



Stoney Lane, Prescott

Air Quality Assessment

Taylor Wimpey North West

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Basis of Report

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1.0 Introduction

SLR Consulting Ltd (SLR) has been commissioned by Taylor Wimpey North West to undertake an Air Quality Assessment (AQA) to accompany the planning application for 204 dwellings and associated infrastructure (the 'Proposed Development'), on land at the former Glen Dimplex manufacturing facility, Stoney Lane, Prescott (the 'Site').

The Site currently comprises the former Glen Dimplex manufacturing facility and associated parking and infrastructure. It is located within the administrative area of Knowsley Metropolitan Borough Council (KMBC) and is located at the approximate National Grid Reference (NGR): x348000, y391600. The surrounding area comprises:

- Stoney Lane running adjacent to the northern boundary, beyond which are existing residential dwellings and Whiston Hospital;
- An existing commercial use to the immediate east;
- The Saint Edmund Arrowsmith Catholic Academy and associated grounds to the immediate south, alongside Willis House of the National Health Service (NHS); and
- Existing residential dwellings and Cumber Lane to the immediate west.

Primary vehicular access to the Site will be via Stoney Lane to the north.

1.1 Scope of Assessment

Consultation with the Environmental Health Officer (EHO) at KMBC was undertaken to agree upon the extent and methodology of the AQA¹. The following scope of works has been undertaken as part of this AQA, in line with published guidance and best practice:

- Baseline Evaluation – Assessment of existing air quality in the local area;
- Construction Phase – Identification and assessment of potential air quality impacts associated with the construction phase of the Proposed Development;
- Operational Phase – Identification and assessment of potential air quality impacts associated with the operational phase of the Proposed Development; and
- Mitigation Measures – Identification of mitigation measures, as appropriate.

¹ Email sent from SLR Consulting Ltd to KMBC (Environmentalhealth@knowsley.gov.uk), dated 2nd October 2025. Response received on 7th October 2025.



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

2.1.1.1 Air Quality Standards

The Air Quality Standards Regulations 2010² (AQSR) transpose both the EU Ambient Air Quality Directive (2008/50/EC), and the Fourth Daughter Directive (2004/107/EC) within UK legislation, in order to align and mirror European obligations. The AQSR includes Limit Values which are legally binding ambient concentration thresholds, however, must be assessed at specific locations (micro and macroscale sampling points). Carriageways or central reservations of roads and any location where the public do not have access (e.g. industrial sites) are exempt. If the sampling point does not comply with the siting locations (Schedule 1: AQSR), then strict comparison cannot be made.

Following the UK's withdrawal from the EU, the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020³ was introduced to mirror revisions to supporting EU legislation. The fine particulate matter (PM_{2.5}) Limit Value is 20µg/m³ (to be met by 2020).

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

In response to persistent exceedences, the Government published its 2017 plan⁴ for reducing roadside nitrogen dioxide (NO₂) concentrations in order to achieve compliance in the shortest time possible. This has resulted in the introduction of Clean Air Zones across England. However, KMBC were not identified as required to conduct a feasibility study to achieve compliance.

2.1.1.2 Environment Targets (Fine Particulate Matter) Regulations

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023⁵ introduced an annual mean concentration target of 10µg/m³ to be met across England by 2040. Central Government and Devolved Administrations is responsible for meeting this target, however not until 2040. Local Authorities have no responsibility to achieve this target.

2.1.2 Local Obligations

Part IV of the Environment Act 1995 (as amended) requires the Secretary of State to review the national Air Quality Strategy (AQS) every five years and modify if required. It also

² The Air Quality Standards Regulations (England) 2010, Statutory Instrument No 1001, The Stationary Office Limited.

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

⁴ UK Plan for Tackling Roadside Nitrogen Dioxide Concentrations, (2017).

⁵ The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. UK Statutory Instruments 2023 No. 96.



established the system of Local Air Quality Management (LAQM) for Local Authorities to regularly review and assess air quality within its area.

The Air Quality (England) Regulations 2000 (as amended) ('the Regulations') provide the statutory basis for the Air Quality Objectives Local Authorities must adhere to under LAQM in England. PM_{2.5} is not currently cited within the Regulations, however in line with the AQS and the '*PM_{2.5} Targets: Interim Planning Guidance*' issued by the Department for Environment, Food & Rural Affairs (Defra) in October 2024⁶, 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 (relevant exposure). Table B provides an 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 2023⁷. 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 A. These are primarily based upon the Air Quality Objectives Local Authorities are responsible for achieving – reflective of the Local Planning Authority's duties. The PM_{2.5} AQSR AQAL has also been included for completeness, to provide an indicative assessment (as the sampling point may not comply with the siting locations prescribed under Schedule 1: AQSR).

Table A: 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
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).		

⁶ Defra, PM_{2.5} Targets: Interim Planning Guidance, (2024).

⁷ Air Quality Strategy: Framework for Local Authority Delivery, Department for Environment Food and Rural Affairs, April 2023.



Table B: 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

2.1.3 Environmental Protection Act 1990

The Environmental Protection Act 1990⁸ 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 PM₁₀) 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.

2.2 Policy

2.2.1 National Policy

2.2.1.1 Clean Air Strategy

The 2019 Clean Air Strategy⁹ 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.

2.2.1.2 Environment Improvement Plan 2023

The 2023 Environment Improvement Plan¹⁰ 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 Environment

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

⁹ The Clean Air Strategy, Defra. January 2019.

¹⁰ Environment Improvement Plan 2023, Defra. 2023.



Improvement Plan builds on the 2019 Clean Air Strategy by setting environmental targets and commitments to reduce air pollution. Goal 2 of the 25YEP is Clean Air – which relates to improving air quality.

2.2.1.3 National Planning Policy Framework

The December 2024 update to the National Planning Policy Framework¹¹ (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 199: Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts 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.”

The NPPF is accompanied by web based supporting Planning Practice Guidance (PPG)¹² which includes guiding principles on how planning can take account of the impacts of new development on air quality. In regard to 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”*.

¹¹ Ministry of Housing, Communities & Local Government, National Planning Policy Framework, (2024).

¹² Ministry of Housing, Communities & Local Government, Planning Practice Guidance: Air Quality, (2019).



2.2.2 Local Policy

2.2.2.1 Local Plan

The Knowsley Local Plan Core Strategy¹³ was adopted in January 2016 and aims to guide the development in the area until 2028. Within the Knowsley Local Plan Core Strategy, the following policies relates to air quality:

“Policy CS2: Development Principles

New development in Knowsley and the preparation of subsequent stages of the Local Plan will be expected to support the following development principles:

[...]

Principle 4: Recognise environmental limits, protect and enhance environmental assets, enhance local character and promote quality of place by:

[...]

e) Mitigating potential negative impacts of traffic growth and road traffic on highway safety, air quality, noise and health;

[...]

j) Minimising negative impact upon flood risk, air quality, water quality, land quality, soil quality, and noise or vibration levels and ensuring any negative impacts are appropriately mitigated.

[...]”

“Policy CS7: Transport Networks

[...]

Location, Design and Management of New Development

New development will be required to be:

[...]

e) inclusive of measures that will mitigate carbon emissions and improve air quality where appropriate.

[...]”

The above policies have been considered as part of this assessment.

2.2.3 Regional Policy

KMBC has adopted the *Liverpool City Region Spatial Planning Statement of Common Ground (October 2019)*, which was jointly prepared in response to the February 2019 publication of the NPPF and requirement for strategic policy-making authorities to document agreement and cooperation on cross boundary strategic planning matters. Within this document, the following policy relates to air quality:

“19.

The LCR [Liverpool City Region] authorities and other partners will work together to address cross-boundary air quality issues and to deliver mitigation and measures to deliver air quality improvements across the City Region.”

¹³ Knowsley Metropolitan Borough Council, Knowsley Local Plan Core Strategy, January 2016.



2.3 Assessment Guidance

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

- Defra: Local Air Quality Management Technical Guidance (LAQM.TG(22))¹⁴;
- Defra: COVID-19: Supplementary Guidance. Local Air Quality Management Reporting in 2021¹⁵;
- Defra: PM_{2.5} Targets: Interim Planning Guidance⁶ (the 'PM_{2.5} IPG');
- National Highways: Design Manual for Roads and Bridges, LA105 - Air Quality (Vertical Barriers)¹⁶ (the 'DMRB LA 105' guidance);
- 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 Quality¹⁷ (hereafter referred to as the 'EPIC & IAQM guidance');
- IAQM: Guidance on the Assessment Dust from Demolition and Construction¹⁸; and
- IAQM: Use of 2020 and 2021 Monitoring Datasets¹⁹.

