Blenheim Estates Limited

37-41 BRIGHTON ROAD, SHOREHAM-BY-SEA

Air Quality Assessment

001
MAY 2025

PUBLIC

Blenheim **Estates Limited**

37-41 BRIGHTON ROAD, SHOREHAM-BY-SEA

Air Quality Assessment

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1. INTRODUCTION

1.1.1. WSP has been commissioned by Blenheim Estates Limited to carry out an assessment of the potential air quality impacts arising from a proposed development located at A259 Brighton Road, Shoreham-by-Sea (hereafter referred to as 'the Proposed Development' or 'the Application Site').

1.1.2. The Application Site is located in Adur District Council (ADC), adjacent to the River Adur. It is bounded by Brighton Road to the north, the newly planned Free Wharf development to the east, commercial spaces to the west, and the River Adur to the south. A location plan of the Application Site is shown in **Appendix** D - Figures

1.1.3. Figure D-1.

1.1.4. Currently occupied by a single-story industrial unit with Kwik Fit as a tenant, Blenheim Estates Limited seeks full Planning Permission to demolish the existing building and redevelop the site with a residential block ranging from five to eight stories, containing up to 50 apartments and a retail unit at ground floor. The development proposal also includes 17 car parking spaces. The site is approximately 8,740 square meters in size.

1.1.5. This report presents the findings of the assessment, which addresses the potential air quality impacts during both the construction and operational phases of the Proposed Development. For both phases, the type, source and significance of potential impacts are identified, and the measures that should be employed to minimise these proposed. The methodology followed was discussed and agreed with the Environmental Protection Officer (EPO) for the ADC.

1.1.6. This air quality assessment report sets out the relevant legislation and policy context in **Section** 2**. Section 3** provides details on the consultation undertaken with the ADC and confirms the scope of the assessment before describing the assessment methodology and the criteria used to determine the significance of effects. Baseline conditions are reviewed in **Section 4**. Potential impacts are described in **Section 5**. **Section 0** sets out the requirements for mitigation and monitoring measures, and the residual effects. A summary of the assessment and its conclusions are given in **Section 7**.

1.1.7. This report is supported by the following appendices:

- Appendix A - Glossary
- Appendix B - IAQM Construction Dust Assessment
- Appendix C - Wind rose
- Appendix D - Figures

2. LEGISLATION, POLICY & GUIDANCE

2.1. AIR QUALITY LEGISLATION

2.1.1. A summary of the relevant air quality legislation is provided below.

ENVIRONMENTAL PROTECTION ACT 1990

2.1.2. Section 79 of the Environmental Protection Act 1990[1] gives the following definitions of statutory nuisance relevant to dust and particles:

"Any dust, steam, smell or other effluvia arising from industrial, trade or business premises or smoke, fumes or gases emitted from premises so as to be prejudicial to health or a nuisance"; and

"Any accumulation or deposit which is prejudicial to health or a nuisance".

2.1.3. Following this, Section 80 says that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

2.1.4. Statutory nuisance provisions are relevant to, amongst other things, the control of dust from demolition and construction. There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist. Nuisance is a subjective concept, and its perception is highly dependent upon the existing conditions and the change that have occurred. The party responsible for the premises giving rise to the emissions is responsible for ensuring use of Best Practicable Means to avoid a statutory nuisance.

ENVIRONMENT ACT 1995

2.1.5. Part IV of the Environment Act 1995[2] required the Secretary of State to publish a national Air Quality Strategy[3,4] and set up a system of Local Air Quality Management (LAQM). The Environment Act 2021 was subsequently enshrined into law in November 2021[5]. Schedule 11 of this Act makes it clear that it remains a requirement for local authorities to periodically review and document local air quality within their area with the aim of meeting the air quality objectives defined in the Air Quality Regulations. Where the Air Quality Strategy objectives are not likely to be achieved, a local authority is required to designate an Air Quality Management Area (AQMA) and to draw up an Air Quality Action Plan to secure improvements in air quality.

[1] The National Archives (1990) *Environmental Protection Act 1990* [online]. Available at: https://www.legislation.gov.uk/ukpga/1990/43/contents [Accessed August 2024].
[2] The National Archives (1995) *Environment Act 1995 - Statutory Instrument No.25* [online]. Available at: https://www.legislation.gov.uk/ukpga/1995/25/contents [Accessed August 2024].
[3] Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 1* [online]. Available at: https://www.gov.uk/government/publications/the-air-quality-strategy-for-england-scotland-wales-and-northern-ireland-volume-1 [Accessed August 2024].
[4] Defra (2007) *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland Volume 2* [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69337/pb12670-air-quality-strategy-vol2-070712.pdf [Accessed August 2024].
[5] The National Archives (2021) *Environment Act 2021* [online]. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted [Accessed August 2024].

ENVIRONMENT ACT 2021

2.1.6. The Environment Act 2021 passed into law in November 2021[6]. This Act sets a legally binding duty on the Secretary of State to bring forward air quality targets into secondary legislation; with specific regard to the annual mean level of $PM_{2.5}$ in ambient air.

2.1.7. In March 2022, and in response to this duty, the UK government proposed a legally binding target to reduce $PM_{2.5}$ concentrations across England to 10µg/m^3 and achieve a 35% reduction of population exposure (compared to 2018 levels) by 2040[7]. In addition to these targets, the government has published, as part of the Environmental Improvement Plan 2023[8], two new interim targets aimed at reducing population exposure to $PM_{2.5}$ by 22% (compared to 2018 levels) and reducing annual mean concentrations to 12µg/m^3 by the end of January 2028.

2.1.8. Schedule 11 of the Environment Act 2021 also provides amendments to the Environment Act 1995 regarding the duty of the Secretary of State to report on air quality in England, as well as the functions and duties of relevant public authorities, including but not limited to, the duty of a local authority to prepare an action plan for an AQMA *"…for the purpose of securing that air quality standards and objectives are achieved…"*

2.1.9. Under the Environment Act 2021, the Office for Environmental Protection was formed to perform the role of an objective and impartial environmental watchdog in the UK. Previously, this role was held by the European Commission.

AIR QUALITY REGULATIONS

The Air Quality (England) Regulations 2000[9] and the Air Quality (England) (Amendment)[10] Regulations 2002 set objectives for ambient pollutant concentrations. The objective for human health applies where there is relevant exposure *"…the quality of air at locations which are situated outside of buildings or other natural or man-made structures, above or below ground, and where members of the public are regularly present…"*

2.1.10. The Air Quality Standards Regulations 2010[11] (as amended)[12], the Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019[13], and the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020[14] establish set legally binding limit values for concentrations of major air pollutants that affect public health in outdoor air, such as NO_2, PM_{10} and $PM_{2.5}$. The limit values are numerically equivalent to the objectives.

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[6] The National Archives (2021) *Environment Act 2021* [online]. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted [Accessed August 2024].
[7] Defra (2022) *Air Quality Targets in the Environment Act* [online]. Available at: Development of the Environment Act Targets - Defra, UK [Accessed August 2024].
[8] Defra (2023) Environmental Improvement Plan 2023 [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1133077/environmental-improvement-plan-2023.pdf [Accessed August 2024].
[9] The National Archives (2000) *The Air Quality (England) Regulations 2000 - Statutory Instrument 2000 No.928* [online]. Available at: https://www.legislation.gov.uk/uksi/2000/928/contents/made [Accessed August 2024].
[10] The National Archives (2002) *The Air Quality (England) (Amendment) Regulations 2002 - Statutory Instrument 2002 No.3043* [online]. Available at: https://www.legislation.gov.uk/uksi/2002/3043/contents/made [Accessed August 2024].
[11] The National Archives (2010) *The Air Quality Standards Regulations 2010 - Statutory Instrument 2010 No.1001* [online]. Available at: https://www.legislation.gov.uk/uksi/2010/1001/contents/made [Accessed August 2024].
[12] The National Archives (2016) *The Air Quality Standards (Amendment) Regulations 2016 - Statutory Instrument 2016 No.1184* [online]. Available at: https://www.legislation.gov.uk/uksi/2016/1184/contents/made [Accessed August 2024].
[13] The National Archives (2019) *The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019 No.74* [online]. Available at: https://www.legislation.gov.uk/uksi/2019/74/contents/made [Accessed August 2024].
[14] The National Archives (2020) *The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020 - Statutory Instrument 2020 No.1313* [online]. Available at: https://www.legislation.gov.uk/uksi/2020/1313/contents/made [Accessed August 2024].

2.1.11. The Environmental Targets (Fine Particulate Matter) (England) Regulations[15] enact new long-term targets for $PM_{2.5,}$ aiming to combat air pollution and safeguard public health. These regulations outline the following objectives:

- Annual Mean Concentration Target: By 2040, achieve of a maximum annual mean concentration of 10µg/m^3 of $PM_{2.5}$ across England. This target sets a clear benchmark for air quality improvement, ensuring that the air we breathe meets stringent standards for particulate matter.
- Population Exposure Reduction Target: Aim for a substantial 35% reduction in population exposure to $PM_{2.5}$ by 2040, compared to a base year of 2018. This reduction target emphasises the importance of minimising the health risks associated with prolonged exposure to fine particulate matter, thereby enhancing the well-being of communities nationwide.

2.1.12. By implementing these targets, policymakers are taking proactive measures to address the adverse effects of air pollution on public health and the environment. It's akin to setting waypoints on a journey towards cleaner air, ensuring that we stay on course to achieve tangible improvements in air quality for generations to come.

2.1.13. The national air quality standards in terms of objectives, limit values and targets relevant to this assessment are given in **Table 2**.

Table 2 – National Air Quality Standards Set for the Protection of Human Health

Pollutant	Concentration in micrograms per cubic metre (µg/m^3)	Measured as	Objective
Nitrogen dioxide (NO_2)	40	Annual mean	Limit value not to be exceeded.
	200	1-hour mean	Not to be exceeded more than 18 times a year.
Particulate matter less than 10 micrometres in diameter (PM_{10})	40	Annual mean	Limit value not to be exceeded.
	50	24-hour mean	Not to be exceeded more than 35 times a year.
Particulate matter less than 2.5 micrometres in diameter ($PM_{2.5}$)	20	Annual mean	Limit value not to be exceeded.
	12	Annual mean	Interim target concentration not to be exceeded by the end of January 2028.
	10	Annual mean	Target concentration not to be exceeded by the end of 2040.

[15] The National Archives (2023). *The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 – Statutory Instrument No. 96* [online]. Available at: https://www.legislation.gov.uk/uksi/2023/96/contents/made [Accessed August 2024].

