Air Quality Assessment

Land at Norway Lane, Littlehampton
BN17 6LS

May 2025
644626.0000.0000.000001.r1

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Quality Control

Client Name:	Hallway Properties Limited
Project Name:	Land at Norway Lane, Littlehampton, BN17 6LS
Site Address:	Land at Norway Lane, Littlehampton, BN17 6LS
Project No.:	644626.0000.0000.000001
Document Title:	Air Quality Assessment

Version:	Date:	Prepared By:	Reviewed By:	Approved By:
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Executive Summary

Site and Report Context	TRC Companies Ltd was commissioned by Hallway Properties Limited to undertake an Air Quality Assessment to inform the planning application for part demolition, conversion, refurbishment and re-elevation of Units 5 and 6 and construction of retail (food and non-food), leisure and food and beverage units (Use Class E), together with associated car parking, access, loading areas, landscaping and associated works (the 'Proposed Development'), located at Land at Norway Lane, Littlehampton, BN17 6LS (the 'Site'). Site is located within an area where air quality is mainly influenced by road traffic emissions along the local road network and as such, elevated pollutant concentrations may be experienced at this location. Consequently, the Proposed Development should be assessed to determine whether it has the potential to cause adverse impacts to existing pollutant levels at nearby sensitive receptors as a result of fugitive dust and plant/vehicle emissions during construction and road vehicle exhaust emissions during operation. This Air Quality Assessment has been prepared to determine baseline conditions and to assess potential impacts associated with the Proposed Development, in accordance with the requirements of the National Planning Policy Framework (NPPF). Accordingly, the Air Quality Assessment considers ambient pollutant concentrations namely NO_2 and particulate matter (PM_{10} and $PM_{2.5}$), across and in the vicinity of the Site.
Summary	A review of local monitoring data and Defra background pollutant concentrations has shown that none of the relevant pollutant NAQOs are likely to be exceeded across the Site and in the surrounding area, with annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations well below their respective objective values. As such, the Site is considered suitable for the Proposed Development with respect to air quality. The assessment of construction phase impacts associated with emissions of fugitive dust and fine particulate matter (PM) with an aerodynamic diameter of less than 10 and 2.5 microns (PM_{10} and $PM_{2.5}$, respectively), has been undertaken in line with the relevant Institute of Air Quality Management (IAQM) guidance. This identified that there is a **medium risk** of dust soiling impacts, and a **low risk** of increases in PM concentrations, due to unmitigated construction activities. However, through good site practice and the implementation of suitable mitigation measures, the effect of dust and PM releases would be significantly reduced. The residual effects of the construction phase on air quality at nearby sensitive receptors, are considered to be **not significant**. In accordance with the assessment criteria and the proposed scale of the Site's operation, the possibility of significant effects arising on local air quality is screened out. As such, the impact of operational phase road vehicle emissions would result in a **negligible** impact at nearby receptors, and no significant effects on air quality are anticipated at these locations. The residual effect on air quality as a result of the Proposed Development is judged to be **not significant**, in line with EPUK and IAQM assessment criteria. As such, in accordance with the assessment criteria, additional mitigation is not required during the operation of the Proposed Development.
Conclusions and Recommendations	Based on the results of the assessment, it is considered that, the Proposed Development complies with national and local planning policies and there are no air quality constraints considered to restrict planning consent.
This is intended as a summary only. Further detail and limitations of the assessment are provided within the main body of the report.	

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1.0 Introduction

1.1 Appointment

TRC Companies Ltd was commissioned by Hallway Properties Limited (the 'Client') to undertake an Air Quality Assessment to inform the planning application for part demolition, conversion, refurbishment and re-elevation of Units 5 and 6 and construction of retail (food and non-food), leisure and food and beverage units (Use Class E), together with associated car parking, access, loading areas, landscaping and associated works (the 'Proposed Development'), located at Land at Norway Lane, Littlehampton, BN17 6LS (the 'Site').

1.2 Site Location and Context

Site is located within an area where air quality is mainly influenced by road traffic emissions along the local road network and as such, elevated pollutant concentrations may be experienced at this location.

Reference should be made to **Figure 1** for a map of the Site and surrounding area.

Consequently, the Proposed Development should be assessed to determine whether it has the potential to cause adverse impacts to existing pollutant levels at nearby sensitive receptors as a result of fugitive dust and plant/vehicle emissions during construction and road vehicle exhaust emissions during operation.

An Air Quality Assessment has been prepared to determine baseline conditions across and in the vicinity of the Site and to assess potential impacts associated with the Proposed Development, in accordance with the requirements of the National Planning Policy Framework (NPPF)[1]. Accordingly, the Air Quality Assessment will, consider ambient pollutant concentrations, namely nitrogen dioxide (NO_2) and particulate matter (PM_{10} and $PM_{2.5}$), across and in the vicinity of the Site.

The standard limitations associated with this assessment are presented in **Annex A**.

A glossary of terms used in this report is provided in **Annex B**.

1 Ministry of Housing, Communities & Local Government (2025) National Planning Policy Framework.

2.0 Legislation, Planning Policy & Guidance

This assessment takes account of the following national, regional and local planning guidance.

2.1 Air Quality Legislation

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

UK Air Quality Strategy (2023)

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 (AQS)[2]. The revised AQS[3] supersedes the air quality strategy: Volume 1[2] in England only. The revised AQS provides a framework for reducing air pollution in the UK and to enable local authorities to make improvements for their communities, sets out their powers, responsibilities, and further actions the government expects them to take.

The AQS also sets standards and objectives for the key air pollutants to protect health, vegetation and ecosystems. The standards and objectives for the pollutants considered in this assessment are given in **Annex C**.

The AQS contains a framework for considering the effects of a finer group of particles known as '$PM_{2.5}$' as there is increasing evidence that this size of particles can be more closely associated with observed adverse health effects than PM_{10}. Local authorities are required to work towards reducing emissions/concentrations of particulate matter within their administrative area. However, there is no statutory objective given in the AQS for $PM_{2.5}$ at this time.

Air Quality Standards (Amendment) Regulations (2016)

Many of the objectives in the AQS have been made statutory in England with the Air Quality (England) Regulations 2000[4] and the Air Quality (England) (Amendment) Regulations 2002[5] for the purpose of Local Air Quality Management (LAQM).

These Regulations require that likely exceedances of the AQS objectives are assessed in relation to:

> *'[…] 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 […]'*

The Air Quality Standards (Amendment) Regulations 2016[6] amends the Air Quality Standards Regulations 2010 that transpose the European Union Ambient Air Quality Directive (2008/50/EC) into law in England. This Directive sets legally binding limit values for concentrations in outdoor air of major air pollutants that impact public health such as PM_{10}, $PM_{2.5}$ and NO_2.

