



**RESIDENTIAL DEVELOPMENT
LAND OFF TROWBRIDGE ROAD
BRADFORD-ON-AVON**



**Air Quality Assessment
April 2026**

**For and on behalf of
Waddeton Park Ltd
Project Reference: 26-1000**

AIR QUALITY ASSESSMENT

RESIDENTIAL DEVELOPMENT LAND OFF TROWBRIDGE ROAD BRADFORD-ON-AVON

APRIL 2026

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Report Issue Log

Issue	Description	Date	Approved
1	Draft Air Quality Assessment issued for comment	16.03.2026	JK
2	Final following client review	17.04.2026	JK

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1 Introduction

1.1 Overview

Kairus Ltd has been instructed by Waddeton Park Ltd to carry out an air quality impact assessment (AQIA) in support of an outline application for residential development on land off Trowbridge Road, Bradford-on-Avon (the 'Site') to include up to 224 dwellings, a 72-bed care home, community sports pitches, allotments, country park and open space.

The Site falls within the administrative boundary of Wiltshire Council (WC). Due to exceedances of the national air quality objectives for nitrogen dioxide (NO₂), the Council currently have eight Air Quality Management Areas (AQMAs) in place, including one covering the main roads within the centre of Bradford-on-Avon. The Site does not fall within the AQMA, but is located on the southeastern edge of the town. Traffic generated by the operational development has the potential to impact air quality within the AQMA.

This report considers the impact of the proposed development on local air quality. Potential sources of emissions are identified and assessed in the context of existing air quality and emission sources and the nature and location of receptors.

The assessment has been carried out in accordance with the WC '*Air Quality Supplementary Planning Document* (AQSP)¹ published in July 2025, taking a 3 Stepped approach which considers Good Design, Site Classification and Supporting Documents.

A glossary of common air quality terminology is provided in Appendix A.

1.2 Scope of Assessment

In undertaking the assessment, the 3 Stepped approach set out within the AQSPD has been followed.

Step 1 considers the development proposals in relation to Good Design, taking account of the Site location and development design to minimise exposure of future occupants to poor air quality and reduce operational emissions.

Step 2 sets out the Site classification to determine any additional assessment and supporting information required to assess the proposals in relation to local air quality and identify appropriate mitigation.

Step 3 includes a construction risk assessment to determine appropriate mitigation for inclusion within a construction environmental management plan (CEMP), an exposure risk assessment and a concentrations assessment.

A mitigation statement has been provided setting out measures that will be implemented during the construction and operational phases to reduce emissions and mitigate impacts on local air quality. It is noted that the proposals are for outline permission with all matters

¹ Wiltshire Council, Air Quality Supplementary Planning Document, July 2025

reserved except access. The final package of mitigation will be determined at reserve matters stage through consultation with WC.

2 Site Description

2.1 The Existing Site

The Site is located on the southeastern edge of the town of Bradford-on Avon.

The Site is bounded to the northwest by residential properties on Widbrook View and Loddon Way, to the southwest by Trowbridge Road, with residential properties beyond, to the southeast by Widbrook Wood and Wid Brook and to the northeast by open country and the River Avon.

The Site is roughly L-shaped and extends to approximately 31 hectares (ha).

The location of the Site is shown by the area bounded in red in Figure 2.1.

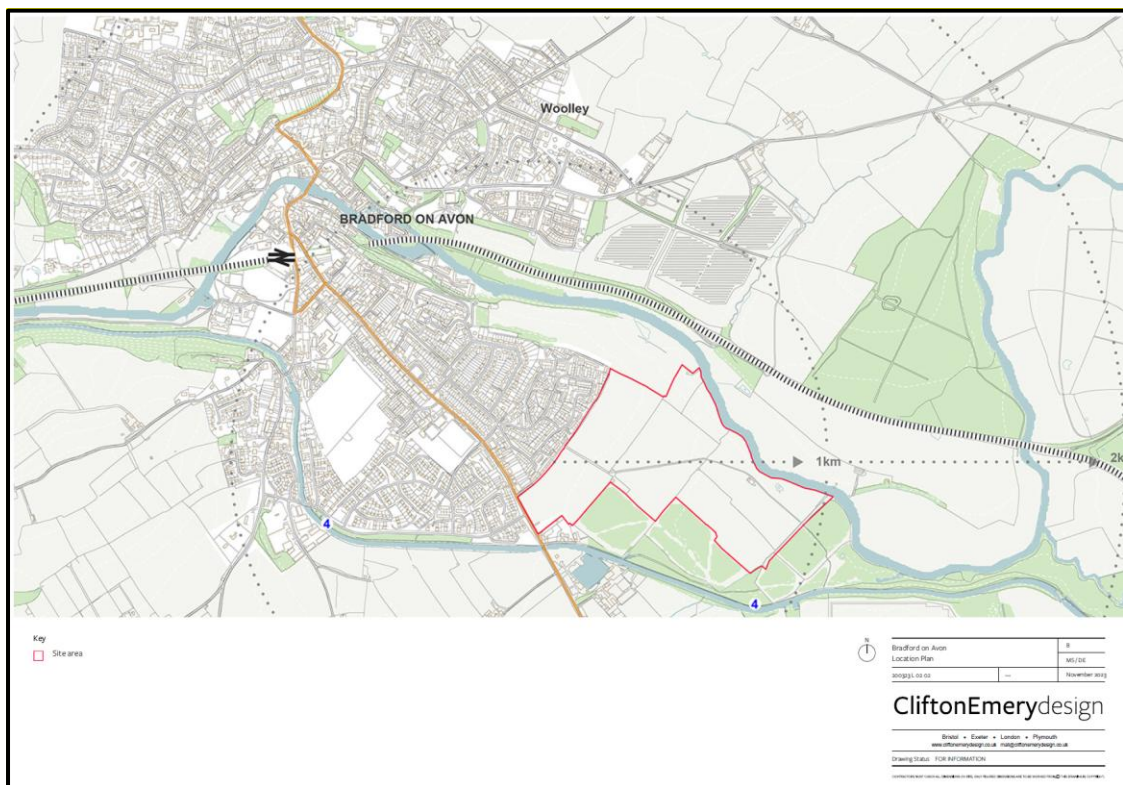


Figure 2.1: Location of Development Site

2.2 The Proposed Development

An outline application is being submitted '*(with all matters reserved except for access) for the erection of up to 224 residential dwellings (Class C3), 72-bed care home (Class C2), with sports pitches, allotments, country park, landscaping and open space*'.

An illustrative masterplan for the Site is provided below in Figure 2.2.



Figure 2.2: Illustrative Masterplan

3 Policy Context

3.1 National Legislation and Policy

3.1.1 Air Quality Regulations

The assessment of potential air quality impacts associated with the proposed development has been evaluated with respect to the current national air quality objectives (NAQOs) for the protection of human health, as set out in the Air Quality Standard Regulations 2010² and the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020³.

In the context of the proposed development, the key pollutants of concern are nitrogen dioxide (NO₂) and particulate matter (PM₁₀) and (PM_{2.5}), which, within the UK, are primarily associated with road traffic emissions and construction works.

The NAQOs for NO₂, PM₁₀ and PM_{2.5} that are applicable in England are presented in Table 3.1.

It is widely accepted that there is no safe level for PM_{2.5} and on 31st January 2023 the Government published the Environmental Improvement Plan (EIP)⁴, which included an Annual Mean Concentration Target of 10 µg/m³, to be achieved by the end of 2040. The 10 µg/m³ target for PM_{2.5} has been adopted into UK law via the Environmental targets (Fine Particulate Matter) (England) Regulations 2023⁵. Although legally binding, it is central government's responsibility for meeting these future targets. Local Authorities currently have no statutory obligation to achieve these targets. For the purposes of this assessment the limit value for PM_{2.5}, as set out in the 2010 regulations (Table 3.1) is considered to be appropriate to apply for this assessment. However, the EIP is given consideration within the report where relevant.

Table 3.1: Relevant National Air Quality Objectives			
Pollutant	Concentrations	Measured As	Date to be Achieved By
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times per year	1 hour mean	31 December 2005
	40 µg/m ³	Annual mean	31 December 2005
Particulate Matter (PM ₁₀)	50 µg/m ³ not to be exceeded more than 35 times per year	24 hour mean	31 December 2004
	40 µg/m ³	Annual mean	31 December 2004
Particulate Matter (PM _{2.5})	20 µg/m ³	Annual mean	1 January 2020
	10 µg/m ³ (Long-term EIP Target)	Annual mean	31 December 2040

2 Air Quality Regulations 2010-Statutory Instrument 2010 No.1001

3 The Environment (Miscellaneous Amendments) (Eu Exit) Regulations 2020, Statutory Instrument 2020, No 1313

4 HM Government Environmental Improvement Plan 2023, First Revision of the 25 Year Environment Plan

5 The Environmental Targets (Fine particulate Matter) (England) Regulations 2023 – Statutory Instrument 2023 No.96

The NAQOs apply to external air where there is relevant exposure to the public over the associated averaging periods within each objective. Guidance is provided within LAQM.TG(22)⁶ on where the objectives apply, as detailed in Table 3.2. The objectives do not apply in workplace locations, to internal air or where people are unlikely to be regularly exposed (i.e. centre of roadways).

Table 3.2: Locations Where Air Quality Objectives Apply		
Averaging Period	Objectives should apply at:	Objectives should generally not apply at:
Annual Mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care home etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term.
24 Hour Mean	All locations where the annual mean objective would apply together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building facade), or any other location where public exposure is expected to be short term.
1 Hour Mean	All locations where the annual mean and 24-hour mean objectives apply. Kerbside Sites (e.g. pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc. which are not fully enclosed, where the public might reasonably be expected to spend 1-hour or more. Any outdoor locations where the public might reasonably be expected to spend 1-hour or longer.	Kerbside sites where the public would not be expected to have regular access.

3.1.2 The UK Air Quality Strategy

The Government's policy on air quality within the UK is set out in the Air Quality Strategy (AQS) published in August 2023⁷. The document sets out the strategic framework for improving air quality and responsibilities of local authorities to address air quality exceedances in their areas. This includes requirements for declaring air quality management areas (AQMA) and

⁶ Defra (2022) Local Air Quality Management Technical Guidance 2022 (LAQM.TG22)

⁷ DEFRA (2023) The Air Quality Strategy: Framework for Local Authority Delivery, August 2023

publishing Air Quality Action Plans (AQAPs) setting out measures to reduce emissions and comply with the limit values.

The strategy also sets out expectations on local authorities to implement preventative action to ensure future breaches of the limit values do not occur.

3.1.3 Local Air Quality Management – The Environment Act 1995

Local authorities are seen to play a particularly important role. Section 82 of the Environment Act 1995 requires every local authority to conduct a review of the air quality from time to time within the authority's area. The DEFFA technical guidance, LAQM.TG(22), continues with the streamlined approach to the Local Air Quality Management (LAQM) regime, whereby every authority has to undertake and submit a single Annual Status Report/Annual Progress Report within its area, to identify whether the objectives have been or will be achieved at relevant locations by the applicable date. If the objectives are not being met, the authority must declare an Air Quality Management Area (section 83 of the Act) and prepare an action plan (section 84) which identifies measures that will be introduced in pursuit of the objectives.

3.1.4 Control of Dust and Particulates Associated with Construction

Section 79 of the Environmental Protection Act (1990)⁸ states that where a statutory nuisance is shown to exist, the local authority must serve an abatement notice. Statutory nuisance is defined as:

- *'any dust or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance', and*
- *'any accumulation or deposit which is prejudicial to health or a nuisance'.*

Failure to comply with an abatement notice is an offence and if necessary, the local authority may abate the nuisance and recover expenses.

