Air Quality Assessment

Portslade Village Centre, Portslade

October 2023

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Brighton and Hove City Council

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1. Introduction

Background

1.1 Phlorum Limited was commissioned by Brighton and Hove City Council (BHCC) to undertake an Air Quality Assessment (AQA) in support of a planning application for the proposed redevelopment of the Portslade Village Community Centre, Portslade. The National Grid Reference for the centre of the site is 525526, 106160. A site location plan has been included in Figure 1.

1.2 It is understood that that the proposal seeks to demolish the existing community centre and develop 28 residential units, split across two blocks of flats, and a replacement community centre.

1.3 The application site is located between Windlesham Close to the west and Locks Hill to the east, situated within the centre of Portslade village. Land use in the vicinity of the site predominantly comprises of residential dwellings, with Portslade Village Green bounding the application site to the north.

1.4 The main sources of air pollution in the vicinity of the site are motor vehicles travelling on the local road network, particularly the aforementioned road links.

1.5 BHCC, the local authority, has declared six Air Quality Management Areas (AQMAs) within the authority boundary due to elevated concentrations of Nitrogen Dioxide (NO_2). The closest of these AQMAs, AQMA 3, is located approximately 250m to the south-east of the application site and was established in 2020 due to exceedances of the annual mean Air Quality Standard (AQS) for NO_2.

Scope of Assessment

1.6 The focus of this report is the assessment of the suitability of the site, in air quality terms, for its proposed end use. Further assessment of the potential for traffic generated by the proposed development to impact local air quality is also presented.

1.7 This report also includes an assessment of the potential for dust nuisance and soiling impacts to occur due to the re-development of Portslade Village Centre.

1.8 An Emissions Mitigation Assessment (EMA), in line with guidance from the Sussex-Air Partnership, was also undertaken, influencing recommendations for suitable mitigation measures to further reduce potential impacts associated with development-related traffic emissions.

2. Policy Context

The UK Air Quality Strategy

2.1 The UK Air Quality Strategy (UKAQS)[1] sets out air quality standard (AQS) concentrations for a number of key pollutants that are to be achieved at sensitive receptor locations across the UK by corresponding air quality objective (AQO) dates. The sensitive locations at which the standards and objectives apply are those where the population are reasonably expected to be exposed to said pollutants over the particular averaging period.

2.2 For those objectives to which an annual mean standard applies, the most common sensitive receptor locations used to compare concentrations against the standards are areas of residential housing. It is reasonable to expect that people living in their homes could be exposed to pollutants over such a period of time.

2.3 Schools and children's playgrounds are also often used as sensitive locations for comparison with annual mean objectives due to the increased sensitivity of young people to the effects of pollution (regardless of whether or not their exposure to the pollution could be over an annual period). For shorter averaging periods of between 15 minutes, 1 hour or 1 day, the sensitive receptor location can be anywhere where the public could be exposed to the pollutant over these shorter periods of time. A summary of the AQS relevant to this assessment are included in Table 2.1, below.

Table 2.1 UK Air Quality Standards and Objectives

Pollutant	Averaging Period	Air Quality Standard (µg.m^{-3})	Air Quality Objective
Nitrogen dioxide (NO_2)	1 hour	200	200 µg.m^{-3} not to be exceeded more than 18 times a year
	Annual	40	40 µg.m^{-3}
Particulate Matter (PM_{10})	24-hour	50	50 µg.m^{-3} not to be exceeded more than 35 times a year
	Annual	40	40 µg.m^{-3}
Particulate Matter ($PM_{2.5}$)	Annual	20	20 µg.m^{-3}

1 Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2) July 2007.

2.4 The objectives adopted in the UK are based on the Air Quality (England) Regulations 2000[2], as amended, for the purpose of Local Air Quality Management. These Air Quality Regulations have been adopted into UK law from the limit values required by European Union Daughter Directives on air quality.

2.5 The UK AQS for $PM_{2.5}$ was amended as part of the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020[3].

2.6 Obligations under the Environment Act 1995 require local authorities to declare an AQMA at sensitive receptor locations where an objective concentration has been predicted to be exceeded. In setting an AQMA, the local authority must then formulate an Air Quality Action Plan (AQAP) to seek to reduce pollution concentrations to values below the objective levels.

2.7 BHCC produced its latest AQAP[4] in 2022, outlining the actions and strategies being implemented to reduce pollutant emissions and subsequent concentrations across the City, particularly within designated AQMAs.

National Planning Policy Framework

2.8 The National Planning Policy Framework (NPPF)[5], which was updated in September 2023, sets out the Government's planning policy for England. At its heart is an intention to promote more sustainable development. A core principle in the NPPF that relates to air quality effects from development is that planning should "contribute to conserve and enhance the natural and local environment" as demonstrated at paragraph 174:

"Planning policies and decisions should contribute to and enhance the natural and local environment by: […]

preventing new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability […]".

2.9 With regard to assessing cumulative effects the NPPF states the following at paragraph 185:

"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 wider area to impacts that could arise from the development."

2 The Air Quality (England) (Amendment) Regulations 2002 - Statutory Instrument 2002 No.3043.
3 The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020
4 Brighton and Hove City Council. (2022). *Air Quality Action Plan 2022 to 2027*.
5 Ministry of Housing, Communities & Local Government. (2023). *National Planning Policy Framework.*

2.10 With regard to a compliance with relevant limit values and national objectives for air pollutants, along with assessing cumulative effects the NPPF states the following at paragraph 186:

"Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or to mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan."

2.11 With regard to promoting sustainable transport, paragraph 105 states:

"The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making".

2.12 The NPPF offers a broad framework but does not afford a detailed methodology for assessments. Specific guidance for air quality continues to be provided by organisations such as the Department for Environment, Food and Rural Affairs (Defra), Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM).

National Planning Practice Guidance

2.13 Reference ID 32 (Air Quality) of the National Planning Practice Guidance (PPG)[6], which was updated in July 2021, provides guiding principles on how planning can take account of the impact of new development on air quality. The PPG summarises the importance of air quality in planning and the key legislation relating to it.

2.14 As well as describing the importance of International, National and Local Policies (detailed elsewhere in this report), it summarises the key sources of air quality information. It also explains when air quality is likely to be relevant to a planning decision, stating:

6 Planning Practice Guidance (PPG) 32. (2021). *Air Quality*.

"Considerations that may be relevant to determining a planning application include whether the development would:

- *Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield. This could be through the provision of electric vehicle charging infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would generate large Heavy Goods Vehicle flows over a period of a year or more;*
- *Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area; or extraction systems (including chimneys) which require approval or permits under pollution control legislation;*
- *Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;*
- *Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- *Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value."*

2.15 Details are also provided of what should be included within an air quality assessment. Key considerations include:

- Baseline local air quality;
- Whether the proposed development could significantly affect local air quality during its construction/operation; and
- Whether the development is likely to expose more people to poor air quality.

2.16 Examples of potential air quality mitigation measures are also provided in the PPG.

Local Planning Policy

2.17 The Brighton and Hove City Development Plan, adopted in March 2016, directs planning in the city. The Plan is made up of a number of documents, including the *Brighton and Hove City Plan Part One*[7] and *Brighton and Hove City Plan Part Two*[8].

2.18 The *Brighton and Hove City Plan Part One*[7] contains policies and strategic objectives (SO) of direct relevance to wider pollution mitigation and air quality, including:

SO22

"[…] Ensure pollution is minimized and actively seek improvements in water, land and air quality and reduce noise pollution".

SO11

"Provide an integrated, safe and sustainable transport system to improve air quality, reduce congestion, reduce noise and promote active travel".