2.2. PLANNING POLICY

NATIONAL PLANNING POLICY

National Planning Policy Framework

2.2.1. The Government's overall planning policies for England are described in the National Planning Policy Framework (NPPF)[16].

2.2.2. The core underpinning principle of the Framework is the presumption in favour of sustainable development, defined as *'… meeting the needs of the present without compromising the ability of future generations to meet their own needs'.*

2.2.3. One of the three overarching objectives of the NPPF 2024 is that the planning system should seek '*to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.*'

2.2.4. In relation to air quality, the following paragraphs in the document, concern air quality considerations (and also in line with the requirement of Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021[17]):

- Paragraph 110: *"*[…]*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…."*
- Paragraph 117: *"… applications for development should (a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;* […] *(e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations."*
- Paragraph 187: *"Planning policies and decisions should contribute to and enhance the natural and local environment by:* […] *e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans…."*
- Paragraph 198: "*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…."*
- Paragraph 199: *"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*

[16] Ministry of Housing, Communities and Local Government (2024) *National Planning Policy Framework* [online]. Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2 [Accessed May 2025].

[17] Sussex-air (2021). *Air Quality and Emissions Mitigation Measures Guidance for Sussex* 2021 [online]. Available at: https://sussex-air.net/wp-content/uploads/2022/09/Sussex-AQ-Guidance-V.1.2-2021.pdf [Accessed August 2024].

from individual sites in local areas. Opportunities to improve air quality or 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."

CLEAN AIR STRATEGY 2019

2.2.5. The Department for Environment, Food and Rural Affairs (Defra) published the Government's Clean Air Strategy in 2019[18]. This strategy outlines measures aimed at reducing emissions from all sources of air pollution, thereby improving air quality, safeguarding natural environments, and stimulating economic growth. Additionally, the Strategy sets specific goals to reduce to reduce public exposure to airborne particulate matter in alignment with recommendation made from the World Health Organisation.

2.2.6. Moreover, the Strategy affirms the Government's commitment to enacting new legislation to "… create *a stronger and a more coherent framework for action to tackle air pollution. This will be underpinned by new England-wide powers to control major sources of air pollution, in line with the risk they pose to public health and the environment, plus new local powers to take action in areas with an air pollution problem. These will support the creation of Clean Air Zones to lower emissions from all sources of air pollution, backed up with clear enforcement mechanism."* New enforcement powers will also be given at a national and local level, across all sectors of society.

UK AIR QUALITY STRATEGY FOR LOCAL AUTHORITY DELIVERY

2.2.7. The Government's policy on air quality within the UK is set out in the Air Quality Strategy for England, Scotland, Wales and Northern Ireland[19]. The Air Quality Strategy provides a framework for reducing air pollution in the UK to meet its objectives.

Environmental Improvement Plan 2023

2.2.8. On January 31, 2023[20], the UK government published its Environment Improvement Plan, which represents the first review of the 25 Year Environment Plan as mandated by the Environment Act 2021. Of significance to air quality in this document is the objective to attain clean air in the UK by reducing overall air pollution. This will be achieved by addressing major sources of emissions, targeting specific hotspots, and decreasing ammonia (NH_3) emissions.

LOCAL PLANNING POLICY

Adur Local Plan 2017

2.2.9. The Adur Local Plan adopted in 2017[21] provides a comprehensive vision and strategy for the future of Adur (outside of the South Downs National Park) until 2032. It guides how new development can

[18] ADC (2017). Adur Local Plan 2017 [online]. Available at: https://www.adur-worthing.gov.uk/media/Media,159572,smxx.pdf [Accessed August 2024].
[19] Defra and the Devolved Administrations (2023) Air quality strategy: framework for local authority delivery [online]. Available at: https://www.gov.uk/government/publications/the-air-quality-strategy-for-england. [Accessed August 2024].
[20] Defra and the Devolved Administrations (2023) *Environmental Improvement Plan 2023* [online]. Available at: https://www.gov.uk/government/publications/environmental-improvement-plan [Accessed August 2024].
[21] Defra (2019) *Clean Air Strategy 2019* [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf [Accessed August 2024].

address challenges faced and identifies where, when, and how much development will take place within the ADC's administrative area.

2.2.10. This section highlights the relevant policies from the Adur Local Plan concerning air quality considerations:

- Policy 8: Shoreham Harbour Regeneration Area: *"All new development proposals must take into account contaminated land, local noise and air quality impacts and improvements should be sought wherever possible."*
- Policy 28: Transport and Connectivity: *"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".*
- Policy 34: Pollution and Contamination: *"Where appropriate, air quality assessments and/or noise assessments will be required in conjunction with development proposals."*

2.3. GUIDANCE

National Planning Practice Guidance 2019 – Air Quality

2.3.1. This guidance[22] provides several guiding principles on how the planning process can consider the impact of new development on air quality, It explains the level of detail required in air quality assessments for proposed developments, and how impacts on air quality can be mitigated. This guidance also offers information on how Local Authorities account for air quality in both the broader planning context of Local Plans and neighbourhood planning, as well as in individual cases where air quality is a factor in a planning decision.

Local Air Quality Management Review and Assessment Technical Guidance 2022

2.3.2. The Defra has published technical guidance for use by local authorities in their review and assessment work. This guidance, referred to in this document as LAQM TG(22)[23], has been utilised in the assessment presented here.

Land-use Planning & Development Control: Planning for Air Quality

2.3.3. Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance[24] that offers comprehensive advice on several aspects: when an air quality assessment may be required; what should be included in such an assessment; how to determine the significance of any air quality impacts associated with a development; and, the potential mitigation measures that may be implemented to minimise these impacts.

Guidance on the Assessment of Dust from Demolition and Construction 2024

2.3.4. This document[25] published by the IAQM, offers guidance to developers, consultants and environmental health officers on assessing the impacts of construction activities. The methodology

[22] Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government (2019). *National Planning Practice Guidance – Air quality* [online]. Available at: https://www.gov.uk/guidance/air-quality--3 [Accessed August 2024].
[23] Defra (2022). *Part IV of the Environment Act 1995 as amended by the Environment Act 2021 Environment (Northern Ireland) Order 2002 Part III Local Air Quality Management Technical Guidance (TG22)* [online]. Available at: https://laqm.defra.gov.uk/wp-content/uploads/2022/08/LAQM-TG22-August-22-v1.0.pdf [Accessed August 2024].
[24] EPUK / IAQM (2017). *Land-Use Planning & Development Control: Planning For Air Quality* [online]. Available at: https://iaqm.co.uk/text/guidance/air-quality-planning-guidance.pdf [Accessed August 2024].
[25] IAQM (2024). *Guidance on the assessment of dust from demolition and construction Version 2.2* [online]. Available at: https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf [Accessed August 2024].

emphasis classifying sites based on to risk of impacts including dust nuisance, PM_{10} impacts on public exposure, impacts on sensitive ecological receptors. It also aims to identify mitigation measures appropriate to the level of risk identified.

Air Quality and Emissions Mitigation Measures Guidance for Sussex 2021

2.3.5. The Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021[26] was published and adopted in April 2021. The guidance aims to support guidance on the way in which air quality and air pollution issues will be dealt with through the planning system.

[26] Sussex-air (2021). *Air Quality and Emissions Mitigation Measures Guidance for Sussex* 2021 [online]. Available at: https://sussex-air.net/wp-content/uploads/2022/09/Sussex-AQ-Guidance-V.1.2-2021.pdf [Accessed August 2024].

3. CONSULTATION, SCOPE & METHODOLOGY

3.1. CONSULTATION

3.1.1. **Table 3-1** summarises the consultation process undertaken with the EPO at the ADC in preparation of this assessment.

Table 3-1 – Summary of consultation

Body / organisation	Individual / organisation	Summary of consultation	Summary of outcomes of consultation
ADC	Nadeem Shad, EPO, ADC	The proposed scope and method of assessment was sent to the EPO at the ADC via email to on Tuesday, August 6, 2024. A response was received on Wednesday, August 7, 2024.	The EPO approved the overall assessment methodology but requested: • Detailed analysis of existing and future receptors during construction and operational of the Proposed Development, in line with the Sussex's air quality and emissions mitigation guidance for Sussex (2021) planning for guidance[27]. • Evaluation of cumulative impacts from other developments.

3.2. SCOPE

3.2.1. The scope of the assessment has been determined as follows:

- Consultation with the EPO at ADC to agree the assessment's scope and methodology;
- Review of the latest Air Quality Annual Status Report (ASR) reports[28] and air quality monitoring data published by ADC.
- Examining of the air quality data for the area surrounding the Application Site, including monitoring data from ADC, Defra[29] and the Environment Agency Public Register for Permitted Installations[30]; and ADC's environmental permit register[31]
- Desk study to confirm the locations of nearby existing receptors sensitive to changes in local air quality, and a review of the plans for the Proposed Development to identify the location of new sensitive receptors.
- Review of the traffic data for the Proposed Development.

[27] Sussex Air (2021) *Air quality and emissions mitigation guidance for Sussex planning for guidance 2021* [online]. https://sussex-air.net/wp-content/uploads/2022/09/Sussex-AQ-Guidance-V.1.2-2021.pdf [Accessed August 2024].
[28] AWC (2024) *Adur and worthing Council, Annual Status Report for 2024* [online]. *https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/what-is-air-pollution* [Accessed August 2024].
[29] Defra (2020) *Background Mapping data for local authorities – 2018* [online]. Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018 [Accessed August 2024].
[30] Environment Agency (2023). *Environmental Permitting Regulations – Installations* [online]. Available at: https://environment.data.gov.uk/public-register/view/search-industrial-installations [Accessed August 2024].
[31] ADC (2021) Adur District Council Environmental Permit Register 2021 [online]. Available at: https://www.adur-worthing.gov.uk/media/Media,98141,smxx.pdf [Accessed August 2024].

