



Air Quality Assessment:

Land at the Old Vicarage Field and The Old Estate Yard, Church Road, Turners Hill

Elvia Homes

20<sup>th</sup> May 2025

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## Air Quality Assessment

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Elivia Homes • 20<sup>th</sup> May 2025 • H4314 – AQ – v2**Report Details:**

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*This report has been prepared by Hawkins Environmental Limited for the sole purpose of assisting in gaining planning consent for the proposed development described in the introduction of this report.*

*This report has been prepared by Hawkins Environmental Limited with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.*

*This assessment takes into account the prevailing conditions at the time of the report and assesses the impact of the development (if applicable) using data provided to Hawkins Environmental Limited by third parties. The report is designed to assist the developer in refining the designs for the proposed development and to demonstrate to agents of the Local Planning Authority that the proposed development is suited to its location. This should be viewed as a risk assessment and does not infer any guarantee that the site will remain suitable in future, nor that there will not be any complaints either from users of the development or from impacts emanating from the development site itself.*

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## 1. INTRODUCTION

### 1.1. Overview

Hawkins Environmental Limited has been instructed by Elvia Homes to undertake an air quality assessment for the proposed redevelopment of Old Vicarage Field, situated in the village of Turners Hill of the Non-Metropolitan District of Mid Sussex, in the Non-Metropolitan County of West Sussex.

During the planning process, it has been identified that the site requires an air quality assessment to determine whether there are constraints on the site's suitability for residential use, and to determine whether the proposed development would have an adverse impact on local air quality.

Consequently, this assessment has been completed in order to determine whether the proposed development achieves compliance with the National Air Quality Objectives (NAQOs), as well as national, regional and local planning policy.

This assessment has been undertaken in accordance with the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) guidance *Land-Use Planning & Development Control: Planning for Air Quality* (January 2017) and the Department for Environment, Food and Rural Affairs' (Defra) *Local Air Quality Management Technical Guidance (TG22)* (August 2022).

This report primarily assesses concentrations of nitrogen dioxide (NO<sub>2</sub>), particulate matter of less than 10 µm diameter (PM<sub>10</sub>), and particulate matter of less than 2.5 µm diameter (PM<sub>2.5</sub>). The assessment considers both the constraints that existing air quality may have on the development of the site (site suitability) as well as the impacts of development on local air quality (impact assessment). As emissions mitigation has also been carried out in accordance with *Air Quality and Emissions Mitigation Guidance for Sussex*.

In addition to considering the operational phase of the development, a risk-based assessment of the likely impact of the demolition and construction phases on local air quality has been conducted in accordance with the IAQM *Guidance on the Assessment of Dust from Demolition and Construction* (January 2024).

A glossary of terms is detailed in **Appendix 1**.

### 1.2. Site Description

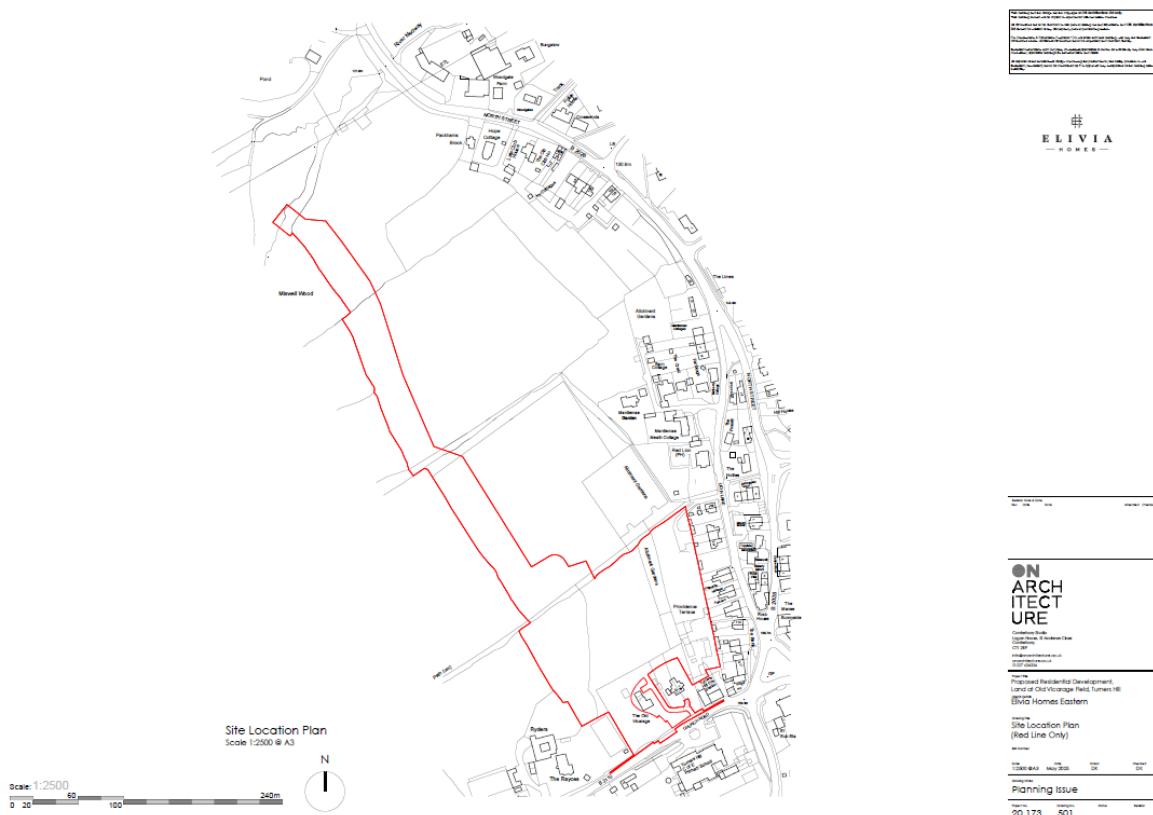
The development site is situated along Church Road (B2110) in Turners Hill within the Mid Sussex District of West Sussex. The site currently comprises of two dwellings with vehicular access and planted land. The proposed development will see the demolition of existing buildings and the development of 40 dwellings (including affordable housing) with open space, access, parking, drainage, landscaping and other associated works as well as the creation of a new community car park and replacement parking for Lion Lane residents. A location plan of the proposed site can be seen in **Figure 1.1**.

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Figure 1.1: Site Location Plan



## 2. LEGISLATION, PLANNING POLICY & GUIDANCE

Air quality considerations within the planning system in England are governed by:

- National Legislation – Acts of Law passed by Parliament, and Regulations created by the Government under powers granted by those Acts, see **Section 2.1**;
- Planning Policy – Documents and guidelines issued by Government bodies that provide a framework for how planning decisions should be made, see **Section 2.2**;
- Best Practice Guidance – Direction on specific air quality issues and methods of assessment, published by professional bodies and institutions such as the Institute of Air Quality Management (IAQM) or World Health Organization (WHO), see **Section 2.3**.

### 2.1. Legislation

Early pieces of air quality legislation in the UK included the *Clean Air Act 1956* and *1968*, which aimed to address the air quality issues associated with rapid industrialisation; and the *Environmental Protection Act 1990*, which further strengthened pollution regulation from industry and gave local councils new enforcement powers.

Today, the legislative framework governing air quality in England is based on the primary legislation of the *Environment Act 1995* and the *Environment Act 2021*; as well as secondary legislation resulting from each act respectively, *The Air Quality Standards Regulations 2010* and *The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023*.

The planning system more broadly is governed by the primary legislation of the *Town and Country Planning Act 1990*. Each of these is discussed in **Sections 2.1.1 to 2.1.5**, below.

#### 2.1.1. Environment Act 1995

The *Environment Act 1995* is a major piece of primary legislation addressing environmental issues in the UK, including air quality.

The Act established the Environment Agency to regulate pollution, enforce environmental laws, and protect natural resources.

Part IV of the Act focuses on air quality, providing a legal framework for its management and improvement.

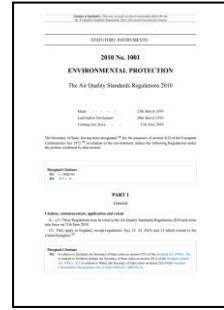
Part IV requires the UK government to develop and maintain a *National Air Quality Strategy* (see **Section 2.2.1**) with standards, objectives and measures for improving air quality, and introduced the *Local Air Quality Management (LAQM)* regime (see **Section 2.3.2**), mandating local authorities to monitor and assess air quality in their areas.



## 2.1.2. Air Quality Standards Regulations 2010

The *Air Quality Standards Regulations 2010* are a piece of secondary legislation under the *Environment Act 1995*, which set pollutant concentration limits to protect human health and the environment.

