: Pollution and Contamination, which states:

"Development should not result in pollution or hazards which prejudice the health and safety of the local community and the environment, including nature conservation interests and the water environment.

New development in Adur will be located in areas most suitable to the use of that development to avoid risks from noise, air, odour or light pollution.

Mitigation measures will need to be implemented for developments that could increase levels of pollution or have a negative impact on drinking water supplies in Adur. Where there are significant levels of increased pollution that cannot be mitigated, development will be refused.

Where appropriate, air quality assessments and/or noise assessments will be required in conjunction with development proposals.

Investigations and assessments of all sites situated in or in close proximity to potentially contaminated land will be required in relation to relevant development proposals."

Air Quality Action Plan

2.2.15 Brighton & Hove City Council and Adur District Council have developed Air Quality Action Plans for their AQMAs (Brighton & Hove City Council, 2015; Adur District Council, 2007). The Action Plans set out measures that the councils intend to implement in order to help meet the objectives.

2.3. Guidance

2.3.1 The Institute of Air Quality Management (IAQM) has published Guidance on the Assessment of Mineral Dust Impacts for Planning (IAQM, 2016). The guidance has been prepared to assist practitioners in undertaking dust assessments for the operational phases of minerals developments and it is considered appropriate to follow the source-pathway-receptor approach underlying the IAQM dust assessment method for assessing the impacts of the operation of the wharf.

3 Methodology

3.1. Existing Conditions

3.1.1 Information on existing air quality within the study area has been collated from the following sources:

- The results of monitoring and the LAQM review and assessment reports undertaken by Brighton & Hove City Council and Adur District Council; and
- Background pollutant concentration maps published by Defra (Defra, 2019b).

3.2. Construction Impacts

3.2.1 The construction impacts have been assessed using the methodology provided by the Institute of Air Quality Management (IAQM) in Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2014).

3.2.2 The guidance divides activities on construction sites into four main types: demolition, earthworks, construction and trackout. The methodology is based on a sequence of steps. Step 1 screens the requirement for more detailed assessment; if there are no receptors within 350 m of the site boundary, or within 50 m of roads used by construction vehicles, then there is no need for further assessment. Step 2 assesses the risk of dust impacts from each of the four activities, considering the scale and magnitude of the works, and the sensitivity of the area. Step 3 determines site-specific mitigation for each of the four activities. Step 4 determines whether significant effects are likely; however, with appropriate mitigation in place, the residual effect will normally be 'not significant'. **Appendix A1** sets out the construction dust assessment methodology in more detail.

3.2.3 The IAQM construction dust assessment methodology ensures that, with appropriate mitigation in place, the residual effect from construction dust will normally be 'not significant'. Therefore, the assessment has been used to determine an appropriate level of mitigation for the construction phase.

3.3. Operational Dust Impacts

3.3.1 The IAQM Guidance on the Assessment of Mineral Dust Impacts for Planning includes an assessment methodology, which has been used for this assessment.

3.3.2 Locations sensitive to dust emitted during site operations will be places where members of the public are regularly present. Residential properties and commercial operations close to the application site will be most sensitive to operational dust. Any areas of sensitive vegetation or ecology that are very close to dust sources may also be susceptible to some negative effects.

3.3.3 The IAQM minerals guidance describes a qualitative source-pathway-receptor approach to determine the risk of dust effects. The assessment method uses a number of steps to determine the site characteristics and baseline conditions, an estimate of the dust impact risk and an estimate of the likely magnitude of effects. Potential dust sources and activities have been identified and the risk of impacts at sensitive receptors determined based on the prevailing meteorological conditions

and topography, the likely magnitude of emissions (with mitigation in place) and the distances over which effects may occur.

3.3.4 The IAQM minerals dust guidance divides activities on minerals sites into four types to reflect their different potential impacts:

- Site preparation/restoration;
- Mineral extraction;
- Material handling;
- On-site transportation;
- Mineral processing;
- Stockpiling/exposed surfaces; and
- Off-site transportation.

3.3.5 A series of steps then consider the potential impact due to:

- the risk of health effects from an increase in exposure to PM_{10};
- annoyance due to the deposition of dust;
- harm to the natural environment.

Screening

3.3.6 A detailed dust assessment would usually be required where there is a human or sensitive ecological receptor within 250m of a sand and/or gravel site, or within 400m of a hard rock quarry, measured from the nearest dust generating activities.

3.3.7 Where there are no sensitive receptors within 250 of a sand and/or gravel site, or within 400m of a hard rock quarry, it would normally be assumed that a detailed dust assessment is not required.

3.3.8 The sensitivity of receptors is defined in to ecological effects is defined in **Table 2**, **Table 3** and **Table 4**; however, professional judgement should be used to identify where on the spectrum between high and low sensitivity a receptor lies.

Table 2: Sensitivities of People to Dust Soiling

Class	Principles	Examples
High	Users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected a to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.	Dwellings, museum and other culturally important collections, medium and long term car parks and car showrooms.

Class	Principles	Examples
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or the appearance, aesthetics or value of their property could be diminished by soiling; or the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.	Parks and places of work.
Low	The enjoyment of amenity would not reasonably be expected; or property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.	Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

Table 3: Sensitivities of People to PM_{10}

Class	Principles	Examples
High	Locations where members of the public may be exposed for eight hours or more in a day.	Residential properties, hospitals, schools and residential care homes.
Medium	Locations where the people exposed are workers, and where individuals may be exposed for eight hours or more in a day.	Office and shop workers, but will generally not include workers occupationally exposed to PM_{10}
Low	Locations where human exposure is transient.	Public footpaths, playing fields, parks and shopping streets.

Table 4: Sensitivities of Receptors to Ecological Effects

Class	Principles	Examples
High	Locations with an international or national designation and the designated features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species.	Special Areas of Conservation (SAC) with dust sensitive features.
Medium	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or locations with a national designation where the features may be affected by dust deposition.	Sites of Special Scientific Interest (SSSI) with dust sensitive features.
Low	Locations with a local designation where the features may be affected by dust deposition.	Local Nature Reserves with dust sensitive features.

