Campsfield, Southwater

Air Quality Assessment

Miller Homes Limited

Prepared by:

SLR Consulting Limited

3rd Floor, Brew House, Jacob Street, Bristol, United Kingdom, BS2 0EQ

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Basis of Report

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Table of Contents

Contents

Tables in Text

Figures in Text

1.0 Introduction

SLR Consulting Ltd (SLR) has been commissioned by Miller Homes Limited to undertake an air quality assessment to support a planning application for a proposed residential development comprising up to 82 dwellings and associated infrastructure (the 'Proposed Development') at Campsfield, Southwater (the 'Site').

The Site currently comprises an area of plantation woodland located approximately 1.4km to the south-east of Southwater town centre within the administrative area of Horsham District council (HDC). The Site is located at the approximate National Grid Reference (NGR): x516065, y124880. The surrounding area comprises:

- Mill Straight and residential premises to the north;
- the A24 to the east;
- Open green space to the south; and
- Pollards Hill Ancient Woodland immediately to the west, with open green space further beyond.

Primary vehicular access to the Site will be via Centenary Road which joins Mill Straight to the north.

1.1 Scope of Assessment

The following scope of works undertaken in line national and local planning guidance, including the '*Air quality and emissions mitigation guidance for Sussex (2021)*' prepared by the Sussex-air Air Quality Partnership and adopted by HDC, has been undertaken:

- Baseline Evaluation;
- Construction Phase Assessment;
- Operational Phase Assessment; and
- Emission Mitigation Statement.

2.0 Background Context

2.1 Legislation

A dual set of regulations, applicable to National and Local Government separately are currently operable within the UK.

2.1.1 National Obligations

The Air Quality Standards Regulations 2010[1] (AQSR) transpose both the EU Ambient Air Quality Directive (2008/50/EC), and the Fourth Daughter Directive (2004/107/EC) within UK legislation. The AQSR includes Limit Values which are legally binding ambient concentration thresholds which, however, are only applicable at specific locations (Schedule 1: AQSR)[2].

Following the UK's withdrawal from the EU, the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020[3] was introduced to mirror revisions to supporting EU legislation. As a result, the fine particulate matter ($PM_{2.5}$) Limit Value was reduced to 20µg/m^3 (to be met by 2020).

The responsibility of achieving the AQSR is a national obligation for Central Government and Devolved Administrations who undertake assessments on an annual basis. Local Authorities have no statutory obligation to achieve the AQSR or the European equivalent Directives, unless otherwise instructed to assist Central Government under Ministerial Direction.

2.1.1.1 Environment Targets (Fine Particulate Matter) Regulations

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023[4] introduced an annual mean concentration target of 10µg/m^3 to be met across England by 2040. Central Government and Devolved Administrations is responsible for meeting this future target, whereas Local Authorities have no statutory obligation to achieve this target.

2.1.2 Local Obligations

Part IV of the Environment Act 1995 (as amended by the Environment Act 2021) requires the Secretary of State to review the national Air Quality Strategy (AQS) every five years and modify this if necessary. It also established the system of Local Air Quality Management (LAQM) for Local Authorities to regularly review and assess air quality within their respective administrative areas.

The Air Quality (England) Regulations 2000 (as amended) provide the statutory basis for the Air Quality Objectives Local Authorities must adhere to under LAQM in England. $PM_{2.5}$ is not currently part of the LAQM framework, however, as per the national AQS, Local Authorities are required to work towards reducing $PM_{2.5}$.

The Air Quality Objectives apply at locations where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period (referred to as 'relevant exposure'). Table 2-2 provides an

[1] The Air Quality Standards Regulations (England) 2010, Statutory Instrument No 1001, The Stationary Office Limited.

[2] Schedule 1 of the 2010 AQSR provides the locations of the sampling points where the AQSR Limits Values can be assessed.

[3] The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020, Statutory Instrument No. 1313, The Stationary Office Limited.

[4] The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. UK Statutory Instruments 2023 No. 96.

indication of those locations. Where any of the prescribed Air Quality Objectives are not likely to be achieved, the authority must designate an Air Quality Management Area (AQMA). For each AQMA, the local authority is required to prepare an Air Quality Action Plan (AQAP), which details measures the authority intends to introduce to deliver improvements in local air quality in pursuit of the objective.

The latest AQS for England was published in 2023[5]. The AQS provides the delivery framework for air quality management across England for local authorities and summarises the air quality standards and objectives operable within England for the protection of public health and the environment.

The ambient air quality standards of relevance this assessment (collectively termed Air Quality Assessment Levels (AQALs) throughout this report) are provided in Table 2-1. These are primarily based upon the Air Quality Objectives Local Authorities are responsible for achieving. The $PM_{2.5}$ AQSR AQAL has also been included for completeness.

Table 2-1: Relevant Ambient AQALs

Pollutant	AQAL (µg/m^3)	Averaging Period
NO_2	40	Annual mean
	200	1-hour mean (not to be exceeded on more than 18 occasions per annum)
Particles (as PM_{10})	40	Annual mean
	50	24-hour mean (not to be exceeded on more than 35 occasions per annum)
Particles (as $PM_{2.5}$)	20	Annual mean
Table note: The $PM_{2.5}$ AQAL is not prescribed within the Air Quality (England) Regulations 2000 / 2002 and there is no requirement for local authorities to meet it. Exceedances are only valid at specific siting locations (Schedule 1: AQSR).		

Table 2-2: Human Health Relevant Exposure

AQAL Averaging Period	AQALs should apply at	AQALs should not apply at
Annual mean	Building facades of residential properties, schools, hospitals etc.	Facades of offices Hotels Gardens of residences Kerbside sites
24-hour mean	As above together with hotels and gardens of residential properties	Kerbside sites where public exposure is expected to be short term
1-hour mean	As above together with kerbside sites of regular access, car parks, bus stations etc.	Kerbside sites where public would not be expected to have regular access

[5] Air Quality Strategy: Framework for Local Authority Delivery, Department for Environment Food and Rural Affairs, April 2023.

2.1.3 Clean Air Strategy

The 2019 Clean Air Strategy[6] sets out the Government's proposals aimed at delivering cleaner air in England and indicates how devolved administrations intend to make emissions reductions. It sets out the comprehensive action that is required from across all parts of government and society to deliver clean air.