Environmental Protection Act 1990 - Control of Dust and Particulates Associated with Construction

Section 79 of the Environmental Protection Act 1990[7] 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'.*

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 Department for Environment, Food and Rural Affairs (Defra) and the Devolved Administrations (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland (Volumes 1 and 2).
3 Defra Policy paper - Air quality strategy: framework for local authority delivery Published 28 April 2023
4 The Air Quality (England) Regulations 2000 - Statutory Instrument 2000 No.928.
5 The Air Quality (England) (Amendment) Regulations 2002 - Statutory Instrument 2002 No.3043.
6 The Air Quality Standards (Amendment) Regulations 2016 - Statutory Instrument 2016 No. 1184.
7 UK Public General Acts 1990 Chapter 43

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 which has occurred.

Environment Act 2021

Schedule 11 contains amendments of Part IV of the Environment Act 1995 (air quality). Local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the AQOs defined in the Regulations. There is a requirement for local authorities to identify relevant sources of emissions that are likely to be responsible for any failure to achieve the AQOs within the area of jurisdiction, or to identify relevant sources within neighbouring authorities and to identify them. Where the objectives are not likely to be achieved within the relevant period, an authority is required to designate an AQMA. For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it intends to work towards achieving air quality standards in the future.

Clean Air Strategy (2019)

In 2019, the UK government released its Clean Air Strategy 2019[8], part of its 25 Year Environment Plan[9]. The Strategy sets out the comprehensive action that is considered to be required from across all parts of government and society.

The primary focus of air quality management has primarily related to NO_2, and its principal source in the UK, road traffic. The 2019 Strategy aims to broaden the focus to other areas, including actions on clean growth, and emissions from domestic wood burning stoves, industry and agriculture.

2.2 National Planning Policy

National Planning Policy Framework (as revised 2025)

The Government's overall planning policies for England are described in the NPPF[1]. 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.'*

One of the three overarching objectives of the NPPF, is that the planning system should:

> *'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.'*

In relation to air quality, the following paragraphs in the document are relevant:

Paragraph 56, which states:

> *'Local planning authorities should consider whether otherwise unacceptable development could be made acceptable through the use of conditions or planning obligations. Planning obligations should only be used where it is not possible to address unacceptable impacts through a planning condition.';*

Paragraph 110, which states:

> *'[…] 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 187, which states:

> *'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 […] air […] pollution […]';*

8 Department for Environment, Food and Rural Affairs (Defra) (2019) Clean Air Strategy 2019.
9 Department for Environment Food and Rural Affairs (Defra) (2018) A Green Future: Our 25 Year Plan to Improve the Environment.

Paragraph 198, which states:

> *'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, which states:

> *'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 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.';* and

Paragraph 201, which states:

> *'The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities.'.*

2.3 Local Planning Policy

A summary of relevant local policies is outlined below, however their compliance and soundness in relation to national policy has not been assessed in this instance.

Arun Local Plan 2011 to 2031

The Arun Local Plan 2011 to 2031[10], was adopted in July 2018 and is a document which contains strategic objectives, policies and goals for the local area to create sustainable growth and development. The following is relevant to this appraisal.

Policy QE DM3 'Air Pollution' states that:

> *All major development proposals will be required to assess the likely impacts of the development on air quality and mitigate any negative impacts by:*
>
> *a) Ensuring the development is located within easy reach of established public transport services;*
>
> *b) Maximising provision for cycling and pedestrian facilities;*
>
> *c) Encouraging the use of cleaner transport fuels on site, through the inclusion of electric car charging points; and*
>
> *d) Contributing towards the improvement of the highway network where the development is predicted to result in increased congestion on the highway network.*
>
> *Development proposed nearby any Air Quality Management Area (AQMA) declared within the District within the Plan period, will require an air quality assessment to identify likely impacts of development upon the designated area. Developers will be required to ensure delivery of the actions set out within any Air Quality Action Plan.*
>
> *Industrial development which is regulated by environmental permits (that creates or results in dust, smell, fumes, smoke, heat, radiation, gases, steam or other forms of pollution) must be located in such a position which ensures that the health, safety and amenity of users of the site or surrounding land is not put at risk and the quality of the environment would not be damaged or put at risk.*

The above policy relating to air quality have been considered within this assessment.

10 Arun District Council (2018)) Arun Local Plan 2011 to 2031 [Online] Available at: https://www.arun.gov.uk/download.cfm?doc=docm93jijm4n12844.pdf&ver=12984 [Accessed on 08/05/2025].

2.4 Guidance

Local Air Quality Management Technical Guidance (August 2022)

The Department for Environment, Food and Rural Affairs (Defra) has published technical guidance for use by local authorities in their review and assessment work[11]. This guidance, referred to in this document as LAQM.TG22, has been used where appropriate in the assessment presented herein.

Land-Use Planning & Development Control: Planning for Air Quality (2017)

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have published guidance[12] that offers comprehensive advice on: when an air quality assessment may be required; what should be included in an assessment; how to determine the significance of any air quality impacts associated with a development; and, the possible mitigation measures that may be implemented to minimise these impacts.

Guidance on the Assessment of Dust from Demolition and Construction (2024)

This document[13] published by the IAQM was produced and updated in January 2024 to provide guidance to developers, consultants and environmental health officers on how to assess the impacts arising from construction activities. The emphasis of the methodology is on classifying sites according to the risk of impacts (in terms of dust nuisance, PM_{10} impacts on public exposure and impact upon sensitive ecological receptors) and to identify mitigation measures appropriate to the level of risk identified.

National Planning Practice Guidance - Air Quality (2019)

This guidance[14] provides a number of guiding principles on how the planning process can take into account the impact of new development on air quality, it explains how much detail air quality assessments need to include for proposed developments, and how impacts on air quality can be mitigated. It also provides information on how air quality is taken into account by local authorities in both the wider planning context of Local Plans and neighbourhood planning, and in individual cases where air quality is a consideration in a planning decision.

11 Department for Environment, Food and Rural Affairs (Defra) (August 2022) Part IV of the Environment Act 1995 as amended by the Environment Act 2021 and Environment (Northern Ireland) Order 2002 Part III, Local Air Quality Management Technical Guidance LAQM.TG22.

12 Environmental Protection UK and Institute of Air Quality Management (Version 1.2 Updated January 2017) Land Use Planning & Development Control: Planning for Air Quality.