Dust Impact Risk and Magnitude of Dust Effect

3.3.9 The amenity dust impact risk is determined by combining the residual source emissions and the pathway effectiveness, as shown in **Table 5**. The magnitude of the dust effect is then described by combining the dust impact risk with the receptor sensitivity, as shown in **Table 6**. The significance of the effect on amenity is determined to be either significant or not significant. The judgement of significance should be made by a competent, suitably qualified professional, and the professional experience of the consultant preparing this report is set out in **Appendix A1**.

3.3.10 With regard to health effects, the IAQM minerals guidance takes the approach that, if background ambient PM_{10} concentrations are below 17µg/m^3, there is little risk that a process contribution from a dust source would lead to an exceedence of the objectives. For this assessment, should the background PM_{10} concentration at the application site be less than 17µg/m^3, the impact from the proposed development on health will be deemed as not significant.

3.3.11 Where background PM_{10} concentrations are above 17 µg/m^3, the impact has been described by estimating the contribution to annual mean PM_{10} concentrations due to the operation of the proposed development and adding this to the background PM_{10} concentration to determine the total annual mean PM_{10} concentration and comparing this with the annual mean air quality objective.

Table 5: Estimation of Dust Impact Risk

Pathway Effectiveness	Residual Source Emissions		
	Small	Medium	Large
Highly Effective	Low	Medium	High
Moderately Effective	Negligible	Low	Medium
Ineffective	Negligible	Negligible	Low

Table 6: Descriptors for Magnitude of Dust Effects

Dust Impact Risk	Receptor Sensitivity		
	Low	Medium	High
High	Slight Adverse	Moderate Adverse	Substantial Adverse
Medium	Negligible	Slight Adverse	Moderate Adverse
Low	Negligible	Negligible	Slight Adverse
Negligible	Negligible	Negligible	Negligible

3.3.12 The residual source emissions and pathway effectiveness have been defined using the following guidelines.

Residual Source Emissions

3.3.13 The IAQM guidance sets out examples of the residual source emissions magnitude for a number of activities (see **Table 7**). The residual source emissions take account of designed in mitigation measures and landscaping.

Table 7: Examples of Residual Source Emissions Magnitude

Large	Small
Site Preparation / Restoration	
Large working area (>10ha)	Small working area (<2.5ha)
High bunds (>8m)	Low bunds (<4m)
High volume of material movement (>100,000m^3)	Low volume of material movement (<20,000m^3)
High no. of heavy plant (>10 simultaneously active)	Low no. of heavy plant (<5 simultaneously active)
Minimal seeding/sealing of bund surface	Bunds seeded/sealed immediately
Material of high dust potential (fine grained, friable)	Material of low dust potential (high moisture content)

Large	Small
Mineral Extraction	
Large working area (>100ha)	Small working area (<20ha)
High energy extraction methods (drilling and blasting)	Low energy extraction methods (hydraulic excavator)
Material of high dust potential (small particle size and/or low moisture content)	Material of low dust potential (coarse material and/or high moisture content)
Potential high extraction rate (1,000,000 tpa)	Low extraction rate (<200,000 tpa)
Materials Handling	
High no. heavy plant (>10 loading plant)	Low no. of heavy plant (<5 loading plant)
Unconsolidated / bare surface	Hard standing surface
Activities close to site boundary (<50m of site boundary)	Activities within quarry void or >100m of site boundary
Material of high dust potential	Material of low dust potential
On-site Transportation	
Unconsolidated/unpaved haul road	Conveyors and/or paved haul road
Road surface of high dust potential	Road surface of low dust potential
High no. of HDV movements (>250)	Low no. of HDV movements (<100)
High total haul road length	Low total haul road length (<500m)
Uncontrolled vehicle speed	Controlled vehicle speed (<15 mph)
Mineral Processing	
Raw material of high dust potential (hard rock)	Raw material of low dust potential (wet sand/gravel)
End product of high dust potential (cement)	End product of low dust potential
Complex or combination of processes	Single process
High volume of material processed (>1,000,000 tpa)	Low volume of material processed (<200,000 tpa)
Stockpiles / Exposed Surfaces	
Long term stockpile (>12 months)	Short term stockpile (<1 month)
Frequent material transfers (daily)	Infrequent material transfers (weekly)
Material of high dust potential	Material of low dust potential
Unconsolidated ground surface	Hardstanding
Stockpiles close to boundary (<50m)	Stockpiles well within quarry void or away from boundary (>100 m)
Large areas of exposed surfaces (>10ha)	Small areas of exposed surfaces (<2.5 ha)
High wind speeds / low dust threshold	Low wind speeds / high dust threshold
Large quarry production (1,000,000 tpa)	Small quarry production (<200,000 tpa)

Large	Small
Off-site Transportation	
High no. HDV movements (>200/day)	Low no. HDV movements (<25/day)
Unconsolidated access road	Paved access road
Limited/no vehicle cleaning facilities	Extensive vehicle cleaning facilities
Small length of access road (<20m)	Large length of access road (>50m)

Pathway Effectiveness

3.3.14 A frequency category, derived from wind and rainfall data (**Table 8**), and a receptor distance category (**Table 9**) are combined in a matrix (**Table 10**) to classify the pathway effectiveness.

Table 8: Categorisation of Frequency of Potentially Dusty Winds

Frequency Category	Criteria
Infrequent	Frequency of winds (>5 m/s) from the direction of the dust source on dry days are less than 5%
Moderately Frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are between 5% and 12%
Frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are between 12% and 20%
Very Frequent	The frequency of winds (>5 m/s) from the direction of the dust source on dry days are greater than 20%

Table 9: Categorisation of Receptor Distance from Source

Receptor Distance Category	Criteria
Distant	Receptor is between 200m and 400m from dust source
Intermediate	Receptor is between 100m and 200m from dust source
Close	Receptor is less than 100m from dust source

Table 10: Pathway Effectiveness

Receptor Distance Category	Frequency of Potentially Dusty Winds			
	Infrequent	**Moderately Frequent**	**Frequent**	**Very Frequent**
Close	Ineffective	Moderately Effective	Highly Effective	Highly Effective
Intermediate	Ineffective	Moderately Effective	Moderately Effective	Highly Effective
Distant	Ineffective	Ineffective	Moderately Effective	Moderately Effective

4 Baseline Conditions

4.1. LAQM Review and Assessment

4.1.1 Both Brighton & Hove City Council and Adur District Council have declared AQMAs for exceedances of the annual mean nitrogen dioxide objective. In terms of PM_{10}, both Brighton & Hove City Council and Adur District Council have concluded that there are no exceedances of the objectives; therefore, it is highly unlikely concentrations in the vicinity of the application site exceed the objectives (Brighton & Hove City Council, 2018; Adur District Council, 2018).