2.1.4 Environmental Improvement Plan 2023

The 2023 Environmental Improvement Plan[7] is the first revision of the UK Government's 25 Year Environment Plan (25YEP) – planned on a five-year rolling cycle. This document sets out the 5-year delivery plan to improve the natural environment. The 2023 Environmental Improvement Plan builds on the 2019 Clean Air Strategy by setting environmental targets and commitments to reduce air pollution.

2.1.5 Environmental Protection Act 1990

The Environmental Protection Act 1990[8] sets out provisions for the regulation of statutory nuisances. Section 79 sets out this statutory nuisance as "*any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance*".

Section 79 requires that, where a complaint of a statutory nuisance is made to it by a person living within its area, a Local Authority must take steps as are reasonably practicable to investigate the complaint and decide whether the odour is prejudicial to health or a nuisance. Proposed developments which result in the introduction of future sensitive receptors are however subject to the Agent of Change principle to ensure potential interactions with the existing environment and operations are assessed and mitigated to minimise restrictions being placed on existing businesses.

Fractions of dust greater than 10µm (i.e. greater than PM_{10}) in diameter typically relate to nuisance effects as opposed to potential health effects and therefore are not covered within the UK AQS. In legislation there are currently no numerical limits in terms of what level of dust deposition constitutes a nuisance.

2.1.6 Ecological Habitats

Ecological habitats vary in terms of their sensitivity, perceived ecological value, geographic importance, and level of protection. Within the UK, there are three types of nature conservation designations: international, national and local designations, which are all provided environmental protection from developments, including from atmospheric emissions, with a greater level of protection afforded to the former, relative to the latter.

The Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations')[9] introduces the precautionary principle for protected European sites, i.e. that projects can only be permitted to proceed; having ascertained that there will be no adverse effect on the integrity of the designated site. European sites include Special Areas of Conservation (SAC) and Special Protection Areas (SPA). These regulations were subsequently amended in 2019 to make them operable from 1 January 2021 despite the UK's withdrawal from the EU[10].

[6] The Clean Air Strategy, Defra. January 2019.

[7] Environmental Improvement Plan 2023, Defra. 2023.

[8] The Environmental Protection Act 1990. Available at http://www.legislation.gov.uk/ukpga/1990/43/contents.

[9] UK Government, Statutory Instrument No. 490, The Conservation of Habitats and Species Regulations, (2017).

[10] UK Government, The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations, (2019).

Other sites of international significance are Ramsar sites, which are wetlands protected under the 1971 Ramsar Convention[11]. Many of these sites in the UK were initially selected on the basis of their importance to waterbirds and are therefore also classified as SPAs.

The Wildlife and Country Act 1981[12] (as amended, primarily by The Countryside and Rights of Way (CRoW) Act 2000) provides protection to Sites of Special Scientific Interest (SSSI) to ensure that developments are not likely to cause damage. This Act also provides a protection to local nature conservation sites too, which can be particularly important in providing 'buffers' to SSSIs and European sites.

The Environment Act 1995 and the Natural Environment and Rural Communities Act (NERC) 2006[13] provides and extension to the biodiversity duty set out in the CRoW Act to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity (i.e. ecological designations of local status).

Sites of ecological importance are provided environmental protection with respect to air quality, through the application of standards known as Critical Levels (CLe) and Critical Loads (CLo). The level of protection afforded to an internationally designated site is significantly greater than that afforded to a Local Nature Reserve (LNR), for example; reflecting the relative sensitivity of the sites as well as their perceived ecological value.

2.2 Policy

2.2.1 National Policy

The December 2024 update to the National Planning Policy Framework[14] (NPPF) sets out planning policy for England. The NPPF states that the planning system should contribute to and enhance the natural and local environment, by preventing new development from contributing to or being adversely affected by unacceptable concentrations of air pollution and development should, wherever possible, help to improve local environmental conditions such as air quality.

In specific relation to air quality policy, the document states:

Chapter 15 – Conserving and Enhancing the Natural Environment

> "*Para 192: 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.*"

[11] Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, (1971).

[12] UK Government, Wildlife and Countryside Act, (1981).

[13] UK Government, Natural Environment and Rural Communities Act, (2006).

[14] National Planning Policy Framework, Ministry of Housing, Communities & Local Government. 2024.

The NPPF is accompanied by web based supporting Planning Practice Guidance (PPG)[15] which includes guiding principles on how planning can take account of the impacts of new development on air quality. Regarding air quality, the PPG states:

> "*The Department for Environment, Food and Rural Affairs carries out an annual national assessment of air quality using modelling and monitoring to determine compliance with relevant limit values. 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, or where the need for emissions reductions has been identified.*"
>
> "*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).*"

The PPG sets out the information that may be required within the context of a supporting air quality assessment, stating that "*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* […] *Mitigation options will need to be locationally specific, will depend on the proposed development and need to be proportionate to the likely impact*".

2.2.2 Local Policy

The Horsham District Planning Framework[16] was adopted in November 2015 and sets out the long-term vision for HDC and provides a blueprint for managing growth and development in the area up to 2025.

Within the Horsham District Planning Framework, the following policy relates to air quality:

> "***Policy 24***
>
> ***Strategic Policy: Environmental Protection***
>
> *The high quality of the district's environment will be protected through the planning process and the provision of local guidance documents. Taking into account any relevant Planning Guidance Documents, developments will be expected to minimise exposure to and the emission of pollutants including noise, odour, air and light pollution and ensure that they: […]*
>
> *4. Minimise the air pollution and greenhouse gas emissions in order to protect human health and the environment;*
>
> *5. Contribute to the implementation of local Air Quality Action Plans and do not conflict with its objectives;*
>
> *6. Maintain or reduce the number of people exposed to poor air quality including odour. Consideration should be given to development that will result in new public exposure, particularly where vulnerable people (e.g. the elderly, care homes or schools) would be exposed to the areas of poor air quality; and*
>
> *[…]*"

[15] Planning Practice Guidance: Air Quality. Department for Levelling Up, Housing and Communities and Ministry of Housing, Communities & Local Government. November 2019.

[16] Horsham District Planning Framework (excluding South Downs National Park), November 2015.

HDC are in the process of developing a new Local Plan for the district. This was submitted to the Planning Inspectorate in July 2024 following a Regulation 19 period of representation. The new Local Plan sets out planning policies and proposals to guide development in the district up to 2040.