13 Institute of Air Quality Management (Version 2.2 Updated January 2024) Assessment of dust from demolition and construction

14 Department of Communities and Local Government (DCLG) (Updated November 2019) National Planning Practice Guidance.

3.0 Scope and Methodology

3.1 Scope

The scope of the assessment has been determined in the following way:

- Review of the latest available Air Quality Annual Status Report (ASR) from Arun District Council (ADC)[15]and air quality data for the area surrounding the Site, including from ADC, Defra[16] and the Environment Agency (EA)[17];
- Desk study to confirm the locations of nearby existing receptors that may be sensitive to changes in local air quality, as a result of the Proposed Development; and
- Review of the traffic data provided by the Project's Transport Consultant (the 'PTC') and the traffic data obtained from the Department for Transport's (DfT) Road Traffic Statistics website[18].

The scope of the assessment includes consideration of the potential impacts on local air quality resulting from:

- Dust and PM generated by on-site activities during the construction phase;
- Increases in pollutant concentrations as a result of exhaust emissions arising from construction traffic and plant; and
- Increases in pollutant concentrations as a result of exhaust emissions arising from traffic generated by the Proposed Development once operational.

3.2 Methodology

Construction Phase Assessment

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

The smaller particles of dust are known as PM, with less than 10µm in aerodynamic diameter (PM_{10}) representing 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, they 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 in sensitive members of the public could have a potential impact on health.

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. $PM_{2.5\text{-}10}$) with just 10-15% expected to comprise $PM_{2.5}$. The IAQM guidance therefore focusses on PM_{10} for the purposes of assessment.

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 using: the relevant assessment methodology published by the IAQM, the available information for this phase of the Proposed Development provided by the Client and Project Team, and professional judgement.

15 Arun District Council (2024) 2024 Air Quality Annual Status Report (ASR) [Online] Available at: https://www.arun.gov.uk/download/ar-completed-asr-2024pdf.pdf?ver=27577&doc=docm93jijm4n21307.pdf&ver=27627 [Accessed on 08/05/2025].

16 Department for Environment, Food and Rural Affairs (Defra) Local Air Quality Management (LAQM) Support Pages [Online] Available at: http://laqm.defra.gov.uk/ [Accessed on 07/05/2025].

17 Environment Agency (2025) Pollution Inventory [Online] Available at: https://data.gov.uk/dataset/cfd94301-a2f2-48a2-9915-e477ca6d8b7e/pollution-inventory [Accessed on 07/05/2025].

18 Department for Transport (DfT) (2024) Road Traffic Statistics [Online] Available at: https://roadtraffic.dft.gov.uk/#16/50.8237/-0.5312/basemap-countpoints [Accessed on 07/05/2025].

The IAQM 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 takes into account 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 determined. A summary of the IAQM assessment methodology is provided in **Annex D**.

In addition to impacts on local air quality due to on-site construction activities, exhaust emissions from construction vehicles and plant may have an impact on local air quality adjacent to the routes used by these vehicles to access the application Site and in the vicinity of the application Site itself. As information on the number of vehicles and plant associated with the construction phase was not available at the time of writing, a qualitative assessment of their impact on local air quality has been undertaken using professional judgement and by considering the following:

- The number and type of construction traffic and plant likely to be generated by this phase of the development;
- The number and proximity of sensitive receptors to the application Site and along the likely routes to be used by construction vehicles; and
- The likely duration of the construction phase and the nature of the construction activities undertaken.

Operational Phase Assessment

Of the pollutants included in the AQS, concentrations of NO_2, PM_{10} and $PM_{2.5}$ have been considered in this assessment as road traffic is a major source of these pollutants and their concentrations tend to be close to, or in exceedance of, the objectives in urban locations.

In accordance with the EPUK/IAQM guidance, a significant change would be described as a change in Light Duty Vehicle (LDV) flows of 500 Annual Average Daily Traffic (AADT) or more and/or Heavy Duty Vehicle (HDV) flows of 100AADT or more. Alternatively, a change in LDV flows of 100AADT or more and/or HDV flows of 25AADT on routes through an AQMA would also be considered a significant change in accordance with the guidance. The guidance states, that exceeding the screening a criterion would not automatically lead to the requirement for a Detailed Assessment.:

> *'The principle underlying this guidance is that any assessment should provide enough evidence that will lead to a sound conclusion on the presence, or otherwise, of a significant effect on local air quality. A Simple Assessment will be appropriate, if it can provide this evidence.'*

Traffic generated by the Proposed Development is therefore, assessed against the above criteria in order to identify potential significant effects associated with the operational phase of the Site.

3.3 Selection of Sensitive Receptors

Sensitive locations are places where the public or sensitive ecological habitats may be exposed to pollutants resulting from activities associated with the Proposed Development. These will include locations sensitive to an increase in dust deposition and PM_{10} exposure as a result of on-site construction activities, and locations sensitive to exposure to gaseous pollutants emitted from the exhausts of construction and operational traffic associated with the Proposed Development.

Construction Phase

The IAQM assessment is undertaken 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). It is within these distances that the impacts of dust soiling and increased PM in the ambient air will have the greatest impact on local air quality at sensitive receptors.

Operational Phase

In terms of locations that are sensitive to pollutants emitted from engine exhausts, these will include places where members of the public are likely to be regularly present over the period of time prescribed in the AQS. For instance, on a footpath where exposure will be transient (for the duration of passage along that path) comparison with a short-term standard (i.e. 15-minute mean or 1-hour mean) may be relevant. At a school or adjacent to a private dwelling, where exposure may be for longer periods, comparison with a long-term standard (such as 24-hour mean or annual mean) may be more appropriate. Box 1-1 of LAQM.TG22 provides examples of the locations where the AQOs should/should not apply.

3.4 Significance Criteria

Construction Phase

The IAQM assessment methodology recommends that significance criteria are only assigned to the identified risk of dust impacts occurring from a construction activity with appropriate mitigation measures in place. 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.

For the assessment of the impact of exhaust emissions from plant used on-site and construction vehicles accessing and leaving the Site on local concentrations of NO_2 and PM, the significance of residual effects has been determined using professional judgement and the principles outlined in the EPUK/IAQM guidance, which are described below.

Operational Phase

The approach provided in the EPUK/IAQM guidance has been used within this assessment to assist in describing the air quality effects of additional emissions from traffic generated by the Proposed Development once operational.

This guidance recommends that the degree of an impact is described by expressing the magnitude of incremental change in pollution concentration as a proportion of the relevant assessment level and examining this change in the context of the new total concentration and its relationship with the assessment criterion, as summarised in **Table 1**.