3.2.2. The impacts scoped in and out of this assessment are given in **Table 3-2**:

Table 3-2 - Impacts Scoped in or out of the Assessment

Impact	Scoped in or out?	Justification
Construction Phase		
Fugitive dust emissions from construction activities affecting amenity.	In	There are sensitive human receptors within 250m of construction activities and within 50m of the routes to be used by construction vehicles on the public highway, up to 250m from the Site entrance. The determination of the risk of dust impacts from the Proposed Development will guide the identification of proposed mitigation measures proportionate to the identified risk. Dust risk beyond 250m of construction activities is expected to be negligible and any effects deemed insignificant.
Emissions of NO_X, PM_{10} and $PM_{2.5}$ from non-road mobile machinery (NRMM) affecting local air quality at existing receptors.	Out	As operation of NRMM will be limited to working hours and where required within the Site, the exhaust emissions are unlikely to have a substantial impact on pollutant concentrations at receptors. In line with paragraph 7.30 of LAQM.TG(22), a quantitative assessment of this impact has been scoped out.
Emissions of NO_X, PM_{10} and $PM_{2.5}$ from construction traffic affecting local air quality at existing receptors.	Out	The predicted change in traffic flows during the operational phase does not exceed the EPUK/IAQM Land-Use Planning Guidance indicative scoping criteria for air quality assessment for air quality assessment at locations outside an AQMA. Therefore, a quantitative dispersion modelling assessment of this impact has been scoped out.
Operational Phase		
Emissions of NO_X, PM_{10} and $PM_{2.5}$ from operational traffic affecting local air quality at existing receptors.	Out	The predicted change in traffic flows during the operational phase does not exceed the EPUK/IAQM Land-Use Planning 2017 Guidance indicative scoping criteria for air quality assessment for air quality assessment at locations outside an AQMA. Therefore, a quantitative dispersion modelling assessment of this impact has been scoped out.
A Damage Cost Calculation and assessment for both NO_2 and PM_{10}	In	As the development is classed as major development as defined by Town and Country Planning (Development Management Procedure) Order (England) 2015[32], therefore a damage cost calculation determine the appropriate mitigation expenditure has scoped in.
Exposure of future receptors (building occupants) to emissions of NO_X and PM_{10}.	In	In 2021, local authority diffusion tube monitoring data indicated that the annual mean NO_2 concentration at two sites exceeded the air quality standard for annual mean NO_2.

[32] The National Archives (2015) *The Town and Country Planning (Development Management Procedure) (England) Order 2015* [online]. Available at: The Town and Country Planning (Development Management Procedure) (England) Order 2015 (legislation.gov.uk) [Accessed August 2024].

Impact	Scoped in or out?	Justification
		Concentrations at this roadside site were below 60µg/m^3, this is the threshold level at which exceedances of the short-term (1-hour) NO_2 air quality standard can be expected to occur. The EPUK/IAQM Land-Use Planning 2017 Guidance states: "*…where people working at new developments where the air quality is not met at the building facade, any assessment may wish to draw attention to the undesirability of the exposure.*" Assessment of the potential exposure of building users to future levels of NO_2 and PM_{10} (based on the annual mean NO_2 air quality standard) has therefore been scoped in to determine the vertical extent of exposure and to assist with the development of suitable mitigation measures to be incorporated, as necessary.

3.3. ASSESSMENT METHODOLOGY

BASELINE DATA COLLECTION

3.3.1. The following information has been used to define baseline conditions within 2km of the Proposed Development:

- Environment Agency's Public Registers: Installation Permits[30];
- ADC's Environmental Permit Register[31];
- ADC 2024 Air Quality Annual Status Report (ASR)[28];
- Spatial data for AQMAs as published by Defra[33];
- National forecasts for background pollutant concentrations based on Pollution Climate Mapping (PCM) model data published by Defra[34]; and
- Multi-Agency Geographic Information for the Countryside (MAGIC) website[35] for locations of statutory designated sites including Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Ramsar sites, National and Local Nature Reserves (NNRs and LNRs) and Ancient Woodlands (AWs).

3.3.2. **Figure D2 -B** shows the air quality constraints within the air quality study area.

CONSTRUCTION DUST ASSESSMENT

3.3.3. Dust comprises particles typically in the size range 1-75 micrometres (µm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials. The larger dust particles fall out of the atmosphere quickly after initial release and therefore tend to be deposited in close proximity to the source of emission. Dust, therefore, is unlikely to cause long-term or widespread changes to local air quality; however, its deposition on property and cars can cause

[33] Defra (2023). *Local Authority Details – Adur District Council* [online]. Available at: https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=315 [Accessed May 2024].
[34] Defra (2020) Background Mapping data for local authorities – 2018 [online]. Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018 [Accessed August 2024].
[35] Natural England (2024) *MAGIC* [online]. Available at: https://magic.defra.gov.uk/ [Accessed August 2024].

'soiling' and discolouration. This may result in complaints of nuisance through amenity loss or perceived damage caused, which is usually temporary.

3.3.4. The smaller particles of dust (less than 10µm in aerodynamic diameter) are known as particulate matter (PM_{10}) and represent only a small proportion of total dust released; this includes a finer fraction, known as $PM_{2.5}$ (with an aerodynamic diameter less than 2.5µm). As these particles are at the smaller end of the size range of dust particles, they remain suspended in the atmosphere for a longer period of time than the larger dust particles and can therefore be transported by wind over a wider area. PM_{10} and $PM_{2.5}$ are small enough to be drawn into the lungs during breathing, which could have a potential impact on health in sensitive individuals.

3.3.5. However, it is worth noting that, according to the IAQM guidance, the majority of fugitive particulate emissions arising from construction sites are expected to relate to the coarser fractions (i.e. $PM_{2.5-10}$) with just 10-15% expected to comprise $PM_{2.5}$. The IAQM guidance therefore focusses on PM_{10} for the purposes of assessment.

3.3.6. An assessment of the likely significant impacts on local air quality due to the generation and dispersion of dust and PM_{10} during the construction phase has been undertaken with relevant to: IAQM Construction Dust Guidance[25]; the available information for this stage of the Proposed Development provided by the Client and project team, and professional judgement.

3.3.7. The IAQM Construction Dust Guidance assessment methodology assesses the risk of potential dust and PM_{10} impacts from the following four sources: demolition; earthworks; general construction activities and track-out. It considers the nature and scale of the activities undertaken for each source and the sensitivity of the area to an increase in dust and PM_{10} levels to assign a level of risk. Risks are described in terms of there being a low, medium or high risk of dust impacts. Once the level of risk has been ascertained, then site specific mitigation proportionate to the level of risk is identified, and the significance of residual effects is determined. A summary of the IAQM Construction Dust Guidance assessment methodology is provided in **Appendix B**.

Selection of Sensitive receptors

3.3.8. Sensitive locations are places, such as residences, ecological habitats, other areas where people or ecosystems could be exposed to pollutants resulting from the construction activities associated with the Proposed Development. The focus is on areas potentially affected by increased dust deposition, PM_{10} exposure from on-site construction activities, and gaseous pollutants from exhausts construction and operational traffic emissions.

3.3.9. In accordance with the IAQM Construction Dust Guidance, a dust assessment has been undertaken where there are:

- 'human receptors' within 250m of the site boundary; or
- 'human receptors' within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s); and/or
- 'ecological receptors' within 50m of the site boundary; or
- 'ecological receptors' within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).

3.3.10. Impacts of dust soiling and increased particulate matter are most significant for sensitive receptors within these distances. **Figure D-3** illustrates the study area for the construction dust assessment.

Significance Criteria

3.3.11. The IAQM Construction Dust Guidance assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from construction activity with appropriate mitigation measures in place. Therefore, the significance criteria are used to assess the significance of residual effects only. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be not significant.

3.4. OPERATION PHASE IMPACTS

3.4.1. A checklist was developed and presented in Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021, to identify if air quality may be a material consideration. The development proposal has been reviewed with the check list as detailed in **Table 3-2**.

Table 3-3 - Summary of Proposal Evaluation

Type of Proposals	Justification
Is the Proposed Development: ▪ a MAJOR development, as defined by Town and Country Planning (Development Management Procedure) Order (England) 2015[36].	Yes, as the Proposed Development includes more than 10 dwelling houses and will create over 1,000 m^2 of floor space.
▪ within an Air Quality Management Area. Look this up at: https://uk-air.defra.gov.uk/aqma/maps or contact the relevant Local Authority Air Quality Officer;	No
▪ in relevant proximity to an Air Quality Management Area. Contact the relevant Local Authority Air Quality Officer;	No, as the nearest AQMA (Brighton and Hove AQMA3) is 3.6km to the east of the Application Site
▪ in an area close to exceeding the Air Quality Objectives. Contact the relevant Local Authority Air Quality Officer;	No
▪ B8 storage and distribution use class with a floorspace of 500m^2 or more. This is included due to the transport-related movements usually associated with this Use Class.	Yes

3.4.2. The potential emissions from road traffic generated during the operation of the development have been considered.

3.4.3. The proposed redevelopment is located in a highly accessible area, with approximately 17 car parking spaces. The net change in Annual Average Daily Traffic (AADT) is 63, and for Heavy-Duty Vehicles (HDV), it is -4. These figures are below the EPUK & IAQM traffic screening criteria, suggesting that no roads will be significantly affected during the project's operation. With the Air

[36] The National Archives (2015) *The Town and Country Planning (Development Management Procedure) (England) Order 2015* [online]. Available at: The Town and Country Planning (Development Management Procedure) (England) Order 2015 (legislation.gov.uk) [Accessed August 2024].

Quality Management Area (AQMA) having been revoked, air quality concentrations in the area are expected to remain within acceptable limits, negating the need for a detailed assessment.

3.4.4. It is therefore concluded that the impacts from traffic emissions on air quality are not significant. As a result, traffic-related air quality impacts have been excluded from further assessment. However, an emissions mitigation assessment will be undertaken to avoid, minimise, and offset any potential impact on local air quality in accordance with the Sussex Air Quality and Emissions Mitigation Measures Guidance 2021.

3.5. EMISSIONS MITIGATION CALCULATION

3.5.1. An Emissions Mitigation Calculation has been undertaken following the methodology detailed within the Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021[37] with reference to the Defra Air Quality Appraisal: Damage Cost Guidance[38].

3.5.2. This Emissions Mitigation Calculation aims to identify the environmental costs of the Proposed Development as a monetary value, over a five-year period. This value is used for costing the required emissions mitigation for the Proposed Development.

3.5.3. These values estimate the societal costs associated with small changes in pollutant emissions and are applicable for use where estimated costs associated with a Proposed Development fall below £50,000,000[39].