¹⁴ Local Air Quality Management Technical Guidance (22), Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland. May 2025.

¹⁵ Defra and the Greater London Authority, COVID-19: Supplementary Guidance. Local Air Quality Management Reporting in 2021. April 2021.

¹⁶ National Highways, DMRB, LA 105 – Air Quality (Vertical Barriers), (2024).

¹⁷ EPIC and IAQM, Land-Use Planning and Development Control: Planning for Air Quality, v1.2 2017.

¹⁸ IAQM, Guidance on the Assessment Dust from Demolition and Construction, v2.2, January 2024.

¹⁹ IAQM, Use of 2020 and 2021 Monitoring Datasets, v1.1, December 2023.



3.0 Assessment Methodology

3.1 Construction Phase

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 PM₁₀; 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'.

Given the short-term nature of the construction phase and the comparatively low volume of vehicle movements that will likely arise (when compared to the operational phase, for which a full assessment has been undertaken), it is unlikely that significant air quality effects from development related road traffic emissions during the construction phase will arise. Such potential impacts have therefore been scoped out from requiring detailed assessment based on their assumed 'insignificant' effect in reference to the EPIC & IAQM guidance.

3.2 Operational Phase Road Traffic Emissions Assessment

In order to appropriately assess road traffic emission impacts associated with the operation of the Proposed Development as well as the suitability of the Site for residential use, detailed dispersion modelling has been undertaken using the Cambridge Environmental Research Consultants (CERC) ADMS-Roads v5.1 dispersion model, focussing on concentrations of NO₂, PM₁₀ and PM_{2.5} for the following scenarios:

- 2024 Base Case (2024 BC) – Base flows for the year (2024);
- 2031 Do Minimum (2031 DM) – Without development flows for the assumed year of opening, inclusive of any relevant committed development flows; and



- 2031 Do Something (2031 DS) – ‘Do Minimum’ flows, plus all trips associated with the Proposed Development for the proposed year of opening.

For the above base case (2024) and future year (2031) scenarios, concurrent emission factors and background pollutant concentrations have been used.

Details of model inputs are discussed in turn, below. Advanced inputs are discussed in Appendix A.

3.2.1 Traffic Inputs

Traffic data was provided by Eddisons, the appointed transport consultant to the Applicant. Traffic speeds were modelled at the relevant speed limit for each road. However, where appropriate, the speeds have been reduced to simulate queues at junctions, traffic lights and other locations where queues or slower traffic are known to be an issue, in accordance with LAQM.TG(22). Traffic speeds have been assumed to be consistent across all the modelled scenarios.

The Emissions Factors Toolkit (EFT) version 13.1 developed by Defra²⁰ has been used to determine vehicle emission factors for input into the ADMS-Roads dispersion model.

To inform the spatial extent of the model, changes in traffic volumes on the local road network were compared to the ‘indicative criteria for assessment’ provided by EPIC & IAQM guidance. These 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); and/or
 - A change of Heavy-Duty Vehicle (HDV) flows of more than 100 as a 24-hour AADT.
- Within, or within 200m of, 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.

It is noted that the Transport Assessment provided in support of the Proposed Development has sought to offset the trip generation from the proposed use against the consented use of the Site. However, it was not possible to survey the trip generation associated with the existing use of the Site. As such, to provide a precautionary assessment herein, no offsetting of trips associated with the consented / existing use of the Site has been included. This is considered to be a conservative approach to assessment due to the possibility of ‘double counting’ trips and therefore, associated impacts (i.e. concentration change) and absolute assessment against the AQALs.

Where available, neighbouring road links (i.e. links within 200m of a modelled receptor) were also included within the dispersion model to facilitate a robust assessment, rather than rely on their individual contributions being represented within the appropriate background datasets. For those links where distributed operational phase Proposed Development trips fall below the EPIC & IAQM indicative criteria for assessment, it can be concluded that at adjacent receptor locations trips will result in an ‘insignificant’ effect on air quality.

Details of the traffic flows used in this assessment are provided in Appendix A and Table P, whilst the modelled roads in relation to the Site are presented in Figure 2.

²⁰ Defra, EFT v13.1 (2025). <https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>.



3.2.2 Meteorological Data

To calculate pollutant concentrations at identified sensitive receptor locations the dispersion model uses sequential hourly meteorological data, including wind direction, wind speed, temperature, cloud cover and stability, which exert significant influence over atmospheric dispersion.

To calculate pollutant concentrations at identified sensitive receptor locations the dispersion model uses sequential hourly meteorological data, including wind direction, wind speed, temperature, cloud cover and stability, which exert significant influence over atmospheric dispersion.

The dispersion modelling has been undertaken using Numerical Weather Prediction (NWP) data for the 2024 period. The NWP dataset has been centred around the NGR: x348000, y391550 (i.e. that of the Site).

In respect of using NWP data for dispersion modelling, LAQM.TG(22) states:

“NWP data may be a useful alternative to OBS [standard meteorological observations data] data where there are no suitable meteorological data available, or where OBS data are unlikely to represent local meteorological conditions around the modelled source.”

The determination of surface roughness utilised the CORINE (Coordination of Information on the Environment) Land Cover dataset from the European Environment Agency’s Copernicus Land Monitoring Service²¹. A surface roughness value of 0.5m was used to represent the Site locale (corresponding to ‘parkland and open suburbia’).

A wind rose for NWP dataset is presented in Figure 1.

²¹ <https://land.copernicus.eu/en/products/corine-land-cover>, accessed November 2025.



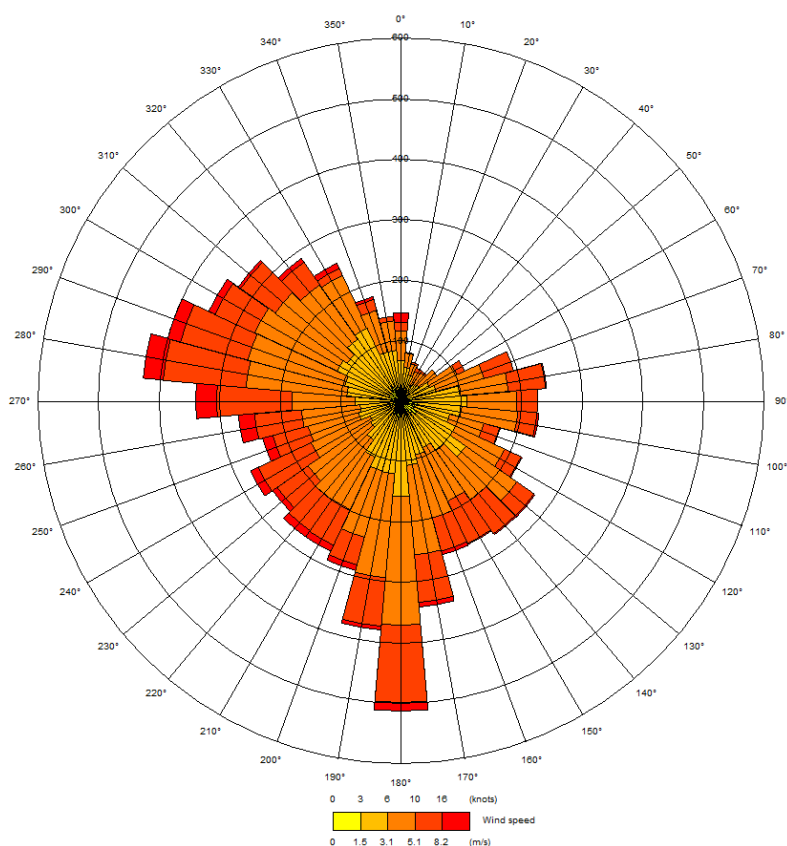


Figure 1: Wind Rose for the Applied NWP Dataset (2024)

3.2.3 Background Concentrations

In the absence of available locally representative background monitoring sites, annual mean background concentrations used for the purposes of the assessment have been obtained from the Defra supplied background maps (2021 reference year)²², based on the 1km grid squares which cover the modelled area. Further detail on these datasets can be found in Section 4.0.