In the context of the proposed development, the main potential for nuisance of this nature would arise during the construction phase - potential sources being the clearance, earthworks, construction and landscaping processes.

There are no statutory limit values for dust deposition above which 'nuisance' is deemed to exist - 'nuisance' is a subjective concept and its perception is highly dependent upon the existing conditions and the change which has occurred. However, research has been undertaken by a number of parties to determine community responses to such impacts and correlate these to dust deposition rates. However, impacts remain subjective and statutory limits have yet to be derived.

⁸ Secretary of State, The Environment Act 1990 HMSO

3.2 Planning Policy

3.2.1 National Planning Policy

The latest edition of the National Planning Policy Framework (NPPF)⁹ was published in December 2024 (with minor amendments in March 2025) and sets out the Government's planning policies for England and how these are expected to be applied. The main changes to the policy, primarily impact on planning making and on planning decisions on housing proposals. The presumption in favour of sustainable development still remains at the heart of the NPPF which requires Local Plans to be consistent with the principles and policies set out in the NPPF with the objective of contributing to the achievement of sustainable development. In addition, members of the United Nations, including the United Kingdom, *'have agreed to pursue the 17 Global Goals for Sustainable Development in the period to 2030. These address social progress, economic well-being and environmental protection.'*

The three overarching objectives for achieving sustainable development remain the same, including the environmental objective, however, the wording of this objective has been altered slightly. It includes a requirement *'to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.'*

Section 15: Conserving and Enhancing the Natural Environment, remains and the NPPF (paragraph 187) requires that *'planning policies and decisions should contribute to and enhance the natural local environment by ... preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality.'*

In dealing specifically with air quality the NPPF (paragraph 199) states that *'planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'*

Paragraph 201 states that *'the focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively'.*

⁹ Department for Levelling up, Housing and Communities (2024) National Planning Policy Framework, December 2024

3.2.2 Local Planning Policy

Wiltshire Core Strategy

The Wiltshire Core Strategy¹⁰ was adopted in January 2015 and sets out the vision and strategy for development within the district up to 2026. The following policy is relevant to air quality:

Core Policy 55

Air Quality

Development proposals, which by virtue of their scale, nature or location are likely to exacerbate existing areas of poor air quality, will need to demonstrate that measures can be taken to effectively mitigate emission levels in order to protect public health, environmental quality and amenity. Mitigation measures should demonstrate how they will make a positive contribution to the aims of the Air Quality Strategy for Wiltshire where relevant, the Wiltshire Air Quality Management Plan. Mitigation may include:

- i. Landscaping, bunding or separation to increase distance from highways and junctions.*
- ii. Possible traffic management or highway improvements to be agreed with the local authority.*
- iii. Abatement technology and incorporating site layout/separation and other conditions in site planning.*
- iv. Traffic routing, site management, site layout and phasing.*
- v. Where appropriate, contributions will be sought toward the mitigation of the impact a development may have on levels of air pollutants.*

Wiltshire Council Air Quality Supplementary Planning Document (SPD)

The Wiltshire SPD provides guidance on the consideration and assessment of air quality in relation to new development. The document sets out a 3 stepped approach. In the first instance the development proposals should be considered for its good design to ensure the development is appropriate in terms of minimizing impacts on local air quality and exposure of future occupants. Step 2 requires the development to be classified in relation to its risk of causing significant impacts on local air quality, while Step 3 sets out the approach and supporting information required to determine the risk of significant impacts and appropriate further mitigation required to minimise emissions, prevent significant impacts on and contribute to improving local air quality.

3.3 Air Quality Guidance

3.3.1 DEFRA Technical Guidance, LAQM.TG(22)

LAQM.TG(22) sets out detailed guidance on how air quality should be assessed and monitored by local authorities. The document provides useful guidance on how air quality from specific

¹⁰ Wiltshire Council (2015) Wiltshire Core Strategy, Adopted January 2015

sources should be screened and the approaches that should be used to undertake detailed assessment where potentially significant emissions are identified, including details on model verification and consideration of monitoring data for use in assessments.

3.3.2 IAQM Land-Use Planning and Development Control: Planning for Air Quality

The IAQM have published guidance on the assessment of air quality impacts for planning purposes¹¹. This includes information on when an air quality assessment is required, what should be included in an assessment and criteria for assessing the significance of any impacts. The document provides useful guidance in relation to undertaking air quality concentration assessments and therefore has been used as the basis for the concentration assessment set out within this report.

3.3.3 IAQM Guidance on the Assessment of Dust from Demolition and Construction

The IAQM guidance on assessing impacts from construction and demolition activities¹² sets out a methodology for identifying the risk magnitude of potential dust sources associated with demolition, construction, earthworks and trackout. The risk magnitude of potential dust sources is then used to identify the level of mitigation necessary in order for the impacts to be not significant.

In accordance with the AQSPD this guidance has been used to undertake the construction risk assessment.

¹¹ IAQM, Land-use Planning and Development Control: Planning for Air Quality, January 2017

¹² IAQM, Guidance on the assessment of dust from demolition and construction – Version 2.2. January 2024

4 Baseline Assessment

4.1 Wiltshire Council Review and Assessment of Air Quality

WC has completed a number of detailed assessments of air quality across the district and currently has eight AQMAs declared due to exceedances of the annual mean NO₂ NAQO. The Bradford-on-Avon AQMA covers the main road links in the centre of the town including St Margarets Street, Market Street, Masons Lane and Silver Street.

The location of the AQMA is shown in Figure 4.1.

The Site does not fall within the AQMA but lies 1.1 km to the southeast of the AQMA.

4.2 Air Quality Monitoring

4.2.1 Nitrogen Dioxide

As detailed in the WC 2025 ASR, the Council measures NO₂ concentrations extensively across the district using diffusion tube monitors and automatic monitors. The monitors located within Bradford-on-Avon and data recorded since 2020 are set out in Table 4.1, with their locations shown in Figure 4.1.

Data presented in Table 4.1 shows that during 2024 annual mean NO₂ concentrations were below the NAQO at all monitoring locations both within and outside the AQMA.

Prior to 2024 the annual mean NAQO was exceeded at monitoring site 25, located at 9 Masons Lane. However, the data shows a decline in concentrations since 2020 resulting in the NAQO being met at this location in 2024.

Data recorded at all other monitoring locations indicates a continuing downward trend in NO₂ concentrations across the town, with the exception of site AM2, where concentrations have increased since 2020.

Short-term NO₂ concentrations cannot be recorded by diffusion tubes. However, the LAQM.TG(22) guidance indicates that where the annual mean is below 60 µg/m³ it can be assumed that exceedances of the 1-hour objective for NO₂ are unlikely to occur. Based on the data set out in Table 4.1, it is unlikely that the short-term NO₂ objective is being exceeded at any of the monitoring locations.

Table 4.1: Diffusion Tube Annual Average Nitrogen Dioxide Concentrations (µg/m ³)						
Site	Classification	Year				
		2020 ¹	2021 ¹	2022	2023	2024
AM2 – Masons Lane	R	25	26	28	30	31.1
DT25 – 9 Masons Lane	R	51.2	57.0	42.9	40.0	38.8
DT26/27/28 - Triplicate co-located with AM2	K	23.2	24.3	23.3	22.2	22.0

Site	Classification	Year				
		2020 ¹	2021 ¹	2022	2023	2024
DT29 – 12 Market St	UB	36.6	38.6	38.9	33.1	32.7
DT30 – Meadowfield	UC	6.4	7.8	8.0	6.1	6.1
DT31 – Springfield	R	-	9.4	9.2	7.8	7.3
DT32 – Lower Woolley St	R	-	23.5	29.0	26.4	24.1
DT33 – Upper Woolley St	R	-	17.2	18.8	16.0	15.1
DT34 - Bath Road	R	-	32.2	32.7	24.4	24.1
DT35 - St Margarets St	R	-	-	-	-	22.4
DT36 - Junction Road	R	-	-	-	-	16.2

R – roadside, K – Kerbside, UB – Urban Background, UC – Urban Centre

Numbers in BOLD represent exceedance of the annual mean objective

¹ data for 2020 and 2021 has been included for consistency purposes only. Due to travel restrictions as a result of the COVID -19 pandemic, pollution levels during 2020 and 2021 were significantly suppressed. Data from both years is therefore considered unsuitable for assessing baseline concentrations.

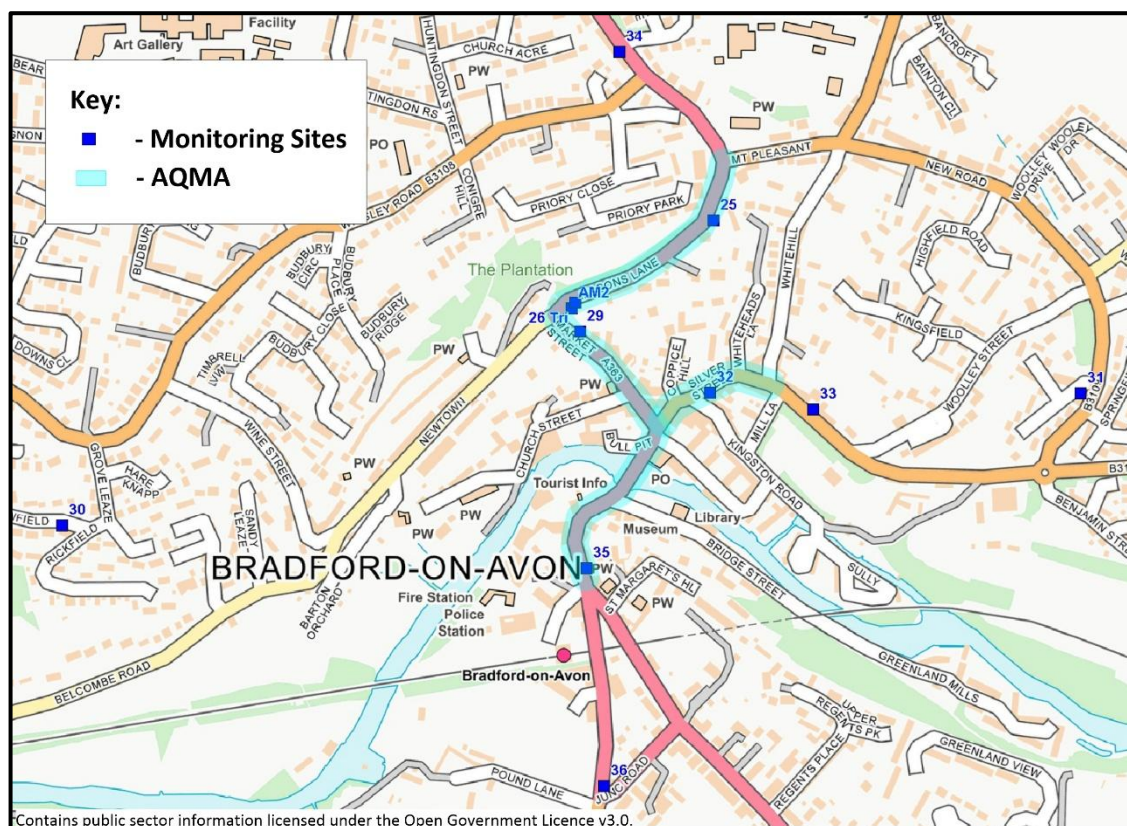


Figure 4.1: Location of Monitoring Sites in Bradford-on-Avon

4.2.2 Particulate Matter (PM₁₀ and PM_{2.5})

WC monitors PM₁₀ and PM_{2.5} concentrations at three locations across the district, one of these is located in Bradford-on-Avon. PM₁₀ data recorded at all three sites is set out in Table 4.2, while PM_{2.5} concentrations are provided in Table 4.3.