Table 1 - Road Vehicle Exhaust Emissions - Significance of Impact

Long Term Average Concentration at Receptors in Assessment Year	% Change in Concentration Relative to Air Quality Assessment Level (AQAL)			
	1	2 - 5	6 - 10	> 10
75% or less of AQO	Negligible	Negligible	Slight	Moderate
76 - 94% of AQO	Negligible	Slight	Moderate	Moderate
95 - 102% of AQO	Slight	Moderate	Moderate	Substantial
103 - 109% of AQO	Moderate	Moderate	Substantial	Substantial
110% or more of AQO	Moderate	Substantial	Substantial	Substantial

Notes

AQAL = air quality assessment level, which for this assessment related to the UK Air Quality Strategy objectives.
Where the %change in concentrations is <0.5%, the change is described as 'Negligible' regardless of the concentration.
When defining the concentration as a percentage of the AQAL, 'without scheme' concentration should be used where there is a decrease in pollutant concentration and the 'with scheme;' concentration where there is an increase.
Where concentrations increase, the impact is described as adverse, and where it decreases as beneficial.

The matrix shown in **Table 1** is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which makes it clearer which cell the impact falls within. It should be noted that changes of 0%, i.e. less than 0.5%, are described as negligible.

Following the prediction of impacts at discrete receptor locations, the EPUK/IAQM document provides guidance on determining the overall air quality impact significance of the operation of a development. The following factors are identified for consideration by the assessor:

- The existing and future air quality in the absence of the development;
- The extent of current and future population exposure to the impacts; and
- The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

The EPUK/IAQM guidance states that for most road transport related emissions, long-term average concentrations are the most useful for evaluating the impacts. The guidance does not include criteria for determining the significance of the effect on hourly mean NO_2 concentrations or daily mean PM_{10} concentrations. The significance of effects of hourly mean NO_2 and daily mean PM_{10} concentrations arising from the operational phase have therefore been determined qualitatively using professional judgement and the principles described above.

The EPUK/IAQM guidance says that 'Where the air quality is such that an AQO at the building façade is not met, the effect on residents or occupants will be judged as significant, unless provision is made to reduce their exposure by some means. For people working at new developments in this situation, the same will not be true as occupational exposure standards are different, although any assessment may wish to draw attention to the undesirability of the exposure.'

The EPUK/IAQM guidance states that an assessment must reach a conclusion on the likely significance of the predicted impact. It should be noted that this is a binary judgement of either it is significant, or it is not significant.

4.0 Baseline Air Quality Conditions

4.1 Introduction

Existing air quality conditions in the vicinity of the Site were identified in order to provide a baseline for consideration. These are detailed in the following sections.

Baseline air quality information was gathered from the following sources:

- Defra UK Air Information Resource (UK AIR) website: Air Quality Management Areas (AQMAs);
- Defra UK AIR: Background Mapping data for local authorities; and
- Air Quality Annual Status Report (ASR) from ADC.

4.2 Local Air Quality Management

The Environment Act 1995 introduced the Local Air Quality Management (LAQM) regime which places responsibility on local authorities to review and assess air quality in their areas of jurisdiction. Where national air quality objectives are not likely to be met, local authorities are required to and designate AQMAs and produce an air quality action plans describing the air pollution reduction measures they will put in place.

According to the latest available Air Quality ASR from ADC[15], there are no AQMAs declared within the district. The Site is located in an area where air quality is mainly influenced by road traffic emissions along the local road network, including the A259 as such, potential effects associated with the Proposed Development have been considered at sensitive receptors within this area.

4.3 Local Air Quality Monitoring Data

Non-Automatic Monitoring

ADC undertook non-automatic monitoring utilising passive diffusion tube samplers within their area of jurisdiction. Locations of the closest NO_2 diffusion tube to the development Site are presented in Figure 1 and previous years' NO_2 monitoring results are shown in **Table 2**.

Table 2 - Details of NO_2 Annual Mean Concentrations from Non-Automatic Monitoring near the Development

Tube ID	Site Address	Site Type	Distance from Site (km)	NO_2 Annual Mean Concentrations (µg/m³)				
				2019	2020	2021	2022	2023
1	Terminus Road, Littlehampton	Roadside	1.8	20.1	33.5	33.7	31.4	34.2
2	Worthing Road, Littlehampton	Roadside	0.4	20.2	19.0	20.6	19.8	21.1
22	Lyminster Road, Littlehampton	Roadside	1.1		17.6	19.8	21.8	20.6
28	Anchor Springs, Littlehampton	Urban Centre	1.6		12.4	13.9	15.6	15.0

As shown in **Table 2**, annual mean NO_2 concentrations did not exceed the relevant AQO at any of the closest monitoring sites during the most recent monitoring years, 2019 to 2023.

Reference should be made to Figure 1 for a map of the diffusion tube monitoring locations.

No monitoring of PM_{10} or $PM_{2.5}$ is currently undertaken in the vicinity of the Site.

4.4 Background Pollutant Concentrations

Defra's website[19] includes estimated background air pollution data for NO_2, PM_{10} and $PM_{2.5}$ centred on 1x1km OS grid squares. Background pollutant concentrations are modelled on the most recent available data which is the base year of 2021 and this has been based on ambient monitoring and meteorological data from that year.

Table 3 shows the annual mean background concentrations for NO_2, PM_{10} and $PM_{2.5}$ for 2025 based on the grid square centred on the co-ordinates, 503500, 103500. The data shows that for all pollutants' annual mean concentrations are within their respective annual mean NAQOs and are predicted to decrease in the long term.

Table 3 - Background Pollutant Concentrations Within the Vicinity of the Site

Pollutant	NO_2	PM_{10}	$PM_{2.5}$
Annual Mean Concentration (µg/m³) 2025	8.5	10.3	6.4

Annual mean national air quality objectives: NO_2 / PM_{10} - 40µg/m³ and $PM_{2.5}$ - 20µg/m³

19 https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2021 {Accessed on: 07/05/2025]

5.0 Assessment

5.1 Introduction

There is the potential for air quality impacts as a result of the construction and operation of the Proposed Development. These are assessed in the following sections.

5.2 Construction Phase Assessment

Dust and PM_{10} Arising from On-Site Activities

Construction activities that have the potential to generate and/or re-suspend dust and PM_{10} include:

- Site clearance and preparation including demolition activities;
- Preparation of temporary access/egress to the Site and haulage routes;
- Earthworks;
- Materials handling, storage, stockpiling, spillage and disposal;
- Movement of vehicles and construction traffic within the Site (including excavators and dumper trucks);
- Use of crushing and screening equipment/plant;
- Exhaust emissions from plant, especially when used at the extremes of their capacity and during mechanical breakdown;
- Construction of buildings, roads and areas of hardstanding alongside fabrication processes;
- Internal and external finishing and refurbishment;
- Trackout, whereby earth is carried from the Site on vehicle tyres, deposited on roads and may later become suspended in the air as a result of vehicle movements; and
- Site landscaping after completion.