The Regulations contain legally binding *Limit Values* that must not be exceeded. These are set for individual pollutants (sulphur dioxide, nitrogen dioxide, benzene, lead, PM<sub>10</sub>, PM<sub>2.5</sub> and carbon monoxide), specifying a concentration, an averaging time over which it is measured, the number of exceedances allowed per year (if any) and a date by which it must be achieved. Some pollutants have more than one limit value covering different averaging times.



The Regulations also contain *Target Values* for other pollutants (ozone, arsenic, cadmium, nickel, mercury, polycyclic aromatic hydrocarbons), structured similarly, which while not legally binding, must be met where possible without disproportionate costs.

Derived from *Directive 2008/50/EC* (the *Ambient Air Quality and Cleaner Air for Europe Directive*) of the European Parliament, these limits remain in force post-Brexit as retained EU law, ensuring continued protection of air quality.

The UK is bound to these limit values to mitigate harmful effects on health and the environment. The *National Air Quality Objectives (NAQOs)*, as presented in the *National Air Quality Strategy* (see **Section 2.2.1**), are largely based on these limit values.

### Limit Values

The limit values contained in the *Air Quality Standards Regulations 2010* (and associated NAQOs in the *National Air Quality Strategy*) form the basis of this air quality assessment. The limit values are based on an assessment of the health effects of each pollutant and are therefore a good indicator as to whether air quality in the vicinity of a development may be detrimental to human health. The limit values are shown in **Table 2.1**.

Table 2.1: Air Quality Standards Regulations 2010 – Limit Values

Pollutant	Averaging Period	Limit Value
Sulphur Dioxide (SO <sub>2</sub> )	One Hour	350 µg/m <sup>3</sup> not to be exceeded more than 24 times per calendar year
	One Day	125 µg/m <sup>3</sup> not to be exceeded more than three times per calendar year
Nitrogen Dioxide (NO <sub>2</sub> )	One Hour	200 µg/m <sup>3</sup> not to be exceeded more than 18 times per calendar year
	Calendar Year	40 µg/m <sup>3</sup>
Benzene	Calendar Year	5 µg/m <sup>3</sup>
Lead	Calendar Year	0.5 µg/m <sup>3</sup>
PM <sub>10</sub>	One Day	50 µg/m <sup>3</sup> not to be exceeded more than 35 times per calendar year

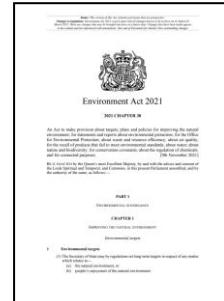
Pollutant	Averaging Period	Limit Value
	Calendar Year	40 µg/m <sup>3</sup>
PM <sub>2.5</sub>	Calendar Year	20 µg/m <sup>3</sup>
Carbon Monoxide	Maximum daily running 8-hour mean	10 mg/m <sup>3</sup>

### 2.1.3. Environment Act 2021

The *Environment Act 2021* is a further significant piece of primary legislation in the UK that formed part of a new legal framework for environmental protection post-Brexit.

The Act made further provisions for air quality, primarily addressing the issue of fine particulate matter by mandating the setting of new targets for PM<sub>2.5</sub> concentrations.

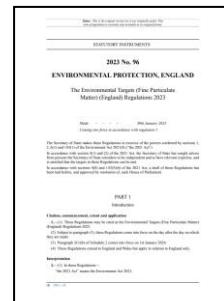
It also refined and strengthened the LAQM regime introduced under the *Environment Act 1995*, provided a legal basis for the introduction of Clean Air Zones, and established the Office for Environmental Protection to protect and improve the environment by holding government and public authorities to account for their environmental policies.



### 2.1.4. Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

The *Environmental Targets (Fine Particulate Matter) (England) Regulations 2023* are a piece of secondary legislation to protect human health and the environment by setting new legally binding targets on concentrations of PM<sub>2.5</sub> under the framework set out in the *Environment Act 2021*, in much the same way that the *Environment Act 1995* provided the framework for the *Air Quality Standards Regulations 2010*. The two Targets are:

- Annual mean concentrations of PM<sub>2.5</sub> to be 10 µg/m<sup>3</sup> or lower by 2040.
- Population exposure to PM<sub>2.5</sub> to be reduced by 35% compared to 2018 levels by 2040.



The two targets are designed to work together to drive actions that both reduce concentrations where it is highest and reduce the pollution that everyone in the country experiences.

It should be noted that the meaning of “Targets” here is different to that in the *Air Quality Standards Regulations 2010*, wherein “target values” have specific meaning. Both PM<sub>2.5</sub> targets described in the *Environmental Targets (Fine Particulate Matter) (England) Regulations 2023* as set out above are legally binding in the way that “limit values” are in the 2010 Regulations.

### 2.1.5. Town and Country Planning Act 1990

The *Town and Country Planning Act 1990* is a piece of primary legislation governing land use and development control in England and Wales. It provides the legal framework for planning permissions, enforcement and permitted development rights. Whilst it does not directly set air quality limits, it allows councils to enforce pollution controls through planning conditions, environmental impact assessments (EIA), and enforcement actions.

The Act sets out permitted development rights which allow certain types of development without planning permission, including small home extensions and conversions of offices to residential properties.



The Act states that the vast majority of development (including building new structures, major extensions or alterations, and change of use class) requires planning permission from the relevant local planning authority (LPA). The LPA must then assess the development proposals against local and national planning policies (see **Section 2.2**), including those which make provisions for air quality, in order to approve or reject the proposals. If a proposal is rejected by the LPA, the applicant can appeal to the national Planning Inspectorate.

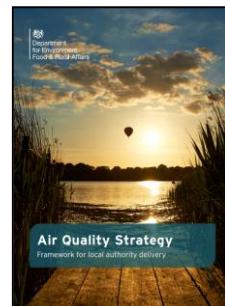
Whilst the Act does not focus solely on air quality, it provides legal mechanisms to ensure new developments do not harm the environment and protect air quality. This includes the requirement for large developments to conduct an EIA (under Section 71A), the ability to grant approval subject to planning conditions, such as air quality damage cost calculations (under Section 70), green belt protection (under Section 336), and the ability to issue enforcement notices if a development is causing harm to public health, the environment or local amenity (under Section 172).

## 2.2. Planning Policy

### National Policy

#### 2.2.1. National Air Quality Strategy (2023)

As per the legislation of Part IV of the *Environment Act 1995*, successive governments have produced, maintained and updated air quality policy in the form of various Air Quality Strategy policy papers.



The original *National Air Quality Strategy 1997* was the first UK-wide strategy to set standards and objectives for major air pollutants. It was replaced by the *Air Quality Strategy for England, Scotland, Wales and Northern Ireland* in 2000 with an addendum in 2003, which tightened several of the objectives and introduced a new one for polycyclic aromatic hydrocarbons. A further update came in 2007 with subsequent revisions in 2011, with new objectives for PM<sub>2.5</sub>.

In April 2023 the UK Government published a document, *Air Quality Strategy: Framework For Local Authority Delivery*, which supersedes the 2007 Strategy in respect of England only. Although this document is considered the successor to the 2007 Strategy, the UK Government also published the broad and overarching *Clean Air Strategy* (see **Section 2.2.4**) for the whole of the UK in 2019.

Like its predecessors, *Air Quality Strategy: Framework For Local Authority Delivery* sets out the *National Air Quality Objectives* (NAQOs). The NAQOs currently mirror the legally binding limit values as set out in the *Air Quality Standards Regulations 2010*, as shown in **Table 2.1**. The NAQOs also currently incorporate the new legally binding PM<sub>2.5</sub> targets as set out in the *Environmental Targets (Fine Particulate Matter) (England) Regulations 2023*, as discussed in **Section 2.1.4**.

### 2.2.2. National Planning Policy Framework (2024)

The *National Planning Policy Framework* (NPPF) was first published in March 2012 and has undergone regular revision, with the latest version published in December 2024 in response to the proposed reforms to the planning system under the Starmer ministry.

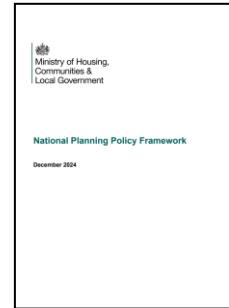
The NPPF sets out England's planning policies and guidance on their application. It guides LPAs in creating Local Plans, which, along with the NPPF itself, inform planning decisions. These local and neighbourhood plans should address community needs and priorities.

The NPPF notes “*The purpose of the planning system is to contribute to the achievement of sustainable development, including the provision of homes, commercial development, and supporting infrastructure in a sustainable manner*” (para. 7) and that sustainable development should be delivered with three main objectives: economic; social and environmental (para. 8).

The NPPF supports a presumption in favour of development, unless the adverse impacts of that development outweigh the benefits (para. 10).

Specifically referencing air quality, the NPPF states that “*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*” (para. 187).

The NPPF also states that “*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*” (para. 199).