Data set out in Table 4.2 shows that annual mean PM₁₀ concentrations have been less than 75% (well below) the NAQO since 2020. The data shows little change in concentrations within Salisbury and Devizes but a slight increase in concentrations at the Site in Bradford-on-Avon.

All three sites have recorded short-term concentrations above the 24-hour limit of 50 µg/m³ since 2020, however at no location has the NAQO been breached which allows for up to 25 exceedances of the 24-hour limit in any given year.

Table 4.2: Annual Mean PM ₁₀ concentrations (µg/m ³)						
Site ID	Averaging period	Year				
		2020 ¹	2021 ¹	2022	2023	2024
AM1 – Exeter St, Salisbury	Annual Mean	21	19	20	20	22.5
	24-hour	0	3	3	1	3 (44)
AM2 – Masons Lane, Bradford-on-Avon	Annual Mean	18	17	17	23	24.1
	24-hour	0	0	2	3	1 (39)
AM3 – Sidmouth St, Devizes	Annual Mean	19	18	20	17	19.2
	24-hour	3	1	6	0	0 (35)
Figures in BOLD represent an exceedance of the annual mean objective of 40 µg/m³ Where data capture is less than 85% the 90.4th percentile of 24-hour means is provided in brackets ¹ data for 2020 and 2021 has been included for consistency purposes only. Due to travel restrictions as a result of the COVID -19 pandemic, pollution levels during 2020 and 2021 were significantly suppressed. Data from both years is therefore considered unsuitable for assessing baseline concentrations.						

Annual mean PM_{2.5} concentrations, as set out in Table 4.3, have been below the NAQO of 20 µg/m³ since 2020, with concentrations showing little change in Salisbury and Devizes but a slight increase in Bradford-on-Avon.

Concentrations are currently exceeding the EIP 2040 target of 10 µg/m³.

Table 4.3: Annual Average PM _{2.5} Concentrations (µg/m ³)						
Site	Classification	Year				
		2020 ¹	2021 ¹	2022	2023	2024
AM2 – Masons Lane	R	14.7	13.3	14.3	14.1	16.5
DT25 – 9 Masons Lane	R	12.6	11.9	16.3	18.4	18.1
DT26/27/28 - Triplicate co-located with AM2	K	13.3	12.6	14.3	11.4	13.2
Figures in BOLD represent an exceedance of the annual mean objective of 40 µg/m³ ¹ data for 2020 and 2021 has been included for consistency purposes only. Due to travel restrictions as a result of the COVID -19 pandemic, pollution levels during 2020 and 2021 were significantly suppressed. Data from both years is therefore considered unsuitable for assessing baseline concentrations.						

4.3 Predicted Baseline Concentrations

Pollutant concentrations have been predicted at a number of discrete receptors adjacent to the main road links within the town using detailed modelling. Details of the methodology employed for the modelling is set out in Appendix C. Details of the receptor locations used in the modelling are set out in Appendix E.

Annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} have been predicted for the 2024 base scenario and the future 2031 base and 2031 base + committed (Do-Minimum (DM)) scenario. The results of the modelling are set out in Table 4.4.

The data shows that predicted annual mean NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant annual mean NAQO for all three pollutants at all the selected receptor locations. PM_{2.5} concentrations are predicted to fall below the EIP target limit at locations outside of the AQMA, however within the AQMA concentrations are predicted to be just above the EIP target limit at the majority of receptor locations.

It is noted that the model is under predicting PM concentrations compared to data recorded at monitoring site AM2. This is due to the limitations of the model verification process as discussed in Appendix C. Furthermore, the monitoring site is located in a hotspot location for air quality, where emissions are elevated due to a very steep incline and sharp turns in the road layout. Concentrations recorded at this location are not therefore considered representative of concentrations across the rest of the study area. However, data recorded at AM2 shows that concentrations of both PM₁₀ and PM_{2.5} are currently below the relevant NAQOs, which is in line with the concentrations predicted as part of the modelling assessment.

As annual mean NO₂ concentrations are predicted to be less than 60 µg/m³ and PM₁₀ concentrations less than 32 µg/m³, both pollutants are meeting the relevant 1-hour and 24-hour NAQOs for both pollutants, respectively.

The data set out in Table 4.4 shows little change in concentrations of PM₁₀ and PM_{2.5} between the 2024 and 2031 base years. In contrast NO₂ concentrations are predicted to decline significantly between the two base years at all receptor locations. This is due to improvements

within the emissions of fuel driven vehicles in conjunction with an increase in the number of low emissions and electric vehicles within the vehicle fleet in future years. As vehicle related emissions make up a significantly smaller proportion of total particulate matter compared to NO₂, and a proportion of particulate matter is also caused by tyre and break wear (which will increase where the number of vehicles increases) the reductions in vehicle emissions are not seen to such an extent in future PM concentrations.

The assessment has also assumed no change in background concentrations between 2024 and 2031, therefore the expected reductions in concentrations due to estimated declines in background levels are not represented within the predicted results.

The predicted results show a slight increase in annual mean concentrations of all three pollutants between the 2031 Base and 2031 DM scenario. This is due to the committed development trips which will result in an overall increase in vehicle movements across the road network within the town.

Table 4.4: Predicted Annual Mean Baseline Air Quality (µg/m ³)									
Receptor	NO ₂			PM ₁₀			PM _{2.5}		
	2024 Base	2031 Base	2031 DM	2024 Base	2031 Base	2031 DM	2024 Base	2031 Base	2031 DM
R1	12.9	9.0	9.2	14.3	14.2	14.4	8.1	8.0	8.1
R2	8.7	7.2	7.2	12.8	12.8	12.8	7.3	7.2	7.2
R3	8.5	7.1	7.1	12.8	12.8	12.8	7.2	7.2	7.2
R4	8.4	7.1	7.1	12.8	12.7	12.7	7.2	7.2	7.2
R5	9.0	7.3	7.3	12.1	12.0	12.0	7.3	7.3	7.3
R6	11.7	8.5	8.5	12.9	12.8	12.8	7.8	7.7	7.7
R7	12.0	8.7	8.7	13.1	13.0	13.0	7.9	7.8	7.8
R8	10.5	8.0	8.0	13.0	12.9	12.9	8.1	8.0	8.0
R9	12.8	9.0	9.0	13.7	13.6	13.6	8.5	8.4	8.4
R10	12.1	8.7	8.7	13.5	13.4	13.4	8.4	8.3	8.3
R11	19.6	12.0	12.2	16.2	15.9	16.1	9.8	9.7	9.7
R12	12.7	8.9	9.1	13.7	13.6	13.7	8.5	8.4	8.5
R13	10.4	7.9	8.0	12.9	12.8	12.9	8.1	8.0	8.0
R14	13.3	9.2	9.4	14.5	14.3	14.5	8.1	8.0	8.1
R15	10.4	7.9	8.0	12.9	12.9	13.0	7.9	7.8	7.9
R16	9.7	7.6	7.7	12.7	12.6	12.7	7.7	7.7	7.7
R17	11.3	8.3	8.5	13.3	13.2	13.3	8.0	8.0	8.1
R18	8.7	7.2	7.3	12.3	12.3	12.4	7.6	7.5	7.6

Table 4.4: Predicted Annual Mean Baseline Air Quality ($\mu\text{g}/\text{m}^3$)									
Receptor	NO ₂			PM ₁₀			PM _{2.5}		
	2024 Base	2031 Base	2031 DM	2024 Base	2031 Base	2031 DM	2024 Base	2031 Base	2031 DM
R19	11.0	8.2	8.3	13.1	13.1	13.2	8.0	7.9	8.0
R20	11.2	8.3	8.4	13.1	13.0	13.1	8.0	7.9	8.0
R21	13.5	9.3	9.5	13.9	13.8	13.9	8.4	8.3	8.4
R22	11.7	8.5	8.6	13.3	13.2	13.3	8.1	8.0	8.1
R23	19.8	12.1	12.4	16.1	15.8	16.1	9.6	9.4	9.5
R24	13.4	9.2	9.3	13.9	13.8	13.9	8.4	8.3	8.4
R25	17.8	11.2	11.4	15.5	15.2	15.4	9.2	9.1	9.2
R26	26.8	15.5	15.8	18.2	17.8	18.1	10.7	10.5	10.6
R27	14.6	9.7	9.9	14.2	14.0	14.1	8.5	8.4	8.5
R28	17.6	11.1	11.3	15.3	15.1	15.2	9.1	9.0	9.1
R29	22.6	13.5	13.7	17.2	16.9	17.1	10.2	10.0	10.1
R30	30.6	17.8	18.2	18.3	17.8	18.1	10.8	10.5	10.6
R31	31.1	18.1	18.5	18.3	17.9	18.1	10.9	10.6	10.7
R32	27.0	15.8	16.2	17.0	16.6	16.8	10.2	9.9	10.0
R33	28.5	16.6	17.0	17.4	17.0	17.2	10.4	10.1	10.2
R34	15.6	10.2	10.3	14.2	14.0	14.1	8.5	8.4	8.5
R35	39.1	27.4	28.2	17.1	16.7	16.9	10.3	10.0	10.1
R36	20.2	14.5	14.8	13.5	13.4	13.4	8.3	8.2	8.2
R37	37.8	26.5	27.2	16.8	16.4	16.6	10.1	9.8	9.9
R38	32.1	22.4	22.9	15.6	15.3	15.5	9.5	9.2	9.3
R39	37.4	26.2	26.9	16.7	16.3	16.5	10.1	9.8	9.9

4.4 DEFRA Background Maps

Additional information on estimated background pollutant concentrations has been obtained from the DEFRA 2021 background maps provided on UK-AIR, the Air Quality Information Resource (<http://uk-air.defra.gov.uk>). Estimated air pollution concentrations for NO₂, PM₁₀ and PM_{2.5} are set out in Table 4.5.

These maps are available in 1km by 1km grid squares and provide an estimate of concentrations between 2021 and 2030. The average concentrations for the grid square representing the Site have been extracted from the 2024 and 2031 base years.

The data indicates that background concentrations in the vicinity of the Site are expected to be well below the annual mean NAQOs for all three pollutants and below both the EIP target for PM_{2.5}.

Table 4.5: Annual Mean Background Air Pollution Concentrations from DEFRA Maps						
OS Grid Square	2024			2031		
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
382500, 159500	5.2	11.1	6.8	4.2	10.5	6.2
383500, 159500	5.3	12.0	6.8	4.2	11.4	6.3
382500, 160500	5.8	11.5	7.3	4.5	10.9	6.7
383500, 160500	5.5	11.5	7.1	4.4	10.9	6.6
382500, 161500	5.7	11.5	7.2	4.4	10.9	6.7

5 Step 1 – Good Design

The development proposals have been reviewed in relation to Good Design.