The majority of the releases are likely to occur during the 'working week'. However, for some potential release sources (e.g., exposed soil produced from significant earthwork activities) in the absence of dust control mitigation measures, dust generation has the potential to occur 24 hours per day over the period during which such activities are to take place.

Assessment of Potential Dust Emission Magnitude

The IAQM assessment methodology has been used to determine the potential dust emission magnitude for the following four different dust and PM_{10} sources: demolition, earthworks, construction, and trackout. The findings of the assessment are presented below.

Demolition

The key factors when determining the potential dust emission magnitude for the demolition element include the volume and height of the buildings being demolished and the type of materials present.

The Proposed Development involves the part demolition of units 5 and 6 and Unit 7 (i.e. the former Body Shop headquarters) is being demolished to facilitate the Proposed Development and as a first enabling phase. The total building volume considered to be demolished is between 12,000 - 75,000m^3, as such, the potential dust emission magnitude for demolition is identified as **medium**.

Earthworks

The exact number of heavy earth moving vehicles active on the Site at any one time is unknown, however, the total area of the Site is between 18,000 - 110,000m^2 and therefore, the potential dust emission magnitude is considered to be **medium** for earthwork activities.

Construction

The Proposed Development involves the conversion, refurbishment and re-elevation of Units 5 and 6 and construction of retail (food and non-food), leisure and food & beverage units (Use Class E), together with associated car parking, access, loading areas, landscaping and associated works on Site. As such the potential dust emission magnitude is considered to be **medium** for earthwork activities.

Trackout

Information on the number of HGVs associated with this phase of the Proposed Development is not available and therefore professional judgement has been used. Whilst the unpaved road length on the Site is less than 50m, it is assumed that there will be approximately 20 to 50 HDV trips per day over the construction period. As such, it is considered that the potential dust emission magnitude is **medium** for trackout.

Table 4 provides a summary of the potential dust emission magnitude determined for each construction activity considered.

Table 4 - Potential Dust Emission Magnitude

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

Assessment of Sensitivity of the Study Area

A wind rose generated using the meteorological data used for the consideration of construction phase impacts is provided in **Annex E**. This shows that the prevailing wind direction is mainly from the south-west and from the north. Therefore, receptors located to the north-east and to the south of the Site are more likely to be affected by dust and PM emitted and re-suspended during the construction phase.

Under low wind speed conditions, it is likely that the majority of dust would be deposited in the area immediately surrounding the source. Receptors to the west and south-east have the greatest potential to be affected as a result of their relative orientation to the Site. It has been assumed that the construction traffic will access the Site via the existing access roads.

There are no ecological receptors within the vicinity of the Site considered to be sensitive to dust or PM, and as such these effects are not considered further within this assessment.

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

Table 5 - Sensitivity of the Study Area

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

Risk of Impacts

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 6** below 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 6 - 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

Construction Vehicles and Plant

The greatest impact on air quality due to emissions from vehicles and plant associated with the construction phase will be in the areas immediately adjacent to the Site access road. Construction traffic will access the Site via the existing access roads.

Final details of the exact plant and equipment likely to be used on-site will be determined by the appointed contractor, it is considered likely to comprise dump trucks, tracked excavators, diesel generators, asphalt spreaders, rollers, compressors and trucks. The number of plant and their location within the Site are likely to be variable over the construction period.

Based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles, and the likely numbers of construction vehicles and plant that will be used, the impacts are considered to be **negligible** according to the assessment significance criteria.

5.3 Operational Impact Assessment

Screening Assessment

Impacts from the operational phase of the Proposed Development have been assessed utilising the criteria within the IAQM's guidance document[12].

Stage 1 is intended to screen out smaller development and/or developments whereby impacts can be considered to have insignificant effects as follows:

Stage 1:

- If any of the following apply:
  - 10 or more residential units or a site area of more than 0.5ha; or
  - More than 1,000 m^2 of floor space for all other uses or a site area greater than 1ha.
- Coupled with any of the following:
  - the development has more than 10 parking spaces; or
  - the development will have a centralised energy facility or other centralised combustion process.

The Proposed Development will generate more than 1,000m^2 floorspace, but the total Site area is greater than 1ha, and the proposals include for more than 10 parking spaces. Additionally, the scheme have the potential to generate more vehicle trips, as such the Stage 2 criteria has been considered and is detailed in **Table 7**.

In accordance with the EPUK/IAQM guidance, a significant change at the Site's location (not being in or close to an AQMA) would be described as a change in Light Duty Vehicle (LDV) flows of 500 Annual Average Daily Traffic (AADT) or more and/or Heavy Duty Vehicle (HDV) flows of 100AADT or more. It is noted, however, that exceeding the screening the criterion would not automatically lead to the requirement for a further assessment.

Table 7 - Stage 2 Operational Phase Screening Assessment

Indicative Criteria to Proceed to an Air Quality Assessment	Proposed Development Specific Values
A change of cars and LDV flows of more than 500 AADT.*	347- 694 AADT cars/LDVs
A change of HDV flows of more than 100 AADT.*	0 AADT HGVs
Where the change is 5m or more and the road is within an AQMA.	N/A
Introduce a new junction or remove an existing junction near to relevant receptors. Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.	N/A
Introduce or change a bus station. Where bus flows will change by: - more than 100 AADT outside an AQMA.	N/A
Have an underground car park with extraction system	N/A
Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.	The Proposed Development will not include any combustion processes.

* Along Road-links with relevant exposure

The data in **Table 7** shows that the Proposed Development will lead to an increase in vehicle movements. The breakdown of the change in trips by mode type has been provided by the project transport consultant.

While the Proposed Development has the potential to generate daily traffic flows above the indicative criteria of 500 AADT, along affected road-links, it is noted that exceeding the screening criteria would not automatically lead to the requirement for a Detailed Assessment.

In the context of this assessment the baseline air quality review confirmed that existing NO_2 concentrations monitored at roadside locations are significantly below the AQO, without the risk of exceedance.

Furthermore the background pollutant concentrations in the vicinity of the Site (as confirmed by **Table 3**) are also well below their respective AQOs.