Policy CP8: Sustainable Buildings

"The council will seek that all new development incorporate sustainable design features to avoid expansion of the city's ecological footprint, help deliver the principles of the One Planet approach, radical reductions in greenhouse gas emissions, particularly CO_2 emissions, and mitigation against and adapt to Climate Change. […]

2. All development proposals including conversions, extensions and changes of use will be expected to demonstrate how the development:

a. addresses climate change mitigation and adaptation;

b. contributes to a reduction in the city's current level of greenhouse gas emissions by delivering significant reductions in fuel use and greenhouse gas emissions via: passive design and orientation; fabric performance; energy efficiency measures; and low carbon solutions;

c. facilitates on-site low or zero carbon technologies, in particular renewable energy technologies;

d. connects, make contributions to low and zero carbon energy schemes and /or incorporates provision to enable future connection to existing or potential decentralised energy schemes; […]"

7 Brighton & Hove City Council. (2016). *Brighton & Hove City Plan Part One: Brighton & Hove City Council's Development Plan*.
8 Brighton & Hove City Council. (2022). *Brighton & Hove City Plan Part Two: Brighton & Hove City Council's Development Plan*.

Policy CP9: Sustainable Transport

"[…] 2. Local – Ensuring the priorities of the Transport Strategy are delivered within the city by:

a. Directing significant development into areas with good sustainable transport links and ensuring that major development will be located in areas where measures can be taken to secure accessibility improvements for all (see DA1-DA8 Development Areas). Sustainable transport measures will be focused into these areas.

b. Improving access to significant uses, facilities and services by supporting or providing sustainable transport measures (public transport, cycle and pedestrian and wheelchair friendly), better public realm and improved safety. […]"

2.19 BHCC's *City Plan Part 2*[8], adopted in October 2022, was created to support the delivery of *City Plan Part One*[7] through setting out a detailed development management policy framework to assist in the development of planning applications. Of relevance to air quality are the following policies:

Policy DM40: Protection of the Environment and Health – Pollution and Nuisance

"Planning permission will be granted for development proposals that can demonstrate they will not give rise nor be subject to material nuisance and/or pollution that would cause unacceptable harm to health, safety, quality of life, amenity, biodiversity and/or the environment (including air, land, water and built form). Proposals should seek to alleviate existing problems through their design.

Proposals liable to cause or be affected by pollution and/or nuisance will be required to meet all the following criteria:

a) be supported by appropriate detailed evidence that demonstrates:

i. the site is suitable for the proposed use and will not compromise the current or future operation of existing uses;

ii. pollution and/or nuisance will be minimised;

iii. appropriate measures can and will be incorporated to attenuate/mitigate existing and/or potential problems in accordance with national and local guidance;

iv. appropriate regard has been given to the cumulative impact of all relevant committed developments as well as that of the proposal and/or effect of an existing pollution/nuisance source.

b) support the implementation of local Air Quality Action Plans and help support the local authority meet the Government's air quality and other sustainability targets;

c) provide, when appropriate, an Air Quality Impact Assessment to consider both the exposure of future and existing occupants to air pollution, and, the effect of the development on air quality. Air quality improvements and/or mitigation must be included wherever possible;

d) have a positive impact, where practicable, on air quality when located within or close to an Air Quality Management Area and not worsen the problem;

e) assess the impacts of emissions from transport, flues, fixed plant, and heat and power systems. New biomass combustion and CHP plants associated with major developments will not be acceptable in or near Air Quality Management Area and sensitive receptors such as the Royal Sussex County Hospital due to the need to comply with Nitrogen Dioxide limits; […]

Policy DM35: Travel Plans and Transport Assessments

"[…] 5) Proposals that could significant noise or air quality impacts or create significant disturbance or intrusion during the demolition and construction processes will be required to submit a Construction & Environmental Management Plan".

3. Methodology Assessment

Guidance

3.1 Defra's *Local Air Quality Management Technical Guidance* (LAQM.TG(22))[9] was followed in carrying out the assessment.

3.2 Guidance published by the IAQM on the *Assessment of Dust from Demolition and Construction*[10] was also used to assess the risk of dust emissions during the construction phase of the proposed development.

3.3 The Greater London Authority's (GLA) Supplementary Planning Guidance (SPG) on *The Control of Dust and Emissions During Construction and Demolition*[11] has also been referred to, which is considered best practice guidance for London and the wider UK. It details a number of mitigation measures that should be adopted to minimise adverse impacts from emissions of dusts and fine particles.

3.4 The latest Environmental Protection UK (EPUK) & IAQM guidance on *Planning for Air Quality*[12] was also referred to throughout the assessment.

3.5 BHCC is a member of the Sussex-Air partnership, and therefore the *Air Quality and Emissions Mitigation Guidance for Sussex* (2021)[13] (AQEMGFS) has been followed when undertaking the emissions mitigation assessment.

Construction Phase

3.6 The construction phase of the proposed development will involve a number of activities that could potentially produce polluting emissions to air. Predominantly, these will be emissions of dust. However, they could also include releases of odours and/or more harmful gases and particles.

3.7 The IAQM's guidance to assess the impacts of construction on human and ecological receptors has been followed in carrying out this air quality assessment.

3.8 The guidance suggests that where a receptor is located within 250m (50m for statutory ecological receptors) of a site boundary and/or 50m of a route used by construction vehicles, up to 250m from the site entrance, a dust assessment should be undertaken. Figure 2 shows receptors near to the site that could be sensitive to dust.

9 Defra. (2022). *Local Air Quality Management, Technical Guidance LAQM. TG(22)*.
10 Institute of Air Quality Management. (2023). *Guidance on the Assessment of Dust from Demolition and Construction*.
11 Greater London Authority. (2014). *The Control of Dust and Emissions During Construction and Demolition*.
12 Environmental Protection UK & Institute of Air Quality Management. (2017). *Land-Use Planning & Development Control: Planning for Air Quality*.
13 Sussex-Air. (2021). *Air Quality and Emissions Mitigation Guidance for Sussex*.

3.9 High sensitivity receptors are considered particularly sensitive when located within 20m of a works area.

3.10 The Multi Agency Geographic Information for the Countryside (MAGIC) website[14], which incorporates Natural England's interactive maps, has been reviewed to identify whether any statutory ecological sensitive receptors are situated within 50m of the site boundary or within 50m of any routes used by construction vehicles on the public highway, up to 350m from the site entrance.

Construction Significance

3.11 The IAQM guidance suggests that Demolition, Earthworks, Construction and Trackout should all be assessed individually to determine the overall significance of the construction phase.

3.12 In the IAQM dust guidance, the first step in assessing the risk of impacts is to define the potential dust emission magnitude. This can be considered 'Negligible', 'Small', 'Medium' or 'Large' for each of the construction stages. Whilst the IAQM provides examples of criteria that may be used to assess these magnitudes, the vast number of potential variables mean that every site is different and therefore professional judgement must be applied by what the IAQM refer to as a "technically competent assessor". The construction phase assessment therefore relies on the experience of the appraiser.

3.13 As such, attempts to define precisely what constitutes a *Negligible*, *Small*, *Medium* or *Large* dust emission magnitude should be treated with caution. Factors such as the scale of the work, both in terms of size and duration, the construction materials and the plant to be used must be considered.

3.14 The second step is to define the sensitivity of the area around the construction site. As stated in the IAQM guidance:

"the sensitivity of the area takes into account a number of factors:

- *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."*

3.15 Based on these factors, the area is categorised as being of 'Low', 'Medium' or 'High' sensitivity.

14 Natural England and MAGIC partnership Organisations. (2023). *Multi Agency Geographic Information for the Countryside*.

3.16 When dust emission magnitudes for each stage and the sensitivity of the area have been defined, the risk of dust impacts can be determined. The IAQM provides a risk of impacts matrix for each construction stage. The overall significance for the construction phase can then be judged from the stages assessed. Again, this is subject to professional judgement.