4.2. Local Air Quality Monitoring

4.2.1 None of the automatic monitoring sites operated by Brighton & Hove City Council or Adur District Council are located in the vicinity of the application site. Brighton & Hove City Council did operate three automatic PM_{10} monitoring sites up until 2015, when the focus switched to monitoring $PM_{2.5}$ concentrations. Adur District Council have operated one automatic monitoring site since 2015; however, the monitor did not operate properly in 2016 and was not operational during 2017. Data from 2015 are presented; however, there was poor data capture and Adur District Council report a high level of uncertainty with regard to the measured data. Measured data from the automatic monitoring sites are shown in **Table 11**, and the monitoring locations are shown in **Figure 1**. Monitoring results from the years 2011 to 2015 show that there have been no exceedances of the objectives.

Table 11: Summary of PM_{10} Monitoring Data (2011 to 2015) [a]

Location	ID	Site Type	2011	2012	2013	2014	2015
Annual Mean (µg/m^3)							
Lewes Road	BH6	K	-	-	-	22.3	-
Beaconsfield Road	BH9	R	22	27.7	-	-	-
North Street	BH10	R	-	-	26	26.1	-
High Street, Shoreham	AD1	K	-	-	-	-	32.6
Objective			**40**				
Number of Days > 50 µg/m^3							
Lewes Road	BH6	K	-	-	-	-	-
Beaconsfield Road	BH9	R	-	15	-	-	-
North Street	BH10	R	-	-	3	9	-
High Street, Shoreham	AD1	K	-	-	-	-	32
Objective			**35**				

a K = kerbside, R = roadside.

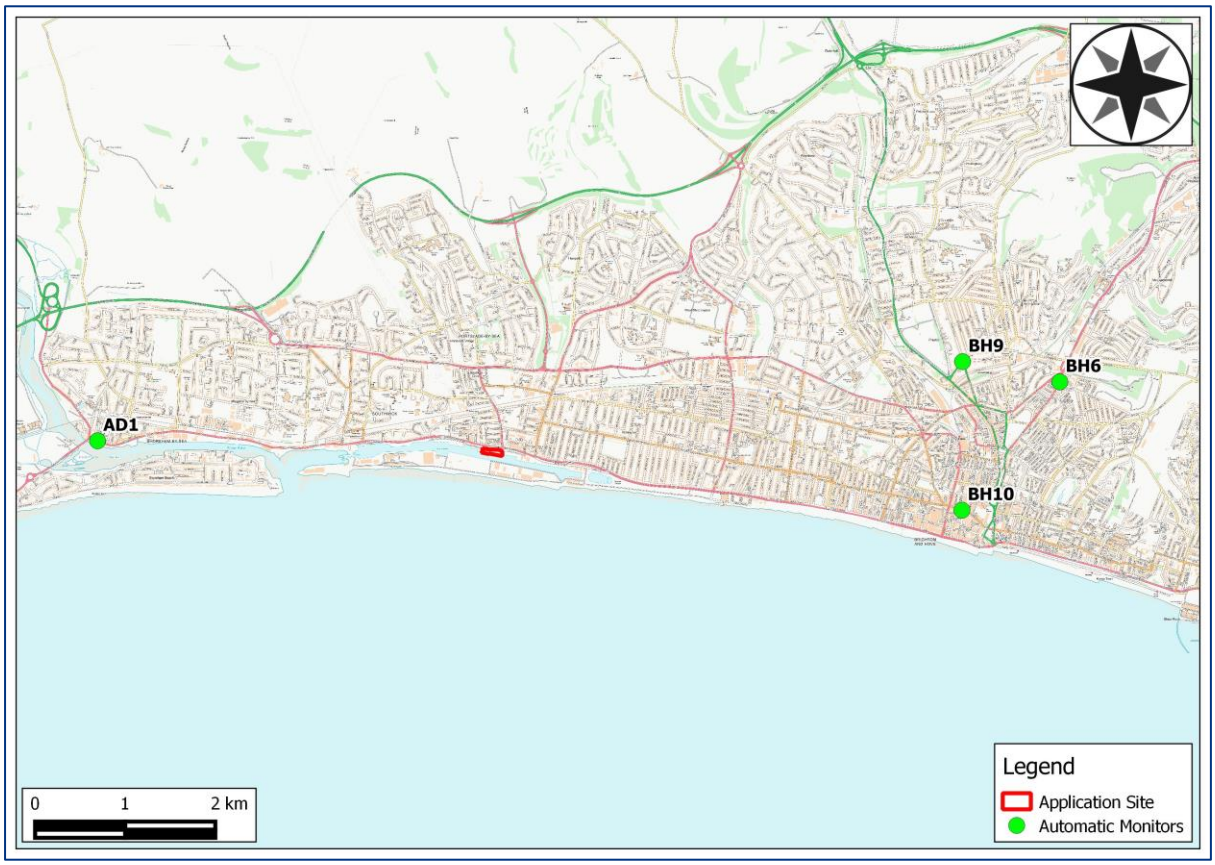

Figure 1: Air Quality Monitoring Sites
Contains Ordnance Survey data © Crown copyright and database right 2019

4.3. Background Concentrations

4.3.1 The estimated background PM_{10} concentration at the application site is shown in **Table 12**. The background concentration is well below the objective.

Table 12: Estimated Annual Mean Background Concentrations in 2019 (µg/m^3)

Grid	PM_{10}
525500,104500	12.1
Objective	**40**

5 Construction Phase Impacts

5.1. Introduction

5.1.1 Without mitigation, there is a risk that the construction phase of the development will lead to dust soiling and elevated concentrations of PM_{10}. These impacts may occur during demolition, earthworks and construction, as well as from trackout of dust onto the public highway, as vehicles leave the construction site.