Consequently the applicable criteria, based on the Council's ASR[15], for a 'significant' impact, in accordance with the IAQM guidance[12] would be an increase in pollutant concentrations by over 10% of the relevant AQOs. In the case of NO_2 and PM_{10} this would be an additional 4µg/m^3 and for $PM_{2.5}$ it would mean an increase of 2µg/m^3 at existing sensitive receptor locations along the affected road-links. A change of this magnitude would be the result of traffic flows significantly higher than those associated with the proposed use of the Site.

Based on the assessment criteria and the proposed scale of the Site's operation the possibility of significant effects arising on local air quality is screened out. As such, the impact of the operational phase on nearby sensitive receptors is considered to be **negligible,** with the resulting effects being **not significant**.

6.0 Mitigation Measures

6.1 Construction Phase

Based on the assessment results, mitigation will be required during the construction phase of the Proposed Development. Recommended mitigation measures are given below.

Mitigation Measures

General Communication

- A stakeholder communications plan that includes informing the community 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.

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 off-site should be recorded, and then the action taken to resolve the situation recorded in the logbook.

Monitoring

- Daily on-site and off-site inspections should be undertaken, where receptors (including roads) are nearby to monitor dust. The inspection results should be recorded and made available to the Local Authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of the Site boundary, with cleaning to be provided if necessary.
- 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.

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.

Operating Vehicle/Machinery and Sustainable Travel

- Make sure that 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.

Vehicle Management

- Detailed mitigation measures to control construction traffic should be discussed with the Local Authority to establish the most suitable access and haul routes for the Site traffic. The most effective mitigation would be achieved by making sure that construction traffic does not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc.) where possible, and that vehicles are kept clean and sheeted when on public highways.
- Timing of large-scale vehicle movements to avoid peak hours on the local road network would also be beneficial.

Site 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.
- Make sure that an adequate water supply is available on the Site for effective dust/PM 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.
- Make sure that 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

- Make sure that 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 debris or damp down such material before demolition.

Measures Specific to Earthworks

- Stockpile surface areas should be minimised (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up.
- Where practicable, windbreak netting/screening should be positioned around material stockpiles and vehicle loading/unloading areas, as well as exposed excavation and material handling operations, to provide a physical barrier between the Site and the surroundings.
- Where practicable, stockpiles of soils and materials should be located as far as possible from sensitive properties, taking account of the prevailing wind direction.
- During dry or windy weather, material stockpiles and exposed surfaces should be dampened down using a water spray to minimise the potential for wind pick-up.

Measures Specific to Construction

- Make sure that 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 make sure that that appropriate additional control measures are in place.
- For smaller supplies of fine powder materials make sure that bags are sealed after use and stored appropriately to prevent dust.

- All construction plant and equipment should be maintained in good working order and not left running when not in use.

Measures Specific to Trackout

- Make sure that vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Record all inspections of haul routes and any subsequent action in a site logbook.
- Detailed mitigation measures to control construction traffic should be discussed with the Local Authority to establish the most suitable access and haul routes for the Site traffic. The most effective mitigation will be achieved by making sure that construction traffic does not pass along sensitive roads (residential roads, congested roads, via unsuitable junctions, etc.) where possible, and that vehicles are kept clean (through the use of wheel washers, etc.) and sheeted when on public highways. Timing of large-scale vehicle movements to avoid peak hours on the local road network will also be beneficial.

It is anticipated that this will be considered with regard to the Proposed Development, where applicable.

Residual Effects

The residual effects of dust and PM_{10} generated by construction activities following the application of the mitigation measures described above and good site practice are considered to be **not significant**.

The residual effects of emissions to air from construction vehicles and plant on local air quality are considered to be **not significant**.

6.2 Operational Phase

Mitigation

The changes in pollutant concentrations attributable to traffic emissions associated with the operational phase of the Proposed Development (i.e., impacts on local air quality) are **negligible** and therefore, in accordance with the assessment criteria, additional mitigation is not required.

Residual Effects

The Proposed Development is expected to result in a **negligible** impact associated with the operational phase traffic on nearby receptors. As such, no significant effects on air quality are anticipated at existing receptors.

Based on the extent of predicted population exposure to the impacts on pollutant concentrations and the guidance provided by the IAQM, the effect of the Proposed Development is considered to be **not significant**.

The residual effects of the Proposed Development on air quality are **not significant** for NO_2, PM_{10} and $PM_{2.5}$ according to the EPUK/IAQM assessment criteria.

7.0 Conclusions

TRC, was commissioned by the Client to undertake an Air Quality Assessment to inform a planning application for the Proposed Development, located at Site.

Site is located within an area where air quality is mainly influenced by road traffic emissions along the local road network and as such, elevated pollutant concentrations may be experienced at this location.

A qualitative assessment of the potential impacts on local air quality from construction activities has been carried out for this phase of the Proposed Development using the IAQM methodology. This identified that there is a **medium risk** of dust soiling impacts, and a **low risk** of increases in PM concentrations due to unmitigated construction activities. However, through good site practice and the implementation of suitable mitigation measures, the effect of dust and PM_{10} releases would be significantly reduced. The residual effects of dust and PM_{10} generated by construction activities on air quality at nearby sensitive receptors, are therefore considered to be **not significant**. The residual effects of emissions to air from construction vehicles and plant on local air quality are considered to be **not significant**.

A qualitative screening assessment of operational phase impacts has been undertaken in line with the relevant IAQM guidance document. In accordance with the assessment criteria and the proposed scale of the Site's operation, the possibility of significant effects arising on local air quality is screened out. As such, the impact of operational phase road vehicle emissions would result in a **negligible** impact at nearby receptors, and **no significant** effects on air quality are anticipated at these locations.

Based on the assessment significance criteria, the residual effects of the Proposed Development are considered to be **not significant** for all pollutants assessed, and therefore, in accordance with the assessment criteria, additional mitigation is not required.

Furthermore, it is considered that, the Proposed Development complies with national and local policy for air quality.