3.17 Combustion exhaust gases from diesel-powered plant and construction vehicles accessing the site will also be released. However, the volumes and periods over which these releases will occur are unlikely to result in long-term impacts on local air quality and therefore this has been scoped out of the assessment.

Operational Phase

Road Transport Sources

3.18 Vehicle emissions will arise from the combustion of fossil fuels in vehicle engines and their subsequent release to atmosphere via tailpipe exhausts. The most significant pollutants released by cars and other vehicles are oxides of nitrogen (NO_2/NO_x) and particulate matter (PM_{10} and $PM_{2.5}$). Releases of carbon monoxide (CO) and some volatile hydrocarbons (e.g. benzene and 1,3-butadiene) are of less significance and are not considered further in this report.

3.19 As it is elevated annual mean concentrations of NO_2 and PM_{10} that have resulted in the declaration of most AQMAs across the UK, these are the pollutants of most concern and they have therefore been the focus of this air quality assessment. $PM_{2.5}$, which is another fraction of particulate matter, has also been considered.

3.20 The latest EPUK & IAQM planning guidance[12] provides indicative thresholds for changes in traffic flows which would require a detailed, dispersion modelling air quality assessment. These are a change in 24-hour annual average daily traffic (AADT) flows exceeding 100 light-duty vehicles (LDVs) and/or 25 heavy-duty vehicles (HDVs) within an AQMA, or 500 LDVs and/or 100 HDVs elsewhere.

3.21 Full justification behind the screening assessment of air quality related impacts on existing sensitive receptors in the local area has been provided in Section 6 of this report.

Emissions Mitigation Assessment

3.22 Sussex-Air's Air Quality Planning Guidance[13] advocates that an Emissions Mitigation Assessment (EMA) should be undertaken to outline how air quality impacts from development emissions can be minimised.

3.23 The purpose of an EMA is to determine an 'appropriate scale and kind' of mitigation required from a development. An EMA sets out a methodology to assess the impact of a development's emissions on air quality and provides an approach to mitigating emissions for developments, even those which have no significant impact on local air quality.

3.24 Noting the number of proposed residential dwellings, and the development's location within fairly close proximity of BHCC's AQMA 3, an EMA with an emissions cost calculation was required to be undertaken. The emissions cost calculation was undertaken following the Sussex AQEMGFS[13] and Defra's Damage Cost guidance[15]. The latest Defra Air Quality Damage Cost Appraisal Toolkit[16] was utilised in the assessment.

Emissions Cost Calculation

3.25 The emissions calculation utilised the latest Defra Emissions Factors Toolkit (EFT)[17] to determine total transport related emissions (NO_X & $PM_{2.5}$) that would be generated by the proposed development.

3.26 Defra provides *Damage Costs*, which are set of impact values, defined per tonne of pollutant for use in this calculation. Damage costs estimate the societal costs associated with changes in pollutant emissions and are then combined with the forecasted emissions changes to provide an approximate valuation of the cost (or benefit) to society caused by a development's associated traffic emissions.

3.27 Defra's Appraisal Toolkit[16], which incorporates the latest damage cost values, was used in the calculation. The principal of the calculation is summarised in the equation below:

EFT output x Damage costs x 5 years = 5 year exposure cost value (in £)

3.28 As a number of the inputs are based on assumptions, the resulting figure should be treated with caution, but it can be used to give an idea of the scale of a development in terms of total generated transport emissions and therefore a gauge of what level of mitigation might be appropriate.

3.29 It is usual for costs established in this way to be apportioned to low emission measures associated with a proposed development. In doing this it should be possible for damage costs to be offset.

Consultation

3.30 BHCC's Environmental Health Officer (EHO) was contacted on the 18th of September 2023 to discuss and agree the proposed scope of the assessment. A response was received on the 19th of September 2023 outlining a number of recommendations and actions the EHO requested to be implemented. Where applicable, these have been addressed throughout this assessment.

15 Defra. (2023). *Defra Damage Cost*.
16 Defra. (2022). *Air Quality Damage Cost Appraisal Toolkit*.
17 Defra. (2021). *Emissions Factor Toolkit (V11.0)*.

4. Baseline Assessment

4.1 This chapter is intended to establish prevailing air quality conditions in the vicinity of the application site. Baseline air quality conditions in the vicinity of the site have been established through the compilation and review of appropriately sourced background concentration estimates and local monitoring data.

4.2 Defra provides estimated background concentrations of the UKAQS pollutants at the UK Air Information Resource (UK-AIR) website[18]. These estimates are produced using detailed modelling tools and are presented as concentrations at central 1km^2 National Grid square locations across the UK. At the time of writing, the most recent background maps were from August 2020 and based on monitoring data from 2018.

4.3 Being background concentrations, the UK-AIR data are intended to represent a homogenous mixture of all emissions sources within the general area of a particular grid square location. Concentrations of pollutants at various sensitive receptor locations can, therefore, be calculated by modelling the emissions from a nearby pollution source, such as a busy road, and then adding this to the appropriate UK-AIR background datum.

4.4 BHCC's automatic and non-automatic local pollutant monitoring data are also considered an appropriate source for establishing baseline air quality. The most recent available data is from BHCCs *2023 Air Quality Annual Status Report (ASR)*[19], which has been included and referenced within this report.

UK-AIR Background Pollution

4.5 UK-AIR predicted background concentrations of NO_2, PM_{10} and $PM_{2.5}$ for 2019 to 2024 are presented in Table 4.1 below. These data were taken from the central grid square location closest to the application site (i.e. National Grid Reference: 525500, 106500).

18 Defra. (2023). *UK Air Information Resource Website (UK-AIR).*
19 Brighton & Hove City Council. (2023). *2023 Air Quality Annual Status Report.*

Table 4.1: 2019 to 2024 Background Concentrations of Pollutants at the Application Site.

Pollutant	Predicted Background Concentration (µg.m^{-3})						Averaging Period	Air Quality Standard Concentration (µg.m^{-3})
	2019	2020	2021	2022	2023	2024		
NO_2	13.7	13.2	12.7	12.3	11.9	11.4	Annual Mean	40
PM_{10}	15.7	15.4	15.2	15.0	14.8	14.6	Annual Mean	40
$PM_{2.5}$	11.2	11.0	10.8	10.7	10.5	10.4	Annual Mean	20

4.6 The data in Table 4.1 show that annual mean background concentrations of NO_2, PM_{10} and $PM_{2.5}$, in the vicinity of the application site, between 2019 and 2024, are predicted to be well below their respective AQSs.

4.7 The data show that in 2023, NO_2, PM_{10} and $PM_{2.5}$ concentrations are predicted to be below their respective AQSs by 70%, 63% and 48% respectively. As such, annual mean background pollutant concentrations are likely to be below their respective AQSs at the application site.

4.8 Concentrations of all three pollutants are predicted to decline each year. These reductions are principally due to the forecast effect of the roll out of cleaner vehicles, but also due to UK national and international plans to reduce emissions across all sectors.

Local Sources of Monitoring Data

4.9 Air quality monitoring is considered an appropriate source of data for the purposes of describing baseline air quality. At the time of writing, the most recent *ASR*[19] released by BHCC included local pollutant monitoring data from 2022.

4.10 However, due to the uncertainty surrounding the impacts associated with COVID-19 on emissions and subsequent levels of pollution across the UK, this baseline review has focused on local pollutant monitoring data from 2019, despite more recent monitoring data being available.

Automatic Monitoring

NO_2

4.11 BHCC undertook automatic (continuous) pollutant monitoring for NO_2 at four sites in 2019. The most recent available data from the closest automatic monitoring station to the application site, BH0, has been included in Table 4.2, below.