5.2. Screening

5.2.1 There are human receptors within 350 m of the applications site to the north, east and west. There are also receptors within 50 m of the route used by construction vehicles on the public highway, up to 500 m from the site entrance; therefore, further assessment of the construction phase impacts is necessary. There are no sensitive ecological receptors within 50 m of the application site and the impacts on ecology will not be considered further.

5.3. Risk of Dust Impacts

Potential Dust Emission Magnitude

5.3.1 The existing office building and a wall at the site will be demolished. The total of volume of buildings to be demolished will be well below 20,000 m^3; therefore, based on the example definitions in **Table A1** in **Appendix A1**, the dust emission class for earthworks is considered to be small.

5.3.2 No earthworks will be undertaken at the site; therefore, the impacts due to earthworks will not be considered further.

5.3.3 The proposed development involves the construction of buildings with a total volume significantly less than 25,000 m^3. The construction materials will have a low potential for dust release; therefore, based on the example definitions in **Table A1** in **Appendix A1**, the dust emission class for construction is considered to be small.

5.3.4 The number of daily outward heavy duty vehicle (HDV) movements from the application site during the construction phase is currently unknown; however, given the small scale of the construction works, it is likely to be less than 10; therefore, based on the example definitions in **Table A1** in **Appendix A1**, the dust emission class for trackout is considered to be small.

5.3.5 A summary of the likely dust emission magnitudes is shown in **Table 13**.

Sensitivity of the Area

5.3.6 The sensitivity of the area depends on the specific sensitivities of local receptors, the proximity and number of receptors, local PM_{10} background concentrations and other site specific factors, e.g. natural screening by trees.

Table 13: Likely Dust Emission Magnitudes

Source	Dust Emission Magnitude
Demolition	Small
Earthworks	n/a
Construction	Small
Trackout	Small

Sensitivity of the Area to Dust Soiling

5.3.7 Residential properties are considered to be 'high' sensitivity receptors to dust soiling, whereas the industrial and commercial uses close to the application site would be considered medium/low sensitivity receptors (see **Table A2** in **Appendix A1**).

5.3.8 There are no sensitive residential receptors within 20m of the application site boundary, less than 10 within 50m and between 10-100 within 100m. The school is over 50m from the application site boundary. There is more than one medium sensitivity place of work within 20m of the application site boundary; therefore, with reference to **Table A5** in **Appendix A1**, the area is considered to be of medium sensitivity to dust soiling.

5.3.9 **Table 13** shows that the dust emission magnitude for trackout is small; therefore, there is a risk of material being tracked up to 50m from the site exit. There are no receptors within 20m of roads along which material could be tracked; therefore, the impacts on trackout will not be considered further.

Sensitivity of the Area to the Health Effects of PM_{10}

5.3.10 Residential properties are considered to be 'high' sensitivity receptors to the health effects of PM_{10}, whereas the industrial and commercial uses would be considered medium/low sensitivity receptors (see **Table A3** in **Appendix A1**).

5.3.11 PM_{10} concentrations at the commercial receptors close to the application site are likely to be close to the level measured at automatic monitoring sites in Brighton. There are less than 10 commercial receptors within 20m of the application site boundary. There are no sensitive residential receptors within 20m of the application site boundary, less than 10 within 50m and between 10-100 within 100m. Assuming a worst-case measured roadside annual mean PM_{10} concentration of 27.7µg/m^3 (see **Table 11**[1]) would result in a low sensitivity to health effects from on-site works, with reference to **Table A6** in **Appendix A1**.

5.3.12 A summary of the sensitivity of the area to the effects of the construction works is shown in **Table 14**.

[1] Data from the Shoreham High Street automatic monitoring site is not included due to the high level of uncertainty with regard to the data.

Table 14: Summary of the Area Sensitivity

Potential Effect	Sensitivity of the Area	
	On-site Works	Trackout
Dust Soiling	Medium	n/a
Health	Low	n/a

Risk of Impact and Significance

5.3.13 The dust emission magnitudes in **Table 13** have been combined with the area sensitivities in **Table 14** and a risk category has been assigned to each construction activity using the matrix in **Table A8** in **Appendix A1**,. The resultant risk categories, shown in **Table 15**, have then been used to determine the appropriate level of mitigation necessary for a residual effect that is likely to be 'not significant'.

Table 15: Summary of the Risk of Impacts Without Mitigation

Construction Activity	Dust Soiling	Health
Demolition	Low	Negligible
Earthworks	n/a	n/a
Construction	Low	Negligible
Trackout	n/a	n/a

6 Operational Phase Impacts

6.1. Screening

6.1.1 The operation of the proposed development will potentially lead to dust emissions. There are human receptors within 250m of the application site boundary; therefore, a detailed dust assessment is required. There are no sensitive habitats within 250m of the application site; therefore, impacts on habitats are not considered further.

6.2. Dust Generating Activities

6.2.1 The following activities are likely to have the greatest potential for dust emissions:

- Materials handling;
- On-site transportation;
- Mineral processing;
- Stockpile and exposed surfaces;
- Off-site transportation.

6.3. Residual Source Emissions

6.3.1 The residual source emissions, i.e., the emissions with designed in mitigation in place, have been estimated for the changes to each of the main operational activities. The development proposals will amend the layout of the site to improve efficiency and to accommodate a new dredger. A new ready mixed concrete feed hopper and associated conveyor will be installed, the storage capacity for dredged material will be increased, a new weighbridge and associated office will be installed and additional parking provided on-site.

Material Handling and On-site Transportation

6.3.2 The aggregates are brought into the wharf by a dredger and unloaded into the storage bay by conveyor. The aggregates (sand and gravel) have a low dust potential and will be worked wet, minimising the potential for dust emissions. The use of the conveyor means that there will be minimal movement of plant. All of the conveyors at the site are fitted with guards to prevent dust emissions. The aggregates are then loaded onto another conveyor using a shovel loader, for transport to the aggregates processing plant.