Details of how the proposals minimise exposure and emissions through good design are set out in Table 5.1 below

Table 5.1: Good Design		
Measure	Summary of measure	Expected Benefit
Appropriate Location		
Edge of town location	The Site is located on the edge of Bradford-on-Avon immediately adjacent to the existing settlement area, locating future occupants close to existing amenities such as schools, shops, community and sporting facilities, parks and open space	Easy access to local facilities via active travel options
Located close to existing public transport routes	Future occupants would be within easy walking distance of existing bus stops and bus routes providing opportunities for alternative travel to the wider town and surrounding area. Furthermore, the Site is in easy cycling distance to the main train station.	Easy access to alternative modes of transport
Located within walking/cycling distance of education facilities	The Site is within a 20 minute walk/ 10 minute cycle of the nearest primary school, promoting active travel and reducing the need for private vehicle trips	Promotes the use of active travel to and from school
Located within close proximity to existing pedestrian and cycle routes	The Site is located immediately to the west of Trowbridge Road which provides a safe pavement route to the wider town, within close proximity to the Towpath Trail route linking the site with the town centre and adjacent town of Trowbridge and immediately adjacent to a number of pedestrian routes linking the site to the adjacent residential settlement, open spaces and woodland	Promotes active travel options to wider community facilities
Located in a location of good air quality	The Site is located outside of the Bradford-on-Avon AQMA, in a background location in terms of air quality, where pollution levels are meeting the UK air quality objective limits	Minimising the exposure of future occupants to air pollution
Development Design		
Energy Efficient Design	All properties will be designed and built to a high level of energy performance, incorporating measures to ensure a high level of insulation and low energy requirements.	Minimise energy requirements and reduce on-site emissions from energy plant
Low Emission Heating Systems	The energy strategy has yet to be finalised, given the proposals are at outline stage, however it is	Reducing on-site emissions and

Table 5.1: Good Design		
Measure	Summary of measure	Expected Benefit
	anticipated that an all-electric strategy will be implemented through the use of measures such as Air Source Heat Pumps	minimising impacts on local air quality
Provision of renewable energy	The full energy strategy is not known at this stage due to the proposals being at outline stage, however a proportion of the sites energy demand will be met through the use of Photovoltaic Cells (PV) and consideration will be given to other possible renewable energy sources	Energy from renewables minimising on-site emissions and reducing impacts on local air quality
Residential EV Charging	The development will provide EV charging points for residential development in line with relevant policy and regulations	To encourage the uptake of low emission vehicles
Commercial EV Charging	The development will provide EV charging points for the commercial elements of the development in line with relevant policy and regulations	To encourage the uptake of low emission vehicles
Designed to promote active travel	The site layout has been designed to promote and prioritise active travel, with easy and safe pedestrian/cycle paths through the Site, links to a number of the existing local walking and cycling routes linking future occupants to the town centre, existing community and local facilities, local public transport, proposed sports pitches and wider open green spaces	Encourage active travel and the use of alternative modes of transport
Site Specific Travel Plan	At detailed design stage a site-specific low emission travel plan will be designed and implemented setting out measures to inform future occupants of active travel measures and encourage alternative methods of travel	Encourage active travel and the use of alternative low emission modes of transport
Provision of extensive open space – contributing to the WC Green Infrastructure Strategy	The scheme design incorporates a new country park and sports pitches providing easy access to future residents and existing residents in the adjacent settlement areas to sporting facilities and public open spaces	Reduce the need for car trips by providing easy access to community facilities and increasing the WC Green Infrastructure
Provision of Blue Infrastructure	A number of ponds will be created within the country park (attenuation ponds) which will contribute the WC blue infrastructure	Increase in WC blue infrastructure

6 Step 2 – Site Classification

The development will provide up to 224 residential dwellings and a 72-bed care home. The size of the development exceeds the site classification thresholds set out in Appendix B of the AQSPD¹³, therefore the development is classified as at least a ‘Type 2’ development.

The Site lies 1.2 km to the southeast of the Bradford-on-Avon AQMA.

A review of monitoring carried out within the Bradford-on-Avon AQMA shows that at the majority of locations annual mean NO₂ concentrations were less than 36 µg/m³. However, monitoring site DT25, located at 9 Mason Lane, recorded an annual mean concentration of 38.8 µg/m³ during 2024. Prior to 2024 concentrations exceeded the NAQO of 40 µg/m³ at this location.

The Site is located 1.4 km to the southeast of monitoring site 25, therefore in accordance with the AQSPD screening criteria the development is classified as a ‘Type 3’ development¹⁴.

Where a development is classified as ‘Type 3’ Development the following supporting documents/information is required:

- Evidence of good design (see Section 5, Table 5.1 – Step 1 Good Design)
- Construction Environmental Management Plan (CEMP) – to include a construction risk assessment and recommendation of mitigation – See Section 7.1 – Construction Risk Assessment
- Exposure Mitigation (if applicable) – See Section 7.2– Baseline Exposure Assessment
- Concentration Assessment – See Section 7.3
- Low Emissions Travel Plan – See Section 8 – Mitigation Statement
- Mitigation Statement – See Section 8

¹³ Site Classification Thresholds – Use Class C3 (dwellings) – Threshold >100 units, C2 (residential institutions) – Threshold >100 beds/residents

¹⁴ Type 3 Development – where development meets the criteria for Type 2 development and is within 5km of a monitoring location where annual mean NO₂ concentrations are greater than or equal to 36 µg/m³

7 Step 3 – Supporting Documents

7.1 Construction Risk Assessment

The following construction risk assessment has been carried out in accordance with the IAQM guidance to determine appropriate mitigation for inclusion with the project CEMP. Full details of the methodology are provided in Appendix B.

7.1.1 Construction Traffic Impacts

The volume of demolition and construction traffic generated by the proposed development is not known at this stage, however, due to the nature of demolition and construction works there will be a significant fluctuation in the numbers of vehicle movements generated on the surrounding network throughout this phase of the development. When averaged over a year the total daily trips will be significantly lower than peak movements. Furthermore, volumes of demolition and construction traffic generated by the proposed development are anticipated to be lower than trips generated during the operational phase, as this is typically the case for developments of this size and type. This being the case, it is reasonable to expect that impacts associated with emissions from demolition and construction vehicles will be less significant than those detailed in section 7.3.

It should also be taken into consideration that any potential impacts associated with demolition and construction traffic will be temporary in nature. Furthermore, a Construction Environmental Management Plan (CEMP) will be developed which will include measures to minimise emissions associated with demolition and construction vehicles, thus further reducing any potential impacts.

Taking into consideration the above and based on professional judgment, the impact of emissions associated with demolition and construction traffic is concluded as being negligible and therefore not significant.

7.1.2 Site and Surroundings

A summary of the proposed development is provided in Section 2 of this report.

The Site covers an area of approximately 31 ha. There are sensitive receptors within 250 m of the Site, therefore, an assessment of impacts on human receptors has been carried out.

Dust emissions from construction activities are unlikely to result in significant impacts on ecologically sensitive receptors beyond 50 m from the site boundary. A review of data held on the DEFRA MAGIC website¹⁵ shows no sites designated as important for wildlife within 50 m of the Site, therefore impacts on ecological receptors have not been considered any further within this assessment.

As discussed in Section 5, PM₁₀ concentrations in the vicinity of the Site are expected to be well below the relevant NAQO (Table 4.5). The data indicates background concentrations in the region of 11-12 µg/m³. Given the location of the Site, outside of an AQMA, and based on

¹⁵ <http://magic.defra.gov.uk/>

the most recent background data PM₁₀ concentrations in the vicinity of the Site are expected to be less than 24 µg/m³.

The precise behaviour of the dust, its residence time in the atmosphere, and the distance it may travel before being deposited would depend upon a number of factors. These include wind direction and strength, local topography and the presence of intervening structures (buildings, etc.) that may intercept dust before it reaches sensitive locations. Furthermore, dust would be naturally suppressed by rainfall.

The windrose from Bristol Airport, provided in Figure 6.1, shows that prevailing winds are from the west/southwest. Areas most consistently affected by dust are those located downwind of an emission source. Therefore, the highest risk of impacts would occur to the east/northeast of any construction activities. The main land-uses to the east and northeast are open countryside and woodland which would have a low sensitivity to dust effects.

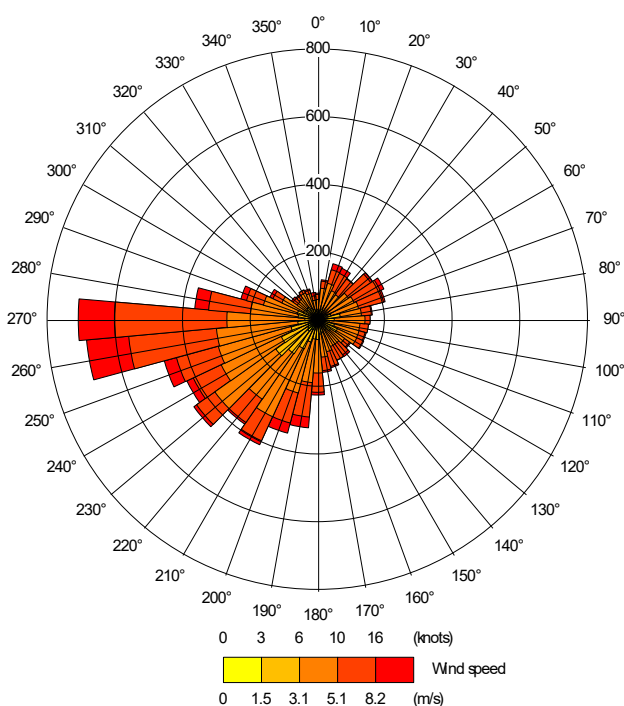


Figure 7.1: Windrose for Bristol

7.1.3 Risk Assessment of Dust Impacts

Potential Dust Emission Magnitude

With reference to the criteria detailed in Appendix B, the dust emission magnitude for each of the categories' demolition, earthworks, construction and trackout have been determined. These have been summarised in Table 7.1.

Table 7.1: Dust Emission Magnitudes		
Activity	Criteria	Dust Emission Magnitude
Demolition	No significant demolition required	n/a
Earthworks	Total site area is 31 ha, although the main construction areas would be in the northwestern area of the Site closest to the existing settlement area, expected to be > 10 heavy earth moving vehicles active at any one time, and storage bunds in excess of 6m	Large
Construction	Up to 2 residential dwellings, a care home, sports hub - build volume potentially >100,000 m ³ , main construction material brick and concrete	Large
Trackout	During peak periods between 20-50 HDV (>3.5t) movements per day	Medium

Sensitivity of Area

The sensitivity of the surrounding area takes account of the following factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM₁₀, the local background concentrations; and
- site-specific factors i.e. whether there are natural shelters such as trees, to reduce the risk of wind-blown dust.

The nearest residential properties are to the northwest on Widbrook View and to the west and southwest on Trowbridge Road. There are over 10 properties within 20m of the site boundary. Based on the number of adjacent receptors and associated separation distances between the construction activities and the nearest receptors, the sensitivity of the surrounding area to dust effects is considered to be 'high'.

As previously discussed, annual mean PM₁₀ concentrations in the vicinity of the Site are not expected to exceed 24 µg/m³. Based on the proximity of sensitive receptors to the site boundary and the local concentrations of PM₁₀ the sensitivity of the surrounding area is considered to be 'low' with regards human health impacts.

In relation to trackout, vehicles travelling to and from the Site would travel along Trowbridge Road, either northbound or southbound. The majority of receptors are within 20m from the roadside therefore the sensitivity of the area to trackout is considered to be 'high'.

A summary of the sensitivity of the area surrounding the Site in relation to each activity is provided below in Table 7.2.

Table 7.2: Summary of Sensitivity of Surrounding Area				
Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	n/a	High	High	High
Human Health	n/a	Low	Low	Low

Defining the Risk of Impacts

The dust emission magnitude as set out in Table 7.1 is combined with the sensitivity of the area (Table 7.2) to determine the risk of both dust soiling and human health impacts, assuming no mitigation measures applied at site. The risk of impacts associated with each activity is provided in Table 7.3 below and shows a medium to high risk of effects on adjacent receptors as a result of the construction activities. However, the measures recommended within the IAQM guidance for high-risk sites will be incorporated into a Site specific CEMP.