Table 4.2: NO_2 Data from BHCC's BH0 Automatic Monitoring Station

Monitor	Type	Distance to Site (km)	Annual Mean NO_2 Concentration ($\mu g.m^{-3}$)			
			2019	2020	2021	2022
BH0	UB	5.0	15.2	10.9	12.3	12.6

Note: "UB" = Urban Background.

4.12 The data in Table 4.2 show an overall decrease in NO_2 concentrations at monitor BH0 between 2019 and 2022, with a particularly substantial reduction observed in 2020 relative to 2019; likely due to COVID-19 associated impacts on vehicular traffic and industry. It should be noted that concentrations since 2020 have risen marginally in both 2021 and 2022.

4.13 In 2019, BH0 recorded an annual mean NO_2 concentration of 15.2 $\mu g.m^{-3}$, which is below the 40.0 $\mu g.m^{-3}$ AQS by 62%. Located within the centre of Preston Park, in an urban background setting, this monitor is distanced approximately 5.0km to the east of the application site.

PM_{10}

4.14 Automatic (continuous) monitoring of PM_{10} is not undertaken at monitoring station BH0. Whilst automatic monitoring of PM_{10} is conducted at an automatic monitor located in, and operated by, the University of Brighton (UoB), BHCC's latest ASRs do not present annualised data for this monitoring station.

$PM_{2.5}$

4.15 Automatic (continuous) monitoring of $PM_{2.5}$ was undertaken at monitor BH0 between 2019 and 2022. The most recent available data from this automatic monitor are included in Table 4.3, below.

Table 4.3: $PM_{2.5}$ Data from BHCC's BH0 Automatic Monitoring Station

Monitor	Type	Distance to site (km)	Annual mean PM_{10} concentration ($\mu g.m^{-3}$)			
			2019	2020	2021	2022
BH0	UB	5.0	9.2	9.6	9.9	11.1

Note: "UB" = Urban Background.

4.16 The data in Table 4.3 show that annual mean concentrations of $PM_{2.5}$ at BH0 have, in recent years, been well below the 20.0 $\mu g.m^{-3}$ AQS. It should be noted, however, that recorded concentrations of $PM_{2.5}$ at this monitor have increased between 2019 and 2022.

4.17 In 2019, BH0 recorded an annual mean $PM_{2.5}$ concentration of 9.2 $\mu g.m^{-3}$; 54% below the 20.0 $\mu g.m^{-3}$ AQS.

Non-Automatic Monitoring

4.18 BHCC operate an extensive non-automatic, NO_2 diffusion tube monitoring network at strategic locations within the authority boundary. The most recent available NO_2 monitoring data for all diffusion tubes within 1.0km of the application site are included in Table 4.4, below. Furthermore, diffusion tubes located in the direct vicinity of the application site are spatially presented in Figure.

Table 4.4: Monitoring Data from BHCC's NO_2 Diffusion Tubes Within 1.0km of the Application Site

Monitor	Type	Distance from the Site (km)	NO_2 Annual Mean Concentration ($\mu g.m^{-3}$)			
			2019	2020	2021	2022
A270 OSR13	R	0.3	-	-	31.8	36.5
A270 OSR15	K	0.3	-	-	31.6	34.6
A270 OSR11	K	0.3	-	-	22.5	25.2
A270 OSR9	R	0.3	-	-	18.2	20.7
A259 W19-2009	R	0.4	39.9	34.4	31.7	33.4
A270 OSR5	R	0.5	-	-	24.9	28.0
A270 OSR7	R	0.5	-	-	18.6	21.2
A270 OSR3	R	0.7	-	-	20.6	23.7
A270 OSR1	R	0.7	-	-	28.6	32.8
A259 W18-2010	UB	1.0	18.4	17.0	15.0	16.4

Note: "K" = Kerbside; "R" = Roadside; and "UB" = Urban Background.

4.19 The data in Table 4.4 shows that annual mean concentrations of NO_2 at all diffusion tubes within 1.0km of the application site were all below the respective 40.0 $\mu g.m^{-3}$ AQS between 2019 and 2022.

4.20 The closest diffusion tube to the development site that recorded data in 2019, monitor A259 W19-2009, is located at a roadside location adjacent to Trafalgar Road; approximately 0.4km to the south of the application site. In 2019, this diffusion tube recorded an annual mean NO_2 concentration of 39.9 $\mu g.m^{-3}$, below the 40.0 $\mu g.m^{-3}$ AQS by just 0.3%. This monitor also recorded the highest concentration of each of the tubes located within 1.0km of the application site throughout the 2019 to 2022 monitoring period.

4.21 The closest diffusion tube to the application site, Monitor A270 OSR13, is located approximately 0.3km to the south-east of the application site, positioned in a roadside setting adjacent to the A270 Old Shoreham Road. Whilst monitoring at this location commenced in 2021, an annual mean concentration of 36.5 $\mu g.m^{-3}$ was recorded in 2022; below the respective AQS by 9%.

5. Construction Phase Impacts

5.1 The construction phase of the proposed development will involve a number of activities that could produce polluting emissions to air. Predominantly, these will be emissions of dust.

5.2 The estimates for the dust emission magnitude for demolition, earthworks, construction and trackout below are based on the professional experience of Phlorum's consultants, information provided by the client and Google Earth imagery.

Dust Emission Magnitude

Demolition

5.3 The total volume of the buildings proposed for demolition is 2,170m^3, with a maximum demolition height of between 6-12m. Therefore, with reference to IAQM's respective guidance[10], the overall dust emission magnitude for the demolition phase is considered to be *Medium*.

Earthworks

5.4 It is believed that potential contaminants are present within some of the existing buildings proposed for demolition[20]. The potential health effects from the release of contaminated dusts are not considered by this report.

5.5 The total area of the site is approximately 6,300m^2, which falls into the *Small* dust emission magnitude category with reference to the IAQM guidance[10].

5.6 It is anticipated that fewer than 5 heavy earth moving vehicles will be operating at the site at any one time, also falling into the IAQM's *Small* dust emission magnitude category.

5.7 No bunds will be formed throughout this phase of the construction programme.

5.8 Overall, and with reference to the IAQM guidance[10], the dust emission magnitude for the earthworks phase is considered to be *Small*.

Construction

5.9 Localised use of cement powder and general handling of construction materials also have the potential to generate dust emissions, as does the effect of wind-blow from stockpiles of friable materials. It is anticipated that both piling and concrete batching will occur on-site.

20 Construction Evaluation. (2023). *Portslade Village Centre Report*.

5.10 It is estimated that the total building volume of the proposed development will be below 12,000m^3, falling within the IAQM's *Small* dust emission magnitude category[10].

5.11 Noting that concrete batching is proposed during the construction phase, the overall dust emission magnitude for this phase in considered to be *Medium*.

Trackout

5.12 Construction traffic, when travelling over soiled road surfaces, has the potential to generate dust emissions and to also add soil to the local road network. During dry weather, soiled roads can lead to dust being emitted due to physical and turbulent effects of vehicles. When accessing the site during construction, vehicles will use only existing, paved road surfaces located to the north of the application site.

5.13 It is anticipated that fewer than 20 HDVs would access the application site each day throughout its development.

5.14 Therefore, considering the above, and with reference to the IAQM guidance[10], the dust emission magnitude for the trackout phase is considered to be *Small.*

Emission Magnitude Summary

5.15 A summary of the dust emission magnitude as a result of the activities of the Demolition, Earthworks, Construction and Trackout phases as specified in the IAQM guidance, and discussed above, are listed in Table 5.1 below.

Table 5.1: Dust Emission Magnitude for the Construction Activities, Based on the IAQM's Guidance.