3.2.4 Sensitive Receptors

Human receptors considered in the assessment of emissions from road traffic are shown Table C, whilst their locations are illustrated in Figure 2.

Receptors ER1 – ER8 are representative of worst-case exposure locations at existing receptors within the Site locale, relative to the affected road network discussed. Despite predicted trip generation being below the *indicative criteria for assessment* beyond Stoney Lane (see Table P), pollutant concentrations have been predicted at the façade of Whiston Hospital in recognition of a hospital's sensitivity to air quality and incremental concentrations.

New receptors introduced as a result of the Proposed Development, PR1 – PR3, are selected as the locations of proposed dwellings at potential worst-case exposure on the Site relative to the surrounding modelled road network.

Receptors were considered in relation to exposure at breathing height relative to the adjacent modelled road at ground level (i.e. 1.5m height). Receptor locations represent

²² Defra Background Maps (2021-Reference) <http://uk-air.defra.gov.uk/data/laqm-background-home>.



relevant exposure to the annual mean AQAL – in accordance with LAQM.TG(22) presented in Table B.

Table C: Receptor Locations Considered

Receptor		NGR (m)		Height (m)
ID	Description	X	Y	
Existing Receptors				
ER1	Residential dwelling on Stoney Lane / Cumber Lane junction	347828	391662	1.5
ER2	Residential dwelling on Stoney Lane / Hulton Avenue junction	347763	391693	1.5
ER3	Residential dwelling on Stoney Lane / Dragon Lane junction	347697	391721	1.5
ER4	Whiston Hospital adjacent to Stoney Lane	347747	391736	1.5
ER5	Whiston Hospital adjacent to Dragon Lane	347725	391755	1.5
ER6	Whiston Hospital adjacent to Dragon Lane	347748	391805	1.5
ER7	Whiston Hospital adjacent to Dragon Lane	347800	391930	1.5
ER8	Whiston Hospital adjacent to Stoney Lane	348022	391641	1.5
Site-suitability Receptors				
PR1	Proposed residential dwelling	347879	391647	1.5
PR2	Proposed residential dwelling	347963	391631	1.5
PR3	Proposed residential dwelling	348192	391509	1.5

3.2.5 Model Outputs

The background pollutant concentrations discussed in Section 4.3 have been used in conjunction with the concentrations predicted by the ADMS-Roads model to calculate predicted total annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} for each respective scenario.

For the prediction of annual mean NO₂ concentrations for all modelled scenarios at receptor locations, the road NO_x contributions (adjusted as per Appendix A) have been converted to total NO₂ following the methodology in LAQM.TG(22) using the latest version of Defra's NO_x to NO₂ conversion tool (v9.1)²³. The traffic mix within the calculator was set to "All Other Urban UK traffic" and "Knowsley" was selected as the local authority. The modelled NO₂ road contribution was then added to the appropriate NO₂ background concentration value to obtain an overall total annual mean NO₂ concentration.

For the prediction of short-term NO₂ impacts, LAQM.TG(22) advises that it is valid to assume that exceedances of the 1-hour mean NO₂ AQAL are unlikely to occur where the annual mean NO₂ concentration is <60µg/m³. This approach has thus been adopted for the purposes of this assessment, at relevant receptor locations with an applicable exposure period.

For the prediction of short-term PM₁₀, LAQM.TG(22) provides an empirical relationship between the annual mean and the number of exceedances of the 24-hour mean AQAL for PM₁₀ that can be calculated as follows:

²³ Defra NO_x to NO₂ Calculator v9.1 (2024), available at <https://laqm.defra.gov.uk/air-quality/air-quality-assessment/no2-adjustment-for-nox-sector-removal-tool/>.



$$\text{No. 24-hour mean exceedances} = -18.5 + 0.00145 \times \text{annual mean}^3 + (206/\text{annual mean})$$

This relationship has thus been adopted to determine whether exceedances of the short-term PM₁₀ AQAL are likely in this assessment.

Verification of the ADMS-Roads assessment has been undertaken as per Appendix A.1.1. All results presented in the assessment are calculated following the process of model verification.

3.2.6 Assessing Significance

Guidance for determining operational phase effects associated with air quality is provided by EPIC & IAQM.

Existing Receptors

When describing the developmental impact at a specific existing receptor, the resultant total concentration as well as the concentration change in relation to respective AQALs are both considered – using the approach detailed in Table D.

Table D: Impact Descriptor Matrix for Receptors

Long Term Average Concentration at Receptor in Assessment Year	Change in Concentration relative to AQAL			
	1% (A)	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
Note: (A) Changes <0.5% will be described as Negligible.				

Following derivation of impacts at all receptor locations assessed, the overall significance of the developmental 'effect' is determined based upon consideration, as necessary, of the following factors:

- The existing and future air quality in the absence of the Proposed Development;
- The extent of current and future population exposure to the impacts;
- The worst-case assumptions adopted when undertaking the prediction of impacts; and
- The extent to which the Proposed Development has adopted best practice to eliminate and minimise emissions.

New Receptors

Modelled pollutant concentrations predicted at future receptors have been compared with the relevant AQALs to determine the suitability of the Site for residential use.

As per the EPIC & IAQM guidance, *“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”*.



3.2.7 Uncertainty

Dispersion modelling is inherently uncertain and is principally reliant on the accuracy and representativity of its inputs. In acknowledgement of this, the ADMS-Roads dispersion model has been verified with the latest representative publicly available local monitoring data, as collected by KMBC.

In addition, there is a widely acknowledged disparity between emission factors and ambient monitoring data²⁴. To help minimise any associated uncertainty when forming conclusions from the results, this assessment has utilised the latest EFT version 13.1 utilising COPERT 5.8 emission factors, and associated tools/datasets published by Defra.

The IAQM published a Position Statement on ‘*Dealing with Uncertainty in Vehicle NOx Emissions Within Air Quality Assessments*’ in July 2018²⁵ within which it was suggested to include a sensitivity test to account for predicted large reductions in NOx emissions that were not borne out in measured roadside concentrations. However, the latest iterations of the EFT (from version 9 onwards), reflect the real-world NOx emissions more accurately. As such, the IAQM has withdrawn its position statement saying as such and including:

“It is judged that an exclusively vehicle emissions-based sensitivity test is no longer necessary.

On this basis, the EFT may be used for future year modelling with greater confidence when considering the per vehicle emission, provided that the assessment is verified against measurements made in the year 2016 or later.”

Given the above, use of further sensitivity modelling is not considered relevant or appropriate (i.e. too pessimistic).

²⁴ Carslaw, et al. (2011). Trends in NOx and NO₂ emissions and ambient measurements in the UK.

²⁵ IAQM, Dealing with Uncertainty in Vehicle NOx Emissions Within Air Quality Assessments, July 2018.