Details of these recommended measures are set out in Appendix F.

Following implementation of these measures emissions will be effectively controlled and resulting impacts will not be significant.

Table 7.3: Summary of Risk Effects to Define Site-Specific Mitigation				
Potential Impact	Sensitivity of Surrounding Area			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	n/a	High Risk	High Risk	Medium Risk
Human Health	n/a	Low Risk	Low Risk	Low Risk

7.2 Exposure Assessment

Monitoring data, as set out in Section 4, shows that NO₂, PM₁₀ and PM_{2.5} concentrations within Bradford-on-Avon are currently meeting the NAQOs across the town.

As detailed in Section 2, the Site is located on the edge of the town, outside of the AQMA. The nearest and most representative monitoring site is site 36, located at the junction of Junction Road and Frome Road. During 2024, the site recorded an annual mean concentration of 16.2 µg/m³, well below the NAQO.

There is limited monitoring of PM carried out within the district, however data recorded at monitoring site AM2, located adjacent to Masons Lane, shows concentrations of both PM₁₀ and PM_{2.5} below the relevant NAQOs during 2024.

Due to the location of the Site, to the south of the existing settlement area of the town, the majority of the Site is considered to be a background location in terms of air quality. The highest pollution levels are expected to occur along the western edge of the Site, immediately adjacent to Trowbridge Road, due to the influence of vehicle emissions emitted along the road

link. However, concentrations are expected to be lower than recorded at the WC monitoring sites, the majority of which are located within the AQMA and experience higher traffic volumes, slow moving and queueing traffic, resulting in high vehicle related emissions.

The model results set out in Table 4.4 include concentrations predicted at a number of receptors adjacent to Trowbridge Road. Receptors 1, 2 and 14 are located closest to the Site. Data set out in Table 4.4 shows predicted annual mean NO₂, PM₁₀ and PM_{2.5} concentration at receptors 1, 2 and 14 are below the relevant NAQOs, indicating that concentrations at the Site will also be meeting the NAQOs. Furthermore, data set out in Table 4.5 shows background concentrations of all three pollutants across the Site well below the NAQOs.

The development would not introduce new receptors into a location of poor air quality and therefore impacts in terms of exposure will be negligible. No mitigation, in respect of exposure, is considered necessary.

7.3 Concentration Assessment

The impact of the operational development on local air quality has been assessed using detailed modeling of operational traffic emissions. Details of the methodology used for the modelling assessment and to predict the impact of operational traffic emissions is set out in Appendix C.

The predicted impact of the operational development is discussed below in Sections 7.3.1 to 7.3.4.

7.3.1 Operational Traffic Impact

Nitrogen Dioxide

Annual mean NO₂ concentrations predicted at the selected discrete receptor locations are set out in Table G1, Appendix G.

The modelling assessment is predicting annual mean NO₂ concentrations below the annual mean NAQO of 40 µg/m³ at all the selected receptors in the DM and DS scenarios (Table G1, Appendix G).

Traffic generated by the operational development is predicted to result in a change in annual mean NO₂ concentrations of up to 0.5 µg/m³ at the selected receptor locations, the highest impact being predicted at receptors R35 to R39, located on Masons Lane. This equates to a change of up to 1% of the NAQO. The impact is concluded as being of negligible significance based on the criteria set out in Tables C1, Appendix C due to overall concentrations remaining well below the NAQO.

With predicted annual mean concentrations being less than 60 µg/m³, it is expected that the hourly objective of 200 µg/m³ will be met at all locations and impacts in terms of short-term NO₂ would be negligible.

Overall, the impact of the operational development on NO₂ is concluded as being **not significant**.

PM₁₀ Concentrations

Predicted annual mean PM₁₀ concentrations at the selected receptor locations are presented below in Table G2, Appendix G.

The ADMS model is predicting annual mean PM₁₀ concentrations well below the NAQO of 40 µg/m³ at all receptor locations (Table G2, Appendix G). As previously discussed, due to the limitations of the verification process the model is underpredicting PM₁₀ concentrations, however if the predicted concentrations were elevated to an equivalent of approximately 24 µg/m³, in line with concentrations recorded at AM2, the NAQO would still be met at all receptor locations within the study area.

Traffic generated by the operational development is predicted to change annual mean PM₁₀ concentrations by up to 0.2 µg/m³, which equates to no more than 1% of the AQAL and is classed as a negligible impact based on criteria set out in Table C1, Appendix C. Were an uplift in PM₁₀ concentrations applied to the predicted baseline to account for the underprediction discussed previously, the predicted impact would remain as negligible.

As discussed in Appendix C, where annual mean PM₁₀ concentrations fall below 32 µg/m³, exceedance of the 24-hour objective is considered unlikely. As annual mean concentrations are below this threshold at all the selected receptors, concentrations are predicted to be meeting the 24-hour objective limit of 50 µg/m³. Impacts on short-term PM₁₀ are therefore predicted to be negligible.

Overall, the impact of the operational development scenario on PM₁₀ is concluded as being **not significant**.

PM_{2.5} Concentrations

Predicted annual mean PM_{2.5} concentrations at the selected receptor locations are presented Table G3, Appendix G.

The ADMS model is predicting annual mean PM_{2.5} concentrations below the annual mean NAQO of 20 µg/m³ at all receptor locations. As previously discussed, due to the limitations of the verification process the model is underpredicting PM_{2.5} concentrations, however if the predicted concentrations were elevated to an equivalent of approximately 18 µg/m³, in line with concentrations recorded at AM2, the NAQO would still be met at all receptor locations within the study area.

The operational development is predicting a change in annual mean PM_{2.5} concentrations of no more than 0.1 µg/m³, which equates to less than 1% of the NAQO and considered to be of negligible significance based on the criteria set out in Table C1, Appendix C. Were an uplift in PM_{2.5} concentrations applied to the predicted baseline to account for the underprediction discussed previously, the predicted impact would remain as negligible.

Overall, the impact of the operational development is concluded as being **not significant** in relation to PM_{2.5}.

7.3.2 Cumulative Traffic Impact

The results of the cumulative assessment are set out in Tables G1 to G3, Appendix G.

Traffic generated by both the operational development and other committed developments is predicted to increase annual mean NO₂ concentrations by up to 3% of the NAQO. As concentrations are predicted to remain well below the NAQO, the cumulative impact is concluded as being negligible in relation to NO₂.

In relation to both PM₁₀ and PM_{2.5}, traffic generated by the proposed development and other committed developments is predicted to increase concentration by up to 1% of the relevant NAQOs which is concluded as being a negligible change in air quality.

Overall, the cumulative impact of the proposed development in conjunction with other committed developments is concluded as being **not significant**.

8 Mitigation Statement

8.1 Construction Phase

The control of dust emissions from construction site activities relies upon management provisions and mitigation techniques to reduce emissions of dust and limit dispersion. Where dust emission controls have been used effectively, large-scale operations have been successfully undertaken without impacts to nearby properties.

The proposed development has been identified as a medium to high risk for dust soiling effects during all phases of construction. For human health, the impacts are considered to be low.

To mitigate emissions during the construction phase and prevent adverse effects on adjacent receptors mitigation measures recommended for high-risk sites within the IAQM guidance will be implemented through a CEMP. Full details of these measures are set out in Appendix F.

8.2 Operational Phase

The development proposals are at outline application stage therefore the final package of mitigation measures cannot be determined. However, as detailed in Table 5.1, good design measures have been taken into consideration as part of the overall masterplan design incorporating measures aimed at reducing operational emissions, reducing exposure of occupants, encouraging active travel, the uptake of low emission vehicles and alternative models of transport.

In accordance with the requirements of the AQSPD a site-specific low emissions travel plan (LETP) will be developed at the reserved matters stage incorporating measures such as school travel initiatives, green travel vouchers, smarter travel information packs, secure cycle parking provision, promotion of active travel measures, car clubs and ultra-low emission vehicles. The LETP will be developed in accordance with the requirements of the WC AQSPD.

In addition to the above further measures will be considered for inclusion within the scheme design at the detailed design stage in accordance with the requirements for Type 3 development as set out within the AQSPD. Consideration will be given to the following mitigation measures:

- A financial contribution to EV charging infrastructure;
- Provision of new or enhanced public transport services;
- Procurement of ultra low emission service vehicles;
- Contribution towards infrastructure projects to encourage sustainable/active travel;
- Support for ultra-low emission car clubs;
- Contribution to support the WC air quality monitoring network;
- Contribution towards measures set out in the WC Air Quality Action Plan.

The final package of measures will be determined as part of the reserved matters application, with the provision of an updated Mitigation Statement. These measures will be agreed with WC as part of any planning approval for the Site.

9 Conclusion

This air quality assessment has been completed to support an outline application (with all matters reserved except access) for residential development on land off Trowbridge Road, Bradford-on-Avon to include up to 224 dwellings, a 72-bed care home, community sports pitches, allotments, country park and open space.

The Site falls within the administrative boundary of Wiltshire Council (WC), approximately 1.1 km to the southeast of the Bradford-on-Avon AQMA, declared due to exceedances of the national air quality objectives for nitrogen dioxide (NO₂).

The assessment has been carried out in accordance with the WC AQSP and sets out a 3 Stepped approach in considering impacts on local air quality; Step 1 - Good Design to reduce exposure and operational emissions; Step 2 – Site Classification to determine any additional assessment of emissions and Step 3 - additional supporting assessments to identify any additional mitigation required to minimise the impact of the proposals on local air quality.

The development [proposals have been considered in relation to good design, taking into consideration its location immediately adjacent to the existing settlement area, providing good links to existing public transport and local amenities, incorporating measures within the site design to promote active travel and the uptake of low emission vehicles and contributing the WC green and blue infrastructure.

The proposals will provide up to 224 dwellings and is located within 5km of the Bradford-on-Avon AQMA. The development is classified as a Type 3 development and as a consequence a construction risk assessment, exposure risk assessment, concentrations assessment mitigation statement has been provided.

The construction risk assessment concludes a medium to high risk of impacts with regards to dust soiling and PM₁₀ concentrations. Appropriate mitigation for high-risk sites, as recommended within the IAQM guidance, will be set out within a CEMP to minimise emissions and prevent a significant effect on nearby receptors.

A review of local monitoring data and predicted baseline air quality has found that concentrations of NO₂, PM₁₀ and PM_{2.5} are below the relevant air quality objectives across the Site. The Site is therefore considered suitable for residential development without the need for exposure mitigation.

A concentration assessment has been carried out using detailed modelling to predict the impact of operational traffic emissions on local air quality, taking into account the presence of the AQMA within the centre of the town. The assessment has shown that impacts on local air quality during the operational phase will be negligible.

The development proposals are at outline application stage therefore the final package of mitigation measures cannot be determined. However, good design measures have been taken into consideration as part of the scheme design incorporating measures aimed at reducing operational emissions, reducing exposure of occupants, encouraging active travel, the uptake of low emission vehicles and alternative models of transport. Furthermore, in accordance with the requirements of the AQSPD a site-specific low emissions travel plan (LETP) will be

developed at the detailed design stage incorporating measures aimed at encouraging sustainable and active travel and the uptake of low emission vehicles.

In addition to the above further measures will be considered for inclusion within the scheme design at the detailed design stage in accordance with the requirements for Type 3 development as set out within the AQSPD.