6.3.3 The internal roads are all hard surfaced, and water suppression is used to minimise dust emissions. There would be no increase with regard to annual average daily HDV movements into and out of the application site.

6.3.4 With regard to **Table 7** the residual source emission magnitude due to the changes to material handling and on-site transportation is considered to be small.

Mineral Processing

6.3.5 Aggregates are fed to the processing plant from a conveyor where they are washed and graded before being conveyed to stockpiles. The washing process ensures that the minerals remain wet, minimising dust emissions during the grading process. From the stockpiles, aggregates are loaded directly into HDVs by loading shovel for

transport off site, or used on site for ready mixed concrete. With regard to **Table 7** the residual source emission magnitude due to changes to mineral processing is considered to be small.

Stockpiles and Exposed Surfaces

6.3.6 The exposed surface of the entire site is approximately 1.18 ha. The new storage area and the existing stockpiles are sheltered from prevailing winds as they are protected by high sided concrete walls. The stockpiles are watered depending on weather conditions. Stockpiles of the graded aggregates are long-term with daily transfer of the materials off-site and the stockpiles are located close to the application site boundary. With regard to **Table 7**, given the low dust potential of sand and gravel and that the minerals will be worked wet, the residual source emission magnitude for the changes to stockpiles and exposed surfaces is considered to be small.

Off-site Transportation

6.3.7 There will be no additional HDV movements into and out of the application site. All HDV vehicles leaving the site are covered prior to using the weighbridge, and travel over 50m of a hard surfaced road before joining Fishersgate Terrace A road sweeper is used weekly on the site and access road to prevent dust build up. Water abatement is used during dry conditions. The use of water abatement and the distance travelled over hard standing will prevent the track-out of dust onto the local road network. As there will be no increase in vehicle movements, there will be no impact on off-site transportation due the development proposals.

Summary of Residual Source Emissions

6.3.8 A summary of the residual source emissions is shown in **Table 16**.

Table 16: Summary of Residual Source Emissions for Each Phase

Activity	Residual Source Emissions
Materials Handling	Small
On-site Transportation	Small
Mineral Processing	Small
Stockpiles and Exposed Surfaces	Small
Off-site Transportation	None

6.4. Pathway Effectiveness

6.4.1 The transport of fugitive dust in the air is dependent on the prevailing meteorological conditions. Receptors downwind of the dust emissions source, with regard to the prevailing wind, will be exposed to dust more frequently than those located upwind. An eight year average wind rose from Shoreham Airport meteorological station (see **Figure 2**) shows that the prevailing wind direction is from

the southwest, with a significant element from the north. The Shoreham Airport meteorological station is located approximately 5 km to the west of the application site and wind conditions are likely to be similar to those at the application site.

6.4.2 There is a risk that dust will be entrained from the ground even when no dust generating activities are taking place. Wind speeds greater than 5 m/s are considered strong enough to initiate the suspension of dust from the ground, and the risk is increased on dry days, i.e. when less than 0.2 mm of rainfall are recorded over a 24 hour period. The prevailing wind data show that, for approximately 58% of the time, wind speeds are likely to be below 5 m/s, when dust is unlikely to become suspended in the air.

6.4.3 Analysis of average rainfall data for the area shows that, over the 30 year period from 1981 to 2010, an average of 150-160 days will be wet days, i.e. rainfall will be greater than 0.2 mm (Met Office, 2015). Therefore, for approximately 43% of the time, daily rainfall will be greater than 0.2 mm, when there will be natural dust suppression.

6.4.4 It is commonly accepted that the greatest impacts on dust deposition will occur within 100m of an emissions source (IAQM, 2016). There are approximately 20 dwellings, St. Peter's Community Primary School and a range of medium sensitivity commercial premises within 100m to the north and northwest of the application site. The residential areas within 100m of the application site boundary and the school are shown in **Figure 3**. Other built up areas within the 100m buffer are medium sensitivity commercial premises.

6.4.5 The wind frequency category, estimated from the meteorological data and with regard to **Table 8**, is shown in **Table 17**.