The Regulation 19 Local Plan[17] includes the following policy specific to air quality:

> "**Strategic Policy 12: Air Quality**
>
> *The Council recognises the direct effects air quality has on public health, natural habitats and biodiversity, including its contribution to climate change, and the importance of the management of air quality. Taking into account any relevant Planning Guidance Documents and / or policies within this Plan, proposals will be required to:*
>
> *1. Adhere to the Air Quality and Emissions Mitigation Guidance for Sussex (2021), or any future updates, to identify if an Air Quality Impact Assessment and / or an Emissions Mitigation Statement is required;*
>
> *2. Contribute to the implementation of local Air Quality Action Plans, and not conflict with the set objectives;*
>
> *3. Minimise traffic generation and congestion through access to sustainable transport modes, maximising the provision for cycling and pedestrian facilities;*
>
> *4. Encourage the use of cleaner transport fuels, including through the provision of electric car charging points.*
>
> *5. Take into account habitats or biodiversity designations that are sensitive to air quality changes, including ancient woodland. Habitats identified as sensitive to such changes, including proposals within 7km of The Mens, will require a relevant impact assessment and appropriate mitigation measures to be put in place.*
>
> *6. Mitigate the impact on the amenities of users of the site and surrounding land to an appropriate level, during both construction and operation where development creates or results in pollution including particulates, dust, smoke, pollutant gases or odour, as outlined in the Air Quality and Emissions Mitigation Guidance for Sussex (2021), or any future updates; and*
>
> *7. Ensure that the cumulative impact of all relevant permitted and allocated developments, including associated traffic impacts, is appropriately assessed.*"

2.3 Assessment Guidance

This assessment has been carried out in accordance with the principles contained within the guidance documents below.

- Department for Environment Food and Rural Affairs (Defra): Local Air Quality Management Technical Guidance (LAQM.TG(22))[18];
- Defra: COVID-19: Supplementary Guidance. Local Air Quality Management Reporting in 2021[19];

[17] Horsham District Council, Horsham District Local Plan 2023-2040, Regulation 19, January 2024.

[18] Local Air Quality Management Technical Guidance (22), Published by Defra in partnership with the Scottish Government, Welsh Government and Department of Agriculture, Environment and Rural Affairs Northern Ireland. August 2022.

[19] Defra and the Greater London Authority, COVID-19: Supplementary Guidance. Local Air Quality Management Reporting in 2021. April 2021.

- Environmental Policy Implementation Community (EPIC) (previously Environmental Protection UK (EPUK)) and the Institute of Air Quality Management (IAQM): Land-Use Planning and Development Control: Planning for Air Quality[20] (referred to as the 'EPIC & IAQM guidance');
- IAQM: A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites[21] (referred to as the 'IAQM nature guidance');
- IAQM: Guidance on the Assessment of Dust from Demolition and Construction[22]
- IAQM: Use of 2020 and 2021 Monitoring Datasets[23]; and
- Sussex-air Air Quality Partnership: Air quality and emissions mitigation guidance for Sussex (2021)[24].

[20] EPIC (previously EPUK) and IAQM, Land-Use Planning and Development Control: Planning for Air Quality, v1.2 2017.

[21] IAQM, A guide to the assessment of air quality impacts on designated nature conservation sites, v1.1, 2020.

[22] IAQM, Guidance on the Assessment of Dust from Demolition and Construction, v2.2, January 2024.

[23] IAQM, Use of 2020 and 2021 Monitoring Datasets, v1.1, December 2023.

[24] Sussex-air: Air quality and emissions mitigation guidance for Sussex (2021). v1.1, April 2021.

3.0 Assessment Methodology

3.1 Development Classification

In line with the Sussex-air guidance, a residential development is classified as ‘major’ when either of the below criteria are met:

i. the number of dwellinghouses to be provided is 10 or more; or

ii. the development is to be carried out on a site having an area of 0.5 hectares or more […];

Given the Proposed Development includes provision of 82 dwellings, it has been classified as ‘major’ development for the purposes of this assessment and the associated methodology has been designed around this classification.

3.2 Construction Phase Dust

A construction dust assessment has been undertaken in accordance with IAQM guidance. The assessment of risk is determined by considering the risk of dust effects arising from four activities in the absence of mitigation:

- Demolition;
- Earthworks;
- Construction; and
- Trackout.

The assessment methodology considers three separate dust impacts with account being taken of the sensitivity of the area that may experience these effects:

- Annoyance due to dust soiling;
- The risk of health effects due to an increase in exposure to PM_{10}; and
- Harm to ecological receptors.

The first stage of the assessment involves a screening review to determine if there are sensitive receptors within threshold distances of the Site activities associated with the construction phase of the scheme. A detailed assessment is required where a:

- Human receptor is located within 250m of the Site, and/or within 50m of routes used by construction vehicles, up to 250m from the Site entrance(s); and/or
- Ecological receptor is located within 50m of the Site, and/or within 50m of routes used by construction vehicles, up to 250m from the Site entrance(s).

The dust emission class (or magnitude) for each activity is determined on the basis of the guidance, indicative thresholds and professional judgement by a technically competent assessor. The risk of dust effects arising is based upon the relationship between the dust emission magnitude and the sensitivity of the area. The risk of impact is then used to determine the appropriate mitigation requirements, whereby through effective application, residual effects are considered to be ‘not significant’.

3.3 Operational Phase

3.3.1 Road Traffic Screening Assessment

3.3.1.1 Human Receptors

The assessment of air quality effects on human receptors in relation to the Proposed Development's operational phase has been undertaken in accordance with EPIC & IAQM guidance.

The EPIC & IAQM guidance provides a series of indicative screening criteria where if exceeded, should warrant further consideration of potential impacts on air quality. If the Proposed Development is found not to exceed any of the relevant indicative criteria presented, then a detailed impact assessment is consequently not required and potential effects are concluded to be 'insignificant'.

The indicative screening criteria are as follows:

- Outside of an AQMA:
  - A change of Light-Duty Vehicle (LDV) flows of more than 500 as a 24-hour Annual Average Daily Traffic (AADT) flow; and/or
  - A change of Heavy-Duty Vehicle (HDV) flows of more than 100 as a 24-hour AADT.
- Within an AQMA:
  - A change of LDV flows of more than 100 as a 24-hour AADT; and/or
  - A change of HDV flows of more than 25 as a 24-hour AADT.