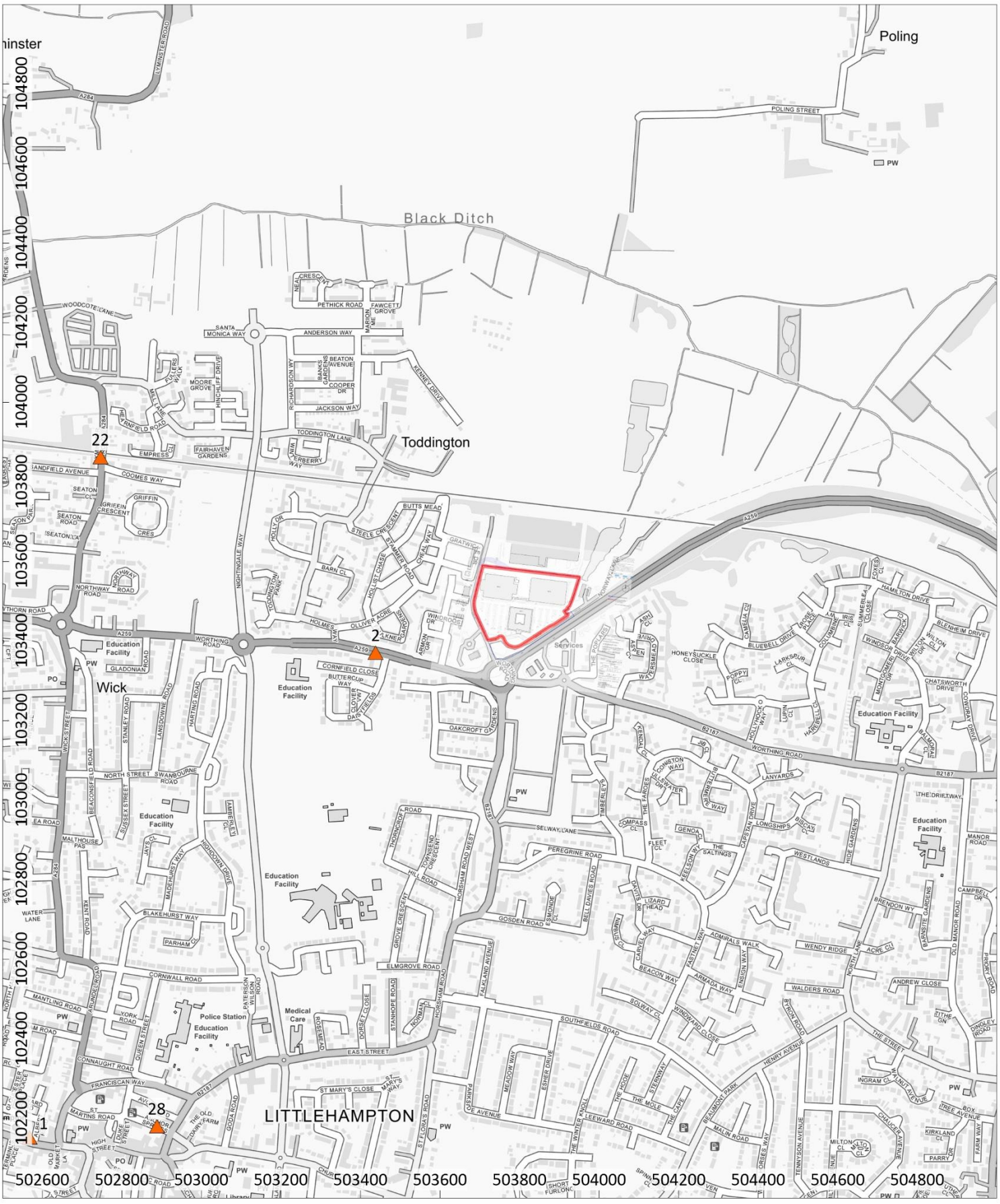
In conclusion, the development will have a **not significant** effects on local air quality during its respective construction and operation phases and air quality is not considered a constraint to planning consent.

Figures

LEGEND

Diffusion Tube Location

Site Location



TRC	TITLE: Site Location and Assessment Extents	DRAWN BY: JS	SCALE: NTS
		CHECKED BY: GA	REVISION: -
		DATE: 3rd May 2025	PROJECT NO: 644626.00.00.01
			FIGURE NO: 1

Annexes

Annex A - Limitations and Exclusions

Reliance

The recommendations contained in this report represent TRC's professional opinions, based upon the currently available information, and are arrived at in accordance with currently acceptable professional standards. This report is based upon a specific scope of work requested by the Client. The contract between TRC and its Client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of TRC's Client and anyone else specifically identified in writing by TRC as a user of this report. TRC will not and cannot be liable for unauthorized reliance by any other third party. Other than as contained in this paragraph, TRC makes no express or implied warranty as to the contents of this report.

Significant Assumptions

The reliability of information provided by others to TRC cannot be guaranteed to be accurate or complete. Performance of this assessment is intended to reduce, but not eliminate, uncertainty regarding environmental conditions associated with the subject site; therefore, the findings and conclusions made in this report should not be construed to warrant or guarantee the subject site, or express or imply, including without limitation, warranties as to its marketability for a particular use. TRC found no reason to question the validity of information received unless explicitly noted elsewhere in this report.

Third Party Information

TRC has been provided with information from third parties for information purposes only and without representation or warranty, express or implied as to its accuracy or completeness and without any liability on such third parties part to revise or update the information. Where reliance has been provided by third parties to potential purchasers, this is noted in our report.

In performing the services to which this report relates, TRC has relied upon the information obtained from third parties. TRC makes no representation or warranty, express or implied as to the accuracy or completeness of any statement or advice contained within this report that is based upon the information obtained from third parties and to the fullest extent permissible by law we hereby exclude any and all liability we may have in respect of the same, provided that nothing shall be taken as limiting TRC's liability in respect of personal injury (including death) caused by its negligence.

Interpretation of Findings

TRC's report is based upon the information provided to TRC and TRC's observations made during the subject property reconnaissance. Given the inherent limitations of environmental assessment work, TRC does not guarantee that the subject property is free of additional air pollution sources or considerations, or that latent or undiscovered conditions will not become evident in the future. TRC's report is prepared in accordance with the proposal and the standard terms and conditions agreed between the Client and TRC, and no other warranties, representations, or certifications are made.

Annex B - Glossary

Glossary

Table B1: Glossary

Abbreviation	Definition
AADT Annual Average Daily Traffic	A daily total traffic flow (24hrs), expressed as a mean daily flow across all 365 days of the year.
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.
ADC	Arun District Council
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 subgroups (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.
AQMA	Air Quality Management Area
AQO	Air Quality Objective
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
EFT	Emissions Factor Toolkit
Emission rate/factor	The quantity of a pollutant released from a source over a given period of time.
EPUK	Environmental Protection (UK)
Exceedance	A period of time where the concentration of a pollutant is greater than the appropriate air quality standard.
HDV/HGV	Heavy Duty Vehicle/Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LAQM	Local Air Quality Management
NO_2	Nitrogen dioxide
NO_x	Nitrogen oxides
PM	Particulate Matter
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.
PTC	Project Transport Consultant
Road link	A length of road which is considered to have the same flow of traffic along it. Usually, a link is the road from one junction to the next.
Robust	Tending to over-predict the impact rather than under-predict.
$\mu g/m^3$ micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of $1\mu g/m^3$ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