3.5.4. For this assessment, the calculation utilised:

- The total two-way AM and PM trip rate (0.46) generated by the Proposed Development (sourced from the Blenheim Shoreham Transport Assessment). The trip rate was multiplied by the proposed number of residential units (50) to calculate the additional trips per annum associated with the Proposed Development.
- Defra's most recent Emission Factor Toolkit (EFT) version 12.1 (published in August 2024) available on the Defra website[40] predict the change in NO_X and PM_{10} emissions associated with the Proposed Development.
- Defra's Air Quality Appraisal: Damage Costs Toolkit[41] to convert PM_{10} emissions to $PM_{2.5}$ using the National Transport $PM_{2.5}$ conversion factor provided within the toolkit. NO_X and $PM_{2.5}$ emissions were inputted to the most recent DEFRA Air Quality Appraisal: Damage Costs Toolkit, to calculate the resultant emissions mitigation costs.
- Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021[42] which calculates the emissions mitigation cost as a total sum over five years. This provides a five-year exposure cost value, which is the total monetary value expected to be spent on mitigation measures. With the anticipated opening year being 2027, annual traffic emissions and associated emissions

[37] Sussex-air (2021). *Air Quality and Emissions Mitigation Measures Guidance for Sussex* 2021 [online]. Available at: https://sussex-air.net/wp-content/uploads/2022/09/Sussex-AQ-Guidance-V.1.2-2021.pdf [Accessed August 2024].
[38]Defra (2023). *Air quality appraisal: damage cost guidance*. [online]. Available at Air quality appraisal: damage cost guidance - GOV.UK (www.gov.uk) (Accessed August 2024).
[39]Defra (2023). *Air quality appraisal: damage cost guidance.* [online]. Available at Air quality appraisal: damage cost guidance - GOV.UK (www.gov.uk) (Accessed August 2024).
[40] Defra (2024). *Emissions Factor Toolkit* 12.1 [online]. Available at: https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html [Accessed August 2024].
[41] Defra (2023) *Air Quality Appraisal: Damage Costs Toolkit* [online]. Available at https://www.gov.uk/government/publications/assess-the-impact-of-air-quality
[42] Sussex-air (2021). *Air Quality and Emissions Mitigation Measures Guidance for Sussex* 2021 [online]. Available at: https://sussex-air.net/wp-content/uploads/2022/09/Sussex-AQ-Guidance-V.1.2-2021.pdf [Accessed August 2024].

mitigation costs were calculated for the period 2027 – 2031 inclusive, to provide a five-year exposure cost value.

3.6. HUMAN EXPOSURE

3.6.1. A qualitative air quality assessment of the impacts of the local area's emissions on the Proposed Development itself was undertaken in accordance with EPUK/IAQM Land-Use Planning 2017 Guidance. This assessment evaluated the exposure that future residents or users might experience, considering the following:

- The background and future baseline air quality, and whether this will be likely to approach, or exceed, the threshold values set by the air quality objectives;
- The presence and location of AQMAs as an indicator of local hotspots where the air quality objective thresholds may be exceeded;
- The presence of any heavily trafficked roads, with emissions that could give rise to significantly higher concentrations of pollutants (e.g. NO_2), that would cause unacceptably high exposure for users of the new development; and
- The presence of a source of odour and/or dust that may affect amenity of future occupants of the development.

3.6.2. The baseline conditions were established qualitatively by reviewing relevant air quality information that is readily available from the Local Authority, including Review and Assessment Reports and historic monitoring data. These data were used to understand baseline pollutant concentrations at receptors within the study area, and the risk that any changes in air quality may cause exceedance of air quality standards at these locations.

3.6.3. The exposure that future residents or users might experience was considered in accordance with EPUK/IAQM Land-Use Planning 2017 Guidance and Defra's Local Air Quality Management Review and Assessment Technical 2022 Guidance (LAQM.TG22).

3.7. LIMITATIONS AND ASSUMPTIONS

3.7.1. Dust risk assessment: Assumptions have been made about vehicles numbers on paved and/or unpaved roads during the construction. Professional judgement has been used where information was unavailable.

3.7.2. Exposure assessment: The receptors used in the future exposure assessment have been based on data and drawings provided by the Project Team and are representative of locations, i.e., openable windows, balconies and terraces, where short-term exposure consistent with the averaging time of the NO_2 air quality standard, i.e., 1-hour, may occur.

4. BASELINE CONDITIONS

4.1. ADC REVIEW & ASSESSMENT OF AIR QUALITY

4.1.1. There were two AQMA's declared within the administrative area of Adur District Council (ADC) both are recently revoked on 19/12/2023. Shoreham AQMA was very close to the application site about 250m to the west. Currently the nearest AQMA to the Proposed Development is Brighton & Hove AQMA3, which is approximately 3.6km east to the application Site, declared as a result of exceedances of annual mean NO_2 air quality standard objective.

4.2. LOCAL EMISSION SOURCES

4.2.1. The Application Site is located in a predominantly retails and commercial area where air quality is mainly influenced by emissions from road transport using the local road network including Brighton Road(A259) and Eastern Avenue Road.

4.2.2. According to the Environment Agency's public register for permitted installations[43] there are two large scale permitted installations within the ADC administrative area. None of the permitted installations are within 2km of the Application Site boundary. The nearest large-scale installation is VPI Power Limited (permit number: EPR/DP3433DM), located approximately 2.4km east of the Application Site.

4.2.3. In addition, according to the ADC public register of environmental permits[44] there are 16 small scale permitted processes within the district. Six of the permitted installations are within 2km of the Application Site boundary. The closest permitted process is the Aggregate Industries, which is located approximately 190m to the east of the Application Site.

4.2.4. It is assumed that as part of their operating permits, these facilities will be required to implement appropriate mitigation to prevent and/or minimise releases to air, especially beyond the boundaries of the facilities. Given their distance from the Application Site and the presence of other buildings between these industrial facilities and the Application Site, it is considered unlikely that they would have a measurable influence on air quality at the Proposed Development.

4.3. AIR QUALITY MONITORING DATA

CONTINUOUS MONITORING

4.3.1. ADC currently operates only one continuous automatic monitoring site (CMS) within its administrative area for monitoring ambient NO_2 and $PM_{2.5}$. The site, CMS AD1 (Hight Street Shoreham), is located approximately 790m west of the Application Site and within 2km of it. The location of CMS is shown in **Figure D-2.**

4.3.2. **Table 4-1** below summarises the data collected at AD1 over the five-year period from 2019 to 2023. The data indicates that annual mean NO_2 concentrations were well below the annual mean air quality standard throughout this period. Overall, there has been a decrease in annual mean NO_2 concentrations measured at AD1.

[43] Environment Agency (2022) *Environmental Permitting Regulations – Installations* [online]. Available at: https://environment.data.gov.uk/public-register/view/search-industrial-installations [Accessed August 2024].
[44] AWC (2024) *Adur & Worthing Councils Environmental Permit Register 2024* [online]. Available at: https://www.adur-worthing.gov.uk/environmental-health/pollution/air-quality-and-pollution/environmental-permits [Accessed August 2024].

Table 4-1 - Annual Mean NO_2 Continuous Monitoring Data

Site ID	Site Name	Type	X, Y	Approximate distance from Application Site Boundary	Annual mean NO_2 concentrations ($\mu g/m^3$)				
					2019	2020*	2021*	2022	2023
AD1	Hight Street Shoreham	Kerbside	537468, 191071	790m	26.0	20.0	19.6	20.3	21.0

Data for the ADC was obtained from the Air Quality Annual Status Report 2023.
*2020 and 2021 monitoring data is not considered to be representative of normal conditions nor when making comparisons of long-term trends due to national lockdown restrictions attributed to the outbreak of the COVID-19 pandemic.

4.3.3. The data in **Table 4-2** indicates that there has been a general decrease in annual mean $PM_{2.5}$ concentrations measured at site AD1 from 2021 to 2023. Annual mean $PM_{2.5}$ concentrations measured at CMS AD1 were compliant with the annual mean air quality standard of $20\mu g/m^3$ over the five year period.

Table 4-2 - Annual Mean $PM_{2.5}$ Continuous Monitoring Data

Site ID	Name	Type	X, Y	Approximate distance from Application Site boundary	Annual Mean PM_{10} concentration in $\mu g/m^3$ (and number of days the 24-hour mean concentration exceeded $50\mu g/m^3$)				
					2019	2020*	2021*	2022	2023
AD1	Hight Street Shoreham	Kerbside	537468, 191071	790m	-	-	16.2	11.6	10.7

Data for the ADC was obtained from the Air Quality Annual Status Report 2023.

*2020 and 2021 monitoring data is not considered to be representative of normal conditions nor when making comparisons of long-term trends due to national lockdown restrictions attributed to the outbreak of the COVID-19 pandemic.

PASSIVE MONITORING

4.3.4. ADC also conducts passive diffusion tube monitoring of NO_2 at 27 locations throughout its administrative area. Thirteen of these tubes are within 2 km of the Application Site and are likely to be representative of local conditions. The annual mean concentrations for the last five years (2019–2023) are provided in **Table 4-3** and illustrated in **Figure D-2**.

4.3.5. The data in **Table 4-3** shows that annual mean NO_2 concentrations have been compliant with the annual mean air quality standard at all monitoring sites within 2km of the Application Site. The monitoring site nearest to the Application Site is the roadside site S37, located approximately 87m west of the Application Site boundary. Table 4 3 shows that a general decrease in annual mean NO_2 concentrations was observed at site S37 over the five-year period from 2019 to 2023.

4.3.6. All passive monitoring locations within 2km of the Application Site measured an annual mean NO_2 concentration of less than 60µg/m^3 over the five-year period between 2019 and 2023. With reference to LLAQM.TG(22), where an annual mean NO_2 concentration is less than 60µg/m^3, it is unlikely that there would be an exceedance of the 1-hour mean air quality standard.

Table 4-3 – Local Authority Air Quality Monitoring Data

Site ID	Site Name	Type	X,Y	Approximate distance from Application Site boundary	Annual mean NO_2 concentrations (µg/m^3)				
					2019	2020 *	2021 *	2022	2023
S37	Humphrey's Gap Shoreham	Roadside	522103,105126	0.1	29.1	23.4	23.8	24.9	23.4
S45	Dolphin Mews Shoreham	Roadside	522300,105258	0.1	19.1	15.9	17.2	16.4	14.6
S43	Brunswick Road Shoreham	Roadside	521733,105251	0.5	22.5	16.6	18.4	17.1	16.7
S50	High Street Shoreham	Roadside	521478,105002	0.7	0	0	22.2	22.8	20.5
S17	High Street AQMS 1 Shoreham	Kerbside	521400,105040	0.8	30.4	24.3	25.4	23.7	23.3
S18	High Street AQMS 2 Shoreham	Kerbside	521400,105040	0.8	30.9	24.2	25	24.4	24.2
S19	High Street AQMS 3 Shoreham	Kerbside	521400,105040	0.8	29.6	23.5	24.1	24.4	22.5
S47	West Street 2 Shoreham	Roadside	521375,105101	0.8	0	16.3	16.8	16.9	16
S46	West Street 1 Shoreham	Roadside	521363,105082	0.8	0	18.3	18.8	18.8	18.6
S36	Victoria Road Footpath Shoreham	Roadside	521282,105254	0.9	24.3	18.3	19.4	18.6	17.8
S39	Brighton Road Kingston	Kerbside	523329,104960	1.1	21.9	17.4	17.4	18.1	17.2
S10	Holmbush Roundabout Shoreham	Roadside	523343,106111	1.5	23.2	19.2	20.1	20.3	18

Site ID	Site Name	Type	X,Y	Approximate distance from Application Site boundary	Annual mean NO_2 concentrations ($\mu g/m^3$)				
					2019	2020 *	2021 *	2022	2023
S9	Old Shoreham Road Southwick	Roadside	523784,106081	1.8	31.1	25.6	26.2	25.4	23.6

Data for the ADC was obtained from the Air Quality Annual Status Report 2023.