3.3.1.2 Ecological Receptors

The assessment procedure outlined within the IAQM nature guidance document has been used in relation to the assessment of sensitive ecological receptors. The IAQM nature guidance initially comprises a screening assessment irrespective of current baseline rates to indicate whether:

- Any sensitive qualifying features are located within 200m of a road link projected to experience developmental-generated vehicle movements; and
- The Proposed Development (alone and/or in-combination with other projects and plans for European sites) is likely to generate either >1,000 AADT (total vehicles) on a road link and/or >200 HDVs.

The outcomes of the above will determine whether impacts associated with the Proposed Development could result in a '*likely significant effect*' on the assessed ecological feature (either alone, or in-combination for European sites) – providing the location of the screened ecological receptor can be validated. If the above conditions are not met, then impacts on ecological designations are likely to be imperceptible, whereby resultant effects can be classed as 'insignificant'.

3.3.2 Site Suitability Assessment

A site suitability assessment is required to assess the likely exposure future occupants of the Proposed Development may experience in respect of the considered AQALs, to ensure the Site is suitable for its residential use. The scope of the site suitability assessment has been informed by the EPIC & IAQM guidance requirements, and in relation to the Site locale considers:

- The background and future baseline air quality and whether this will be likely to approach or exceed an AQAL;
- The presence and location of any AQMAs as an indicator of local hotspots where the AQALs may be exceeded; and
- The presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO_2), that would cause unacceptably high exposure for users of the new development.

To determine the overall significance with respect to the suitability of the Site for future occupants and likely exposure to pollutant concentrations, the EPIC & IAQM guidance states:

> "*Where the air quality is such that an air quality objective 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.*"

In line with this, a qualitative site suitability assessment has been undertaken, with reference to local monitoring data relative to the AQALs (detailed in Table 2-1), to determine whether further consideration is required or whether effects can be considered 'not significant'.

4.0 Baseline Environment

4.1 LAQM Review and Assessment

HDC, in fulfilment of statutory requirements, has conducted an on-going exercise to review and assess air quality within its administrative area. The latest publicly available LAQM report for HDC at the time of writing is the 2024 Annual Status Report[25] (ASR) (inclusive of 2019 – 2023 monitoring datasets).

HDC currently has two declared AQMAs within its administrative area. The closest of these AQMAs to the Site lies approximately 5.2km to the southeast in Cowfold (the Horsham Cowfold AQMA). Given the separation distance, the impact of the Proposed Development on AQMAs has not been considered further.

4.2 Review of Air Quality Monitoring

4.2.1 Automatic Air Quality Monitoring

From review of HDC's 2024 ASR, automatic air quality monitoring was undertaken at three locations during 2023.

The closest automatic monitor to the Site is 'HO5', located approximately 5.6km to the southeast in Cowfold. Given the separation distance, comparative pollutant concentrations are not expected. As such, no further consideration has been given to 'HO5' within this assessment.

4.2.2 Passive Diffusion Tube Monitoring

Passive NO_2 diffusion tube monitoring is currently undertaken by HDC within the Site locale at one location. Further monitors are located approximately 5km from the Site and therefore not considered relevant to this assessment.

The details and results of the monitoring location of relevance is presented in Table 4-1 and Table 4-2, respectively, whilst the location is illustrated in Figure 4-1. All monitoring data presented has been ratified by HDC.

Table 4-1: Local NO_2 Diffusion Tube Monitoring Sites: Details

Site ID	Site Type	NGR (m)		Within AQMA?	Distance and Direction to Site (km)
		X	Y		
49	Roadside	515639	126599	No	1.4 north
Note: (a) Roadside site defined by LAQM.TG(22) as: "A *site sampling typically within one to five metres of the kerb of a busy road*".					

Table 4-2: Local NO_2 Diffusion Tube Monitoring Sites: Results

Site ID	2023 Data Capture %	Annual Mean NO_2 Concentration (µg/m^3)				
		2019	2020 (a)	2021 (a)	2022	2023
49	100	23.5	21.1	21.7	19.4	19.0
Note:						

[25] Horsham District Council, 2024 Air Quality Annual Status Report, June 2024.

Site ID	2023 Data Capture %	Annual Mean NO_2 Concentration (µg/m^3)				
		2019	2020 (a)	2021 (a)	2022	2023

(a) As per guidance published by Defra[19] and the IAQM's Position Statement[23], monitoring results obtained in 2020 and 2021 are likely to be atypical due to the impacts of the COVID-19 pandemic. The IAQM's Position Statement[23] further states "*the 2022 (or later year) monitoring data is likely to represent a post-pandemic baseline*".

As shown in Table 4-2, monitor 49 recorded an annual mean NO_2 concentration of 19.0µg/m^3 in 2023, representing 47.5% of the annual mean NO_2 AQAL of 40µg/m^3 – i.e. 'well below' (<75% of the AQAL). 2019 concentrations (pre COVID-19) and 2022 concentrations (post COVID-19) were also well below the AQAL.

Diffusion tube 49 is located at a roadside location, where comparable pollutant concentrations would be anticipated given the Site's proximity to the A24.

The empirical relationship given in LAQM.TG(22) states that exceedances of the 1-hour mean NO_2 AQAL are unlikely to occur where annual mean concentrations are <60µg/m^3. This indicates that an exceedance of the 1-hour mean AQAL was unlikely to have occurred at the above locations in between 2019 – 2023.

4.3 Defra Mapped Background Concentrations

Defra maintains a nationwide model of existing and future background air quality concentrations at a 1km grid square resolution which is routinely used to support LAQM requirements and air quality assessments. The data sets include annual average concentration estimates for NO_2, PM_{10} and $PM_{2.5}$ using a base year of 2021 (the year in which comparisons between modelled and monitored concentrations are made).

The Defra mapped background concentrations for the base year (2024) and the earliest anticipated year of first occupancy at the Proposed Development (2026) are presented in Table 4-3.

All of the mapped background concentrations presented are "well-below" the respective annual mean AQALs.