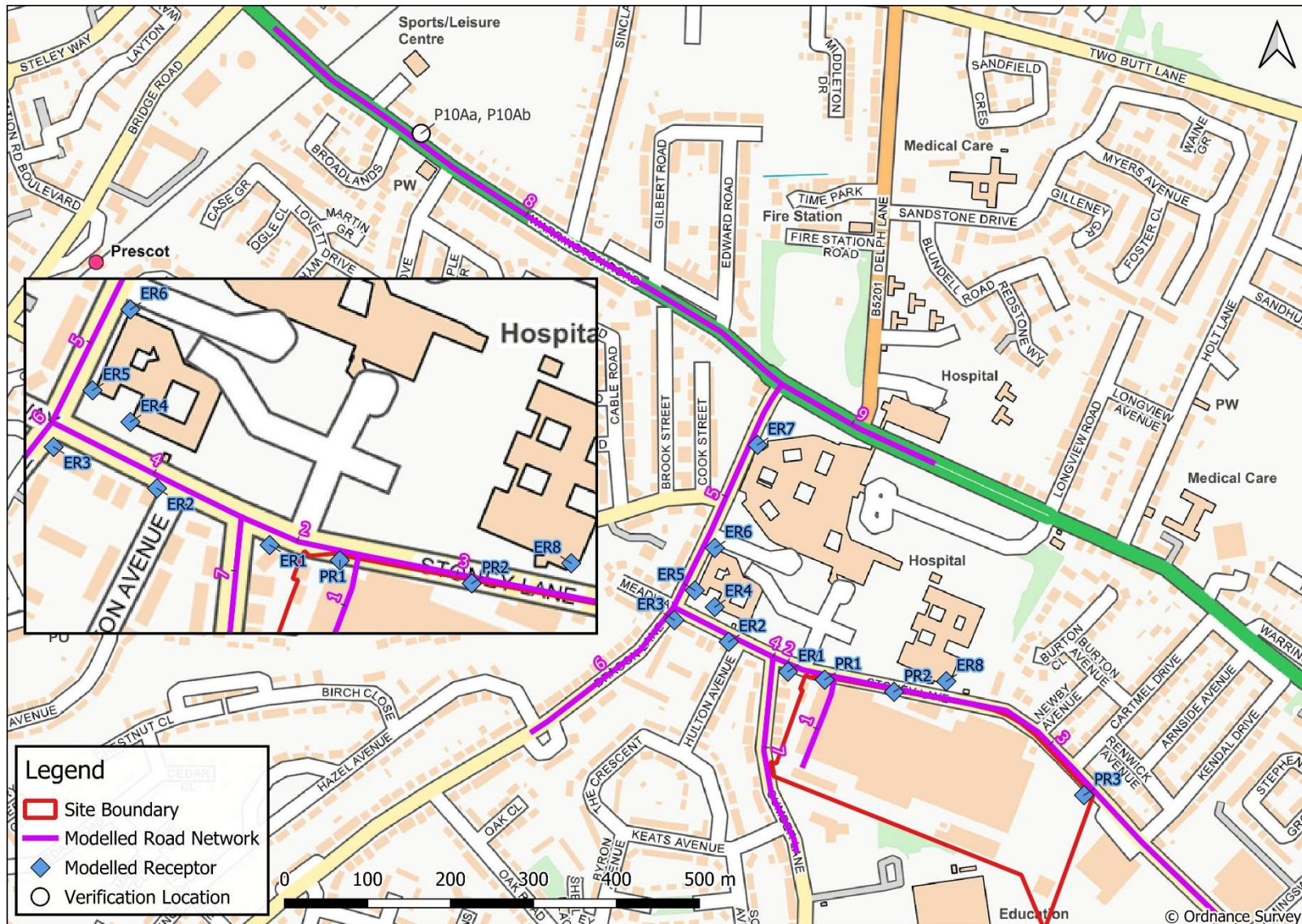


Figure 2: Operational Phase Road Traffic Emissions Assessment



4.0 Baseline Environment

4.1 LAQM Review and Assessment

KMBC, in fulfilment of statutory requirements, has conducted an on-going exercise to review and assess air quality within their administrative area. The latest available LAQM report for KMBC at the time of writing is the 2025 Air Quality Annual Status Report²⁶ (ASR) (the '2025 ASR').

KMBC do not currently have any declared AQMAs within its administrative area. The nearest AQMAs to the Site are the St Helens Metropolitan Borough Council (SHMBC) 'AQMA No.3' located approximately 3.8km to the north-east of the Site, and the Liverpool City Council (LCC) 'Liverpool City AQMA', located approximately 4km to the south-west of the Site. Given the separation distance between the Site and these AQMAs, air quality impacts associated with the Proposed Development are not considered to have any significant effects on their declaration, nor are elevated concentrations associated with these AQMAs likely to have an impact on the Site. As such, no further consideration has been given to AQMA designations within this assessment.

4.2 Review of Air Quality Monitoring

4.2.1 Automatic Air Quality Monitoring

KMBC did not undertake any automatic monitoring within their administrative area during 2024.

The nearest Automatic Urban and Rural Network (AURN) monitor is situated approximately 6.6km to the south-west of the Site, at an 'Urban Traffic' site classification²⁷ (i.e. the 'Widnes Milton Road' AURN). Given the differences in site characteristics and the separation distance between the Site and the monitor, comparable pollutant concentrations are not anticipated.

No further consideration has been given to automatic air quality monitoring networks within this assessment.

4.2.2 Passive Diffusion Tube Monitoring

Passive NO₂ diffusion tube monitoring is currently undertaken by KMBC within the Site locale and wider authority area.

The details and results of the monitoring location of relevance to this assessment are presented in Table E and Table F, respectively, whilst also shown in Figure 3. All monitoring data presented has been ratified by KMBC.

Table E: Local NO₂ Diffusion Tube Monitoring Sites: Details

Site ID	Site Type	NGR (m)		Height (m)	Within AQMA?	Distance and Direction to Site (km)
		X	Y			
P9Aa, P9Ab	Roadside ²⁸	347950	392325	2.2	No	0.68, N

²⁶ Knowsley Metropolitan Borough Council, 2025 Air Quality Annual Status Report, June 2025.

²⁷ Urban Traffic site classification defined within LAQM.TG(22) as: "Sites in an urban area at least 25 metres from the edge of major junctions and no more than 10 metres from the kerbside".

²⁸ Roadside site classification defined by LAQM.TG(22) as: "a site sampling typically within one to five metres of the kerb of a busy road".



Site ID	Site Type	NGR (m)		Height (m)	Within AQMA?	Distance and Direction to Site (km)
		X	Y			
P10Aa, P10Ab	Roadside	347393	392307	2.2	No	0.8, NW
P7Aa, P7Ab	Roadside	346799	391419	2.4	No	1.05, W
P8Aa, P8Ab	Roadside	346792	391617	2.4	No	1.05, W
P4Aa, P4Ab	Roadside	346942	392387	2.4	No	1.17, NW
P5Aa, P5Ab	Roadside	346898	392367	2.4	No	1.19, NW
P6Aa, P6Ab	Roadside	346850	392360	2.4	No	1.23, NW
P3a, P3b	Roadside	346393	392844	2.4	No	1.89, NW
P2a, P2b	Roadside	346164	392807	2.4	No	2.05, NW
P1a, P1b	Roadside	345816	392660	2.4	No	2.28, NW

Table F: Local NO₂ Diffusion Tube Monitoring Sites: Results

Site ID	2024 Data Capture %	Annual Mean NO ₂ Concentration (µg/m ³)				
		2020 (A)	2021 (A)	2022	2023	2024
P9Aa, P9Ab ^(B)	100	-	-	24.0	22.3	21.7
P10Aa, P10Ab ^(B)	100	-	-	18.6	18.6	18.7
P7Aa, P7Ab ^(B)	100	-	-	17.9	16.2	17.1
P8Aa, P8Ab ^(B)	100	-	-	17.9	16.0	16.0
P4Aa, P4Ab ^(B)	100	-	-	23.5	21.4	21.5
P5Aa, P5Ab ^(B)	75	-	-	20.4	19.0	17.7
P6Aa, P6Ab ^(B)	100	-	-	21.1	19.0	18.7
P3a, P3b	92.7	26.4	25.7	24.9	25.1	25.3
P2a, P2b	75	22.4	25.6	22.4	20.3	20.0
P1a, P1b	100	22.6	25.1	21.9	21.5	22.7
Notes: (A) As per guidance published by Defra ¹⁵ and the IAQM's Position Statement ¹⁹ , 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 ¹⁹ further states "the 2022 (or later year) monitoring data is likely to represent a post-pandemic baseline". (B) Monitoring at these locations commenced in 2022.						

As shown in Table F, none of the considered monitoring locations recorded exceedences of the annual mean NO₂ AQAL (i.e. 40µg/m³) during any year between 2020 to 2024.

Furthermore, as stated within the 2025 ASR, KMBC recorded no exceedences of the AQAL at any of the wider monitoring locations within the administrative area during 2023 or 2024.

The monitoring location closest to the Site, 'P9Aa, P9Ab', recorded a 2024 annual mean NO₂ concentration of 21.7µg/m³, representing 54.3% of the AQAL.



However, more so than 'P9Aa, P9Ab', monitoring locations 'P7Aa, P7Ab' and 'P8Aa, P8Ab' are situated in a relatively similar setting to that of the Site (i.e. a residential area set away from major road links) and therefore provide a reasonable indication for the concentrations likely to be found at the Site. These monitoring locations recorded 2024 annual mean NO₂ concentrations of 17.1µg/m³ and 16.0µg/m³, representing 42.3% and 40% of the AQAL, respectively.

Overall, there has been a downward trend in annual mean NO₂ concentrations at the majority of the considered monitoring locations, with some slight year-on-year fluctuations.