### 2.2.3. Planning Practice Guidance (2019)

Planning Practice Guidance (PPG) was launched as a series of online guidance documents to support the NPPF, with first Air Quality guidance published on 6<sup>th</sup> March 2014. It has since undergone regular revision, with the most recent changes in November 2019. It provides guidance on how planning can take account of the impact of new development on air quality.

The air quality PPG notes "*Defra carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with relevant Limit Values*" and "*It is important that the potential impact of new development on air quality is taken into account where the national assessment indicates that relevant limits have been exceeded or are near the limit*".

The PPG goes on to say that "*Whether air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to have an adverse effect on air quality in areas where it is already known to be poor, particularly if it could affect the implementation of air quality strategies and action plans and/or breach legal obligations (including those relating to the conservation of habitats and species)*".

With regards to the content of an air quality assessment, the PPG states "*Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific*".

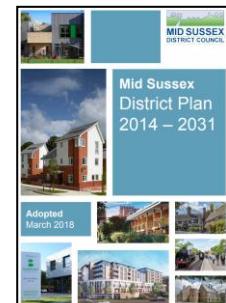
### Local Policy

#### 2.2.4. Mid Sussex District Plan 2014-2031 (2018)

Mid Sussex District Council's District Plan includes policy on noise, air and light pollution, specifically in policy DP29: Noise, Air and Light Pollution which notes:

*"The environment, including nationally designated environmental sites, nationally protected landscapes, areas of nature conservation or geological interest, wildlife habitats, and the quality of people's life will be protected from unacceptable levels of noise, light and air pollution by only permitting development where...*

*Air Pollution:*



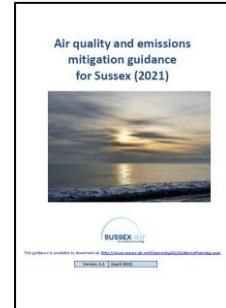
- *It does not cause unacceptable levels of air pollution;*
- *Development on land adjacent to an existing use which generates air pollution or odour would not cause any adverse effects on the proposed development or can be mitigated to reduce exposure to poor air quality to recognised and acceptable levels;*
- *Development proposals (where appropriate) are consistent with Air Quality Management Plans".*

## 2.2.5. Air Quality and Emissions Mitigation Guidance for Sussex (2021)

This guidance document presents screening criteria to determine whether a proposed development requires an emissions mitigation assessment, which takes the form of a damage cost calculation to quantify the monetised health damage value associated with transport emissions from a proposed development.

This is required for all proposed developments which meet the *Town and Country Planning (Development Management Procedure) Order (England) 2015* definition of “major development”, which for residential proposals constitutes ten or more new dwellings.

The document also contains guidance on how to carry out the assessment.



## 2.3. Best Practice Guidance

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

*Land-Use Planning & Development Control: Planning for Air Quality*, jointly published by the IAQM and Environmental Protection UK (EPUK) in May 2015 and updated in January 2017, serves as a comprehensive guide for integrating air quality considerations into the planning system and development control processes

Specific guidance is given on undertaking an air quality assessment for planning, including how to assess both the impacts of existing air quality on a new development, or the impacts of new developments on air quality in their area. It also discusses how to determine the significance of the effects arising from such air quality impacts.

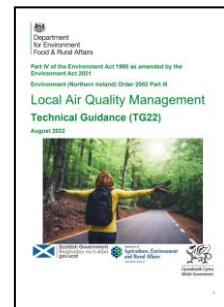
Guidance is also given on screening criteria for different types of assessment, the verification of air quality models, identification of appropriate receptors, and appropriate mitigation measures.



### 2.3.2. Local Air Quality Management Technical Guidance TG22 (2022)

The LAQM process is a framework under which local authorities are required to review and manage air quality in their areas. It is governed by Part IV of the *Environment Act 1995* (see **Section 2.1.1**) and aims to ensure compliance with the NAQOs.

Local authorities are required to regularly review and assess air quality in their areas. If the review indicates that the NAQOs are being exceeded or are likely to be exceeded, local authorities must designate an AQMA. Once an AQMA has been designated, the local authority is required to develop and implement Action Plans that outline measures to improve air quality, with continuing monitoring, evaluation and reporting required.

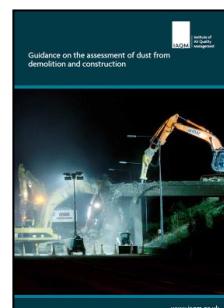


Although produced for local authorities tasked with managing air quality in their areas, TG22 provides detailed instructions on how to assess air quality using both monitoring data and modelling techniques, and evaluate whether air quality objectives are being met, and is therefore essential guidance for anyone considering air quality impacts within the planning system.

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

Published in 2014 and most recently amended in 2024, the IAQM *Guidance on the Assessment of Dust from Demolition and Construction* provides a structured approach to assessing dust risks arising from demolition and construction, and implementing appropriate mitigation measures.

The guidance provides the framework for a qualitative risk assessment of three different dust impacts: disamenity dust soiling, human health do increase PM exposure, and harm to ecological receptors.



The guidance divides activity on construction sites into four categories each of which are considered separately: demolition, earthworks, construction, and trackout. The likely magnitude of dust

emission for each activity is combined with the sensitivity of the area (determined by the number of receptors within prescribed distance bands) to determine the risk level from each activity.

Based on the determined risk level, mitigation measures are recommended to be incorporated into a Dust Management Plan which can form part of a broader Construction and Environmental Management Plan. The guidance states that if the recommended mitigation measures are adopted, there will be no overall significant effect.

### 2.3.4. World Health Organization Air Quality Guidelines (2021)

The *World Health Organisation Air Quality Guidelines* proposes air quality guideline levels for key air pollutants that pose health risks. The guidelines cover a range of pollutants and suggest threshold levels at which health effects are unlikely to occur, based on the latest scientific evidence.

Due to a substantial increase in scientific evidence since 2005 (the publication of the previous guidelines), the World Health Organisation (WHO) significantly lowered its guideline levels for most air pollutants in its 2021 update, such that they are now more stringent than the legally binding limit values as described in the *Air Quality Standards Regulations 2010*.



**Table 2.2** summarises the WHO Guideline levels.

**Table 2.2: WHO Air Quality Guideline Levels**

Pollutant	Average Period	WHO Guideline Value
Nitrogen Dioxide	One Hour	200 µg/m <sup>3</sup>
	One Day	25 µg/m <sup>3</sup>
	Calendar Year	10 µg/m <sup>3</sup>
PM <sub>10</sub>	One Day	45 µg/m <sup>3</sup> (99 <sup>th</sup> Percentile)
	Calendar Year	15 µg/m <sup>3</sup>
PM <sub>2.5</sub>	One Day	15 µg/m <sup>3</sup> (99 <sup>th</sup> Percentile)
	Calendar Year	5 µg/m <sup>3</sup>

## 3. ASSESSMENT METHODOLOGY

### 3.1. Methodology Overview

The assessment of air quality considers several different areas, specifically:

1. Establishing the baseline conditions at the proposed development site. This entails an evaluation of historic air quality data, the most recent published years' worth of which is used to verify an air quality model for predicting onsite pollutant concentrations at present. See **Section 3.3**.
2. Constraints of existing air quality on the proposed development. This determines the site's suitability for use. The verified baseline model is updated to model the year of first use, incorporating projected traffic growth, changes in emissions factors, and background concentrations as appropriate. Opening year pollutant concentrations are then compared to the relevant air quality objectives.
3. Air quality impacts of the proposed development on local receptors, by means of both emissions from increased traffic and the energy strategy. The future baseline model is updated to reflect these new sources. Impacts are assessed based on both the change caused by the proposed development *and* the existing air quality at a receptor. It is then determined whether any impacts would lead to significant effects, i.e. to health. See **Section 3.4**.
4. Impacts from demolition and construction at local receptors. The risk of dust impacts from demolition and construction are assessed qualitatively in terms of their potential to cause effects in terms of disamenity, health or ecology. If the level of construction traffic is sufficient, the impacts of this may be assessed similarly to operational traffic impacts as described in point 3 above. See **Section 3.5**.
5. Compliance with any local air quality policies as appropriate, for example emissions benchmarking or damage cost analysis.
6. Consideration of ecological impacts. This is typically a screening assessment to identify risks of significant adverse effects on European designated sites (Special Protection Area, Special Area of Conservation, or Ramsar site) that could undermine conservation objectives, therefore requiring further detailed examination through an "Appropriate Assessment" under the Habitats Regulations.

The site-specific scoping assessment in **Section 4.4** determines which areas of assessment are relevant to the proposed development. The main methodologies are discussed in the subsections below, along with a description of the identification of receptors and the determination of effect significance.

### 3.2. Identification of Receptors

*Land-Use Planning & Development Control: Planning for Air Quality* states that receptor locations should be chosen both within a proposed development (site suitability), as well as on roads significantly affected by it (impact assessment), even if distant to it, and particularly if within AQMAs.