The final package of measures will be determined as part of the reserved matters application, with the provision of an updated Mitigation Statement. These measures will be agreed with WC as part of any planning approval for the Site.

Appendix A – Air Quality Terminology

Term	Definition
Accuracy	A measure of how well a set of data fits the true value.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Ambient air	Outdoor air in the troposphere, excluding workplace air.
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between 2 years, which is useful for pollutants that have higher concentrations during the winter months.
AQMA	Air Quality Management Area.
DEFRA	Department for Environment, Food and Rural Affairs.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
Fugitive emissions	Emissions arising from the passage of vehicles that do not arise from the exhaust system.
LAQM	Local Air Quality Management.
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO₂	Nitrogen dioxide.
NO_x	Nitrogen oxides.
O₃	Ozone.
Percentile	The percentage of results below a given value.
PM₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
Ratification (Monitoring)	Involves a critical review of all information relating to a data set, in order to amend or reject the data. When the data have been ratified they represent the final data to be used (see also validation).
µgm⁻³ micrograms per cubic metre	A measure of concentration in terms of mass per unit volume. A concentration of 1µg/m ³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.
UKAS	United Kingdom Accreditation Service.
Uncertainty	A measure, associated with the result of a measurement, which characterizes the range of values within which the true value is expected to lie. Uncertainty is usually expressed as the range within which the true value is expected to lie with a 95% probability, where standard statistical and other procedures have been used to evaluate this figure. Uncertainty is more clearly defined than the closely related parameter 'accuracy', and has replaced it on recent European legislation.
USA	Updating and Screening Assessment.
Validation (modelling)	Refers to the general comparison of modelled results against monitoring data carried out by model developers.
Validation (monitoring)	Screening monitoring data by visual examination to check for spurious and unusual measurements (see also ratification).
Verification (modelling)	Comparison of modelled results versus any local monitoring data at relevant locations.

Appendix B – Construction Impact Assessment Procedure

Construction Traffic Impacts

During construction of the proposed development, lorries will require access to the Site to deliver and remove materials; earthmoving plant and other mobile machinery may also work on site including generators and cranes. These machines produce exhaust emissions; of particular concern are emissions of NO₂ and PM₁₀. As detailed in the IAQM guidance, emissions associated with on-site mobile machinery are unlikely to cause a significant impact on local air quality and therefore the main concern related to on-road construction vehicles.

The IAQM air quality planning guidance sets out criteria for establishing when there is a risk of significant impacts on local air quality as a result of traffic generated by a proposed development. The guidance states that where the following criteria are exceeded a more detailed assessment is required:

- An increase in Light Duty Vehicle (LDV) traffic of >500 annual average daily traffic (AADT) (or >100 AADT within or adjacent to an AQMA); and/or
- An increase in Heavy Duty Vehicle (HDV) traffic of >100 AADT (or >25 AADT within or adjacent to an AQMA).

The above criteria apply to any individual link and therefore, a development generating >100 HGV AADT (or >25 AADT within an AQMA) may be considered to fall below the screening criteria where the increase is spread over a number of different road links.

In addition to the above screening criteria, the assessment of potential impacts as a result of demolition and construction traffic generated by the proposed development also takes into consideration the anticipated duration of the demolition and construction period and any anticipated mitigation measures that are likely to be applied.

Where it is not possible to screen out significant effects from road sources, detailed modelling may be required.

Construction/Fugitive Dust Emissions

Construction phase activities associated with the Proposed Development may result in the generation of fugitive dust emissions (i.e. dust emissions generated by site-specific activities that disperse beyond the construction site boundaries).

If transported beyond the site boundary, dust can have an adverse impact on local air quality. The IAQM has published a guidance document for the assessment of demolition and construction phase impacts¹⁶. The guidance considers the potential for dust nuisance and impacts to human health and ecosystems to occur due to activities carried out during the following stages of construction:

- Demolition (removal of existing structures);
- Earthworks (soil-stripping, ground-leveling, excavation and landscaping);
- Construction (activities involved in the provision of a new structure); and
- Trackout (the transport of dust and dirt from the construction site onto the public road network where it may be deposited and then re-suspended by vehicles using the network).

¹⁶ IAQM (June 2023) Guidance on the assessment of dust from demolition and construction Version 2.1

For each activity, the risk of dust annoyance, health and ecological impact is determined using three categories: low, medium and high risk. The risk category may be different for each of the four activities. The risk magnitude identified for each of the construction activities is then compared to the number of sensitive receptors in the near vicinity of the site in order to determine the risks posed by the construction activities to these receptors.

Step 1: Screen the Need for an Assessment

The first step is to screen the requirement for a more detailed assessment. An assessment is required where there is:

- A 'human receptor' within 250m of the boundary of the site or 50m of the route(s) used by the construction vehicles on the public highway, up to 250m from the site entrance(s); and/or
- An 'ecological receptor' within 50m of the boundary of the site; or 50m of the route(s) used by the construction vehicles on the public highway, up to 200m from the site entrance(s).

Step 2A: Define the Potential Dust Emission Magnitude

This is based on the scale of the anticipated works and the proximity of nearby receptors. The risk is classified as small, medium or large for each of the four categories.

Demolition: The potential dust emission classes for demolition are:

- Large: Total building volume $>75,000\text{m}^3$, potentially dusty construction material (e.g. concrete), on site crushing and screening, demolition activities $>12\text{m}$ above ground level;
- Medium: Total building volume $12,000\text{--}75,000\text{m}^3$, potentially dusty construction material demolition activities $6\text{--}12\text{m}$ above ground level;
- Small: Total building volume $<12,000\text{m}^3$, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities $<6\text{m}$ above ground, demolition during wetter months.

Earthworks: This involves excavating material, haulage, tipping and stockpiling. The potential dust emission classes for earthworks are:

- Large: Total site area $>110,000\text{m}^2$, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds $>6\text{m}$ in height;
- Medium: Total site area $18,000\text{--}110,000\text{m}^2$, moderately dusty soil (e.g. silt) $< 5\text{--}10$ heavy earth moving vehicles active at any one time, formation of bunds $3\text{m--}6\text{m}$ in height; and
- Small: Total site area $<18,000\text{m}^2$, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds $<4\text{m}$ in height, earthworks during wetter months.

Construction: The important issues here when determining the potential dust emission magnitude include the size of the building(s)/infrastructure, method of construction, construction materials, and duration of build. The categories are:

- Large: Total building volume $>75,000\text{m}^3$, on site concrete batching, sandblasting;
- Medium: Total site area $12,000\text{--}75,000\text{m}^2$, moderately dusty soil (e.g. silt) $< 5\text{--}10$ heavy earth moving vehicles active at any one time, formation of bunds $3\text{m--}6\text{m}$ in height; and
- Small: Total site area $<12,000\text{m}^2$, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds $<4\text{m}$ in height, earthworks during wetter months.

Trackout: The risk of impacts occurring during trackout is predominantly dependent on the number of vehicles accessing the Site on a daily basis. However, vehicle size and speed, the duration of activities and local geology are also factors which are used to determine the emission class of the Site as a result of trackout. The categories are:

- Large: >50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100;
- Medium: 10-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content, unpaved road length 50-100m;
- Small: <10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length >50m.

Step 2B: Defining the Sensitivity of the Area

The sensitivity of the area is defined for dust soiling, human health (PM₁₀) and ecological receptors. The sensitivity of the area takes into account the following factors:

- the specific sensitivities of receptors in the area;
- the proximity and number of receptors;
- in the case of PM₁₀, the local background concentration; and
- site specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

Table B1 is used to define the sensitivity of different types of receptors to dust soiling, health effects and ecological effects.

Based on the sensitivities assigned to the different receptors surrounding the site and numbers of receptors within certain distances of the site, a sensitivity classification can be defined for each. Tables B2 to B4 indicate the criteria used to determine the sensitivity of the area to dust soiling, human health and ecological impacts.

Table B1: Examples of Factors Defining Sensitivity of an Area			
Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
High	Users can reasonably expect enjoyment of a high level of amenity The appearance, aesthetics or value of their property would be diminished by soiling' The people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land. E.g. dwellings, museums and other important collections, medium and long term car parks and car showrooms.	10 – 100 dwellings within 20 m of site. Local PM ₁₀ concentrations close to the objective (e.g. annual mean 36 -40 µg/m ³). E.g. residential properties, hospitals, schools and residential care homes.	Locations with an international or national designation and the designated features may be affected by dust soiling. Locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red List for Great Britain. E.g. A Special Area of Conservation (SAC).
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to	Less than 10 receptors within 20 m.	Locations where there is a particularly important plant species, where its dust

Table B1: Examples of Factors Defining Sensitivity of an Area

Sensitivity of Area	Dust Soiling	Human Receptors	Ecological Receptors
	enjoy the same level of amenity as in their home. The appearance, aesthetics or value of their property could be diminished by soiling The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land. E.g. parks and places of work.	Local PM₁₀ concentrations below the objective (e.g. annual mean 30-36 µg/m³). E.g. office and shop workers but will generally not include workers occupationally exposed to PM₁₀ as protection is covered by the Health and Safety at Work legislation.	sensitivity is uncertain or unknown. Locations with a national designation where the features may be affected by dust deposition E.g. A Site of Special Scientific Interest (SSSI) with dust sensitive features.
Low	The enjoyment of amenity would not reasonably be expected. Property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling. There is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land. E.g. playing fields, farmland unless commercially sensitive horticultural, footpaths, short lived car [parks and roads.	Locations where human exposure is transient. No receptors within 20 m. Local PM₁₀ concentrations well below the objectives (less than 75%). E.g. public footpaths, playing fields, parks and shopping streets.	Locations with a local designation where the features may be affected by dust deposition. E.g. Local Nature Reserve with dust sensitive features.

Table B2: Sensitivity of the Area to Dust Soiling on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<350
High	>100	High	High	Low	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

Table B3: Sensitivity of the Area to Human Health Impacts							
Receptor Sensitivity	Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table B4: Sensitivity of the Area to Ecological Impacts		
Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Define the Risk of Impacts

The final step is to combine the dust emission magnitude determined in step 2A with the sensitivity of the area determined in step 2B to determine the risk of impacts with no mitigation applied. Tables B5 to B7 indicate the method used to assign the level of risk for each construction activity. The identified level of risk is then used to determine measures for inclusion within a site-specific Construction Management Plan (CMP) aimed at reducing dust emissions and hence reducing the impact of the construction phase on nearby receptors. The mitigation measures are drawn from detailed mitigation set out within the IAQM guidance document.

Table B5: Risk of Dust Impacts from Demolition

Sensitivity of Area	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Table B6: Risk of Dust Impacts from Earthworks/ Construction

Sensitivity of Area	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Table B7: Risk of Dust Impacts from Trackout

Sensitivity of Area	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

Appendix C – Concentration Assessment

Air Quality Impact Assessment

Baseline Assessment

A baseline assessment of air quality in the vicinity of the Site and the surrounding area has been carried out through a review of monitoring data available within the WC air quality review and assessment reports, most notably the WC 2025 Air Quality Annual Status Report (ASR)¹⁷.

Additional data has been obtained from the UK Air Information Resource (UK-AIR) background pollution maps¹⁸.

The results of the baseline assessment have been used to determine the suitability of the Site for residential development and identify whether any mitigation measures are required to reduce exposure.