The empirical relationship given in LAQM.TG(22) states that exceedences of the 1-hour mean NO₂ AQAL is unlikely to occur where annual mean concentrations are <60µg/m³. This indicates that an exceedence of the 1-hour mean AQAL was unlikely to have occurred at the above location in between 2020 and 2024.

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_x, NO₂, PM₁₀ and PM_{2.5} using a base year of 2021 (the year in which comparisons between modelled and monitoring are made).

The Defra mapped background concentrations for the base year (2024) and the earliest anticipated opening year of the development (2031) are presented in Table G.

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

Table G: Defra Mapped Background Pollutant Concentrations

Grid Square (X, Y) (m)	Year	Annual Mean Concentration (µg/m ³)			
		NO _x	NO ₂	PM ₁₀	PM _{2.5}
347500, 391500	2024	21.2	15.5	13.3	8.0
	2031	16.9	12.6	12.9	7.5
348500, 391500	2024	15.9	12.0	12.4	7.4
	2031	12.1	9.3	12.0	7.0
AQAL		N/A	40	40	20

4.4 Defra's Pollution Climate Mapping Model

The Pollution Climate Mapping (PCM) model comprises a suite of models that provide annual mean pollutant concentrations across the UK. It includes predictions at roadside locations for major roads and serves as Defra's primary mechanism for reporting compliance with National Obligations (Section 2.1.1).

Modelled concentrations reflect roadside exposure, based on receptors located 4m from the road at a height of 2m. Concentrations are expected to decline with increasing distance from the road.

The latest PCM dataset includes semi-empirical roadside annual mean concentration estimates for NO₂, PM₁₀ and PM_{2.5} based on a 2023 reference year (the year in which



modelled outputs are compared against monitoring data)²⁹. This provides a conservative baseline as air quality is expected to improve in future years.

The PCM road link nearest to the Site is the A57 Warrington Road, situated approximately 240m to the north of the Site (Figure 3). Reported values are presented in Table H, alongside the relevant AQALs.

Table H: Defra PCM 2023 Modelled Annual Mean Concentrations

Road Link	Year	Annual Mean Concentration (µg/m³)		
		NO ₂	PM ₁₀	PM _{2.5}
A57 Warrington Road	2023	18.3	12.8	7.4
Relevant AQAL		40	40	20

All values are well below the relevant annual mean AQALs operable in each respective assessment year.

²⁹ Defra PCM (2023 Reference Year). https://uk-air.defra.gov.uk/data/modelled-data?base_year=2023



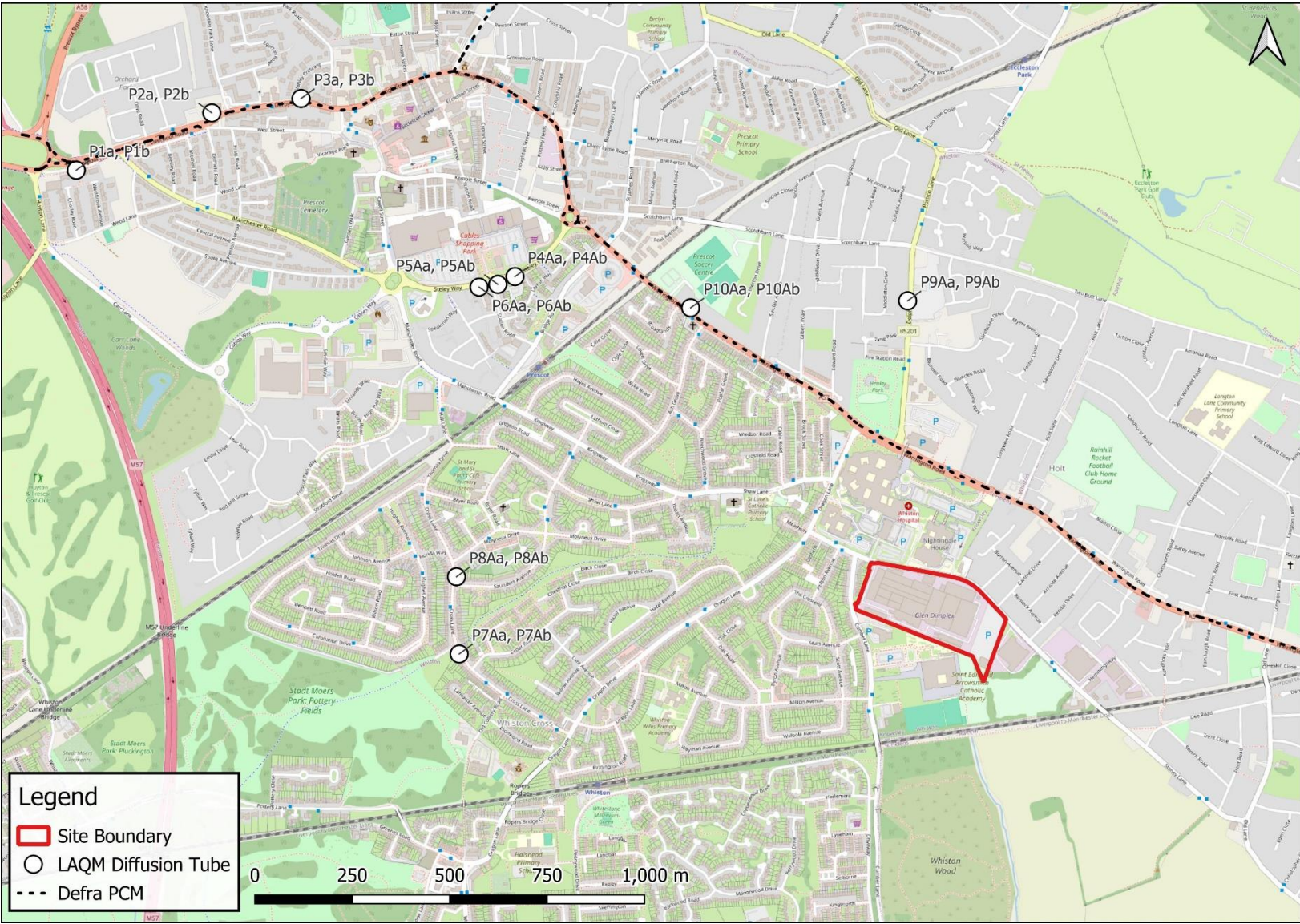


Figure 3: Baseline Air Quality Datasets



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 but no designated habitat sites within 50m of the Site boundary or up to 250m of the Site entrance(s) / 50m of the roads anticipated to witness construction traffic movements. Therefore, an assessment of construction dust on human receptors, only, is required.

5.1.2 Potential Dust Emissions Magnitude

5.1.2.1 Demolition

Demolition of the former Glen Dimplex manufacturing facility has been approved under a separate S80 and Prior Approval Notice application, and therefore demolition activities are not considered to be relevant to the planning application for the Proposed Development. As such, impacts associated with demolition have been scoped out of this assessment.

5.1.2.2 Earthworks

The total area of the Site is approximately 58,000m². Site earthworks are therefore required over an area between 18,000m² – 110,000m². In addition, according to Magic³⁰, the main surface texture class of the underlying soil is regarded to be 'loamy', which is considered to have a moderate dust generating potential.

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

5.1.2.3 Construction

The proposals are for up to 204 dwellings. The total building volume associated with the Proposed Development is predicted to be >12,000m³. However, in recognition of the phased construction of residential schemes, the total building volume associated with the Proposed Development is considered likely to be <75,000m³ at any given time. Building materials are anticipated to be as standard brick masonry.

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

5.1.2.4 Trackout

Construction vehicles will access the Site from Stoney Lane. Given the scale and nature of works required, there are anticipated to be a maximum 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.

³⁰ <https://magic.defra.gov.uk/MagicMap.aspx>.



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

5.1.2.5 Summary

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

Table I: 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 anticipated to be 10 – 100 residential properties (receptors of high sensitive) within 20m of the Site boundary. Moreover, within 50m of the Site boundary are buildings associated with the Whiston Hospital, which are considered to be receptors of high sensitivity.

Furthermore, there are believed to be 10 – 100 residential receptors within 20m of sections of the Site access within 250m of the Site entrance, including buildings associated with Whiston Hospital. It is noted that at the time of writing, it is not known where construction vehicles will enter the Site as there are currently entrances at the western and eastern extents, with the masterplan³¹ further showing emergency entrances in these locations. Calculation of sensitivity to trackout has therefore considered the trackout routes to be 250m from each of these extents, to provide a conservative assessment.