The guidance notes "*These receptors will represent locations where people are likely to be exposed for the appropriate averaging time (dependent on the air quality objective being assessed against).*" This is critical as it

identifies that sensitivity to air quality is related to the time spent in a location. For example, annual mean objectives should be used to assess anywhere a person may be present for sustained periods over a year, for example dwellings. Although users wouldn't be present for the appropriate averaging time, hospitals and schools would also be assessed against annual mean objectives, owing to the higher sensitivity of their users.

Offices and commercial uses would not usually be assessed against annual objectives, given that most users would be healthy adults who would spend less than 25% of the hours in a year there, however assessment against daily or hourly mean objectives would be necessary. Similarly, hotels may not be assessed against annual mean objectives, however hostels, sheltered accommodation and student accommodation would be considered the same as dwellings, as residents could be expected to stay for several months.

### 3.3. Baseline and Site Suitability Methodology

To determine the baseline conditions, the following was undertaken:

- A review of the most recent Air Quality Annual Status Reports published by the local planning authority (as required under Local Air Quality Management Regime (see **Section 2.3.2**), as submitted to the Department for the Environment, Food and Rural Affairs (Defra);
- Determination of whether the site is situated within a designated Air Quality Management Area (AQMA), or if in London, Air Quality Focus Area;
- A review of local air quality monitoring data in the area around the proposed development site;
- A review of the Environment Agency's register of industrial sites under the EC Integrated Pollution Prevention and Control Directive (IPPC) to determine whether industrial sources of air pollution could be affecting the site;
- Review of the list of registered Part A2 and Part B permitted premises under the PPC Regulations to determine whether any other sources of air pollution could be affecting the site;
- Using the ADMS-Roads Detailed Dispersion Model (details of which can be seen in **Appendix 2**, utilising data described in **Appendix 3**), predict concentrations of air pollutants at the proposed development site in the baseline year and the future baseline year.

The assessment of site suitability is based on the 'future baseline' scenario, which is based on the year of first occupation or operation of the proposed development. It updates the 'baseline' scenario, i.e. that which is based on the most recent full year of published air quality monitoring data that can be used to create a validated model.

The 'future baseline' updates to the dispersion model include predicted changes in traffic flow between the two years, changes in emissions factors (the amount of pollutant emitted per vehicle-km, which improves in future years as older, more polluting vehicles are removed from the fleet and cleaner engine technologies and alternative fuel vehicles are adopted), and changes in regional background concentrations if appropriate.

### 3.4. Impact Assessment Methodology

To determine the operational effects of the Proposed Development, the change in traffic flow at sensitive receptors in the future opening year of the proposed development, both with and without development related traffic, was modelled using the methodology described in the ADMS-Roads Detailed Dispersion Model (details of which can be seen in **Appendix 2**, utilising data described in **Appendix 3**).

To determine the impact of the proposed development on surrounding local sensitive receptors, the impact magnitude has been derived from Land-Use Planning & Development Control: Planning for Air Quality, jointly published by the IAQM and EPUK. **Table 3.1** identifies the advice given in the IAQM / EPUK Guidance regarding impact descriptors upon individual receptors.

**Table 3.1: Impact Descriptors for Individual Receptors**

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

Source: Table 6.3 of the IAQM Guidance

The guidance goes on to offer the following explanation (taken from the footnotes of Table 6.3 of the IAQM Guidance):

*“AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency ‘Environmental Assessment Level (EAL)’.*

*The Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e.. less than 0.5% will be described as Negligible.*

*The Table is only designed to be used with annual mean concentrations.*

*Descriptors for individual receptors only; the overall significance is determined using professional judgement (see Chapter 7). For example, a ‘moderate’ adverse impact at one receptor may not mean that the overall impact has a significant effect. Other factors need to be considered.*

*When defining the concentration as a percentage of the AQAL, use the ‘without scheme’ concentration where there is a decrease in pollutant concentration and the ‘with scheme;’ concentration for an increase.*

*The total concentration categories reflect the degree of potential harm by reference to the AQAL value. At exposure less than 75% of this value, i.e. well below, the degree of harm is likely to be small. As the exposure approaches and exceeds the AQAL, the degree of harm increases. This change naturally becomes more important when the result is an exposure that is approximately equal to, or greater than the AQAL.*

*It is unwise to ascribe too much accuracy to incremental changes or background concentrations, and this is especially important when total concentrations are close to the AQAL. For a given year in the future, it is impossible to define the new total concentration without recognising the inherent uncertainty, which is why there is a category that has a range around the AQAL, rather than being exactly equal to it.”*

### 3.5. Methodology for Determining Demolition and Construction Effects

The determination of demolition and construction effects of the Proposed Development was based on the IAQM's Guidance on the Assessment of Dust from Demolition and Construction, which provides a risk-based assessment methodology to determine the significance of an air quality impact arising from the construction of a new development, based on the magnitude of change. The methodology provides a five-step approach to determining the significance:

**“STEP 1 is to screen the requirement for a more detailed assessment. No further assessment is required if there are no receptors within a certain distance of the works.**

**STEP 2 is to assess the risk of dust impacts. This is done separately for each of the four activities (demolition; earthworks; construction; and trackout) and takes account of:**

*the scale and nature of the works, which determines the potential dust emission magnitude (STEP 2A); and the sensitivity of the area (STEP 2B).*

*These factors are combined in STEP 2C to give the risk of dust impacts.*

*Risks are described in terms of there being a low, medium or high risk of dust impacts for each of the four separate potential activities. Where there are low, medium or high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk.*

*Based on the threshold criteria and professional judgement one or more of the groups of activities may be assigned a ‘negligible’ risk. Such cases could arise, for example, because the scale is very small and there are no receptors near to the activity.*

**STEP 3 is to determine the site-specific mitigation for each of the four potential activities in STEP 2. This will be based on the risk of dust impacts identified in STEP 2. Where a local authority has issued guidance on measures to be adopted at demolition/construction sites, these should also be taken into account.**

**STEP 4 is to examine the residual effects and to determine whether or not these are significant.**

**STEP 5 is to prepare the dust assessment report.”**

### 3.6. Significance Criteria

Land-Use Planning & Development Control: Planning for Air Quality provides a framework to assess significance in air quality assessments. As described in the guidance, the *"assessment framework for describing impacts can be used as a starting point to make a judgement on significance of effect, but there will be other influences that might need to be accounted for. The impact descriptors set out in Table 6.3 [Replicated in Table 3.1 of this chapter] are not, of themselves, a clear and unambiguous guide to reaching a conclusion on significance. These impact descriptors are intended for application at a series of individual receptors. Whilst it may be that there are 'slight', 'moderate' or 'substantial' impacts at one or more receptors, the overall effect may not necessarily be judged as being significant in some circumstances (Paragraph 7.4)".*

The Land-Use Planning & Development Control guidance goes on to state that any significance needs to be assessed using a certain amount of professional judgement and should take into account *"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"* (Paragraph 7.7). For example, for a large development, a major adverse impact on a single dwelling might be considered insignificant; however, a minor impact to 100,000 dwellings might be considered to be highly significant. Furthermore, the absolute level of pollutant concentrations are also important in determining significance; for example, a moderate impact to a small group of dwellings might be considered highly significant if the concentrations of NO<sub>2</sub> were well in excess of the NAQO level, however, that same moderate impact might be considered insignificant if concentrations were well below the NAQO.

## 4. SCOPING

### 4.1. Overview

Planning Practice Guidance on Air Quality (see **Section 2.2.3**) states "Assessments need to be proportionate to the nature and scale of development proposed and the potential impacts (taking into account existing air quality conditions), and because of this are likely to be locationally specific". This is reiterated in *Land-Use Planning & Development Control: Planning for Air Quality* (see **Section 2.3.1**) which provides guidance on screening on whether an air quality assessment is required and what needs to be assessed.

### 4.2. Impacts of the Local Area on the Development

The IAQM/EPUK Guidance suggests that whether an assessment of the impacts of the local area on the proposed development is required is a matter of judgement, but should take into account:

- "the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;
- the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;
- the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO<sub>2</sub>), 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 for future occupants of the development."

### 4.3. Impacts of the Development on the Local Area

To determine whether an assessment of the impacts of the development on the local environment is required, the IAQM/EPUK Guidance suggests a two-stage approach. The guidance states that "*The first stage is intended to screen out smaller development and/or developments where impacts can be considered to have insignificant effects. The second stage relates to specific details regarding the proposed development and the likelihood of air quality impacts.*"

**Figure 4.1** reproduces Stage 1 of the IAQM/EPUK Guidance' two-stage approach. In order to proceed to Stage 2, development needs to meet both one of the criteria in "A", and one of the criteria in "B". If the development fails to meet these criteria, then an air quality assessment looking at the impacts of the development on the local area will not be required.