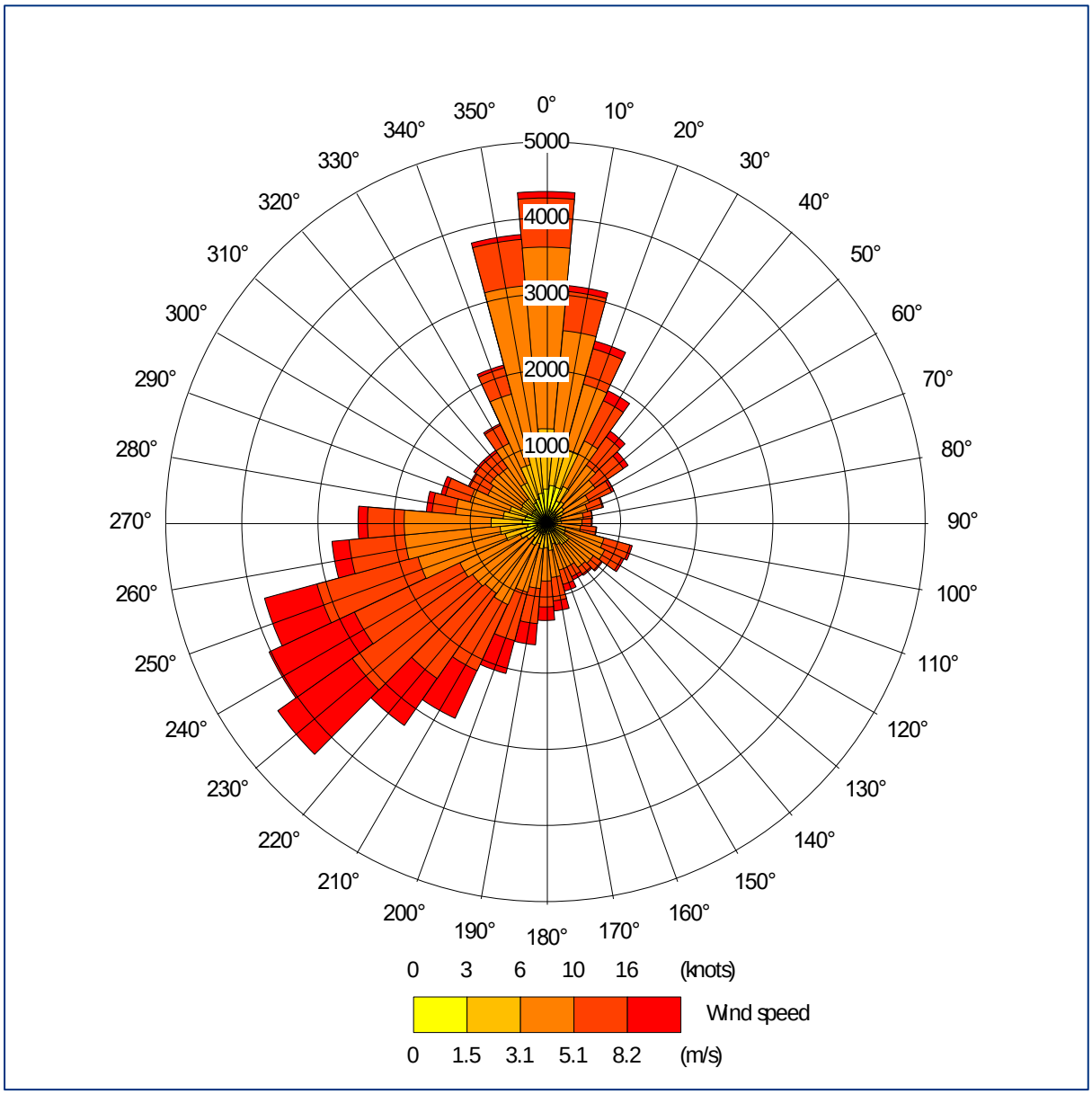

Figure 2: 8 Year Average Wind Rose Shoreham Airport

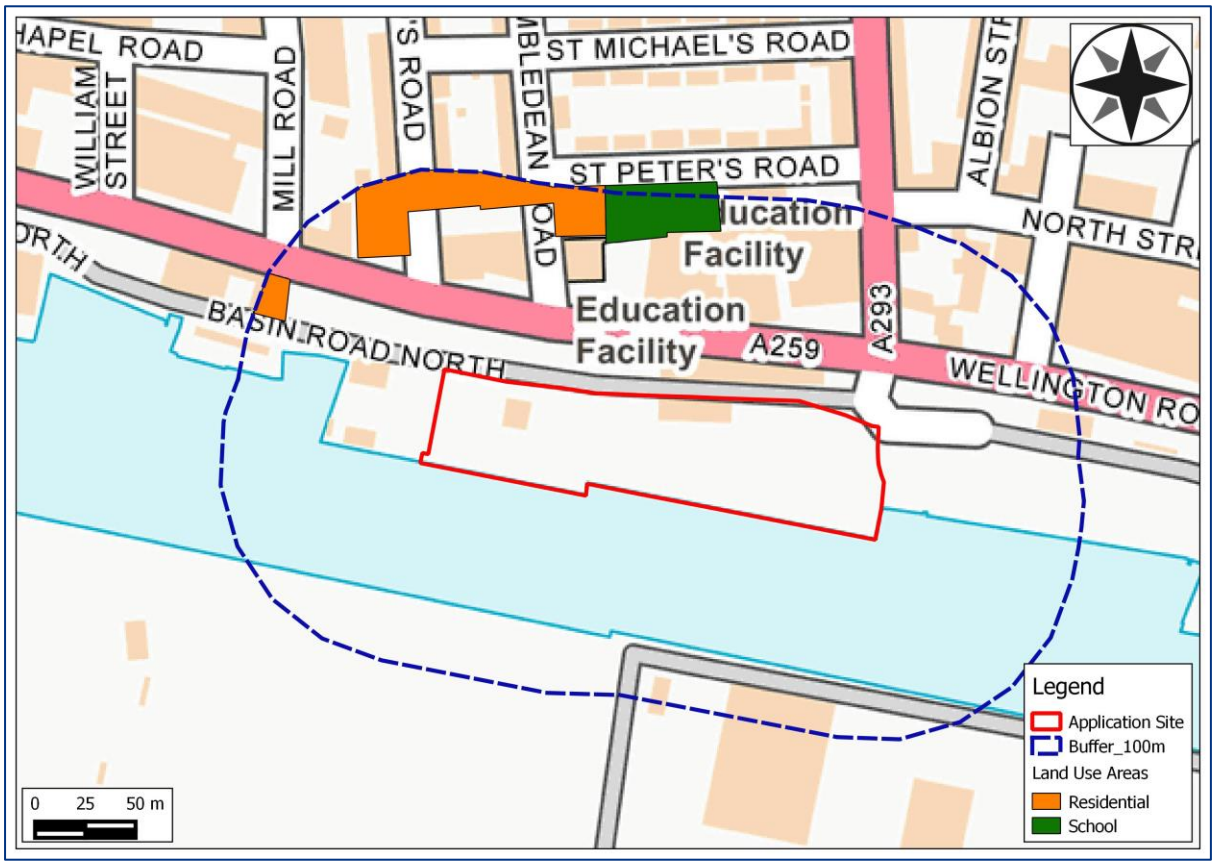

Figure 3: Sensitive Areas within 100m of the Application Site Boundary
Contains Ordnance Survey data © Crown copyright and database right 2019

Table 17: Wind Frequency Category for Each Receptor Area during each Phase

Receptor Area	Wind Sectors Affecting Receptor Area (°)	Frequency of Wind >5m/s Towards Receptor Area (%)	Frequency of Wind >5m/s Towards Receptor Area on Dry Days (%)	Wind Frequency Category
Residential	100-230	18	10	Moderately Frequent
School	130-230	16	9	Moderately Frequent
Commercial	90-260	28	16	Frequent

6.4.6 The potential impact of dust emissions at receptors is dependent on the distance from the source to the receptor and the presence of any physical features that may affect dispersion. Particles responsible for most dust annoyance will usually deposit within 100m of the source and within this distance receptors would be categorised as close (see **Table 9**). However, there is an approximately 10m increase in terrain

height from the application site up to the A259 and the receptor areas. This height difference forms a barrier to dust dispersion.