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 PM₁₀ concentration for the 1km² grid squares which cover the development (x347500, y391500) is estimated to be 13.3µg/m³, based upon 2024 mapped background estimates (i.e. falls into the <24µg/m³ class).

Given the above information regarding the number and nature of surrounding receptors within specified screening distances of the Site boundary, 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 Summary

A summary of the sensitivity of the area defined for each potential impact is displayed in Table J, whereas the spatial densities of receptors discussed in relation to the Site boundary are illustrated in Figure 4.

³¹ Taylor Wimpey Drawing number: 225053-00-1000-Revision U.



Table J: 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

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 K below to determine the risk of impact which is used to inform the selection of appropriate mitigation.

Table K: 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

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 (Table K). 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 4: Construction Dust Buffers



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 NO₂ Modelling Results

Table L presents the annual mean NO₂ concentrations predicted at all assessed receptor locations for the 2024 BC, 2031 DM and 2031 DS scenarios.

Table L: Predicted Annual Mean NO₂ Concentrations – 2031 Development Opening Year

Receptor	Predicted Annual Mean NO ₂ Concentration (µg/m ³)			% Change of AQAL	% of 2031 DS Relative to AQAL	EPIC & IAQM Impact Descriptor
	2024 BC	2031 DM	2031 DS			
Existing Receptors						
ER1	21.6	15.2	15.4	+0.4	38.5	Negligible
ER2	20.9	15.0	15.1	+0.2	37.8	Negligible
ER3	21.2	15.2	15.3	+0.1	38.3	Negligible
ER4	19.4	14.4	14.4	+0.1	36.0	Negligible
ER5	20.7	15.2	15.2	+0.2	38.0	Negligible
ER6	19.5	14.6	14.7	+0.1	36.8	Negligible
ER7	20.4	15.2	15.3	+0.2	38.3	Negligible
ER8	14.2	10.2	10.3	+<0.1	25.8	Negligible
Site-suitability Receptors						
PR1	-	-	14.3	-	35.8	-
PR2	-	-	13.9	-	34.8	-
PR3	-	-	10.1	-	25.3	-

The maximum predicted annual mean NO₂ concentration at all existing receptors during the 2024 BC scenario was at Receptor ER1 with a predicted concentration of 21.6µg/m³, representing 54.0% of the AQAL. Receptor ER1 is a residential dwelling located at the three-way signalised junction of Stoney Lane and Cumber Lane, where slow moving and queuing traffic is anticipated, resulting in an elevated road traffic emission contribution. The extent of Stoney Lane west of the Site access and east of Dragon Lane is characterised by signalised junctions, and therefore slow moving and queuing traffic is anticipated along this entire length of road.

The maximum predicted annual mean NO₂ concentration at existing receptors with the Proposed Development in place (2031 DS) was at Receptor ER1 with a predicted concentration of 15.4µg/m³, representing 38.5% of the AQAL (i.e. 'well-below'). The change in the annual mean NO₂ concentration at this location, due to the Proposed Development (2031 DS vs. 2031 DM) relative to the AQAL was +0.4% (i.e. 0.2µg/m³). This location is additionally that of the maximum observed increase in annual mean NO₂ concentrations at all existing receptors as a result of the Proposed Development. Receptor ER1 is expected to witness the greatest increase in road traffic flows as a result of the Proposed Development, prior to further distribution onto the wider road network.



In accordance with EPIC & IAQM guidance, the impact of the Proposed Development on annual mean NO₂ concentrations at all assessed existing receptors is considered to be 'negligible'. Given the marginal increase in annual mean NO₂ concentrations associated with the Proposed Development, and that there are no predicted exceedences of the annual mean NO₂ AQAL, unmitigated effects associated with annual mean NO₂ concentrations at all existing assessed receptor locations are therefore considered to be 'not significant'.

The maximum predicted annual mean NO₂ concentration (2031 DS) at all receptors newly introduced by the Proposed Development was 14.3µg/m³, representing 35.8% of the AQAL (i.e. 'well-below'). As such, the Site is considered to be suitable for residential development in relation to NO₂ concentrations and unmitigated effects from air quality would be considered 'not significant'.

It is unlikely that an exceedence of the 1-hour mean NO₂ AQAL will occur in reference to the empirical relationship given in LAQM.TG(22) and predicted maximum absolute annual mean NO₂ concentrations. Effects associated with likely 1-hour mean NO₂ concentrations at all assessed receptor locations (including those on Site) are therefore considered to be 'not significant'.

6.2 PM₁₀ Modelling Results

Table M presents the annual mean PM₁₀ concentrations predicted at all assessed receptor locations for the 2024 BC, 2031 DM and 2031 DS scenarios.

Table M: Predicted Annual Mean PM₁₀ Concentrations – 2031 Development Opening Year

Receptor	Predicted Annual Mean PM ₁₀ Concentration (µg/m ³)			% Change of AQAL	% of 2031 DS Relative to AQAL	EPIC & IAQM Impact Descriptor
	2024 BC	2031 DM	2031 DS			
Existing Receptors						
ER1	15.1	14.7	14.8	+0.3	37.0	Negligible
ER2	14.9	14.5	14.5	+0.2	36.3	Negligible
ER3	14.9	14.5	14.5	+<0.1	36.3	Negligible
ER4	14.5	14.0	14.1	+0.1	35.3	Negligible
ER5	14.8	14.5	14.5	+0.1	36.3	Negligible
ER6	14.6	14.4	14.4	+0.1	36.0	Negligible
ER7	15.0	14.8	14.8	+0.1	37.0	Negligible
ER8	13.2	12.7	12.8	+<0.1	32.0	Negligible
Site-suitability Receptors						
PR1	-	-	14.1	-	35.3	-
PR2	-	-	14.0	-	35.0	-
PR3	-	-	12.6	-	31.5	-

The maximum predicted annual mean PM₁₀ concentration at all existing receptors during the 2024 BC scenario was at Receptor ER1 with a predicted concentration of 15.1µg/m³, representing 37.8% of the AQAL (i.e. 'well-below').

The maximum predicted annual mean PM₁₀ concentration at existing receptors with the Proposed Development in place (2031 DS) was at Receptor ER7 with a predicted concentration of 14.81µg/m³ (14.78µg/m³ at Receptor ER1), representing 37.0% of the



AQAL. The change in the annual mean PM₁₀ concentrations at this location, due to the Proposed Development (2031 DS vs. 2031 DM) relative to the AQAL was +0.1% (i.e. 0.05µg/m³). Receptor ER7 represents the façade of Whiston Hospital to the east of Dragon Lane, approximately 58m to the south of the signalised junction with the A57 Warrington Road.

The maximum observed increase in annual mean PM₁₀ concentrations at all existing receptors as a result of the Proposed Development (2031 DS vs. 2031 DM) was +0.3% (i.e. 0.1µg/m³) at Receptor ER1.

In accordance with EPIC & IAQM guidance, the impact of the Proposed Development on annual mean PM₁₀ concentrations at all assessed existing receptors is considered to be 'negligible'. Given the marginal increase in annual mean PM₁₀ concentrations associated with the Proposed Development, and that there are no predicted exceedences of the annual mean PM₁₀ AQAL, unmitigated effects associated with annual mean PM₁₀ concentrations at all existing assessed receptor locations are therefore considered to be 'not significant'.

The maximum predicted annual mean PM₁₀ concentration (2031 DS) at all receptors newly introduced by the Proposed Development was 14.1µg/m³, representing 35.3% of the AQAL (i.e. 'well-below'). As such, the Site is considered to be suitable for residential development in relation to PM₁₀ concentrations and unmitigated effects from air quality would be considered 'not significant'.

Based upon the maximum predicted annual mean PM₁₀ concentration of 14.8µg/m³, there are expected to be no days where 24-hour mean PM₁₀ concentrations are predicted to be greater than 50µg/m³. This is therefore below the 35 permitted 24-hour mean concentrations in excess of 50µg/m³ prescribed within the 24-hour mean AQAL. Effects associated with likely 24-hour mean PM₁₀ concentrations at all assessed receptor locations (including those on Site) are therefore considered to be 'not significant'.

6.3 PM_{2.5} Modelling Results

Table N presents the annual mean PM_{2.5} concentrations predicted at all assessed receptor locations for the 2024 BC, 2031 DM and 2031 DS scenarios.