Table 4-3: Defra Mapped Background Pollutant Concentrations

Grid Square (X, Y) (m)	Year	Annual Mean Concentration (µg/m^3)		
		NO_2	PM_{10}	$PM_{2.5}$
515500, 124500	2024	7.1	11.0	6.2
	2026	6.7	10.8	6.1
516500, 125500	2024	8.0	10.9	6.4
	2026	7.5	10.7	6.3
516500, 124500	2024	7.7	10.9	6.2
	2026	7.2	10.7	6.1
AQAL		***40***	***40***	***20***

4.4 Ecological Sites

From review of Magic Maps[26], several Ancient Woodland (AW) sites have been identified in proximity to the Site and within 200m of road links where development generated traffic may distribute. These AW sites include the Pollards Hill AW, the Nuthorn Wood AW, the East Mead AW, Butlers Gill AW, Three Cornered Field AW, Lond Field AW, Stalkers Wood AW, Great Orchard Field AW and an area of unnamed AW to the west of the Site. Figure 4-1 gives reference to the locations of these AW designations.

[26] https://magic.defra.gov.uk/magicmap.aspx. Accessed December 2024.

Figure 4-1: Site Setting and Local Air Quality Monitoring

5.0 Construction Phase Assessment

This section presents the potential air quality impacts and effects associated with the construction of the Proposed Development.

5.1 Construction Dust Assessment

Where figures relating to area and volume of the Site, approximate number of construction vehicles or distances to receptors are given, these relate to thresholds as defined in the IAQM guidance to guide the assessor to define the dust emissions magnitude and sensitivity of the area.

5.1.1 Assessment Screening

There are 'human receptors' within 250m of the Site and designated habitat sites within 50m. Therefore, an assessment of construction dust on human receptors and ecological receptors is required.

5.1.2 Potential Dust Emissions Magnitude

5.1.2.1 Demolition

The Site currently comprises an area of plantation woodland, with no buildings or structures which require demolition. As such, impacts associated with demolition have been scoped out of this assessment.

5.1.2.2 Earthworks

Site earthworks are required over an area of 18,000m^2 – 110,000m^2. It is assumed there will be 5 – 10 heavy earth moving vehicles active at any one time. In addition, according to Magic[27], the main surface texture class of the underlying soil is regarded to be 'loamy and clayey soils', which is considered to have a relatively high dust generating potential.

The dust emission magnitude for earthworks is therefore considered to be 'medium'.

5.1.2.3 Construction

The proposals constitute the construction of 82 dwellings. The total building volume associated with the Proposed Development is predicted to be between 12,000m^3 – 75,000m^3. Building materials are anticipated to be standard brick masonry.

As such, the dust emission magnitude for construction is therefore considered to be 'medium'.

5.1.2.4 Trackout

Construction vehicles will access the Site via Centenary Road. Given the scale and nature of the works required, there are anticipated to be a maximum of 20 – 50 HDV outward movements in any worst-case day. Due to the size of the Site, the unpaved road length may be 50 – 100m at any given time.

Therefore, the dust emission magnitude for trackout is therefore considered to be 'medium'.

[27] https://magic.defra.gov.uk/MagicMap.aspx.

5.1.2.5 Summary

A summary of the potential dust emission magnitude for each of the activities is displayed in Table 5-1.

Table 5-1: Potential Dust Emission Magnitude

Activity	Dust Emission Magnitude
Demolition	N/A
Earthworks	Medium
Construction	Medium
Trackout	Medium

5.1.3 Sensitivity of the Area

5.1.3.1 Dust Soiling Impacts

Overall, there are 10 – 100 existing residential dwellings (high sensitivity receptors) within 20m of the Site boundary.

Furthermore, there are 10 – 100 existing residential dwellings within 20m of roads up to 250m of the Site entrance.

The sensitivity of the area with respect to dust soiling effects on people and property in relation to earthworks, construction and trackout is therefore considered to be ‘high’.

5.1.3.2 Human Health Impacts

The maximum background PM_{10} concentration for the $1km^2$ grid squares which cover the development (x515500, y124500) is estimated to be 11.0µg/m³, based upon 2024 mapped background estimates (i.e. falls into the <24µg/m^3 class).

Given the above information regarding the number and nature of surrounding receptors, the sensitivity of the area with respect to human health impacts in relation to earthworks, construction and trackout is considered to be ‘low’.

5.1.3.3 Ecological Impacts

The Pollards Pill Wood Ancient Woodland overlaps the Site’s redline boundary on its western extent. However, it should be noted that a standoff distance (of approximately 50m) from Pollards Pill Wood to any residential dwellings has been built into the proposed Site layout. Furthermore, a 15m exclusion zone has also been built into the layout. This includes exclusion of any drainage design / layout within 15m of Pollards Pill Wood. Further details of project specific mitigation measures in relation to Pollards Pill Wood can be found in Section 7.0 of the Ecological Impact Assessment[28]. Ancient Woodland designations are of ‘low’ sensitivity in accordance with IAQM guidance.

There are no designated ecological sites within 50m of the identified trackout routes.

The sensitivity of the area with respect to ecological impacts in relation earthworks and construction is therefore considered to be ‘low’.

[28] Ecological Impacts Assessment, Land at Campsfields, Southwater. Dated June 2024.

Summary

A summary of the sensitivity of the area defined for each potential impact is displayed in Table 5-2, whereas the spatial densities of receptors discussed in relation to the Site boundary are illustrated in Figure 5-1.

Table 5-2: Sensitivity of the Area

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

5.1.4 Risk of Impacts (Unmitigated)

The outcome of the assessment of the potential 'magnitude of dust emissions', and the 'sensitivity of the area' are combined in Table 5-3 below to determine the risk of impact which is used to inform the selection of appropriate mitigation.

Table 5-3: Risk of Dust Impacts (Unmitigated)

Potential Impact	Demolition	Earthworks	Construction	Trackout
Dust Soiling	N/A	Medium Risk	Medium Risk	Medium Risk
Human Health	N/A	Low Risk	Low Risk	Low Risk
Ecological	N/A	Low Risk	Low Risk	N/A

5.1.5 Mitigation

Following the construction dust assessment, the Site is found to be at worst 'medium risk' in relation to dust soiling effects on people and property and 'low risk' in relation to human health impacts and ecological impacts (Table 5-3). However, potential dust effects during the construction phase are considered to be temporary in nature and may only arise at particular times (i.e. certain activities and / or meteorological conditions).