Annex C - Relevant UK Air Quality Strategy Objectives

Relevant UK Air Quality Strategy Objectives

Table C1: Relevant UK Air Quality Strategy Objectives

National Air Quality Objectives and European Directive Limit Values for the Protection of Human Health						
Pollutant	**Applies To**	**Objective**	**Measured As**	**Date to be achieved by and maintained thereafter**	**European Obligations**	**Date to be achieved by and maintained thereafter**
Nitrogen dioxide (NO_2)	UK	40µg/m^3	annual mean	31.12.2005	40µg/m^3	01.01.2010
	UK	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean	31.12.2005	200µg/m^3 not to be exceeded more than 18 times a year	01.01.2010
Particulate Matter (PM_{10}) (gravimetric)[A]	UK (except Scotland)	40µg/m^3	annual mean	31.12.2005	40µg/m^3	01.01.2010
	UK (except Scotland)	50µg/m^3 not to be exceeded more than 35 times a year	24-hour mean	31.12.2004	50µg/m^3 not to be exceeded more than 35 times a year	01.01.2005
Particulate Matter ($PM_{2.5}$)	UK (except Scotland)	20µg/m^3	annual mean	01.01.2020	Stage 1 Limit - 25µg/m^3 Stage 2 Limit - 20µg/m^3	01.01.2015 01.01.2020
Exposure Reduction	UK urban areas	Target of 15% reduction in concentrations at urban background		Between 2010 and 2020	Target of 20% reduction in concentrations at urban background.	Between 2010 and 2020
Particles ($PM_{2.5}$) (Population Exposure Reduction Target)*	England	Target of 35% reduction in population exposure compared with the average population exposure baseline period (2016 - 2018)	population exposure reduction	31st December 2040	-	-
Particles ($PM_{2.5}$) (Annual Mean Concentration Target)*	England	10µg/m^3 not to be exceeded at any relevant monitoring station	annual mean	31st December 2040	-	-

[A] Measured using the European gravimetric transfer sampler or equivalent

µg/m^3 = micrograms per cubic metre

Annex D - IAQM Construction Phase Assessment Methodology

IAQM Construction Assessment Methodology

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 D1: Potential Dust Emission Magnitude

Magnitude	Activity	IAQM Criteria
Large	Demolition	>75,000m^3 building demolished Potentially dusty material (e.g., concrete) On-site crushing/screening Demolition >12m above ground level
	Earthworks	Total site area >110,000m^2 Potentially dusty soil type, e.g., clay >10 heavy earth moving vehicles active at any one time Formation of bunds >6m in height
	Construction	Total building volume >75,000m^3 On site concrete batching Sandblasting
	Trackout	>50 HDV (>3.5t) outward movements in any one day Potentially dusty surface material, e.g., high clay content Unpaved road length >100m
Medium	Demolition	12,000 - 75,000m^3 building demolished Potentially dusty material (e.g., concrete) Demolition 6-12m above ground level
	Earthworks	Total site area 18,000m^2 - 110,000m^2 Moderately dusty soil type, e.g., silt 5-10 heavy earth moving vehicles active at any one time Formation of bunds 3m-6m in height
	Construction	Total building volume 12,000m^3 - 75,000m^3 Potentially dusty construction material, e.g., concrete On site concrete batching
	Trackout	20-50 HDV(>3.5t) outward movements in any one day Moderately dusty surface material, e.g., high clay content Unpaved road length 50m - 100m
Small	Demolition	<12,000m^3 building demolished Non-dusty material (e.g metal cladding) Demolition <6m above ground level Work during wetter months
	Earthworks	Total site area <18,000m^2 Soil type with large grain size, e.g., sand <5 heavy earth moving vehicles active at any one time Formation of bunds <4m in height
	Construction	Total building volume <12,000 m^3 Construction material with low potential for dust release, e.g., metal cladding or timber

Magnitude	Activity	IAQM Criteria
Small	Trackout	<20 HDV (>3.5t) outward movements in any one day Surface material with low potential for dust release Unpaved road length <50m

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 D2: Factors to Consider - Sensitivity of Receptors to Dust Soiling Effects

Receptor Sensitivity	Human Receptors	Ecological Receptors
High	Users can expect enjoyment of a high level of amenity The appearance, aesthetics or value of their property would be diminished by soiling People or property reasonably expected to be present continuously, or at least regularly for extended periods, as part of the normal use of the land Indicative examples include dwellings, museums, medium and long-term car parks and car showrooms	Locations with an international or national designation and the designated features may be affected by dust soiling Locations where there is a community of particularly dust sensitive species such as vascular species included in the Red Data List for Great Britain Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home The appearance, aesthetics or value of their property could be diminished by soiling The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal use of the land Indicative examples include parks and places of work	Location where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown Locations with a national designation where the features may be affected by dust deposition Indicative examples are a Site of Special Scientific Interest (SSSI) with dust sensitive features
Low	The enjoyment of amenity would not reasonably be expected Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling There is a transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short term car parks and roads	Locations with a local designation where the features may be affected by dust deposition Indicative example is a local nature reserve with dust sensitive features

Table D3- Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Low	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 D4: Factors to Consider - Sensitivity of People to Health Effects of PM_{10}

Receptor Sensitivity	Human Receptors
High	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for 8 hours or more in a day). Indicative examples include residential properties. Hospitals and schools should also be considered as have equal sensitivity to residential areas for the purposes of this assessment.
Medium	Locations where the people exposed are workers and exposure is over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for 8 hours or more in a day). Indicative examples include office and shop workers, but will generally not include workers occupationally exposed to PM_{10}, as protection is covered by Health and Safety at Work legislation.
Low	Locations where human exposure is transient. Indicative examples include public footpaths, playing fields, parks and shopping streets.

Table D5: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentrations	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32µg/m^3 (>18 µg/m^3 in Scotland)	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32µg/m^3 (16-18 µg/m^3 in Scotland	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28µg/m^3 (14-16 µg/m^3 in Scotland	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24µg/m^3 (<14 µg/m^3 in Scotland	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32µg/m^3 (>18 µg/m^3 in Scotland)	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32µg/m^3 (16-18µg/m^3 in Scotland)	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	24-28µg/m^3 (14-16µg/m^3 in Scotland)	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
	<24µg/m^3 (<14µg/m^3 in Scotland)	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Table D6: Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from the Source (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 D7: Risk of Dust Impacts

Sensitivity of 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 - Construction and 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.

Annex E - Windrose for Shoreham 2015-2024

Windrose for Shoreham 2015-2024