6.4.7 Combining the wind frequency category with the receptor distance category using **Table 10** determines the pathway effectiveness for each receptor area, as shown in **Table 18**.

Table 18: Pathway Effectiveness for Each Receptor Area

Receptor Area	Frequency of Potentially Dusty Wind	Receptor Distance Category	Pathway Effectiveness
Residential	Frequent	Close	Moderately Effective
School	Frequent	Close	Moderately Effective
Commercial	Frequent	Close	Highly Effective

6.5. Potential Dust Deposition Effects

6.5.1 The worst case pathway effectiveness for each receptor area has been combined with the overall residual source emissions to estimate the dust impact risk at each receptor area using **Table 5**. The dust impact risk and receptor sensitivity have then been used to determine the magnitude of the dust effect at each receptor area using **Table 6**. The dust deposition effects are described as negligible at all of the receptor areas, as summarised in **Table 19**.

Table 19: Summary of Dust Deposition Effects

Receptor Area	Overall Residual Source Emissions	Pathway Effectiveness	Dust Impact Risk	Receptor Sensitivity	Magnitude of Dust Effect
Residential	Small	Moderately Effective	Negligible	High	Negligible
School	Small	Moderately Effective	Negligible	High	Negligible
Commercial	Small	Highly Effective	Low	Medium	Negligible

6.6. Health Effects

6.6.1 The Defra background annual mean PM_{10} concentration at the application site is 12.1 µg/m^3 in 2019 (see **Table 12**). However, close to the A259 , annual mean concentrations are likely to be closer to those measured at the roadside automatic monitoring sites, i.e. 22-32.6 µg/m^3 (see **Table 11**).

6.6.2 Limited data is available regarding the process contributions from minerals workings; however, the IAQM guidance suggests that average daily background levels at opencast coal sites are 2 µg/m^3 higher than when compared to control sites.

Given that PM_{10} emissions from a sand quarry would be lower than those from an open cast coal site, it is considered reasonable to assume a worst-case increase in PM_{10} concentrations due to emissions from the proposed development of 1 µg/m^3.

6.6.3 Adding an annual mean PM_{10} process contribution of 1 µg/m^3 to a worst-case measured roadside annual mean PM_{10} concentration of 27.7µg/m^3 would result in a total annual mean PM_{10} concentration of 28.7 µg/m^3[2]. This worst-case estimate is well below the annual mean objective, and there are unlikely to be any health effects due to the operation of the proposed development.

[2] Data from the Shoreham High Street automatic monitoring site is not included due to the high level of uncertainty with regard to the data.

7 Mitigation

7.1. Construction Phase

7.1.1 The application site has been identified as a low risk site for dust soiling and a negligible risk site for health during the construction phase, as set out in **Table 15**. The dust risk category has been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The mitigation measures, taken from the IAQM guidance (IAQM, 2014), are described in **Appendix A3**.

7.2. Operational Phase

7.2.1 The magnitude of dust effects at local receptors has been shown to be negligible. It is considered that the designed in mitigation measures provide an appropriate level of mitigation at the site.

7.2.2 During adverse weather conditions, such as prolonged dry weather and/or high winds, additional water suppression will be used to prevent dust emissions from the site. Activities with the potential to cause dust emissions will be monitored, and should visible dust be generated, corrective will be taken, including the use of water suppression.

8 Residual Impacts

8.1.1 The residual impacts will be the same as those identified in **Section 4**.

9 Conclusions

9.1.1 The construction phase will have the potential to create dust. It will therefore be necessary to implement mitigation measures to minimise dust emission. With these measures in place, it is expected that any residual effects will be not significant.

9.1.2 The operational phase dust risk assessment has determined that, with the designed in mitigation measures, the magnitude of the dust effect is negligible.

9.1.3 Given that the magnitude of dust effects due to the proposed development are likely to be negligible, it is considered that the effects of the operation of the proposed development of dust will be insignificant.

9.1.4 There should be no constraints to the development of the site, with regard to the dust effects on local receptors, as the proposed development is consistent with:

- The NPPF;
- Policy M18 and M22 of the West Sussex Joint Minerals Local Plan;
- Policy SU9 of the Brighton & Hove Local Plan; and
- Policy 28 and Policy 34 of the Adur Local Plan.

10 References

Adur District Council (2007) *Air Quality Action Plan*.

Adur District Council (2017) *Adur Local Plan*.

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11 Appendices

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A1 Construction Dust Assessment Methodology

A1.1.1 The IAQM guidance divides activities on construction sites into four types to reflect their different potential impacts:

- demolition;
- earthworks;
- construction; and
- trackout.

A1.1.2 A series of steps then consider the potential impact due to:

- annoyance due to dust soiling;
- the risk of health effects due to increased exposure to PM_{10}; and
- harm to ecological receptors.

A1.2. Step 1: Screen the Need for a Detailed Assessment

A1.2.1 An assessment is required where there is a human receptor within 350 m of the site boundary, and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s), or where there is an ecological receptor within 50 m of the site boundary, and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).

A1.2.2 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is negligible, and any effects will be not significant.

A1.3. Step 2: Assess the Risk of Dust Impacts

A1.3.1 A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emissions magnitude (Step 2A); and
- the sensitivity of the area to dust impacts (Step 2B).

A1.3.2 These two factors are combined at Step 2C to determine the risk of dust impacts from each type of construction activity, with no mitigation applied.

Step 2A: Potential Dust Emissions Magnitude

A1.3.3 The dust emission magnitude is classified as small, medium or large. Examples of how the potential dust emission magnitude for each activity can be defined are shown in **Table A1**.

Table A1: Examples of How the Dust Emission Magnitude can be Defined

Class	Example
Demolition	
Large	Total building volume >50,000 m^3, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities >20 m above ground level.
Medium	Total building volume 20,000 m^3 – 50,000 m^3, potentially dusty construction material, demolition activities 10-20 m above ground level.
Small	Total building volume <20,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10 m above ground, demolition during wetter months.
Earthworks	
Large	Total site area >10,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry to due small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.
Medium	Total site area 2,500 m^2 – 10,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m – 8 m in height, total material moved 20,000 tonnes – 100,000 tonnes.
Small	Total site area <2,500 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <4 m in height, total material moved <20,000 tonnes, earthworks during wetter months.
Construction	
Large	Total building volume >100,000 m^3, piling, on site concrete batching; sandblasting.
Medium	Total building volume 25,000 m^3 – 100,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching.
Small	Total building volume <25,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout [a]	
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.
Medium	10-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.
Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.

a These numbers are for vehicles that leave the site after moving over unpaved ground.