Nonetheless, commensurate with the above designation of dust risk, mitigation measures as identified by IAQM guidance are required to ensure that any potential impacts arising from the construction phase of the Proposed Development are reduced and, where possible, completely removed. In accordance with IAQM guidance, providing effective mitigation measures are implemented, such as those outlined in Section 7.1, construction dust effects are considered to be 'not significant'.

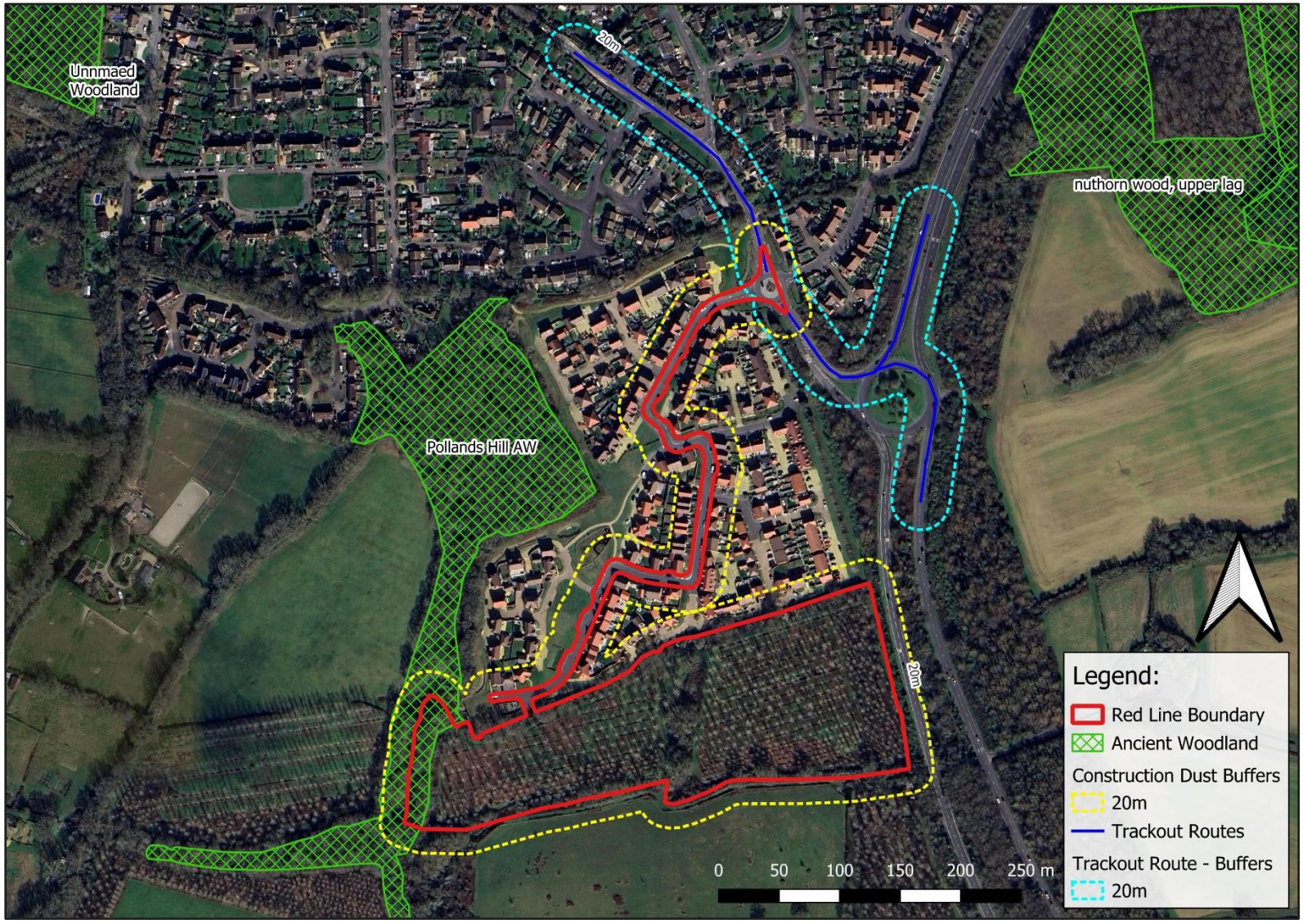


Figure 5-1: Construction Dust Assessment

6.0 Operational Phase Assessment

This section presents the potential air quality impacts and effects associated with the operational phase of the Proposed Development.

6.1 Road Traffic Screening Assessment

6.1.1 Human Receptors

Trip generation data used for screening purposes was provided by Paul Basham Associates (PBA) – the appointed transport consultant. The data relates to the maximum predicted trip rates the Proposed Development is expected to generate, for comparison against the EPIC & IAQM criteria (as outlined in Section 3.3.1.1). Table 6-1 presents the screening assessment.

Table 6-1: Maximum Road Traffic Flows Generated on the Local Road Network

Description	AADT	
	LDVs	HDVs
Total Site	406	12
EPIC/IAQM Screening Criteria (outside AQMAs)	***500***	***100***

As presented in Table 6-1, the maximum road traffic flows generated by the Proposed Development on the local road network are below the relevant EPIC & IAQM screening criteria.

Given the above, the operational effects on local air quality arising from road traffic emissions associated with the Proposed Development can be considered ‘insignificant’.

6.1.2 Ecological Receptors

Based on trip distribution data provided by PBA, development generated trips have the potential to occur on roads within 200m of relevant Ancient Woodland designations, namely the Pollards Hill, Nuthorn Wood, Upper Lag and an unnamed area of woodland northwest of the Site. Within each of these designations, habitats are potentially sensitive to atmospheric pollution including those emission contributions arising from road traffic.

Given the number of project-alone trips generated by the Proposed Development (418 AADT), the impact of road traffic emissions on all relevant Ancient Woodland sites can be screened out, as the trip generation falls below the 1,000 AADT (total vehicles) screening threshold. This approach is worst-case as its based upon the total trip generation rather than the distributed development trips within 200m of each relevant ecological designation.

It is therefore concluded that road traffic emission contributions from the Proposed Development will result in *no likely significant effects* on habitats within the relevant Ancient Woodland sites.