Table N: Predicted Annual Mean PM_{2.5} Concentrations – 2031 Development Opening Year

Receptor	Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)			% Change of AQAL	% of 2031 DS Relative to AQAL	EPIC & IAQM Impact Descriptor
	2024 BC	2031 DM	2031 DS			
Existing Receptors						
ER1	8.9	8.5	8.5	+0.3	42.5	Negligible
ER2	8.8	8.4	8.4	+0.2	42.0	Negligible
ER3	8.8	8.4	8.4	+<0.1	42.0	Negligible
ER4	8.6	8.1	8.2	+0.1	41.0	Negligible
ER5	8.8	8.4	8.4	+0.1	42.0	Negligible
ER6	8.7	8.3	8.3	+0.1	41.5	Negligible
ER7	8.9	8.5	8.5	+0.1	42.5	Negligible
ER8	7.8	7.4	7.4	+<0.1	37.0	Negligible
Site-suitability Receptors						
PR1	-	-	8.2	-	41.0	-



Receptor	Predicted Annual Mean PM _{2.5} Concentration (µg/m ³)			% Change of AQAL	% of 2031 DS Relative to AQAL	EPIC & IAQM Impact Descriptor
	2024 BC	2031 DM	2031 DS			
PR2	-	-	8.1	-	40.5	-
PR3	-	-	7.3	-	36.5	-

The maximum predicted annual mean PM_{2.5} concentration at existing receptors during the 2024 BC scenario was at Receptor ER1 with a predicted concentration of 8.94µg/m³ (8.85µg/m³ at Receptor ER7) representing 44.5% of the AQAL (i.e. 'well-below').

The maximum predicted annual mean PM_{2.5} concentration at existing receptors with the Proposed Development in place (2031 DS) was at Receptor ER7 with a predicted concentration of 8.55µg/m³ (8.53µg/m³ at Receptor ER1), representing 42.5% of the AQAL. The change in the annual mean PM_{2.5} concentrations at this location, due to the Proposed Development (2031 DS vs. 2031 DM) relative to the AQAL was 0.1% (i.e. 0.03µg/m³).

The maximum observed increase in annual mean PM_{2.5} concentrations as a result of the Proposed Development at all existing receptors (2031 DS vs. 2031 DM) was 0.3% (i.e. 0.06µg/m³) at Receptor ER1.

In accordance with EPIC & IAQM guidance, the impact of the Proposed Development on annual mean PM_{2.5} concentrations at all assessed existing receptors is considered to be 'negligible'. Given the marginal increase in annual mean PM_{2.5} concentrations associated with the Proposed Development, and that there are no predicted exceedences of the annual mean PM_{2.5} AQAL, unmitigated effects associated with annual mean PM_{2.5} concentrations at all existing assessed receptor locations are therefore considered to be 'not significant'.

The maximum predicted annual mean PM_{2.5} concentration (2031 DS) at all receptors newly introduced by the Proposed Development was 8.2µg/m³, representing 41.0% of the AQAL (i.e. 'well-below'). As such, the Site is considered to be suitable for residential development in relation to PM_{2.5} concentrations and unmitigated effects from air quality would be considered 'not significant'.

6.3.1 PM_{2.5} Appraisal

The Defra PM_{2.5} IPG emphasises the need to assess exposure to PM_{2.5} concentrations and requires applicants to minimise exposure to PM_{2.5} emission sources whenever feasible and appropriate.

As presented in Section 6.3, the assessment of PM_{2.5} concentrations at proposed dwellings predicts no exceedences of the annual mean AQAL in due consideration of road traffic emission contributions and background concentrations.

A review of aerial imagery in the Site locale identifies no pollution further sources of PM_{2.5} emission contribution which warrant further assessment.



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 PM₁₀.

In order to control potential impacts, Table O presents a range of mitigation measures which could be applied and align with the IAQM guidance. With the effective application of the dust mitigation measures, residual effects will be 'not significant'.

It is noted that the IAQM Dust guidance refers to "*for construction as a whole, it is recommended that the average PM_{2.5} content of PM₁₀ should be assumed to be 10%*". Therefore, it is considered that the application of mitigation measures which are targeted specifically in relation to PM₁₀ and dust soiling would also result in a consequential and beneficial reduction in PM_{2.5} emissions and impacts.

Table O: 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.
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.
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.



Site Application	Mitigation Measures
	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.
	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.



Site Application	Mitigation Measures
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

In accordance with the EPIC & IAQM guidance, road traffic impacts associated with the operation of the Proposed Development can be considered as having an 'insignificant' effect on local air quality. Furthermore, the Proposed Development is found to be suitable for residential purposes in accordance with the site-suitability aspect of the Operational Phase Assessment. 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, the Proposed Development will consider implementing alternative technologies which may include Air Source Heat Pump (ASHP), for example, to provide hot water and space heating.

Furthermore, each dwelling will be provided with an electric vehicle (EV) charge point commensurate with the requirements of Approved Document S: Infrastructure for Charging Electric Vehicles of the Building Regulations³². The specific detail for such will come forward post-planning as a building control requirement.

³² <https://www.gov.uk/government/publications/infrastructure-for-charging-electric-vehicles-approved-document-s>.



Additionally, a Travel Plan³³ has been produced by the appointed transport consultant to the Applicant. Within the Travel Plan there are a number of measures aimed to encourage the occupants to use more sustainable modes of transport to and from the Site. These measures would subsequently have a knock-on effect in terms of reducing road traffic emissions from personal car use. The measures include:

- A resident's Travel Pack;
- Travel awareness and information;
- The promotion of lift share scheme; and
- Encouraging Walking and Cycling.

Reference should be made to the submitted Travel Plan included within the planning submission for further details.

³³ Eddisons, Proposed Residential Development, Glen Dimplex, Whiston: Framework Travel Plan, December 2025.



8.0 Conclusions

SLR has been commissioned by Taylor Wimpey North West to undertake an AQA to accompany the planning application for 204 dwellings and associated infrastructure, on land at the former Glen Dimplex manufacturing facility, Stoney Lane, Prescott.

8.1 Construction Phase

A qualitative assessment of the potential dust impacts during the construction of the development has been undertaken following IAQM guidance. Following the construction dust assessment, the Site is found to be at worst 'High Risk' in relation to dust soiling effects on people and property, and 'Medium Risk' in relation to human health impacts.

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

Given the short-term nature of the construction phase and the comparatively low volume of vehicle movements that will likely arise when compared to the operational phase, there is predicted to be an 'insignificant' effect on air quality from construction-generated road traffic emissions.

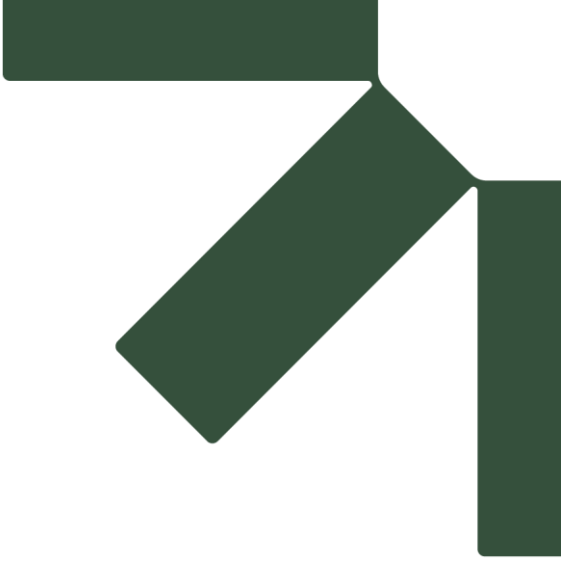
8.2 Operational Phase

The assessment of operational phase effects considered impacts on all relevant receptors from road traffic emissions associated with the Proposed Development.

The ADMS-Roads dispersion model was used to determine the likely NO₂, PM₁₀, and PM_{2.5} concentrations at all assessed existing and proposed receptor locations for a series of scenarios, in accordance with technical guidance published in LAQM.TG(22). Predicted pollutant concentration changes at relevant receptor locations are a result of the Proposed Development were assessed using the EPIC & IAQM significance criteria.