**Figure 4.2** reproduces Stage 2 of the IAQM/EPUK Guidance' two-stage approach. If the development meets the criteria contained within Stage 1, "*more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area.*" If the development then meets any of the eight criteria in Stage 2, an assessment of the impacts of the proposed development on the surrounding environment will be required.

Figure 4.1: IAQM/EPUK Guidance – Stage 1 Criteria

Criteria to Proceed to Stage 2
A. If any of the following apply: <ul style="list-style-type: none"> <li>• 10 or more residential units or a site area of more than 0.5ha</li> <li>• more than 1,000 m<sup>2</sup> of floor space for all other uses or a site area greater than 1ha</li> </ul>
B. Coupled with any of the following: <ul style="list-style-type: none"> <li>• the development has more than 10 parking spaces</li> <li>• the development will have a centralised energy facility or other centralised combustion process</li> </ul>
<b>Note:</b> Consideration should still be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

Figure 4.2: IAQM/EPUK Guidance – Stage 2 Criteria

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment <sup>a</sup>
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight).	A change of LDV flows of: <ul style="list-style-type: none"> <li>- more than 100 AADT within or adjacent to an AQMA</li> <li>- more than 500 AADT elsewhere.</li> </ul>
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight).	A change of HDV flows of: <ul style="list-style-type: none"> <li>- more than 25 AADT within or adjacent to an AQMA</li> <li>- more than 100 AADT elsewhere.</li> </ul>
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA.
4. 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.
5. Introduce or change a bus station.	Where bus flows will change by: <ul style="list-style-type: none"> <li>- more than 25 AADT within or adjacent to an AQMA</li> <li>- more than 100 AADT elsewhere.</li> </ul>
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20 m of a relevant receptor. Coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes, where there is a risk of impacts at relevant receptors.  NB. this includes combustion plant associated with standby emergency generators (typically associated with centralised energy centres) and shipping.	Typically, any combustion plant where the single or combined NO <sub>x</sub> emission rate is less than 5 mg/sec <sup>a</sup> is unlikely to give rise to impacts, provided that the emissions are released from a vent or stack in a location and at a height that provides adequate dispersion.  In situations where the emissions are released close to buildings with relevant receptors, or where the dispersion of the plume may be adversely affected by the size and/or height of adjacent buildings (including situations where the stack height is lower than the receptor) then consideration will need to be given to potential impacts at much lower emission rates.  Conversely, where existing nitrogen dioxide concentrations are low, and where the dispersion conditions are favourable, a much higher emission rate may be acceptable.

<sup>a</sup> As a guide, the 5 mg/s criterion equates to a 450 kW ultra low NO<sub>x</sub> gas boiler or a 30kW CHP unit operating at <95mg/Nm<sup>3</sup>. Users of this guidance should quantify the NO<sub>x</sub> mass emission rate from the proposed plant, based on manufacturers' specifications and operational conditions.

## 4.4. Site Specific Scoping Assessment

### 4.4.1. Site Suitability

The proposed development is not located in an Air Quality Management Area (AQMA). Background pollutant concentrations at the proposed development have been obtained from Defra's UK National Air Quality Information Archive, in accordance with *Local Air Quality Management Technical Guidance TG22*.

Concentrations of NO<sub>2</sub>, and PM<sub>10</sub> and PM<sub>2.5</sub> have all been predicted to be significantly lower than their respective NAQOs. Therefore, a modelled assessment of the impacts of the local area on the development is not required.

### 4.4.2. Impact Assessment

The proposed development consists of 40 new dwellings and associated car parking spaces; therefore Stage 1 "A" and Stage 1 "B" criteria are both met.

Trip generation data supplied by Transport Planning Associates indicates that the trip generation as a consequence of the proposed development will be 350 AADT, which is less than the 500 AADT threshold for assessing impacts outside of an AQMA. This figure accounts for the parking associated with each of the 40 dwellings, as well as the proposed general village car park. There are no AQMAs in the vicinity of the proposed development which would be considered likely to experience an increase in traffic of more than 100 AADT.

With none of the other Stage 2 criteria met, a modelled assessment of the impacts of the development on the local area is not required.

### 4.4.3. Emissions Mitigation Assessment

As a major development located in a district that forms part of the Sussex Air Quality Partnership, an emissions mitigation assessment is required. This is to quantify the monetised health damage value associated with transport emissions from the proposed development in accordance with *Air Quality and Emissions Mitigation Guidance for Sussex (2021)*.

### 4.4.4. Demolition and Construction

As standard for all new developments, a construction dust risk assessment has been carried out in line with the IAQM *Guidance on the Assessment of Dust from Demolition and Construction* (January 2024) to assess impacts during the demolition and construction phase of the proposed development.

## 5. BASELINE CONDITIONS

### 5.1. Air Quality Review and Assessment

Local authorities are required to carry out a review of local air quality within their boundaries to identify areas that may fail to comply with the NAQOs. Where these objectives are unlikely to be achieved, local authorities must designate these areas as Air Quality Management Areas (AQMAs) and prepare a written Air Quality Action Plan (AQAP) detailing measures to achieve compliance with the NAQOs.

The review of air quality takes on several prescribed stages, of which each stage is reported. The review of historic Air Quality Annual Status Reports published by Mid Sussex District Council indicates that air pollutant concentrations in the district are decreasing within the district. Following five years of compliance with the NO<sub>2</sub> annual mean NAQO, the only AQMA in the district was revoked at the end of 2024. The monitoring network operated by Mid Sussex District Council covers 36 diffusion tube locations and one automatic monitoring station, all of which have shown compliance with the annual mean NO<sub>2</sub> NAQO for the last four years.

Concentrations of SO<sub>2</sub>, Benzene, Lead and CO are not considered to be significant within the Borough. Consequently, no further consideration is given to these pollutants as it is highly unlikely that they would be of concern on the proposed development site.

### 5.2. Local Air Quality Monitoring

Mid Sussex District Council continue to conduct air quality monitoring across the district despite the revocation of its AQMAs. One automatic continuous monitoring station is operated alongside 36 monthly diffusion tube locations. All locations were compliant with the NO<sub>2</sub> annual mean NAQO in 2023. The continuous monitoring station also showed compliance with the NO<sub>2</sub> one-hour mean NAQO, as well as the PM<sub>10</sub> annual mean and 24-hour mean NAQOs.

The monitoring locations are spread across the district, and mainly located at roadside settings in the urban centres of East Grinstead, Haywards Heath and Burgess Hill, where pollutant concentrations would be expected to be higher than at the proposed development site, which is in a more rural village setting.

### 5.3. Industrial Emissions

Both the Environment Agency's register of industrial sites under the EC Integrated Pollution Prevention and Control Directive (IPPC) and the Local Authority's list of registered Part A2 and Part B permitted premises under the Pollution, Prevention and Control Act 1999 and the Environmental Permitting (England and Wales) Regulations 2010 have shown that there are no sites within close proximity of the development site that could be affecting air pollutant levels.

### 5.4. Estimated Background Concentrations

The data archive of Defra's UK Air Information Resource contains estimated background concentrations of NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> at 1 km<sup>2</sup> resolution for the whole of the UK. The estimated background concentrations for 2025 at the proposed development site (1 km<sup>2</sup> grid square centred at 534500 135500) correspond to 7.92

$\mu\text{g}/\text{m}^3$   $\text{NO}_2$ , 9.83  $\mu\text{g}/\text{m}^3$   $\text{PM}_{10}$ , and 6.04  $\mu\text{g}/\text{m}^3$   $\text{PM}_{2.5}$ . These are each well below the relevant NAQOs of 40  $\mu\text{g}/\text{m}^3$  ( $\text{NO}_2/\text{PM}_{10}$ ) and 20  $\mu\text{g}/\text{m}^3$  ( $\text{PM}_{2.5}$ ), and the presence of the nearby B-roads and residential streets in isolation would not be sufficient to elevate these levels such that they would be close to the NAQOs.

## 5.5. $\text{NO}_2$ 1-hour Exposure

In order to meet the hourly Air Quality Standard on  $\text{NO}_2$ , the average hourly concentration of  $\text{NO}_2$  must not exceed the hourly objective level of 200  $\mu\text{g}/\text{m}^3$  more than 18 times in one calendar year. If this standard is not met, there would be concern that even short duration exposure to pollutant concentrations could be prejudicial to health, which could be a concern for gardens, balconies and other outdoor amenity spaces associated with the development.