*2020 and 2021 monitoring data is not considered to be representative of normal conditions nor when making comparisons of long-term trends due to national lockdown restrictions attributed to the outbreak of the COVID-19 pandemic.

4.4. DEFRA BACKGROUND AIR QUALITY DATA

4.4.1. Defra publishes estimates of background pollutant concentrations for current and projected future years on its website. These concentrations are provided in 1km x 1km grid squares across the UK and combine measured data with modelled. The latest maps (based on a 2018 reference year) provide annual mean concentration estimates of pollutants up to 2030.

4.4.2. **Table 4-4** presents the background pollutant concentrations for NO_2, PM_{10} and $PM_{2.5}$ relevant to the Application Site's location in 2024 (current year).

Table 4-4 - Defra annual mean background concentrations ($\mu g/m^3$)

Grid Square (centred on OS Grid: 522500,105500, m)	Annual mean concentration		
	NO_2	PM_{10}	$PM_{2.5}$
2024	10.9	13.6	9.5
2027	10.2	13.6	9.5
2030	9.6	13.7	9.6

4.4.3. **Table 4-4** shows that all annual mean background concentrations are below the relevant annual mean air quality standard (see Error! Reference source not found.). Also, the annual mean background $PM_{2.5}$ concentration is compliant with both the interim target concentration of 12µg/m^3 (deadline January 2028), and the stricter target of 10µg/m^3 to be achieved by 2040.

4.5. SUMMARY

4.5.1. There is no AQMA within 2km of the Site. Local air quality is is primarily influenced by road traffic emissions from vehicles using Brighton Road(A259) and Eastern Avenue Road. The available monitoring data are considered sufficient to characterise current air quality conditions at the Application Site.

4.5.2. The ADC local air quality monitoring data show that the annual mean NO_2 air quality standard has been met at all the sites within 2km of the Application Site over the five year period of 2019-2023.

4.5.3. Background concentrations of NO_2, PM_{10} and $PM_{2.5}$ are predicted to be well below the relevant air quality standards for the grid square encompassing the Proposed Development.

4.5.4. In summary, air quality in the vicinity of the Proposed Development can be considered to be improving for NO_2, PM_{10} and $PM_{2.5}$, with background levels well below the air quality standards .

5. Assessment of Impacts

5.1. CONSTRUCTION PHASE

DUST PM_{10} AND $PM_{2.5}$ ARISING FROM ON-SITE ACTIVITIES

5.1.1. Construction activities can generate and/or re-suspend dust and PM_{10}. The following activities have the potential to create dust:

- Site clearance and preparation: This includes demolition activities;
- Preparation of access routes: This covers temporary access and egress points for the Proposed Development;
- Earthworks: This includes excavation and soil movement;
- Materials handling: This includes storage, stockpiling, spillage and disposal of construction materials;
- Vehicles movement: This includes movement of excavators and dumper trucks, and other construction vehicles within the Site;
- Crushing and screening equipment: This includes the use of equipment that crushes or screens materials;
- Plant emissions: Exhaust emissions from construction equipment can contribute to dust, especially when operating at full capacity or during breakdowns;
- Construction activities: Building construction, hardstanding creation, and fabrication processes can also generate dust;
- Finishing and refurbishment: Internal and external finishing can create dust; and
- Landscaping: Site landscaping after construction completion can also generate dust.

5.1.2. Most dust generation is likely to occur during the 'working week'. However, for some activities, like significant earthwork with exposed soil, can potentially generate dust 24/7 if no dust control measures are implemented during the construction period.

ASSESSMENT OF POTENTIAL DUST EMISSION MAGNITUDE

5.1.3. The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust, PM_{10} and $PM_{2.5}$ sources: demolition; earthworks; construction; and trackout.

5.1.4. At this stage, specific details on the construction of the Proposed Development are not known. As such, the construction assessment has been completed using the information that is available and professional judgement where appropriate. The findings of the assessment are presented below.

Demolition

5.1.5. Demolition is planned for the existing brick building on the Application Site. At this stage, the total building volume is anticipated to be below 12,000m^3 and that demolition activities will take place between 6m to 12m above ground level. The potential dust emission magnitude resulting from the demolition activities is therefore estimated to be **Medium**.

Earthworks

5.1.6. The total area of the Application Site is below 18,000m^2 and the soil is composed of a moderately dusty soil type (loamy and clayey soils)[45]. As a result, it is considered that the earthworks have the potential to create dusty conditions which may impact the PM_{10} concentrations in the local area. With five to ten heavy earth moving vehicles active at any one time, the potential dust emission magnitude for earthwork activities is **medium.**

Construction

5.1.7. The proposals are for the constructing residential block ranging from five to eight storeys, with up to 50 apartments and retail unit at ground floor. This is estimated to have a total construction volume less than 12,000m^3 with potentially dusty materials being used (including brick, concrete, cladding and render). Therefore, based on the volume of construction alone, the potential dust emission magnitude is considered to be **Medium** for construction activities.

Trackout

5.1.8. Information on the number of HDVs associated with this phase of the Proposed Development is not available and therefore professional judgement has been used. It has been assumed that given the size of the development area there are likely to be less than 20 HDVs (>3.5t) outward movements in any one day, travelling over dusty surface material. As the unpaved road length in the Application Site will be between 50m to 100m, it is considered that the potential dust emission magnitude of is **medium** for trackout.

5.1.9. **Table 5-1** provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Table 5-1 - Potential Dust Emission Magnitude

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

ASSESSMENT OF SENSITIVITY OF THE STUDY AREA

5.1.10. A wind rose generated using 2017 meteorological data from Shoreham Airport (**Appendix C**) shows that the prevailing wind direction is from the south-west and north. Therefore, receptors primarily located to the north-east and south of the Application Site are more likely to be affected by dust and particulate matter emitted and re-suspended during the construction phase. The Application Site is surrounded primarily by commercial properties, with residential properties little far from Application Site towards north and south directions.

[45] Cranfield University (2023) *Soilscapes Map*. [online] Available from: https://www.landis.org.uk/soilscapes/# [Accessed August 2024].

5.1.11. **Table 4-4** shows that background PM_{10} concentrations are currently about 13.6µg/m^3 at the Application Site and are likely to improve, i.e., decrease, over time.

5.1.12. Given the nature of construction phase emissions, it is likely that the majority of dust would be deposited in close proximity to the source. The closest high sensitivity receptors to the Application Site are the commercial and residential dwellings some of which are within 20m from the Application Site boundary.

5.1.13. There are no ecological receptors within 250m of the Application Site, therefore the impacts of construction dust on this ecological receptor can be scoped out and is not considered further in this assessment.

5.1.14. **Figure D-3** shows the 20m, 50m, 100m and 250m study areas around the Proposed Development.

5.1.15. Taking the above into account and following the IAQM assessment methodology, the sensitivity of the area to changes in dust, PM_{10} and $PM_{2.5}$ has been derived for each of the construction activities considered. The results are shown in **Table 5-2**.

Table 5-2 - Sensitivity of the Study Area

Potential Impact	Sensitivity of the Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	Medium	High
Human Health	Low	Low	Low	Low

RISK OF IMPACTS

5.1.16. The predicted dust emission magnitude has been combined with the defined sensitivity of the area to determine the risk of impacts during the construction phase, prior to mitigation. **Table 5-3** provides a summary of the risk of dust impacts for the Proposed Development. The risk category identified for each construction activity has been used to determine the level of mitigation required.

Table 5-3 - Summary Dust Risk Table to Define Site Specific Mitigation

Potential Impact	Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium Risk	Medium Risk	Medium Risk	Medium Risk
Human Health	Low Risk	Low Risk	Low Risk	Low Risk

5.1.17. The results of the dust risk assessment indicate that there is a **medium risk** of impacts on local air quality during construction of the Proposed Development and there is a **low risk** of impacts to human health.

5.2. OPERATIONAL PHASE

Exposure of Future Occupants

5.2.1. The Application Site is located close to A259 Brighton Road. Defra's PCM roadside predictions shows that the predicted concentrations for annual mean NO_2, PM_{10} and $PM_{2.5}$ concentration are 23.7µg/m^3, 13.37µg/m^3 and 7.5µg/m^3 for 2022 respectively. The predicted values are below the air quality objective threshold, 40 µg/m^3.

5.2.2. The Application Site is bounded by Brighton Road to the north, the newly planned Free Wharf development to the east, commercial spaces to the west, and the River Adur to the south. The Transport Assessment concluded that the traffic flow in the area and along Brighton Road were relatively low. Therefore, it is anticipated that the emissions from local traffic is low and effects on air quality is minimal.

5.2.3. The Defra's Compliance Map[46] also shows that the annual mean NO_2 concentration at Shoreham is compliant with maximum value of 26.0µg/m^3 for year 2022. The Defra's Background Concentration map also shows that the annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations at the nearest grid (522500,105500) are below the relevant air quality standard for future year 2027. It is, therefore, the exposure of future residents at the proposed site is likely to be within the objective threshold. Therefore, exposure to poor air quality is unlikely and it is suitable for the Proposed Development.