6.2 Site Suitability Assessment

The following information, as discussed in Section 4.0, has been used to inform the suitability of the Site, relative to its proposed residential use:

- The Site is sufficiently distant from any AQMAs, with the nearest AQMA, Horsham Cowfold AQMA, located approximately 5.2km southeast of the Site;

- The closest monitor to the Proposed Development of a ‘roadside’ classification (monitor 49) indicates annual mean NO_2 concentrations have historically been below the AQAL for the period assessed (2019-2023), see Table 4-2;
- The Defra mapped background annual mean NO_2, PM_{10} and $PM_{2.5}$ concentrations predicted at the Site (2021 reference year) are considered to be ‘well below’ the respective AQALs; and
- The Proposed Development is not expected to generate additional road traffic volumes in exceedance of the EPIC & IAQM screening criteria. Consequently, it is considered to have an insignificant impact on local air quality, including within the Site.

Given the above information, in line with the EPIC & IAQM guidance, the Site is found to be suitable for its proposed purpose (i.e. residential use). A detailed site suitability assessment is not considered to be required, and pollutant concentrations are predicted to be below the respective AQALs across the Site. Effects associated with likely exposure of future occupants are considered to be ‘not significant’.

7.0 Mitigation Measures

This section presents any proportionate mitigation measures required during the construction and operational phases of the Proposed Development.

7.1 Construction Dust

As discussed in Section 5.0, construction impacts associated to the Proposed Development would result in the generation of dust and PM_{10}.

In order to control potential impacts, Table 7-1 presents a range of mitigation measures which could be applied and align with the IAQM guidance. In accordance with the Sussex-air guidance, these measures are included as standard mitigation. With the effective application of the dust mitigation measures, residual effects will be 'not significant'.

Table 7-1: Construction Dust Mitigation Measures

Site Application	Mitigation Measures
Highly Recommended	
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
	Display the head or regional office contact information.
	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site.
Construction	Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
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.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
	Agree dust deposition, dust flux, or real-time PM_{10} 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.
Operating Vehicle/Machinery and Sustainable Travel	Ensure all vehicles switch off engines when stationary - no idling vehicles.
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.

Site Application	Mitigation Measures
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
	Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
	Use enclosed chutes and conveyors and covered skips.
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
	Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
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.
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
	Avoid site runoff of water or mud.
	Keep site fencing, barriers and scaffolding clean using wet methods.
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
	Cover, seed or fence stockpiles to prevent wind whipping.
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
	Make the complaints log available to the local authority when asked.
	Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Trackout	Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
	Avoid dry sweeping of large areas.
	Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
	Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
	Record all inspections of haul routes and any subsequent action in a site log book.
	Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.

Site Application	Mitigation Measures
	Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
	Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
	Access gates to be located at least 10m from receptors where possible.
Waste Management	Avoid bonfires and burning of waste materials.
Desirable	
Construction	Avoid scabbling (roughening of concrete surfaces) if possible.
	Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
	For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
Earthworks	Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
	Use Hessian, mulches or tackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable
	Only remove the cover in small areas during work and not all at once.
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 local authority 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.
Operating Vehicle/Machinery and Sustainable Travel	Impose and signpost a maximum-speed-limit of 15mph on surfaced and 10mph 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).
	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).

7.2 Operational Phase

7.2.1 Emissions Mitigation Assessment

In line with the Sussex-air guidance note for planning, an estimation of the pollutant emission costs associated with the Proposed Development has been undertaken.

Pollutant emissions costs associated with additional operational development trips over a 5-year period (from the first year of operation – i.e. 2026 to 2030) have been calculated to indicate potential mitigation requirements. The latest version of the EFT (presently v12.1) has been used to determine vehicle emission factors as input into the Damage Cost Calculation.

Reference should be made to Table 7-2 and Table 7-3 for a presentation of the calculation inputs and outputs, respectively.

Table 7-2: Damage Cost Calculation – Inputs

Input Parameter	Inputs
Total Trips (AADT)	418
% HDVs	3
Average trip length (km)	10
Speed (kph)	50
2022 Base Damage cost NOx (£ per tonne) (A)	£11,682
2022 Base Damage cost $PM_{2.5}$ (£ per tonne) (A)	£84,548
Table notes: (A) As provided in the Defra damage costs guidance.	

Table 7-3: Damage Cost Calculation – Outputs

Output Parameter	Year					5 – Year Total
	2026	2027	2028	2029	2030	
Annual NOx Emissions (tonnes/year)	0.25	0.22	0.19	0.17	0.14	0.98
Annual PM_{10} Emissions (tonnes/year)	0.06	0.05	0.05	0.05	0.05	0.27
Annual $PM_{2.5}$ Emissions (tonnes/year) (A)	0.03	0.03	0.03	0.03	0.03	0.17
NOx contribution (£) (rounded up) (B)	£3,114	£2,688	£2,303	£1,958	£1,658	£11,720
$PM_{2.5}$ contribution (£) (rounded up) (B)	£3,055	£2,983	£2,916	£2,853	£2,792	£14,599
Total contribution (£) (rounded up)						***£26,319***
Table notes: (A) Converted utilising the Road Transport PM_{10} to $PM_{2.5}$ factor of 0.622 as provided in the Defra damage costs guidance. (B) Discounted benefits across the period of the policy appraisal.						

In summary, over a 5-year period (commencing from 2026 – the assumed opening year of development), an emission cost has been calculated at ***£26,319.***

The above damage cost provides an indicator of the financial commitment required to offset emissions. The amount (value) determined is not a direct indication of the monetary contribution required to off-set impacts upon air quality. Rather, the scale of damage cost will determine the level of appropriate mitigation required for specific proposals.

7.2.2 Mitigation Measures

Road traffic impacts associated with the operation of the Proposed Development can be considered as having an 'insignificant' effect on local air quality. As such, long-term scheme-

specific mitigation measures in relation to operational effects arising from road traffic emissions are therefore not considered to be necessary.

Notwithstanding, a Travel Plan[29] is provided in support of the planning application. The Plan sets out a package of measures and actions to encourage sustainable and active modes of travel, inclusive of:

- Walking and Cycling Routes;
- Public Transport Links;
- Car Sharing Scheme;
- Sustainable Private Vehicle Use;
- Home/Remote Working and Other Modes;
- Personalised Travel Planning;
- Marketing and Communication – Travel Plan Website/Newsletters
- Local Area and Other Site Users;
- Visitors and Deliveries; and
- Financial Incentives: Travel Voucher.

Further details of these implemented measure can be found in Section 6 of the Travel Plan.