In accordance with EPIC & IAQM guidance, the impacts of the Proposed Development on NO₂, PM₁₀ and PM_{2.5} concentrations at all existing assessed receptor locations are considered to be 'negligible'. There are no predicted exceedences of the relevant NO₂, PM₁₀ or PM_{2.5} AQALs at existing receptors or proposed locations of relevant exposure across the Site. Unmitigated effects associated with NO₂, PM₁₀ and PM_{2.5} concentrations at all assessed receptor locations are therefore considered to be 'not significant' and the Site is considered to be suitable for the proposed use-class of development.





Appendix A Model Inputs and Verification

Former Glen Dimplex, Whiston

Air Quality Assessment

Taylor Wimpey North West

SLR Project No.: 402.065904.00001

4 December 2025

A.1 Traffic Data

Table P details the traffic data used within the assessment.

Table P: Traffic Data Used Within the Assessment

Link		2024 BC		2031 DM		2031 DS		Proposed Development Trips		Average Speed (kph) ^(A)
		AADT	% HDV	AADT	% HDV	AADT	% HDV	AADT	% HDV	
1	Site Access	-	0.0	-	0.0	1,129	0.0	1,129	0.0	32
2	Stoney Lane (West of Site Access)	6,272	0.9	6,764	0.9	7,566	0.8	802	0.0	48
3	Stoney Lane (East of Site Access)	6,169	0.3	6,654	0.3	6,981	0.3	327	0.0	48
4	Stoney Lane (West of Cumber Lane)	9,730	2.2	10,493	2.2	10,968	2.1	475	0.0	48
5	Dragon Lane (North of Stoney Lane)	11,420	2.0	14,534	2.0	14,963	1.9	429	0.0	48
6	Dragon Lane (South of Stoney Lane)	6,392	3.0	6,894	3.0	6,939	3.0	45	0.0	48
7	Cumber Lane	6,942	2.2	7,487	2.2	7,815	2.1	328	0.0	48
8	Warrington Road (West of Dragon Lane)	12,519	3.4	13,505	3.4	13,616	3.4	111	0.0	48
9	Warrington Road (East of Dragon Lane)	9,127	2.7	10,431	2.7	10,521	2.7	90	0.0	48
Note: (A) Speeds are based upon posted speed limits. Traffic speeds have been adjusted to take into account queues and congestion in accordance with LAQM.TG(22).										



A.2 Model Verification

The ADMS-Roads dispersion model has been widely validated for this type of assessment and is specifically listed in the Defra's LAQM.TG(22) guidance as an accepted dispersion model.

Model validation undertaken by the software developer (CERC) will not have included validation in the vicinity of the Site. It is therefore necessary to perform a comparison of modelled results with local monitoring data at relevant locations. This process of verification attempts to minimise modelling uncertainty and systematic error by correcting modelled results by an adjustment factor to gain greater confidence in the final results.

Prior to undertaking model verification, model setup parameters and input data were reviewed to maximise the performance of the dispersion model in relation to the real-world conditions.

A.2.1 NO_x / NO₂ Verification

NO_x / NO₂ verification relates to the comparison and adjustment of modelled road-NO_x (as output from the ADMS-Roads dispersion model), relative to monitored road-NO_x.

For NO_x / NO₂ model verification, 2024 LAQM KMBC monitoring data has been used for those roadside location situated adjacent to a modelled link i.e. where traffic data exists. Table Q presents all local monitoring data available for model verification.

Table Q: Local Monitoring Data Available for Model Verification

Site ID	NGR X (m)	NGR Y (m)	2024 Monitored Annual Mean NO ₂ (µg/m ³)	2024 Data Capture (%)
P10Aa, P10Ab	347393	392307	18.7	100

NO_x was back calculated using the latest version of Defra's NO_x to NO₂ Calculator (v9.1) for the considered monitoring location – given the absence of data. The NO_x to NO₂ Calculator was also used to facilitate the conversion of modelled road-NO_x (as output from the ADMS-Roads dispersion model) into road-NO₂.

Verification was completed using the 2024 Defra background mapped concentrations (2021 base year) for the relevant 1km x 1km grid square (i.e. those within which the model verification location is located).

Comparison of the preliminary modelled vs. monitored road NO_x contribution at the verification location detailed in Table Q is provided in Table R. An adjustment factor of 2.835 has been derived, based on a linear regression forced through zero as shown in Figure 5.

Table R: NO_x / NO₂ Model Verification (2.835)

Site ID	Monitored Total NO ₂ (µg/m ³)	Monitored Road NO _x (µg/m ³)	Modelled Road NO _x (µg/m ³)	Adjustment Factor
P10Aa, P10Ab	18.7	12.6	4.4	2.835



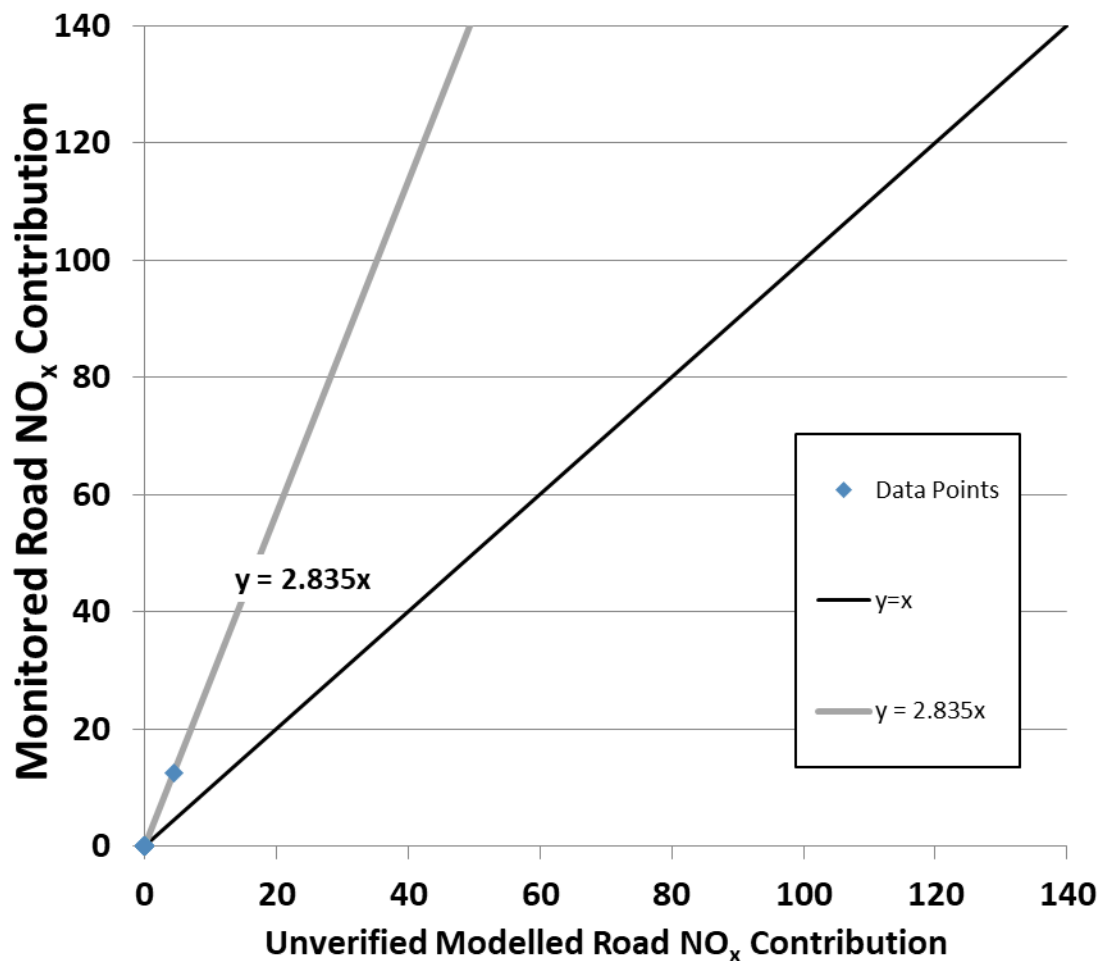


Figure 5: Comparison of Modelled vs. Monitored Road NO_x Contribution (2.835)

A.2.2 PM₁₀ / PM_{2.5} Verification

The above adjustment factor was also applied to road-PM₁₀ and PM_{2.5} concentrations (as output of the ADMS Roads dispersion model), following the recommendations of LAQM.TG(22), in the absence of local particulate monitoring.





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