Activity	Dust Emission Magnitude
Demolition	Medium
Earthworks	Small
Construction	Medium
Trackout	Small

Sensitivity of the Area

5.16 Having established the emission magnitudes for each phase above, the sensitivity of the area must be considered to establish the significance of effects. The effect of dust emissions depends on the sensitivity of each receptor.

5.17 High sensitivity human receptors include residential dwellings, schools, and hospitals, but can also include locations such as car showrooms when considering the impacts of dust soiling.

5.18 The impacts of dust emissions from the sources discussed above have the potential to cause an annoyance to human receptors living in the local area. Within distances of 20m of the site boundary there is a high risk of dust impacts, regardless of the prevailing wind direction. Up to 100m from the construction site, there may still be a high risk, particularly if the receptor is downwind of the dust source and conditions are dry.

5.19 With the exponential decline in dust concentrations with distance from dust generating activities, it is considered that for receptors more than 350m from the site boundary, the risk is negligible. Furthermore, the risks at over 100m only have the potential to be significant in certain weather conditions (e.g. downwind of the source during dry periods).

5.20 The approximate number of high sensitivity human receptors in the vicinity of the site are detailed in Table 5.2 below and shown in Figure 2.

Table 5.2: Approximate Number of High Sensitivity Receptors Within 350m of the Application Site.

Distance to site (m)	Number of *High Sensitivity* Receptors	Receptor Details
<20	75	Residential Dwellings
<50	115	Residential Dwellings
<100	>275	Residential Dwellings
<350	>1000	Brackenbury Primary School; Citroen/Peugeot; Happy Ducks Pre-School; Harmony House Nursing Home; Loxdale English School; St Nicolas CE Primary School; and Tates Hyundai.

5.21 Figure 3 shows that the predominant wind direction at the closest relevant meteorological station at Shoreham Airport (2019) is from the south-west, with stronger, but less frequent, winds from the north also. There are numerous high sensitivity receptors within 20m of the site downwind, namely residential dwellings, and as such, the sensitivity of the area to dust soiling impacts can be defined as *High* with reference to the IAQM guidance.

5.22 UK-AIR have predicted annual mean concentrations of PM_{10} to be below 24.0 $\mu g.m^{-3}$ [21] within the vicinity of the site between 2019 and 2024[21]. Noting that there are approximately 75 highly sensitive receptors within 20m of the site boundary, the sensitivity of the area to human health impacts is defined as *Low*; with reference to IAQM guidance[10].

21 The 24.0$\mu g.m^{-3}$ 'threshold' is taken from Table 3 of the IAQM's construction dust guidance. This threshold, along with the number of receptors, their sensitivity, and their distance from source (construction site), helps establish the sensitivity of an area in terms of potential human health impacts from exposure to PM_{10}. According to the guidance, baseline annual mean PM_{10} concentrations below 24.0$\mu g.m^{-3}$ indicate that the sensitivity of the area in terms of human health impacts is *Low* in all cases except when there are a large number (>100) of highly sensitive receptors within 20m of the construction site.

5.23 Review of the MAGIC website[14], which incorporates Natural England's interactive maps, has identified that the closest ecological receptor, Benfield Hill Local Nature Reserve (LNR), is located approximately 1.5km to the north-east of the application site boundary. Therefore, the proposed development can be considered to have a *Negligible* impact on local ecological receptors, with reference to the IAQM guidance.

Risk of Impacts

5.24 Having established the potential dust emission magnitudes and sensitivity of the area, the risk of impacts can be determined in accordance with the IAQM guidance. These are summarised in Table 5.3, below.

Table 5.3: Summary of Impact Risk by Construction Stage Based on the IAQM's Dust Guidance.

Stage	Impact Risk		
	Nuisance Dust	PM_{10} Health Effects	Ecology
Demolition	Medium Risk	Low Risk	Negligible Risk
Earthworks	Low Risk	Negligible Risk	Negligible Risk
Construction	Medium Risk	Low Risk	Negligible Risk
Trackout	Low Risk	Negligible Risk	Negligible Risk

5.25 Overall, and for conservative purposes, the proposed development is considered to be of *Medium Risk* for nuisance dust soiling effects, *Low Risk* for PM_{10} health effects and of *Negligible Risk* for impacts on nearby ecological receptors, in the absence of mitigation.

Site Specific Mitigation

5.26 The GLA guidance[11] suggests a number of mitigation measures that should be adopted in order to minimise impacts from dusts and fine particles. Appropriate measures that could be included during construction of the proposed development include:

- ideally cutting, grinding and sawing should not be conducted on-site and pre-fabricated material and modules should be brought in where possible;
- where such work must take place, water suppression should be used to reduce the amount of dust generated;

- skips, chutes and conveyors should be completely covered and, if necessary, enclosed to ensure that dust does not escape;
- no burning of any materials should be permitted on site;
- any excess material should be reused or recycled on-site in accordance with appropriate legislation;
- developers should produce a waste or recycling plan;
- hard surfaces should be used for haul routes where possible;
- haul routes should be swept/washed regularly;
- vehicle wheels should be washed on leaving the site;
- all vehicles carrying dusty materials should be securely covered; and
- delivery areas, stockpiles and particularly dusty items of construction plant should be kept as far away from neighbouring properties as possible.

5.27 In addition, the IAQM lists recommended mitigation measures for low, medium and high Dust Impact Risks. The highly recommended mitigation measures for *Medium Risk* sites are included in Appendix A of this report.

5.28 Where dust generation cannot be avoided in areas close to neighbouring properties, additional mitigation measures should be put in place, such as: windbreaks, sprinklers, and/or time/weather condition limits on the operation of some items of plant or the carrying out of activities that are likely to generate a particularly significant amount of dust.

Residual Effects

5.29 After the implementation of the mitigation measures listed above and in Appendix A, the significance of each phase of the construction programme will be reduced and the residual significance of impact for the construction phase is expected to be *Negligible*.

6. Operational Phase

Site Suitability

6.1 The primary source of air pollution in the vicinity of the application site is motor vehicles travelling on the local road network, namely Windlesham Close to the west and Locks Hill to the east.

6.2 The closest proposed residential units will be located approximately 40m from the aforementioned road links, and as such, the site is considered to be located in an *Urban Background* setting with respect to these pollutant sources.

6.3 As the Site can be reasonably considered to be set in an urban background location, it is expected that pollutant concentrations across these areas are likely to be similar to those identified at urban background monitoring sites within the vicinity of the application site.

6.4 As presented in their latest *ASR*[19] (2023), BHCC operate one urban background diffusion tube (A259 W18-2010) within approximately 1.0km of the application site; located within Vale Park to the south. In 2019, this tube recorded an annual mean NO_2 concentration of 18.4 $\mu g.m^{-3}$; 54% below the respective AQS. Noting that, alike the application site, this tube is located within an urban background setting, concentrations recorded at this monitor should be considered broadly representative of baseline conditions at the development site.

6.5 The highest NO_2 concentration recorded in 2019 at each of the diffusion tubes located within 1.0km of the application site was at tube A259 W19-2009, located approximately 0.4km to the south of the application site. In 2019, an annual mean NO_2 concentration of 39.9 $\mu g.m^{-3}$ was recorded; 0.3% below the respective AQS. This non-automatic monitor is located within a roadside setting, directly adjacent to the A293 Trafalgar Road, and therefore would expectedly be subjected to higher pollutant concentrations as a result of the traffic flows that utilise the adjacent strategic link.

6.6 BHCC do not actively monitor concentrations of PM_{10}, with the only automatic monitor recording this pollutant operated by the UoB. Annual mean data recorded at this monitor are not available.