Operational Traffic Assessment

Screening Assessment

The IAQM air quality planning guidance sets out criteria for establishing when there is a risk of significant impacts on local air quality as a result of traffic generated by a proposed development. The guidance states that where the following criteria are exceeded a more detailed assessment is required:

- An increase in LGV of more than 100 vehicles per day within or adjunct to an AQMA, an increase of more than 100 per day elsewhere;
- An increase in HGV of more than 25 vehicles per day within or adjacent to an AQMA, an increase of more than 100 per day elsewhere.

The development has been assessed against these criteria. The traffic data indicates an exceedance of the criteria on Trowbridge Road, Moulton Drive and through the centre of the town, including within the Bradford-on-Avon AQMA. As a result, a detailed assessment of operational traffic impacts has been carried out in accordance with the methodology below.

Detailed Modelling Assessment

Potential impacts on air quality due to operational traffic emissions have been predicted using the ADMS dispersion model (version 5.0.1.3, released March 2023). This is a commercially available dispersion model and has been widely validated for this type of assessment and used extensively in the Air Quality Review and Assessment process.

The model uses detailed information regarding traffic flows on the local road network and local meteorological conditions to predict pollution concentrations at specific locations selected by the user. Meteorological data from the Bristol Airport Meteorological Station for 2024 has been used for the assessment.

17 Wiltshire Council, 2025 Air Quality Annual Status Report, June 2025

18 <https://uk-air.defra.gov.uk/data/iaqm-background-home>

Quantitative assessment of the impacts on local air quality from road traffic emissions associated with the operation of the development have been completed against the NAQOs set out in Table 3.1 for NO₂, PM₁₀ and PM_{2.5}.

Emissions Data

The model has been used to predict road specific concentrations of oxides of nitrogen (NO_x) and particulate matter (PM₁₀ and PM_{2.5}) at selected receptors.

The assessment has predicted air quality during 2024 for model verification.

The modelling assessment has subsequently predicted concentrations in 2031, the expected first year of operation, to assess the impact of the operational development on local air quality.

The emission factors released by Defra in March 2025, provided in the emissions factor toolkit EFT2025_v13.0¹⁹, have been used to predict traffic related emissions of PM and NO_x.

Emission factors and background data used in the prediction of future air quality concentrations predict a gradual decline in pollution levels over time due to improved emissions from new vehicles and the gradual renewal of the vehicle fleet. In recent years the Defra emission factors published within the Emission Factor Toolkits (EFT) have been found to predict lower NO_x concentrations in future years compared to concentrations measures at roadside locations across the UK. However, research carried out by Air Quality Consultants Ltd (AQC) has now shown that emissions of NO_x from vehicles within the 2019 EFTv9 matched concentrations recorded at roadside locations between 2013 to 2019. The report²⁰ concluded that *'the EFT is now unlikely to over-state the rate at which NOx emissions decline into the future at an 'average' site in the UK. Indeed, the balance of evidence suggests that, on average, NOx concentrations are likely to decline more quickly in the future than predicted by the EFT'*. This has removed the need for the use of any sensitivity tests for future year scenarios.

In light of the above, the 2025 EFTv13 is also considered to be representative of future year emissions and suitable for use without sensitivity tests. As a consequence, 2031 emission factors have been used for the 2031 assessment.

Background Concentrations

The ADMS model estimates concentrations arising as a result of vehicle emissions. It is necessary to add an estimate of local background concentrations to obtain the total concentration for comparison against the air quality objectives.

Annual mean NO₂ concentrations recorded during 2024 at the WC background monitoring site within Bradford-on-Avon (Site 30) has been used as background data within the assessment.

There is no background monitoring of PM₁₀ and PM_{2.5}, therefore background data for these two pollutants has been extracted from the Defra background maps²¹ for 2024.

The assessment assumes no change in pollution levels in future years with 2024 background concentrations used in the 2031 assessment scenarios. This is considered to represent a cautious prediction of future concentrations.

19 <https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>

20 <https://www.aqconsultants.co.uk/news/march-2020/defra%E2%80%99s-emission-factor-toolkit-now-matching-measu>

21 <https://uk-air.defra.gov.uk/data/laqm-background-home>

The background data used in the modelling assessment is provided in Table 4.5, Section 4.

Traffic Data

Traffic data for use in the assessment has been provided by the project transport consultants, Rappor. Data has been provided for the 2024 base scenario and the future 2031 Base Scenario, 2031 Base + Committed Development Scenario (DM Scenario) and 2031 Base + Committed + Proposed Development Scenario (Do-something (DS) Scenario), taking account of traffic generation associated with the following committed developments:

- Land south east of Trowbridge (Ashton Park) - 15/04736/OUT - Mixed use development up to 2,500 dwellings, employment, local centre, primary and secondary school; and
- Innox Mills, Trowbridge - PL/2021/08064 - mixed use development of up to 243 dwellings and commercial space.

The 2024 base flows have been factored forward to 2031 to provide the base scenario by applying appropriate TEMPro growth factors.

The traffic data used within the assessment is provided in Table C2 below, with the location of the links displayed in Figures C1 and C2.

Street Canyon

Silver Street is a narrow road bordered by continuous buildings and is therefore classed as a street canyon. Where street canyon effects occur, pollution concentrations can be elevated due to increased circulation of emissions and reduced dispersion.

Silver Street between Coppice Hill and Whiteheads Lane has been treated as a street canyon within the ADMS model.

Model Outputs and Results Processing

The ADMS Model has predicted traffic related annual mean emissions of NO_x and PM at sensitive receptors (residential, educational and community uses) located adjacent to Kineton Road. Relevant background concentrations have subsequently been added to the model outputs to provide the total concentrations of each pollutant.

The predicted concentrations of NO₂, NO_x have been converted to NO₂ using the LAQM calculator (Version 8.1, released August 2020) available on the Defra air quality website²².

Analysis of long-term monitoring data²³ suggests that if the annual mean NO₂ concentration is less than 60 µg/m³ then the one-hour mean NO₂ NAQO is unlikely to be exceeded where road transport is the main source of pollution. Therefore, in this assessment the annual mean concentration has been used to screen whether the one-hour mean objective is likely to be achieved as recommended within LAQM.TG(22). Similar to NO₂, an annual mean PM₁₀ concentrations below 32 µg/m³ is used to screen whether the 24-hour PM₁₀ mean NAQO is likely to be achieved, the approach also recommended within LAQM.TG(22).

²² <http://uk-air.defra.gov.uk>

²³ D Laxen and B Marner: Analysis of the relationship between 1-hour and annual mean nitrogen dioxide at UK roadside and kerbside monitoring sites (July 2003).

Verification of Model Results

It is recommended that the model results are compared with measured data to determine whether the model results need adjusting to more accurately reflect local air quality. This process is known as verification.

LAQM.TG(22) recommends that model predictions should be within 25% (preferably 10%) of monitored concentrations for the model to be predicting with any degree of accuracy. Also, the guidance recommends that any adjustment factors applied to model results should be calculated based on verification using monitoring sites in a similar location i.e. roadside, intermediate or background sites.

Model verification has been carried out against a number of monitoring sites located within Bradford-on-Avon. Concentrations have been predicted at sites AM2, 25, 29, 33 and 35 to represent receptors located within the AQMA. A separate verification has been carried out against monitoring site 32, representing receptors located within the Street Canyon located along Silver Street and a small section of Market Street. A third verification has been carried out against monitoring site 36, to represent locations outside of the AQMA.

Verification has been carried out against 2024 monitoring data.

Further details on the verification process are provided in Appendix D.

There is no suitable monitoring of PM data to allow verification of the PM model results. Data recorded at monitoring site AM2 during 2024 had a data capture of less than 85%. Therefore, the data is not considered suitable for model verification and adjustment. Furthermore, the monitoring site is located in a hotspot location for local air quality where emissions are elevated due to a very steep incline and sharp bend in the road layout. Concentrations recorded at this location are not therefore considered representative of locations across the rest of the study area and use of the data to undertake model verification and adjustment would likely result in an overprediction of concentrations and predicted impacts at the majority of receptors assessed within the study area. However, LAQM.TG (22) suggests applying the NO_x adjustment factor to modelled road-PM where no appropriate verification against PM data can be carried out. Therefore, the adjustment applied to predicted NO_x concentrations has also been applied to the modelled PM concentrations.

Selection of Receptors

As set out in Table 3.2, LAQM.TG(22) describes in detail typical locations where consideration should be given to pollutants defined in the Regulations. Generally, the guidance suggests that all locations '*where members of the public are regularly present*' should be considered. At such locations, members of the public would be exposed to pollution over the time that they are present, and the most suitable averaging period of the pollutant needs to be used for assessment purposes.

For instance, on a footpath, where exposure would be transient (for the duration of passage along that path) comparison with short-term standards (i.e. 15-minute mean or 1-hour mean) may be relevant. In a school, or adjacent to a private dwelling, however; where exposure may be for longer periods, comparison with long-term standards (such as 24-hour mean or annual mean) may be most appropriate. In general terms, concentrations associated with long-term standards are lower than short-term standards owing to the chronic health effects associated with exposure to low level pollution for longer periods of time.

For the completion of this assessment, air quality has been predicted at discrete sensitive receptors (residential, Health and Education facilities) located adjacent to those road links where operational trip data exceeds the IAQM screening criteria, as discussed above.

Details of the receptors are set out in Appendix E.

Significance Criteria

The IAQM air quality planning guidance sets out suggested criteria for determining the significance of traffic impacts on local air quality.

The guidance suggests expressing the magnitude of incremental change in concentrations as a proportion of an Air Quality Assessment Level (AQAL) such as the NAQO, objectives and targets set out in Table C1.

The significance of impact is then identified based on the incremental change in the context of the new total concentrations and its relationship with the assessment criteria, noting whether the impact is adverse or beneficial based on a positive or negative change in concentrations. The criteria suggested for assigning significance is set out in Table C1 below.

To assess the overall significance of the predicted impact the assessment draws on the approach used for undertaking environmental impact assessments where a moderate and major impact is deemed to be significant while a minor or negligible impact would not be classed as significant.

The approach set out in Table C1 has been used within this assessment for assessing the significance of predicted impacts.