Emissions Mitigation Calculation

5.2.4. The calculated change in pollutant emissions are shown in **Table 5-4** below.

Table 5-4 – Calculated Change in Emissions Associated with the Proposed Development

Operational Years	Trip Generation[1]	Annual Emissions (tonnes/year)[2]		
		NO_x	PM_{10}	$PM_{2.5}$[3]
2027	23	0.009486	0.002311	0.001207
2028		0.008260	0.002293	0.001196
2029		0.007121	0.002276	0.001188
2030		0.006098	0.002261	0.001181
2031		0.005214	0.002249	0.001175

[1]Trip Rate x Residential Units = Trip Generation. 0.46 x 50 = 23

[2]Values rounded to 6 decimal places

[3]$PM_{2.5}$ emissions calculated by applying Defra's transport conversion factor of 0.630 to PM_{10} emissions

[46] Defra (2024). *AQ Compliance Map*. [online] Available from: https://uk-air.defra.gov.uk/data/compliance-map/ [Accessed August 2024].

5.2.5. **Table 5-4** shows that annual emissions for all pollutants are predicted to decrease from 2027 to 2031. This is expected as the Defra EFT[47] predicts that pollutant emissions from vehicles will gradually decrease for future years with the increased uptake of cleaner, lower emission vehicles.

5.2.6. The emissions mitigation cost for the Proposed Development was calculated using the data in **Table 5-4** and the Defra Air Quality Appraisal: Damage Costs Toolkit[48]. The resultant five-year exposure cost value is provided in **Table 5-5** below.

Table 5-5 – Five-year Exposure Cost Values

Pollutant Name	Low Sensitivity Present Value	Central Present Value	High Sensitivity Present Value
NO_x (Road Transport)	£72	£434	£1,668
$PM_{2.5}$ (Road Transport)	£128	£324	£929
Total	**£201**	**£757**	**£2,598**

5.2.7. **Table 5-5** shows that the five-year exposure cost value is estimated to range between a minimum of **£201** (based on the Low Sensitivity Present Value) and **£2,598** (based on the High Sensitivity Present Value), with a **Central Present Value of £757**. Given that the calculated damage cost (calculated as a five-year exposure cost value) falls below £50,000,000, further detailed assessment is not necessary[49].

5.2.8. The calculated emissions mitigation costs should be treated as preliminary and conservative, subject to the following assumptions and limitations:

- All generated vehicle trips were assumed to only comprise light duty vehicles and in line with Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021[50] ;
- All generated trip distances were assumed to be 10 km based on the National Transport Statistics UK average[51] and in line with Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021[52];
- The speed travelled was assumed to be 50 km/hour as an estimated average speed; and
- Particulate matter (PM) impacts are potentially overestimated through the damage cost appraisal. This is because air pollutants are typically emitted in mixtures, which causes a degree of overlap between NO_X and $PM_{2.5}$[53]. While the NO_X damage costs are adjusted for this within the damage

[47] Defra (2024). *Emissions Factor Toolkit.* [online]. Available at: https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html [Accessed August 2024].
[48] Defra (2023) *Air Quality Appraisal: Damage Costs Toolkit.* [online]. https://www.gov.uk/government/publications/assess-the-impact-of-air-quality (Accessed August 2024).
[49] Defra (2023). *Air quality appraisal: damage cost guidance*. [online]. Available from] Air quality appraisal: damage cost guidance - GOV.UK (www.gov.uk) (Accessed August 2024).
[50] Sussex-air (2021). *Air Quality and Emissions Mitigation Measures Guidance for Sussex* 2021 [online]. Available at: https://sussex-air.net/wp-content/uploads/2022/09/Sussex-AQ-Guidance-V.1.2-2021.pdf [Accessed August 2024].
[51] Department of Transport (2021). *Transport Statistics Great Britain: 2021*. [online]. Available form https://www.gov.uk/government/statistics/transport-statistics-great-britain-2021/transport-statistics-great-britain-2021(Accessed August 2024).
[52] Sussex-air (2021). *Air Quality and Emissions Mitigation Measures Guidance for Sussex* 2021 [online]. Available at: https://sussex-air.net/wp-content/uploads/2022/09/Sussex-AQ-Guidance-V.1.2-2021.pdf [Accessed August 2024].
[53] Defra (2023). *Air quality appraisal: damage cost guidance* [online]. Available at. Air quality appraisal: damage cost guidance - GOV.UK (www.gov.uk) (Accessed August 2024).

cost values, there is no such adjustment factor available for PM emissions[54]. Therefore, the PM damage costs do not account for the potential confounding effect of other correlated pollutants.

[54] Defra (2023). *Air quality appraisal: damage cost guidance* [online]. Available at. Air quality appraisal: damage cost guidance - GOV.UK (www.gov.uk) (Accessed August 2024).

6. MITIGATION AND RESIDUAL EFFECTS

6.1. CONSTRUCTION PHASE

6.1.1. Based on the assessment results, mitigation will be required. Recommended mitigation measures are given below. General mitigation measures have been derived and recommended based on the highest dust risk category identified in **Table 5-3**.

General Mitigation Measures

Communication

- A stakeholder communications plan that includes community engagement before work commences on site should be developed and implemented.
- The name and contact details of person(s) accountable for air quality and dust issues should be displayed on the site boundary. This may be the environment manager/engineer or the site manager. The head or regional office contact information should also be displayed.

Dust Management

- A Dust Management Plan (DMP), which may include measures to control other emissions, in addition to the dust,PM_{10} and $PM_{2.5}$ mitigation measures given in this report, should be developed and implemented, and approved by the Local Authority.
- The DMP may include a requirement for monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.

Site Management

- All dust and air quality complaints should be recorded, and causes identified. Appropriate remedial action should be taken in a timely manner with a record kept of actions taken including of any additional measures put in-place to avoid reoccurrence.
- The complaints log should be made available to the local authority on request.
- Any exceptional incidents that cause dust and/or air emissions, either on- or offsite should be recorded, and then the action taken to resolve the situation recorded in the log-book.

Monitoring

- Regular site inspections to monitor compliance with the DMP should be carried out, inspection results recorded, and an inspection log made available to the local authority when asked.
- The frequency of site inspections should be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations should be agreed with the Local Authority. Where possible baseline monitoring should start at least three months before work commences on site or, if it is a large site, before work on a phase commences.

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 practicable.
- Where practicable, erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.

- Where practicable, 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 appropriately.
- Where practicable, cover, seed or fence stockpiles to prevent wind whipping.

Operating vehicle/machinery and sustainable travel

- Ensure all vehicle operators 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 such 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.

Measures Specific to Demolition

- Ensure effective water suppression is used during demolition operations. Handheld 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 waste or damp down such material before demolition.

Measures Specific to 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.

Measures Specific to 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 in frequent 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 for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Where practicable, hard surfaced haul routes should be installed, 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 10m from receptors where possible.

6.1.2. Prior to work commencing the appointed contractor should prepare a method statement and a comprehensive, site specific DMP, and agree the DMP with the ADC. The measures in the DMP may differ from the mitigation measures recommended above due to the specific methods to be used on-site and/or measures related to activities that will not take place on the site do not need to be included.

RESIDUAL EFFECTS

6.1.3. With the implementation of the mitigation measures described above and adherence good site practices, the residual effects of dust and PM_{10} generated by construction activities are expected to be **not significant**.

6.1.4. The residual effects of emissions to air from construction vehicles and plant on local air quality is considered to be **insignificant**.

6.2. OPERATIONAL PHASE

MITIGATION

6.2.1. It is anticipated that the impact of the operation phase is likely to be negligible, and therefore no further mitigation measures are required.

6.2.2. Additionally, in reference Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021[55] and within the context of the Emissions Mitigation Calculation, the following operational mitigation measures are deemed appropriate for the Proposed Development.

Residential:

- all gas-fired boilers to meet a minimum standard of <40mgNOx/kWh. Consideration should be given to renewable sources of energy, e.g. air source heat pumps, as an alternative.
- meet the electric vehicle charging point guidance set out above under 'commercial/retail/industrial'.
- Meet the relevant West Sussex County Council (WSCC) Guidance[56,57] on electric vehicle charging points (minimum 7kW (fast) chargers) and travel plans.

[55] Sussex-air (2021). *Air Quality and Emissions Mitigation Measures Guidance for Sussex* 2021 [online]. Available at: https://sussex-air.net/wp-content/uploads/2022/09/Sussex-AQ-Guidance-V.1.2-2021.pdf [Accessed August 2024].
[56] WSCC (2020). *Guidance on Parking at New Developments 2020* [online]. Available at: https://www.westsussex.gov.uk/media/1847/guidance_parking_res_dev.pdf (Accessed August 2024).
[57] WSCC (2024). *Travel Plan Advice.* [online]. Available at: https://www.westsussex.gov.uk/roads-and-travel/travel-and-public-transport/travelwise-sustainable-transport/travel-plans/travel-plan-advice/ (Accessed August 2024).

6.2.3. A Framework Travel Plan has been completed for the Proposed Development, which outlines proposed initiatives to encourage sustainable modes of travel to and from the Proposed Development. It is understood that a Full Travel Plan will be submitted as part of the detailed planning application. At such time, it is recommended that the Full Travel Plan considers the above recommendations.

7. CONCLUSIONS

7.1.1. A qualitative assessment of the potential impacts on local air quality during the construction and operational phases of the Proposed Development at the former Kwik Fit building on Brighton Road has been undertaken in line with IAQM 2024, EPUK/IAQM 2017, LAQM TG(22), and Sussex's Air Quality and Emissions Mitigation Measures Guidance 2021. This assessment considers the potential exposure of new occupants to poor air quality and outlines the inherent mitigation measures included in the design to minimise emissions of air pollutants.

7.1.2. A review of roadside monitoring data collected by the local authority, ADC, over the past five years shows that air quality levels have improved in recent years. Defra's background mapping data for both current baseline and future years are below the relevant air quality standards. Overall, the Application Site is suitable for the Proposed Development and is unlikely to expose new receptors to poor air quality.

7.1.3. A qualitative assessment using the IAQM methodology identified a medium risk of dust soiling and a low risk to human health due to increased particulate matter concentrations from construction activities. However, the impact of dust, PM_{10}, and $PM_{2.5}$ emissions can be significantly reduced through good site practices and the implementation of mitigation measures. Since construction activities are temporary and intermittent, the residual effects of dust, PM_{10}, and $PM_{2.5}$ on air quality will be insignificant.

7.1.4. The predicted changes in traffic flows during the construction and operational phases fall below the EPUK/IAQM Land-Use Planning Guidance 2017 traffic screening criteria that would trigger a quantitative assessment for locations outside an AQMA. Consequently, it is anticipated that the Proposed Development will not have a significant effect on local air quality, and the assessment of air quality impacts associated with its construction and operation has been scoped out.