6.7 The closest automatic monitor to the application site, BH0, does undertake continuous monitoring of $PM_{2.5}$ concentrations. In 2019, an annual mean concentration of 9.2 $\mu g.m^{-3}$ was recorded; 54% below the respective 20.0 $\mu g.m^{-3}$ AQS. Whilst monitor BH0 is similarly located within an urban background setting, alike the application site, this monitor is located 5.0km away to the east. Therefore, noting the distance, concentrations recorded at BH0 cannot be considered representative of baseline conditions at the application site.

6.8 HM Government's Environmental Improvement Plan 2023[22] (page 78) maps and displays modelled $PM_{2.5}$ concentrations across England, highlighting the contribution and scale of both anthropogenic and non-anthropogenic $PM_{2.5}$ sources and their influence on overall baseline concentrations across the country. Produced by Imperial College London, these maps indicate that, within the Brighton & Hove region, approximately 4–6 $\mu g.m^{-3}$ of the total recorded baseline $PM_{2.5}$ concentration would typically comprise $PM_{2.5}$ contributions from natural sources, international shipping, and transboundary European pollution.

6.9 Furthermore, UK-AIR background pollutant concentration estimates further indicate that NO_2, PM_{10}, and $PM_{2.5}$ concentrations across the development site are likely to be well below their relevant AQSs and are expected to decrease further in future years.

6.10 As such, local monitoring data and national mapped pollutant concentration data indicate that the site is anticipated to be suitable for the introduction of new receptors (residential units).

Impact on Local Air Quality

6.1 The latest EPUK & IAQM planning guidance[12] provides indicative thresholds for changes in traffic flows which would require a detailed air quality assessment. These are a change in annual average daily traffic (AADT) flows of >100 LDVs and/or >25 HDVs when situated within the boundaries of an AQMA and >500 LDVs and/or >100 HDVs on roads outside these designated management areas.

6.2 The project's transport consultants, Paul Basham Associates, anticipate that the proposed development will generate total AADT flows of 65 AADT (inclusive of 1 HDV). Therefore, the need to undertake a detailed dispersion modelling assessment of the development's impact on local air quality at existing sensitive receptor locations has been screened out.

6.3 As such, it can reasonably be assumed that traffic emissions associated with the operation of the proposed development would have an insignificant impact on local air quality.

22 His Majesty's Government. (2023). *Environmental Impact Plan 2023*.

7. Emissions Mitigation Assessment

Emission Cost Calculation

7.1 Following the 2023 update to Defra's Emissions Cost Calculation guidance[15], the emissions cost calculation below has been carried out to estimate the value of the impact of NO_x and $PM_{2.5}$ emitted as a result of the proposed development. Defra's 2023 update of the calculation puts greater emphasis on $PM_{2.5}$ as it is deemed to have greater health implications.

7.2 To evaluate the scale of a proposed development's total emissions, Defra recommends an emissions cost calculation using the following formula:

Road Transport Emission Increase (Cost, £) =

Estimated trip rate for 5 years × Emission Rate/10km/vehicle type × Damage Costs

7.3 The latest Defra Emissions Factor Toolkit was used to determine the total transport related emissions that would be generated by the proposed development; the inputs used in the calculation are shown in Table 7.1, below. 2026 is the anticipated opening year of the proposed development, so the five-year period used in the calculation runs from 2026 to 2030 inclusive.

Table 7.1: Calculation Inputs

Input	Value	Unit	Source/guidance
Trip Length	10	km	AQEMGFS
Development Traffic Flow	65 (1 HDV)	AADT	Traffic Data from Paul Basham Associates
EFT Road Type	Urban (not London)	-	EFT
EFT Year	2026 – 2030	-	In line with EFT estimates
Average Speed	50	$km.hr^{-1}$	AQEMGFS
Appraisal period	5	years	AQEMGFS

7.4 The total emission 'damage' cost was calculated using Defra's appraisal toolkit and is presented in Tables 7.2 and 7.3.

7.5 The calculation accounts for an 'uplift factor' of 2% cumulatively per annum and a 'discount rate', in line with the latest 2023 guidance[15]. Central estimate damage costs for '*Road Transport Urban Large*' were based on Defra 2023 prices.

Table 7.2: Emission Cost Calculation for NO_x

	2026	2027	2028	2029	2030
NO_X increase (tonnes)	0.0369	0.0330	0.0296	0.0267	0.0243
Central Damage cost (NO_X)	£11,359	£11,359	£11,359	£11,359	£11,359
Adjusted Damage cost (NO_X)	£419	£369	£327	£290	£260
Total	**£1,665**				

Table 7.3: Emission Cost Calculation for $PM_{2.5}$

	2026	2027	2028	2029	2030
$PM_{2.5}$ increase (tonnes)	0.0043	0.0043	00.43	0.0042	0.0042
Central Damage cost ($PM_{2.5}$)	£81,313	£81,313	£81,313	£81,313	£81,313
Adjusted Damage cost ($PM_{2.5}$)	£349	£342	£336	£330	£325
Total	**£1,682**				

7.6 The total damage costs are summarised as follows:

NO_X emission 'damage' cost' = £1,665 +

$PM_{2.5}$ emission 'damage' cost' = £1,682

TOTAL (cost, £) = £3,347

Mitigation

7.7 The resulting value of the 'emissions cost', as calculated above, is indicative of the value of an appropriate package of mitigation measures to minimise any potential impacts from the proposed development. The mitigation package should at least equate to this 'emissions cost'.

7.1 The developer has committed to provide 'active' EV charging at 30% of the development's parking spaces, with the remaining spaces to be connected by ducting for future installation ('passive' provision).

7.2 In addition to this, the developer is committed to providing cycle storage facilities to further encourage the use of non-emitting transport modes in line with local policy standards.

7.3 The proposed heating strategy will utilise ground source heat pumps and, therefore, no combustion will occur once the proposed development is operational.

7.4 Furthermore, additional green infrastructure will be planted around the application site.

7.5 Mechanical Ventilation with Heat Recovery (MVHR) will be installed to provide filtered air into each of the residential units, whilst retaining a large proportion of the heat generated by the building.

7.6 Although the scheme's proposed mitigation package is likely to at least equate to the calculated 'emissions cost', additional measures could be considered if the proposed mitigation package ultimately does not at least match this cost; with potential measures listed within AQEMFGS[13].

8. Discussion

Construction Phase Impacts

8.1 The construction phase of the proposed development could potentially give rise to emissions which could cause dust soiling effects on adjacent uses. Following IAQM guidance, the construction phase of the proposed development can be considered to be *Medium Risk* with regard to dust soiling effects, *Low Risk* for PM_{10} health effects and of *Negligible Risk* with regards to potential impacts on ecological receptors.

8.2 Following the implementation of the mitigation measures provided in Appendix A and listed in Section 5.26, emissions from the construction programme will be reduced and the residual significance of impact for the construction phase is expected to be *Negligible*, thus complying with the requirements of the NPPF[5].

Operational Phase Impacts

8.3 The need for a detailed pollutant dispersion modelling assessment of the proposed development's sensitivity to local air quality has been screened out using Defra mapping and BHCC's monitoring data. This was primarily due to baseline conditions and concentrations being anticipated to be below their respective AQS' at and within the immediate vicinity of the application site. Therefore, the site is considered to be suitable for the introduction of new residential receptors, and no further assessment of site suitability is considered necessary.

8.4 As the proposed development is not expected to generate traffic flows exceeding the EPUK & IAQM thresholds on any specific road link, the need to undertake a detailed dispersion modelling assessment of the proposed development's impact on local air quality at existing sensitive receptor locations has been screened out. Therefore, it can be reasonably assumed that traffic emissions associated with the operation of the proposed development would have an insignificant impact on local air quality.