According to research conducted in 2003<sup>1</sup>, there is only a risk that the  $\text{NO}_2$  1-hour objective (200  $\mu\text{g}/\text{m}^3$ ) could be exceeded if the annual mean nitrogen dioxide concentration is greater than 60  $\mu\text{g}/\text{m}^3$ . Based on the sections above, it is considered that annual mean  $\text{NO}_2$  concentrations are below the 40  $\mu\text{g}/\text{m}^3$  NAQO, and therefore also below the 60  $\mu\text{g}/\text{m}^3$  indicative threshold for possible hourly exceedances. Consequently, local short duration pollutant concentrations would not be considered a cause for concern in gardens, balconies and other outdoor amenity spaces associated with the development.

Based on this as well the other factors discussed above, it is considered that air pollutant concentrations at the proposed development site are currently well below all short- and long-term objectives and should not be a constraint on the development of the site for residential purposes.

The scoping assessment contained within **Section 4** of this report identifies that the impact of the proposed development on the local environment is likely to be insignificant and therefore no further assessment is required.

<sup>1</sup> Analysis of Relationship between 1-Hour and Annual Mean Nitrogen Dioxide at UK Roadside and Kerbside Monitoring Sites, Laxen and Marner, 2003.

## 6. SITE SUITABILITY

The baseline investigation contained within **Section 5** of this report identifies that air pollutant concentrations at the proposed development site are compliant with all short- and long-term objectives, and should therefore not be a constraint on the development of the site for residential purposes.

## 7. IMPACT ASSESSMENT

The scoping assessment contained within **Section 4** of this report identifies that the level of trip generation as a consequence of the proposed development is sufficiently low, such that the impact of the proposed development on the local environment is negligible. The effects will therefore be insignificant and therefore no mitigation is required.

## 8. EMISSIONS MITIGATION ASSESSMENT

### 8.1. Overview

As a major development, the proposed development meets the criteria within *Air Quality and Emissions Mitigation Guidance for Sussex (2021)* for an emissions mitigation assessment. This takes the form of a damage cost calculation to quantify the monetised health damage value associated with transport emissions from the proposed development.

The purpose of an emissions mitigation assessment is to:

- 1) calculate the additional transport emissions associated with a development;
- 2) determine the appropriate level of mitigation required to help avoid, minimise and/or off-set the impact on air quality;
- 3) enable an evidence-based and proportionate approach.

Where mitigation is not integrated into a proposed development, the LPA may require this through relevant planning conditions or Section 106 agreement.

The calculation has been performed in accordance with the methodology described within *Air Quality and Emissions Mitigation Guidance for Sussex (2021)*. The value calculated is the minimum sum of money that must be spent on practical mitigation measures. The developer will implement the measures following agreement with the LPA.

The calculation uses the Defra Emissions Factor Toolkit (EFT v12.1) to estimate the transport emissions of NO<sub>x</sub> and PM<sub>2.5</sub> from a proposed development over five years, which is then used to estimate the associated health damage cost using the most recent Defra damage costs per tonne of pollutant. The EFT requires several inputs as stated below:

- Area: England (urban)
- Daily trips generated by the proposed development: 350
- Speed and average trip distance (standard values used for all assessments): 50 kph & 10 km
- Year: Five years from opening of proposed development 2027-2031

The EFT output is in the form the annual emissions of the selected pollutants (NO<sub>x</sub> and PM<sub>2.5</sub>) in tonnes, which are then used in combination with the Defra damage costs to determine the total health damage cost associated with the pollutants. This is done using the Defra Damage Costs Appraisal Toolkit using the following inputs:

- Pollutants: NO<sub>x</sub> and PM<sub>2.5</sub>
- Year: Five years from opening of proposed development 2027-2031, price base year 2025 (current)
- Damage costs: "Road Transport – Rural, Central Cost"

The output from the above calculation is as follows:

- Central present value NO<sub>x</sub>: £3,524
- Central present value PM<sub>2.5</sub>: £3,630
- Total damage cost: £7,154

The above total cost of £7,154 is the total amount that must be spent on mitigation towards air pollution under the guidance found within Air Quality and Emissions Mitigation Guidance for Sussex (2021) and it will be required for the applicant to agree what constitutes this with the local planning authority prior to implementation.

## 9. CONSTRUCTION DUST IMPACT ASSESSMENT

### 9.1. Overview

The main air quality impacts that may arise during construction activities are:

- Dust deposition, resulting in the soiling of surfaces;
- Visible dust plumes; and
- An increase in concentrations of airborne particles (e.g. PM<sub>10</sub>, PM<sub>2.5</sub>) and nitrogen dioxide due to exhaust emissions from site plant and traffic that can impact adversely on human health.

The most common impacts are dust soiling and increased ambient PM<sub>10</sub> concentrations due to dust arising from the site. Most of this PM<sub>10</sub> is likely to be in the PM<sub>2.5-10</sub> fraction, known as coarse particles.

It is very difficult to quantify emissions of dust from construction activities. It is, therefore, common practice to provide a qualitative assessment of potential impacts. The Institute of Air Quality Management's *Guidance on the assessment of dust from demolition and construction (January 2024)* contains a complex methodology for determining the significance of construction impacts on air quality. The following sections outline the steps outlined in the IAQM methodology.

### 9.2. Step 1 – Screening the Need for a Detailed Assessment

The IAQM guidance states that:

*“An assessment will normally be required where there is:*

- a ‘human receptor’ within:
  - 350 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s).
- an ‘ecological receptor’ within:
  - 50 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s). ”

There are existing receptors within 350m of the boundary of the development site and within 50m of the route used by construction vehicles on the public highway. Therefore, a detailed assessment is required to determine potential dust impacts.

**Step 1 Summary:**

*A detailed assessment is required to determine potential dust impacts.*

### 9.3. Step 2 – Assess the Risks of Dust Impacts

The IAQM guidance states that:

*“The risk of dust arising in sufficient quantities to cause annoyance and/or health and/or ecological impacts should be determined using four risk categories: negligible, low, medium and high risk.*

*A site is allocated to a risk category based on two factors:*

- the scale and nature of the works, which determines the potential dust emission magnitude as small, medium or large (STEP 2A); and*
- the sensitivity of the area to dust impacts (STEP 2B), which is defined as low, medium or high sensitivity.*

*These two factors are combined in STEP 2C to determine the risk of dust impacts with no mitigation applied. The risk category assigned to the site can be different for each of the four potential activities (demolition, earthworks, construction and trackout). More than one of these activities may occur on a site at any one time.”*

#### 9.3.1. Step 2a – Dust Emission Magnitude

The first step (Step 2a) is therefore to assess the magnitude of the anticipated works. **Table 9.1** summarises the dust emission magnitude for each activity.

Table 9.1: Dust Emission Magnitude

Activity	Dust Emission Magnitude	Justification
Demolition	Small	<i>Minimal demolition required on existing buildings of volume of less than 20,000m<sup>3</sup>, no more than 10 m above ground.</i>
Earthworks	Medium	<i>Although the total site area is less than 18,000 m<sup>2</sup>, moderate degree of soil clay content identified.</i>
Construction	Medium	<i>Building volume may exceed 25,000 m<sup>3</sup>, some higher risk activities and materials likely.</i>
Trackout	Medium	<i>Less than 10 outward HGV movements per day are expected however some sections of unpaved road likely given site size.</i>

#### 9.3.2. Step 2b – Sensitivity of the Area

The next step (Step 2b) is therefore to assess the sensitivity of the area that could be affected by the anticipated works. **Figure 9.1** shows the distance bands into which receptors fall as described in the guidance, both from the site (20, 50, 100 and 350 metres) and **Figure 9.2** shows the relevant bands for the associated haul routes (20 and 50 metres).