In addition, in relation to Electric Vehicle (EV) charging points and in line with Approved Document S of the Building Regulations (2010)[30], for new dwellings it is a requirement that:

> *Where associated parking spaces are provided for a new residential building, the number of associated parking spaces that have access to an electric vehicle charge point must be a minimum of either of the following.*
>
> *i. The number of associated parking spaces.*
>
> *ii. The number of dwellings that the car park serves. See paragraphs 1.4 to 1.7 for the application of these requirements.*

[29] Campsfield, Southwater. Framework Travel Plan (original). Dated November 2024.

[30] Infrastructure for the charging of electric vehicles. Approved Document S. The Building Regulations, 2010. 2021 edition – for use in England.

8.0 Conclusions

SLR has undertaken an air quality assessment to support a planning application for a proposed residential development comprising up to 82 dwellings and associated infrastructure at Campsfield, Southwater.

8.1 Construction Phase

A qualitative assessment of the potential dust impacts during the construction of the development has been undertaken following IAQM guidance.

Providing effective mitigation measures are implemented, such as those outlined in Table 7-1 of this report, residual impacts from dust emissions during the construction phase are deemed to be 'not significant'.

8.2 Operational Phase

8.2.1 Human Receptors

In terms of operational phase effects at human receptors, the Proposed Development is expected to generate road traffic volumes well below the EPIC & IAQM *indicative criteria* for assessment. As such, it is considered that road traffic impacts associated with the operation of the Proposed Development will have an 'insignificant' effect on local air quality.

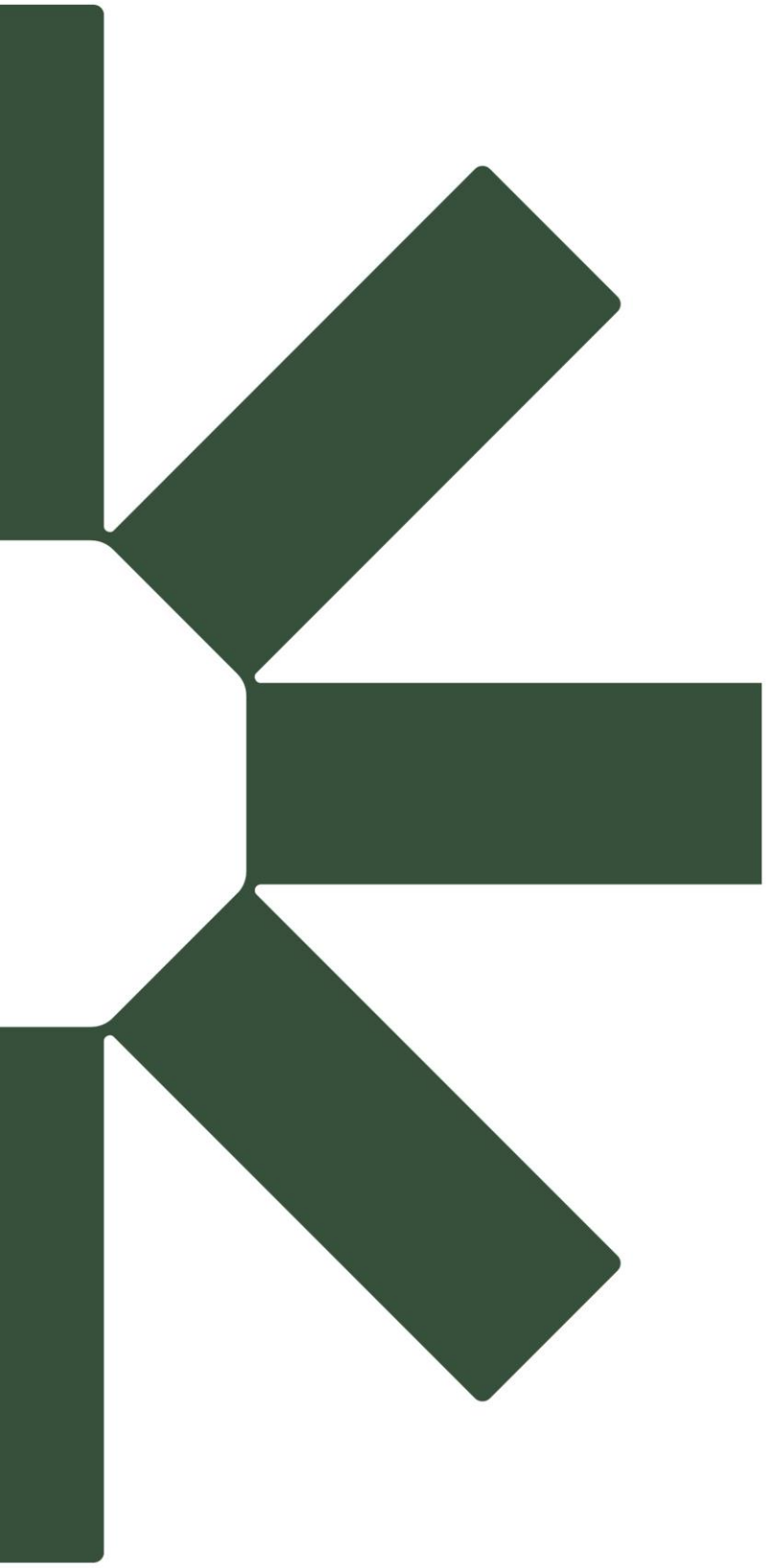
A qualitative site suitability assessment has been undertaken. In line with the EPIC & IAQM guidance, the Site is found to be suitable for its proposed purpose (i.e. residential use). Effects associated with likely exposure of future occupants are considered to be 'not significant'.

In accordance with the Sussex-air guidance, an estimation of the pollutant emission costs associated with the Proposed Development has been undertaken. The calculated damage cost is £26,319.

8.2.2 Ecological Receptors

Consideration has been given to potential impacts on habitats within identified ecological designations within the vicinity of the Site. This has been limited to the Ancient Woodland sites Pollards Hill, Nuthorn Wood, Upper Lag and an unnamed area of woodland to the nothwest of the Site.

The impact of road traffic emissions on these sites has been screened out based on 'project alone' development trips being below the 1,000 AADT (total vehicles) screening threshold. It is therefore concluded that road traffic emission contributions from the Proposed Development will result in *no likely significant effect* to the ecological designations.



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