7.1.5. For the operational phase exposure assessment, the predicted future year concentrations are well below the relevant air quality standards and Exposure Criteria. Therefore, exposure of future site users to short-term NO_2 concentrations above the air quality standard objective is not anticipated. No additional operational phase mitigation measures are required.

7.1.6. The calculated damage cost (based on the five-year exposure cost value) falls below £50,000,000, therefore further detailed assessment was not necessary.

7.1.7. Overall, the Proposed Development is anticipated to have a minimal impact on local air quality. The assessment has demonstrated that the development aligns with national and local air quality policies and that appropriate mitigation measures are in place to address potential issues related to construction activities and operational emissions. By reducing emissions from existing sources and contributing to a healthier environment, this development can play a positive role in improving air quality in the area.

7.1.8. While the assessment has identified low risks to human health, it's important to note that continuous monitoring and evaluation will be necessary to ensure that the actual impacts align with the predictions.

Appendix A

GLOSSARY

APPENDIX A - GLOSSARY

Acronym or Term	Definition
Adjustment	Application of a correction factor to modelled results to account for uncertainties in the model.
Accuracy	A measure of how well a set of data fits the true value.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year.
ADC	Adur District Council
AQMA	Air Quality Management Area
ASHP	Air Source Heat Pump
Conservative	Tending to over-predict the impact rather than under-predict.
Data capture	The percentage of all the possible measurements for a given period that were validly measured.
Defra	Department for Environment, Food and Rural Affairs.
DfT	Department for Transport
Dust	Dust comprises particles typically in the size range 1-75 micrometres (µm) in aerodynamic diameter and is created through the action of crushing and abrasive forces on materials.
Emission rate	The quantity of a pollutant released from a source over a given period of time.
Exceedance	A period of time where concentrations of a pollutant is greater than the appropriate air quality standard.
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.
LAQM	Local Air Quality Management.
NO_2	Nitrogen dioxide

NO_X	Oxides of nitrogen (NO + NO_2)
PM_{10}	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
$PM_{2.5}$	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
PCC	Portsmouth City Council
Trackout	The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.
µg/m^3 microgrammes per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m^3 means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

Appendix B

IAQM CONSTRUCTION ASSESSMENT METHODOLOGY

APPENDIX B – CONSTRUCTION DUST ASSESSMENT

STEP 1 – SCREENING THE NEED FOR A DETAILED ASSESSMENT

An assessment will normally be required where there are:

- 'Human receptors' within 250m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s); and/or
- 'Ecological receptors' within 50m of the site boundary; or within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is "negligible".

STEP 2A – DEFINE THE POTENTIAL DUST EMISSION MAGNITUDE

The following are examples of how the potential dust emission magnitude for different activities can be defined (Note that not all the criteria need to be met for a particular class). Other criteria may be used if justified in the assessment.

Table 2A: Definitions of Dust Emission Magnitudes

Dust Emission Magnitude	Activity	
Large	Demolition	>75,000m^3 building demolished, dusty material (e.g. concrete), on-site crushing/screening, demolition >12m above ground level
	Earthworks	>110,000m^2 site area, dusty soil type (e.g. clay) >10 earth moving vehicles active simultaneously >6m high bunds formed
	Construction	>75,000m^3 building volume, on site concrete batching, sandblasting
	Trackout	>50 HDVs out / day, dusty surface material (e.g. clay) >100m unpaved roads
Medium	Demolition	12,000 - 75,000m^3 building demolished, dusty material (e.g. concrete) 6-12m above ground level
	Earthworks	18,000 - 110,000m^2 site area, moderately dusty soil (e.g. silt), 5-10 earth moving vehicles active simultaneously, 3m - 6m high bunds
	Construction	12,000 - 75,000m^3 building volume, dusty material e.g. concrete, on site concrete batching
	Trackout	20 - 50 HDVs out / day, moderately dusty surface material (e.g. clay) 50 -100m unpaved roads
Small	Demolition	<12,000m^3 building demolished, non-dusty material (e.g. metal cladding), <6m above ground level, work during wetter months
	Earthworks	<18,000m^2 site area, soil with large grain size (e.g. sand), <5 earth moving vehicles active simultaneously, <3m high bunds,
	Construction	<12,000m^3, non-dusty material (e.g. metal cladding or timber)
	Trackout	<20 HDVs out / day, non-dusty soil <50m unpaved roads

STEP 2B – DEFINE THE SENSITIVITY OF THE AREA

The tables below present the IAQM assessment methodology to determine the sensitivity of the area to dust soiling, human health and ecological impacts respectively. The IAQM guidance provides guidance to allow the sensitivity of individual receptors to dust soiling and health effects to assist in the assessment of the overall sensitivity of the study area.

Table 2Ba: Sensitivity of the Area to Dust Soiling Effects

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
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

Table 2Bb: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
		>10	Medium	Low	Low	Low

Receptor Sensitivity	Annual Mean PM_{10} Concentration ($\mu g/m^3$)	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
	28-32	1-10	Low	Low	Low	Low
	24-28	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low

Table 2Bc: Sensitivity of the Area to Ecological Impacts

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

STEP 2C – DEFINE THE RISK OF IMPACTS

The dust emissions magnitude determined at Step 2A should be combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts without mitigation applied. For those cases where the risk category is 'negligible' no mitigation measures beyond those required by legislation will be required.

Table 2C: Risk of Dust Impacts

Sensitivity of surrounding 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 and Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Sensitivity of surrounding area	Dust Emission Magnitude		
	Large	Medium	Small
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

STEP 3 –SITE SPECIFIC MITIGATION

Having determined the risk categories for each of the four activities it is possible to determine the site-specific measures to be adopted. These measures will be related to whether the site is considered to be a low, medium or high-risk site. The IAQM guidance details the mitigation measures required for high, medium and low risk sites as determined in Step 2C.

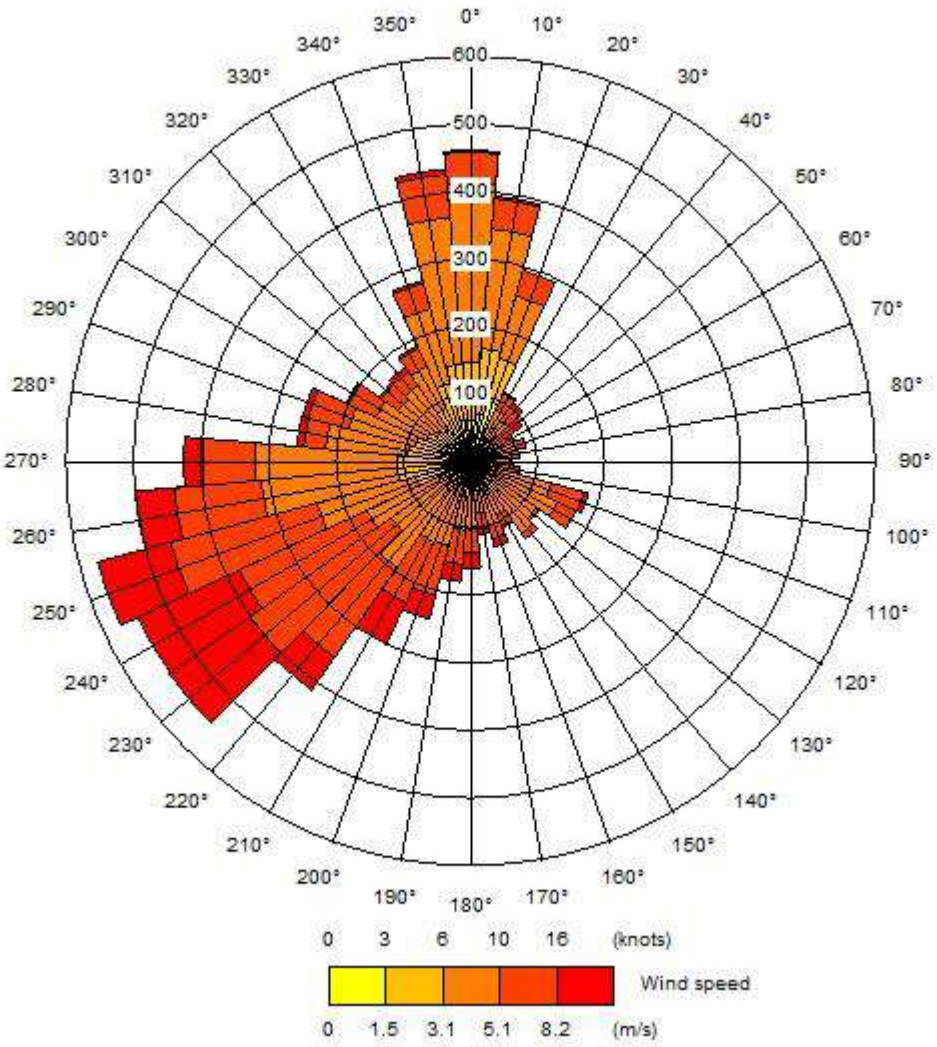
STEP 4 – DETERMINE SIGNIFICANT EFFECTS

Once the risk of dust impacts has been determined in Step 2C and the appropriate dust mitigation measures identified in Step 3, the final step is to determine whether there are significant effects arising from the construction phase. For almost all construction activities, the application of effective mitigation should prevent any significant effects occurring to sensitive receptors and therefore the residual effect will normally be negligible.