Figure 9.1: Receptor distance bands from proposed development site

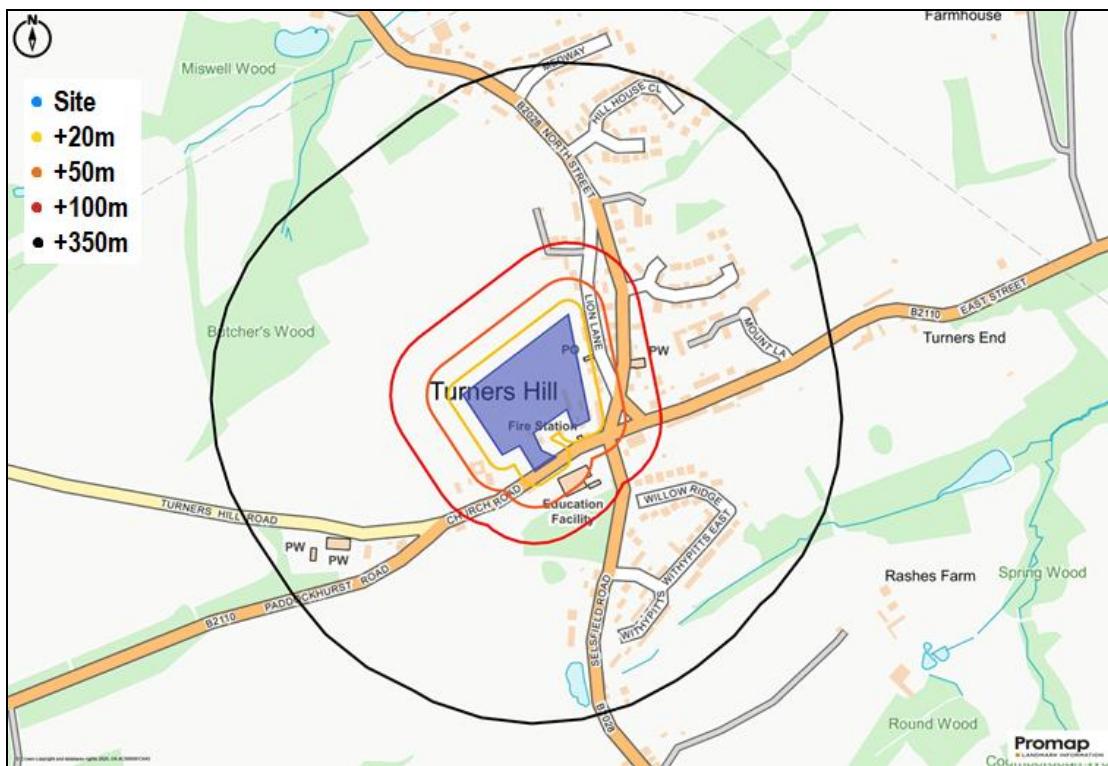
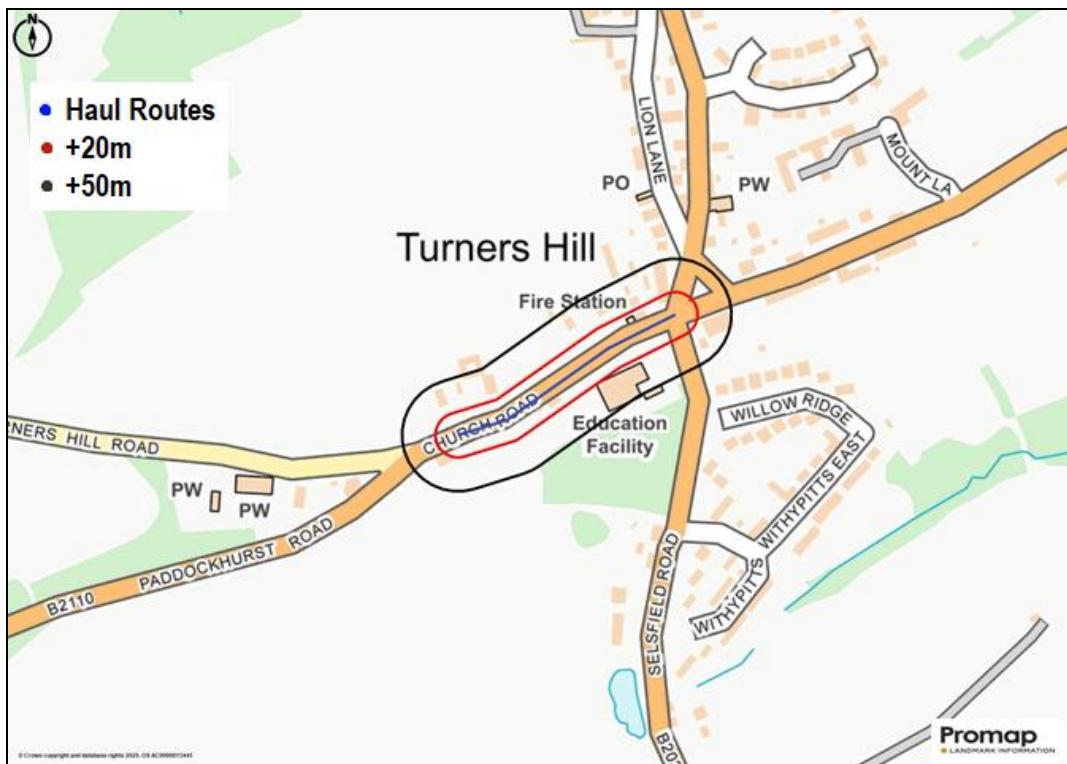


Figure 9.2: Receptor distance bands from proposed haul routes



There are a number of existing dwellings in the area that are considered to be high sensitivity receptors. There are between 10 and 100 high sensitivity receptors within 20 m of the site boundary; therefore, the sensitivity to dust soiling effects on people and property is “*high*” for all activities.

The annual mean concentration of PM<sub>10</sub> is less than 24 µg/m<sup>3</sup>; despite the number of high sensitivity receptors outlined above, this results in a “*low*” sensitivity of the area to human health impacts for all activities.

There are no ecological receptors that are considered to be anything greater than low sensitivity receptors within 50 m of the site; this results in a “*low*” sensitivity of the area to ecological impacts for all activities.

**Table 9.2** summarises the sensitivity of the area for each activity.

**Table 9.2: Outcome of Defining the Sensitivity of the Area**

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

### 9.3.3. Step 2c – Define the Risks

The next step (Step 2c) is to assign the level of risk for each activity, based on the receptor sensitivity and the dust emission magnitude. **Table 9.3** summarises the dust risk for each activity.

**Table 9.3: Summary Dust Risk Table to Define Site-Specific Mitigation**

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

#### Step 2 Summary:

- Dust Emission Magnitude is “*Medium*” for earthworks, construction and trackout and “*Small*” for demolition.
- The Sensitivity of the area of is “*High*” for dust soiling and “*Low*” for human health and ecological impacts.
- The site is considered a “*Medium Risk Site*” in respect of demolition, earthworks, construction and

trackout. It is therefore considered a “Medium Risk Site” overall.

#### 9.4. Step 3 – Site Specific Mitigation

Stage 2 determines that the site is considered a “*Medium Risk Site*” in respect of demolition, earthworks, construction and trackout. It is therefore considered a “*Medium Risk Site*” overall.

The IAQM guidance provides a list of potential mitigation measures and suggests where these measures are highly recommended, desirable or not required based upon the risk of the site. For all sites that are a “*Medium Risk Site*” or higher, a Dust Management Plan is highly recommended and should incorporate the mitigation measures recommended based on the site risk.

The IAQM’s Guidance states that the following measures are highly recommended or desirable as mitigation for all Medium risk sites:

- Communications: Develop and implement a stakeholder communications plan that includes community engagement before work commences – *Highly Recommended*.
- Communications: Display the name and contact details of person(s) accountable for air quality and dust issues on the Site boundary – *Highly Recommended*.
- Communications: Display the head or regional office contact information – *Highly Recommended*.
- Communications: Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the LPA. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the Site. In London, additional measures may be required to ensure compliance with the Mayor of London’s guidance. The DMP may include monitoring of dust deposition, dust flux, real-time PM<sub>10</sub> continuous monitoring and/or visual inspections – *Highly Recommended*.
- Site management: Record all dust and air quality complaints, identify the cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken – *Highly Recommended*.
- Site management: Make the complaints log available to the local authority when asked – *Highly Recommended*.
- Site management: Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book – *Highly Recommended*.
- Monitoring: Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the LPA when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of Site boundary, with cleaning to be provided if necessary - *Desirable*.

- Monitoring: Carry out regular Site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked – *Highly Recommended*.
- Monitoring: Increase the frequency of Site inspections by the person accountable for air quality and dust issues on-site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions – *Highly Recommended*.
- Monitoring: Agree on dust deposition, dust flux, or real-time PM<sub>10</sub> continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on-site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction. – *Highly Recommended*.
- Preparing and maintaining the Site: Plan Site layout so that machinery and dust causing activities are located away from receptors, as far as is possible – *Highly Recommended*.
- Preparing and maintaining the Site: Erect solid screens or barriers around dusty activities (or the Site boundary) that are at least as high as any stockpiles on-site – *Highly Recommended*.
- Preparing and maintaining the Site: Fully enclose Site or specific operations where there is a high potential for dust production and the Site is active for an extensive period – *Highly Recommended*.
- Preparing and maintaining the Site: Avoid Site runoff of water or mud – *Highly Recommended*.
- Preparing and maintaining the Site: Keep Site fencing, barriers and scaffolding clean using wet methods – *Highly Recommended*.
- Preparing and maintaining the Site: Remove materials that have a potential to produce dust from Site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below – *Highly Recommended*.
- Preparing and maintaining the Site: Cover, seed or fence stockpiles to prevent wind whipping – *Highly Recommended*.
- Operating vehicle/machinery and sustainable travel: Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable – *Highly Recommended*.
- Operating vehicle/machinery and sustainable travel: Ensure all vehicles switch off engines when stationary - no idling vehicles – *Highly Recommended*.
- Operating vehicle/machinery and sustainable travel: Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable – *Highly Recommended*.
- Operating vehicle / machinery and sustainable travel: Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long-haul routes are required these speeds may be increased with suitable additional control measures provided, subject to

the approval of the nominated undertaker and with the agreement of the local authority, where appropriate) - *Desirable*.