Emissions Mitigation Assessment

8.5 The Sussex-Air emissions mitigation guidance requires an Emissions Mitigation Assessment for all developments considered 'Major', to help minimise the potential for incremental impacts on local air quality.

8.6 Following the latest Defra Damage Cost guidance and guidance from Sussex-Air[13], an 'emissions cost' of **£3,347** was calculated as a result of emissions of NO_x and $PM_{2.5}$ expected to be generated by traffic associated with the scheme, in its first five operational years.

8.7 Current plans to offset potential air quality impacts include the installation of 'active' electric vehicle charging points (EVCP) at 30% of the development's car parking spaces ('passive' provision at the remaining spaces), provision of cycle storage, the installation of MVHR in each proposed residential unit and the planting of additional green infrastructure across the site. Regarding the proposed development's energy strategy, ground source heat pumps will be utilised.

8.8 It is anticipated that the proposed mitigation measures are likely to offset the calculated 'Damage Cost'. Should the mitigation measures proposed not fully offset the 'emissions cost', further mitigation should be considered to ensure that the 'emissions cost' is achieved.

9. Conclusions

9.1 Brighton & Hove City Council commissioned Phlorum Limited to undertake an Air Quality Assessment in support of the proposed redevelopment of the Portslade Village Community Centre, Portslade. It is understood that that the proposal seeks to demolish the existing community centre and develop 28 residential units, split across two blocks of flats, and a replacement community centre.

9.2 Local air quality monitoring results suggest that whilst concentrations recorded at roadside measurement can be poor within the vicinity of the application site, urban background concentrations remain well below the respective Air Quality Standards. Furthermore, data from the UK-Air Information Resource indicate that background pollutant concentrations across the site are likely to be well below these Standards.

9.3 The construction phase of the development could give rise to emissions which could cause dust soiling effects on adjacent uses. However, by adopting appropriate mitigation measures to reduce emissions and their potential impact, there should be no significant residual effects, thus complying with the requirements of the National Planning Policy Framework.

9.4 The operation of the proposed development is not expected to introduce new receptors into an area of poor air quality, nor is it anticipated to significantly impact on local air quality.

9.5 To mitigate for future emissions and offset the 'emissions cost', the development will include mitigation measures considered appropriate for its scale. Should the mitigation measures proposed not fully offset the 'emissions cost', further mitigation should be considered to ensure that the 'emissions cost' is fully offset.

9.6 Therefore, the proposed development is expected to comply with all relevant local, regional and national air quality policy, and as such, Air Quality should not pose any significant obstacles to the planning process.