Appendix C

WIND ROSE

APPENDIX C - WIND ROSE FOR SHOREHAM AIRPORT 2017



Appendix D

FIGURES

APPENDIX D - FIGURES

Figure D-1 - Site Location

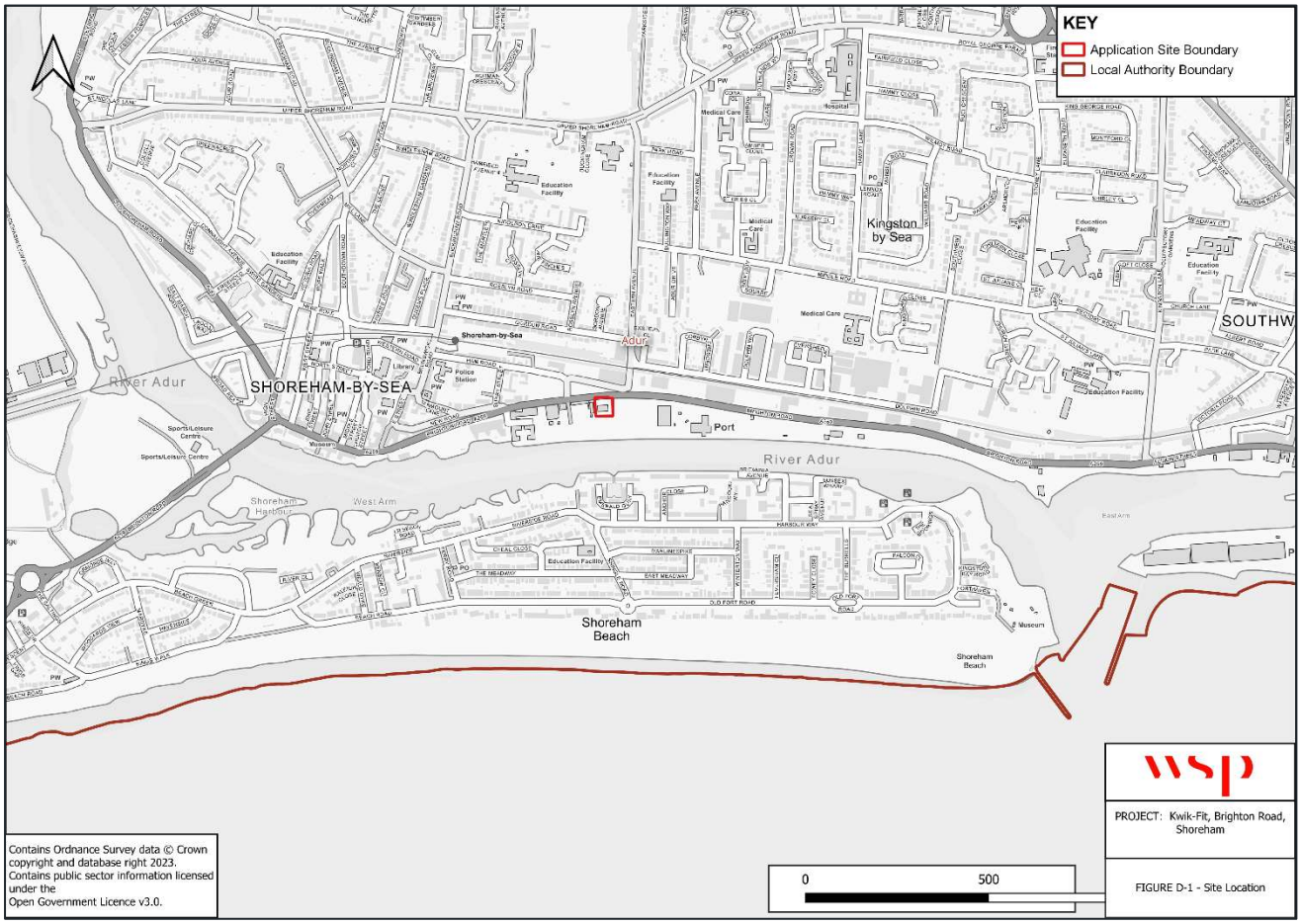


Figure D-2 - Site Study Area

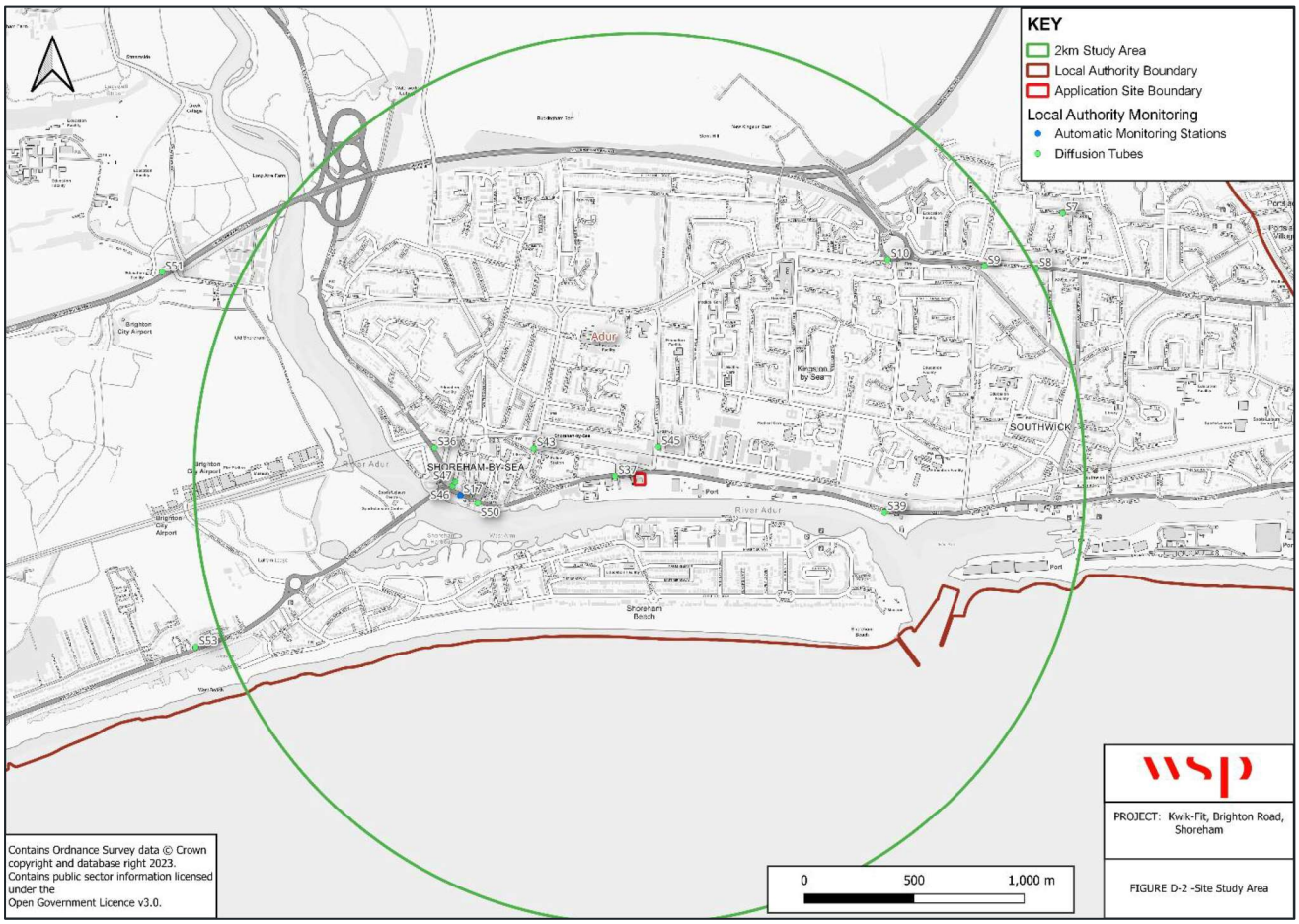
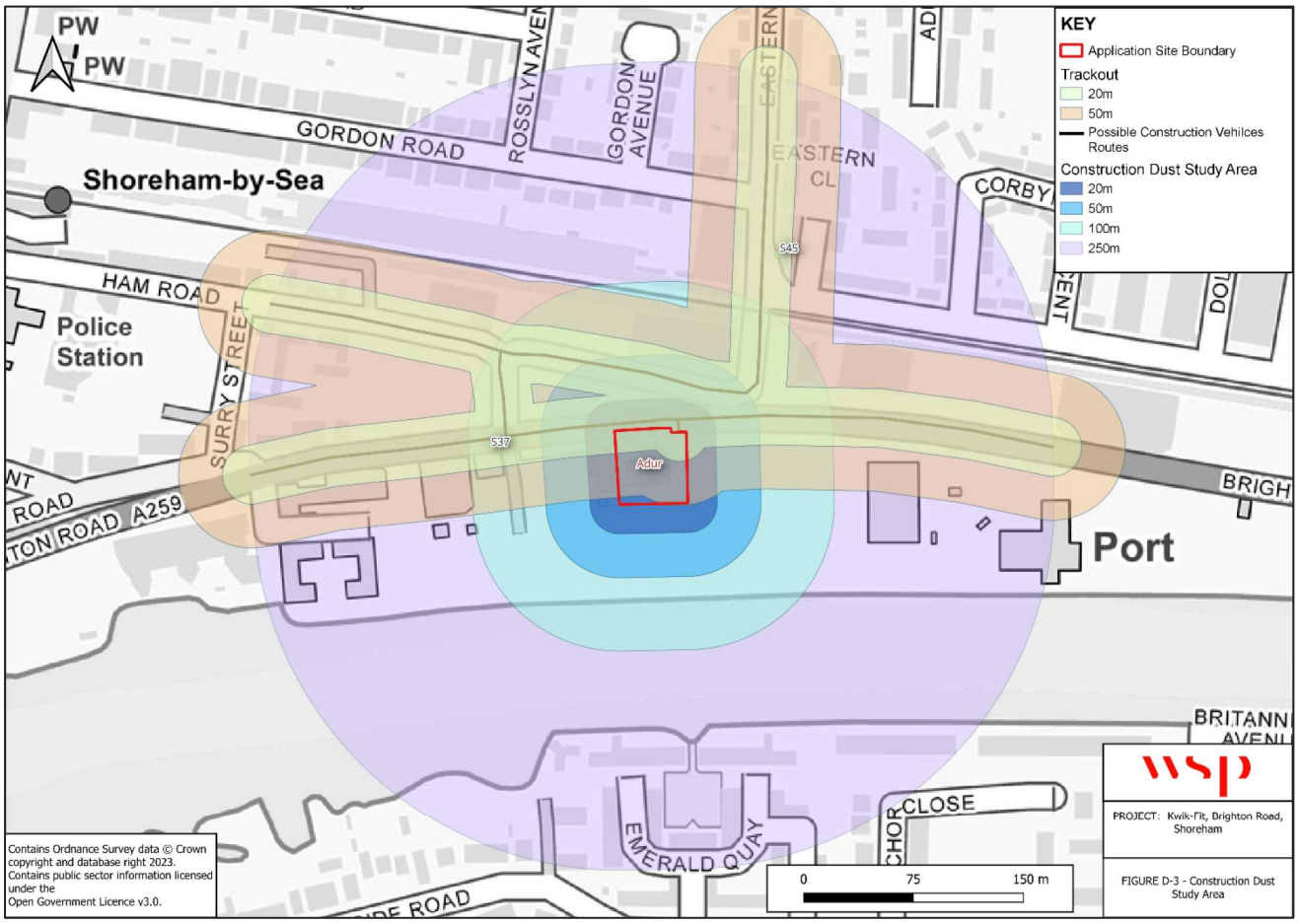


Figure D-3 – Construction Dust Study Area



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