- Operating vehicle/machinery and sustainable travel: Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials – *Highly Recommended*.
- Operating vehicle/machinery and sustainable travel: Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) – *Desirable*.
- 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 system – *Highly Recommended*.
- Operations: Ensure an adequate water supply on the Site for effective dust / particulate matter suppression/mitigation, using non-potable water where possible and appropriate – *Highly Recommended*.
- Operations: Use enclosed chutes and conveyors and covered skips – *Highly Recommended*.
- Operations: Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate – *Highly Recommended*.
- Operations: 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 – *Highly Recommended*.
- Waste management: Avoid bonfires and burning of waste materials – *Highly Recommended*.

The IAQM's Guidance states that the following measures are highly recommended or desirable as mitigation for all Medium risk sites in relation to demolition:

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust) – *Desirable*.
- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground – *Highly Recommended*.
- Avoid explosive blasting, using appropriate manual or mechanical alternatives – *Highly Recommended*.
- Bag and remove any biological debris or damp down such material before demolition – *Highly Recommended*.

The IAQM's Guidance states that the following measures are highly recommended or desirable as mitigation for all Medium risk sites in relation to earthworks:

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable - *Desirable*.

- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable - *Desirable*.
- Only remove the cover in small areas during work and not all at once - *Desirable*.

The IAQM's Guidance states that the following measures are highly recommended or desirable as mitigation for all Medium risk sites in relation to construction:

- Avoid scabbing (roughening of concrete surfaces) if possible - *Desirable*.
- 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 – *Highly Recommended*.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent the escape of material and overfilling during delivery – *Desirable*.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust - *Desirable*.

The IAQM's Guidance states that the following measures are highly recommended or desirable as mitigation for all Medium risk sites in relation 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 continuously in use – *Highly Recommended*.
- Avoid dry sweeping of large areas – *Highly Recommended*.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport – *Highly Recommended*.
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable – *Highly Recommended*.
- Record all inspections of haul routes and any subsequent action in a site log book – *Highly Recommended*.
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned – *Highly Recommended*.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable) – *Highly Recommended*.
- 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 – *Highly Recommended*.
- Access gates to be located at least 10m from receptors where possible – *Highly Recommended*.

**Step 3 Summary:**

*The site is considered a “Medium Risk Site” overall and a Dust Management Plan is recommended incorporating a number of specific mitigation measures based on the site-specific risks.*

## 9.5. Step 4 – Determining Significant Effects

The site is considered a “*Medium Risk Site*” overall and if appropriate mitigation measures are put in place, as identified in Step 3, significant effects on receptors are unlikely to occur. Considering both the construction details and the specific characteristics of the site, it is anticipated that effective mitigation will be possible and residual effects will not be considered significant.

**Step 4 Summary:**

*With risk appropriate mitigation, residual effects will not be considered significant.*

## 9.6. Step 5 – Dust Assessment Report

**Step 5 Summary:**

*Dust and other pollutant emissions from the construction, demolition, earthworks and trackout phases of the construction of the proposed development will see the site designated a “Medium Risk Site”. However, with risk-appropriate mitigation, residual effects will not be considered significant.*

## 10. MITIGATION

### 10.1. Site Suitability

Air pollutant concentrations at the proposed development site have been modelled to be compliant with the National Air Quality Objectives in the opening year of the proposed development.

Mitigation measures to reduce the exposure of future occupiers of the proposed development are therefore not required.

### 10.2. Impact Assessment

The impacts on air quality at local sensitive receptors as a consequence of the operation and occupation of the proposed development are considered to be negligible; therefore the overall effects of those air quality impacts are considered to be not significant.

Mitigation measures to reduce the air quality impacts of the proposed development are therefore not required.

### 10.3. Construction Phase

Appropriate mitigation measures to ensure that the effects of any air quality impacts arising during the demolition and construction phases of the proposed development are not significant have been determined by the construction dust risk assessment.

Based on the characteristics of the proposed development, the full list of mitigation measures considered to be 'highly recommended' or 'desirable' under current guidance are shown in **Section 9.4**.

### 10.4. Emissions Mitigation Assessment

As per *Air Quality and Emissions Mitigation Guidance for Sussex (2021)*, a damage cost calculation has been carried out based on the level of vehicle trip generation as a consequence of the proposed development. A total cost of £7,154 is the amount that must be spent on mitigation towards air pollution and it will be required for the applicant to agree what constitutes this with the local planning authority prior to implementation.

## 11. CONCLUSIONS & SUMMARY

An air quality assessment has been undertaken in accordance with Defra's *Local Air Quality Management Technical Guidance (TG22)* and the IAQM/EPUK guidance *Land-Use Planning & Development Control: Planning for Air Quality* (2017), addressing the effects of local air pollutant emissions, and emissions associated with the development proposals.

In addition, a risk-based assessment of the impact of construction on local air quality has been conducted in accordance with the IAQM *Guidance on the Assessment of Dust from Demolition and Construction* (2024). An Emissions Mitigation Assessment has also been carried out in accordance with *Air Quality and Emissions Mitigation Guidance for Sussex* (2021).

Baseline pollutant concentrations at the proposed development site have been assessed using historic monitoring data. At present, and in the opening year of the proposed development (2027), concentrations of all pollutants are predicted to be below the National Air Quality Objectives.

The impact of the proposed development on local air quality has also been assessed using dispersion modelling in ADMS-Roads. The assessment shows that as a consequence of limited traffic generation and good baseline local air quality, the impact of new emissions arising from the proposed development is considered to be "Negligible".

As per *Air Quality and Emissions Mitigation Guidance for Sussex* (2021), a damage cost calculation has been carried out based on the level of vehicle trip generation as a consequence of the proposed development. A total cost of £7,154 is the amount that must be spent on mitigation towards air pollution and it will be required for the applicant to agree what constitutes this with the local planning authority prior to implementation..

With regards to the impacts of construction on air quality, dust and other pollutant emissions from the construction and demolition phases of the construction of the proposed development, the site is designated as a "Medium Risk Site". However, with risk-appropriate mitigation, residual effects will not be considered significant.

Since it has been shown that the proposed development meets the guidance contained within *Technical Guidance on Local Air Quality Management (LAQM) (TG22)*, IAQM/EPUK's *Land-Use Planning & Development Control: Planning for Air Quality* and IAQM's *Guidance on the assessment of dust from demolition and construction*, it is considered that the proposed development adheres to the principles of the National Planning Policy Framework since the new development will not be "put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution". Since it has been shown that in terms of air quality, the proposals adhere to local and national planning policy, it is considered that air pollution should not be a constraint on the proposed residential development.

## Appendix 1

### Glossary of Terms

## Appendix 1: Glossary of Terms

**National Air Quality Standard/National Air Quality Objective (NAQO):** 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 an assessment of the effects of each pollutant on human health including the effects on sensitive subgroups.

**Annual mean:** The average of the concentrations measured for each pollutant for one year. In the case of the Air Quality Objectives, this is for a calendar year.

**Air Quality Management Area (AQMA):** An area that a local authority has designated for action, based upon predicted exceedances of Air Quality Objectives.

**Concentration:** The amount of a (polluting) substance in a volume (of air), typically expressed as a mass of pollutant per unit volume of air (for example, microgrammes per cubic metre,  $\mu\text{g}/\text{m}^3$ ) or a volume of gaseous pollutant per unit volume of air (parts per million, ppm).

**Exceedance:** A period of time where the concentration of a pollutant is greater than the appropriate Air Quality Objective.

**Nitrogen Oxides:** Nitric oxide (NO) is mainly derived from road transport emissions and other combustion processes such as the electricity supply industry. NO is not considered to be harmful to health. However, once released into the atmosphere, NO is usually very rapidly oxidised to nitrogen dioxide ( $\text{NO}_2$ ), which is harmful to health.  $\text{NO}_2$  and NO are both oxides of nitrogen and together are referred to as nitrogen oxides ( $\text{NO}_x$ ).

**Particulate Matter:** Fine Particles are composed of a wide range of materials arising from a variety of sources including combustion sources (mainly road traffic), and coarse particles, suspended soils and dust from construction work. Particles are measured in a number of different size fractions according to their mean aerodynamic diameter. Most monitoring is currently focused on  $\text{PM}_{10}$  (less than 10 microns in diameter), but the finer fractions such as  $\text{PM}_{2.5}$  (less than 2.5 microns in diameter) is becoming of increasing interest in terms of health effects.

**$\mu\text{g}/\text{m}^3$  microgrammes per cubic metre of air:** A measure of concentration in terms of mass per unit volume. A concentration of 1  $\mu\text{g}/\text{m}^3$  means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.