Figures and Appendices

Figure 1: Site Location Plan

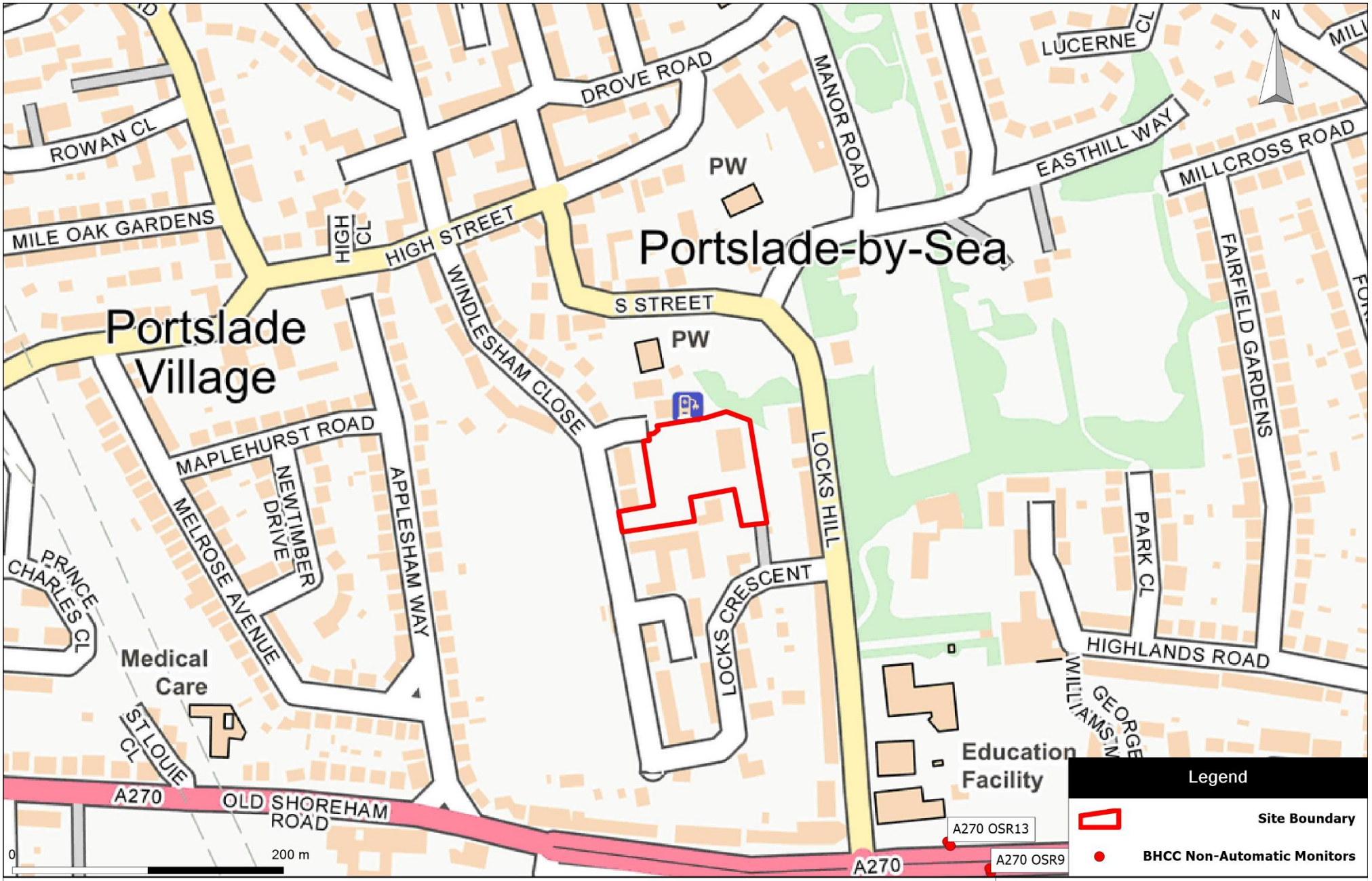


Figure 1: Site Location Plan

Job No: 12557.S
Drawn by: M.Batchelor
Printed at: 02/10/2023
www.Phlorum.com

Figure 2: Construction Phase

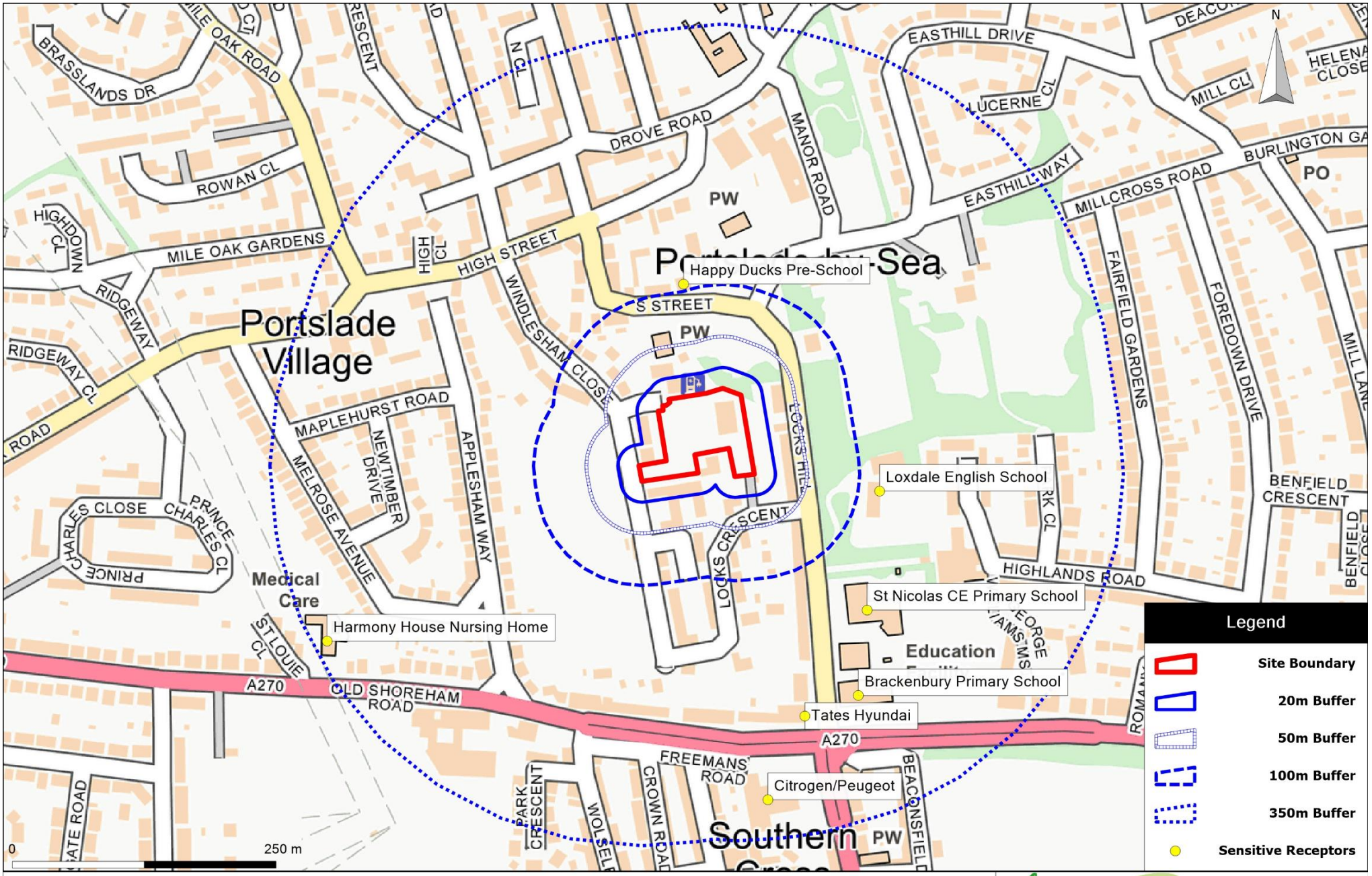
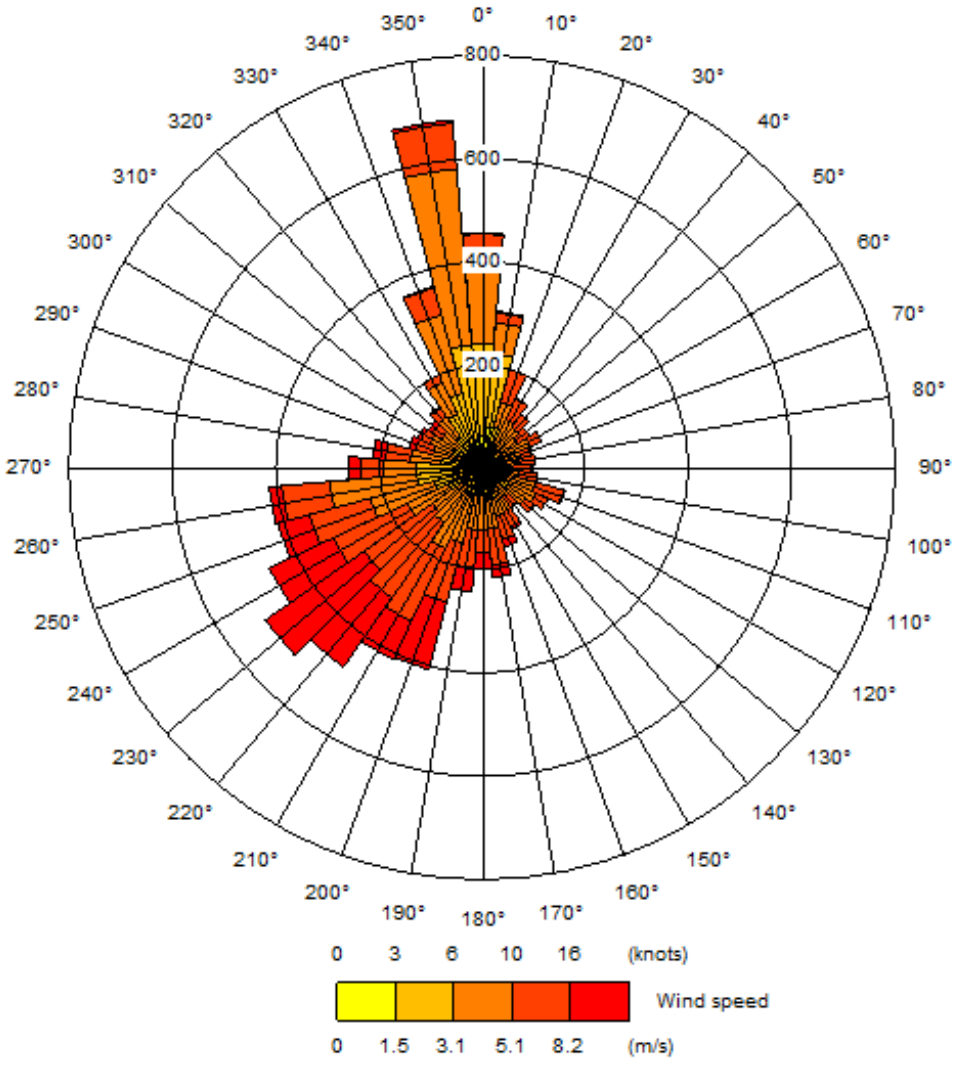


Figure 2: Construction Phase

Job No: 12557.S
Drawn by: M.Batchelor
Printed at: 02/10/2023
www.Phlorum.com

Figure 3: Wind Rose for Shoreham Airport (2019)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800
600
400
200
0 3 6 10 16 (knots)
Wind speed
0 1.5 3.1 5.1 8.2 (m/s)

Appendix A: IAQM Highly Recommended Mitigation Measures for Medium Risk Sites

Appendix A: IAQM Highly Recommended Mitigation Measures for Sites with a Medium Risk of Dust Impacts

Please refer to the IAQM's *Guidance on the Assessment of Dust from Demolition and Construction (2023)*[10] and *Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites (2018)*[23] for further, "desirable", mitigation measures.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.
- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real time PM10 continuous monitoring and/or visual inspections.

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.
- 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 logbook.

Monitoring

- Carry out regular site inspections to monitor compliance with the Dust Management Plan, record inspection results, and make an inspection log available to the local authority when asked.
- 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 are being carried out and during prolonged dry or windy conditions.
- Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.

23 Institute of Air Quality Management. (2018). *Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites*.

Preparing and Maintaining the Site

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing , barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.

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.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on equipment wherever appropriate.
- Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- Avoid bonfires and burning of waste materials.

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.
- Bag and remove any biological debris or damp down such material before demolition.

Construction

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Inspect on-site haul routes and for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
- Access gates to be located at least m from receptors where possible.

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