Step 2B: Define the Sensitivity of the Area

A1.3.4 The sensitivity of the area takes account of:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentrations; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

A1.3.5 The specific sensitivities of different types of receptor to dust soiling and PM_{10} are shown **Table A2**, **Table A3** and **Table A4**.

A1.3.6 Professional judgement should be used to identify where on the spectrum of sensitivity a receptor lies, taking account of specific circumstances, i.e. the first occupants of residential units on a phased development may be expected to be less sensitive to dust soiling.

A1.3.7 The sensitivity of the area is then determined from the specific sensitivities of the receptors using the matrices set out in **Table A5**, **Table A6** and **Table A**7.

A1.3.8 Professional judgement should be used to determine the final sensitivity of the area, taking account of:

- any history of dust generating activities in the area:
- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between source and receptors;
- any conclusions drawn from analysing local meteorological data which accurately represents the area; and if relevant, the season during which the works will take place;
- any conclusions drawn from local topography;
- duration of the potential impact, as a receptor may become more sensitive over time; and
- any other known specific receptor sensitivities.

Step 2C: Define the Risk of Impacts

A1.3.9 The dust emission magnitude determined at Step 2A is combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts with no mitigation applied. The level of risk for each activity is determined using the matrix in **Table A8**.

A1.4. Step 3: Determine Site Specific Mitigation

A1.4.1 The dust risk category determined at Step 2C has been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The highly recommended and desirable mitigation measures set out in the IAQM guidance form the basis of the mitigation set out in **Appendix** Error! Reference source not found..

A1.5. Step 4: Determine Significant Effects

A1.5.1 The IAQM guidance is clear that, with appropriate mitigation in place, the residual effect will normally be ‘not significant’.

Table A2: Sensitivities of People to Dust Soiling

Class	Principles	Examples
High	Users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected a to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.	Dwellings, museum and other culturally important collections, medium and long term car parks and car showrooms.
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or the appearance, aesthetics or value of their property could be diminished by soiling; or the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.	Parks and places of work.
Low	The enjoyment of amenity would not reasonably be expected; or property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.	Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

Table A3: Sensitivities of People to PM_{10}

Class	Principles	Examples
High	Locations where members of the public may be exposed for eight hours or more in a day.	Residential properties, hospitals, schools and residential care homes.
Medium	Locations where the people exposed are workers, and where individuals may be exposed for eight hours or more in a day.	Office and shop workers, but will generally not include workers occupationally exposed to PM_{10}
Low	Locations where human exposure is transient.	Public footpaths, playing fields, parks and shopping streets.

Table A4: Sensitivities of Receptors to Ecological Effects

Class	Principles	Examples
High	Locations with an international or national designation and the designated features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species.	Special Areas of Conservation (SAC) with dust sensitive features.
Medium	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or locations with a national designation where the features may be affected by dust deposition.	Sites of Special Scientific Interest (SSSI) with dust sensitive features.
Low	Locations with a local designation where the features may be affected by dust deposition.	Local Nature Reserves with dust sensitive features.

Table A5: Sensitivity of the Area to Dust Soiling Effects on People and Property [3]

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	**>100**	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	**>1**	Medium	Low	Low	Low
Low	**>1**	Low	Low	Low	Low

[3] For demolition, earthworks and construction, the distances are measured from the dust source, or the application site boundary. For trackout, the distances are measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge or the road.

Table A6: Sensitivity of the Area to Human Health Effects [3]

Receptor Sensitivity	Annual Mean PM_{10}	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m^3	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m3	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m^3	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table A7: Sensitivity of the Area to Ecological Effects [3]

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Table A8: Defining the Risk of Dust Impacts

Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

A2 Professional Experience

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Bob Thomas is a Director at AQA, with over eleven years' experience in the field of air quality management and assessment. He has carried out air quality assessments for a wide range of developments, including residential, commercial, industrial, minerals and waste developments. He has been responsible for air quality projects that include ambient air quality monitoring of nitrogen dioxide, dust and PM_{10}, the assessment of nuisance odours and dust, and the preparation of Review and Assessment reports for local authorities. He has extensive dispersion modelling experience for road traffic, energy centre and industrial sources, and has completed many stand-alone reports and chapters for inclusion within an Environmental Statement. Bob has worked with a variety of clients to provide expert air quality services and advice, including local authorities, planners, developers, architects and process operators, and has provided expert witness services at public inquiry. He is a Chartered Scientist, a Member of the Institute of Air Quality Management and a Member of the Institution of Environmental Sciences.

A full CV for Bob Thomas is available at http://aqassessments.co.uk/about

A3 Construction Mitigation

A3.1.1 The following is a set of measures that should be incorporated into the specification for the works:

A3.2. Communications

- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager; and
- display the head or regional office contact information.

A3.3. Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- make the complaints log available to the local authority when asked; and
- record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book.

A3.4. Monitoring

- Carry out regular site inspections, record inspection results, and make an inspection log available to the Local Authority when asked; and
- increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust area being carried out and during prolonged dry or windy conditions.

A3.5. Preparing and Maintaining the Site

- Plan the site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible; and
- avoid site runoff of water or mud;

A3.6. Operating Vehicle/Machinery and Sustainable Travel

- Ensure all vehicles switch off their engines when stationary – no idling vehicles; and
- avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where practicable;

A3.7. Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate; and
- use enclosed chutes, conveyors and covered skips;

- minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

A3.8. Waste Management

- No bonfires or burning of waste materials.

A3.9. Measures Specific to Demolition

- ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground;
- avoid explosive blasting, using appropriate manual or mechanical alternatives; and
- bag and remove any biological debris or damp down such material before demolition.