Table C1: Impact Descriptors for Individual Receptors				
Long-term Average Concentration at Receptor in Assessment Year	% Change in Concentrations Relative to Air Quality Assessment Level (AQAL)			
	1	2-5	6-10	>10
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% of AQAL	Moderate	Substantial	Substantial	Substantial
AQAL – Air Quality Assessment Level which in this assessment refers to the NAQO set out in Table 3.1				

In undertaking the assessment of significance the following have also been taken into consideration:

- The percentage change in concentration should be rounded to a whole number
- The table should only be used with annual mean concentrations
- The descriptors are for individual receptors only: overall significance should be based on professional judgment
- When defining the concentrations as a percentage of the AQAL use the 'without scheme' concentration where there is a decrease in pollutant concentrations and the 'with scheme' concentrations for an increase

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

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

Table C2: AADT traffic Flows used in ADMS Modelling Assessment										
Link No.	Road Link	Speed (kph)	2024 Base		2031 Base		2031 DM		2031 DS	
			AADT	%HDV	AADT	%HDV	AADT	%HDV	AADT	%HDV
1	A363 Market Street	5-15	15160	4	16102	4	16756	4	17261	3
2	B3107 Silver Street	15-25	7945	3	8439	3	8717	3	8957	3
3	A363 Silver Street	25-35	22184	3	23564	3	24496	3	25241	3
4	A363 Frome Road (A)	35-48	17102	3	18165	3	18649	3	19162	3
5	A363 St Margaret's Street	35	4995	4	5305	4	5753	3	5986	3
6	A363 Junction Road	48	5776	2	6135	2	6620	1	6883	1
7	B3109 Frome Road (A)	35-48	11888	4	12627	4	12627	4	12876	3
8	B3109 Frome Road (B)	35-48	11267	4	11968	4	11968	4	12228	4
9	Moulton Drive (A)	35-48	5272	2	5600	2	5600	2	6216	2
10	B3109 Frome Road (C)	35-48	11253	4	11952	4	11952	4	12320	4
11	Moulton Drive (B)	35-48	4389	2	4662	2	4662	2	5277	2
12	A363 Trowbridge Road (A)	35-48	11567	3	12286	3	13218	3	13715	3
13	A363 Trowbridge Road (B)	35-48	11479	3	12193	3	13125	3	13780	3

Figure C1: Road Links Detailed in Table C1

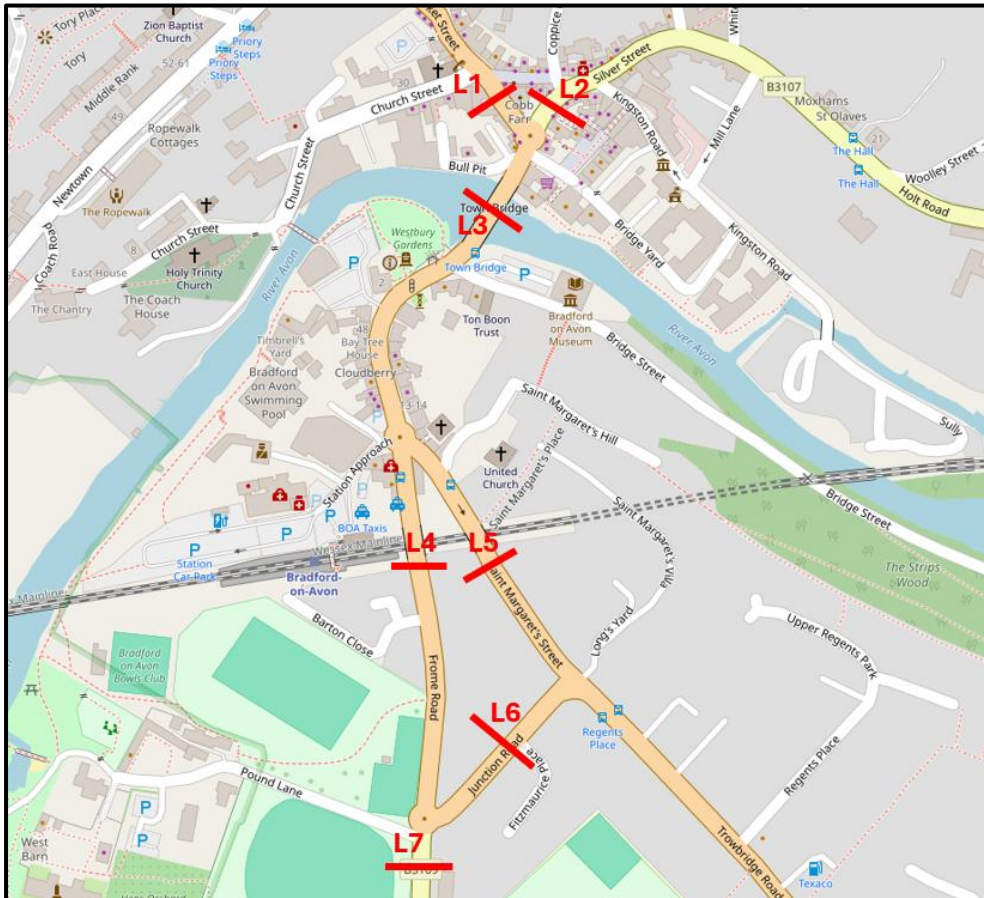
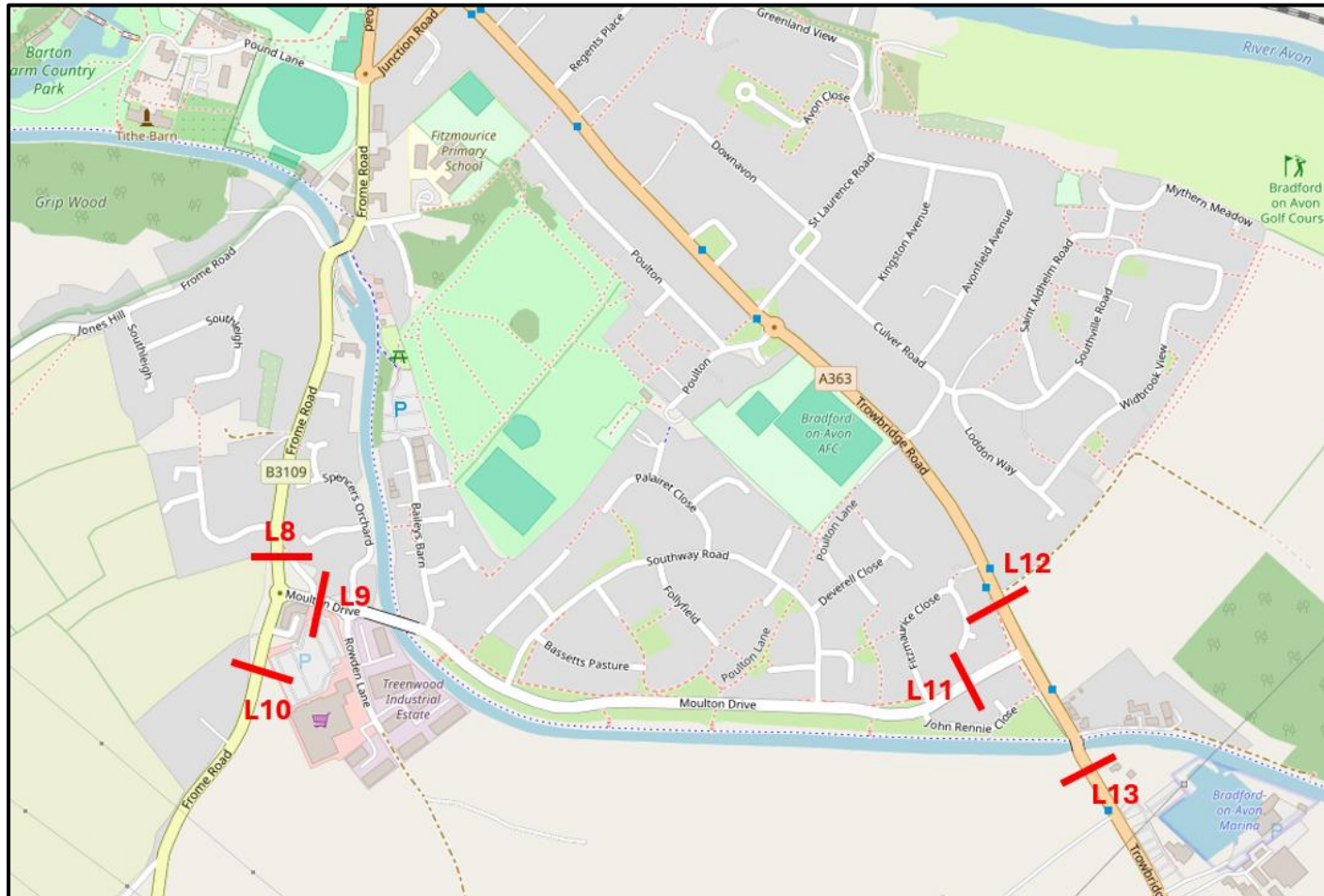


Figure C2: Road Links Detailed in Table C1



Appendix D– Verification and Adjustment of Modelled Concentrations

Most nitrogen dioxide (NO₂) is produced in the atmosphere by reaction of nitric oxide (NO) with ozone. It is therefore most appropriate to verify the model in terms of primary pollutant emissions.

Verification of concentrations predicted by the ADMS model has followed the methodology presented in LAQM.TG(22).

Verification within the AQMA

Verification of the model results has been carried out against local monitoring sites AM2, 25, 29, 33 and 35.

The model has predicted NO_x concentrations at the three monitoring sites during 2024.

The model output of road-NO_x (i.e. the component of total NO_x coming from road traffic) has been compared with the 'measured' road-NO_x (Figure D1). The 'measured' road-NO_x has been calculated from the measured NO₂ concentrations by using the DEFRA NO_x from NO₂ calculator available on the UK-AIR website.

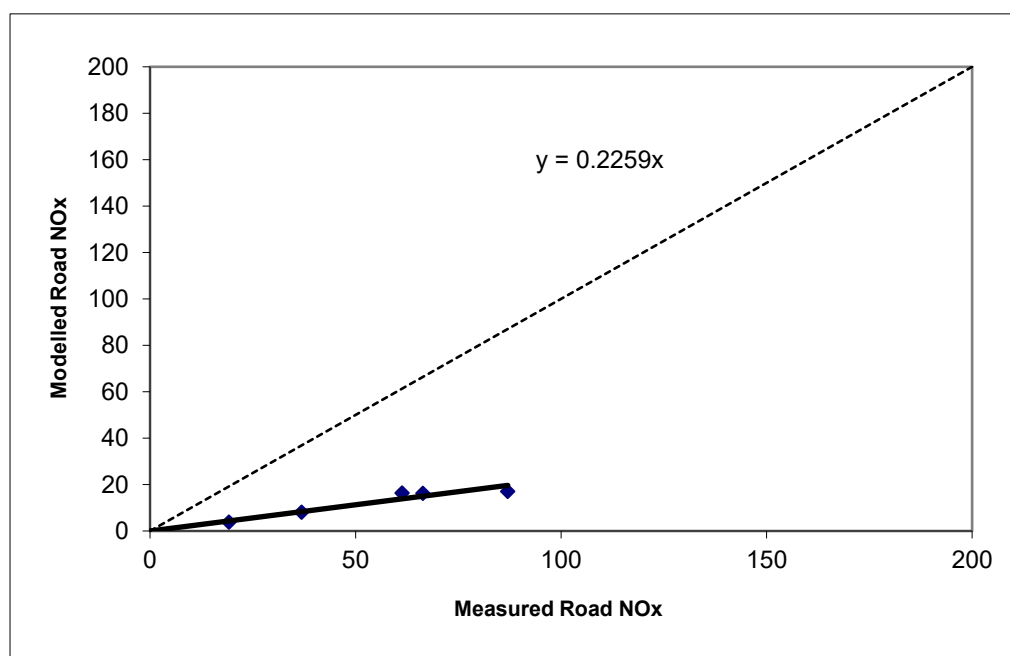


Figure D1: Comparison of Modelled Road NO_x with Measured Road NO_x

Figure D1 shows that the ADMS model is under-predicting the road-NO_x concentrations at all five monitoring locations. An adjustment factor has been determined to reduce the level of under prediction at the sites, bringing the predicted concentrations to within 10% of monitored concentrations with no bias towards over or under predicting.

The adjustment factor has been determined as the ratio between the measured road-NO_x contribution and the modelled road-NO_x contribution, forced through zero ($1/0.2259 = 4.43$). This factor has been applied to the modelled road-NO_x concentration for each location to provide an adjusted modelled road-NO_x concentration.

The annual mean road-NO₂ concentration was determined using the DEFRA NO_x:NO₂ spread sheet calculation tool and added to the background NO₂ concentration to produce a total adjusted NO₂ concentration.

Figure D2 shows the adjusted modelled total NO₂ vs monitored NO₂. There is good agreement, but the best fit line forced through zero still has a slight departure from a 1:1 line, thus a secondary adjustment factor, to be applied to the adjusted modelled total NO₂, was calculated ($1/1.0044=0.996$).

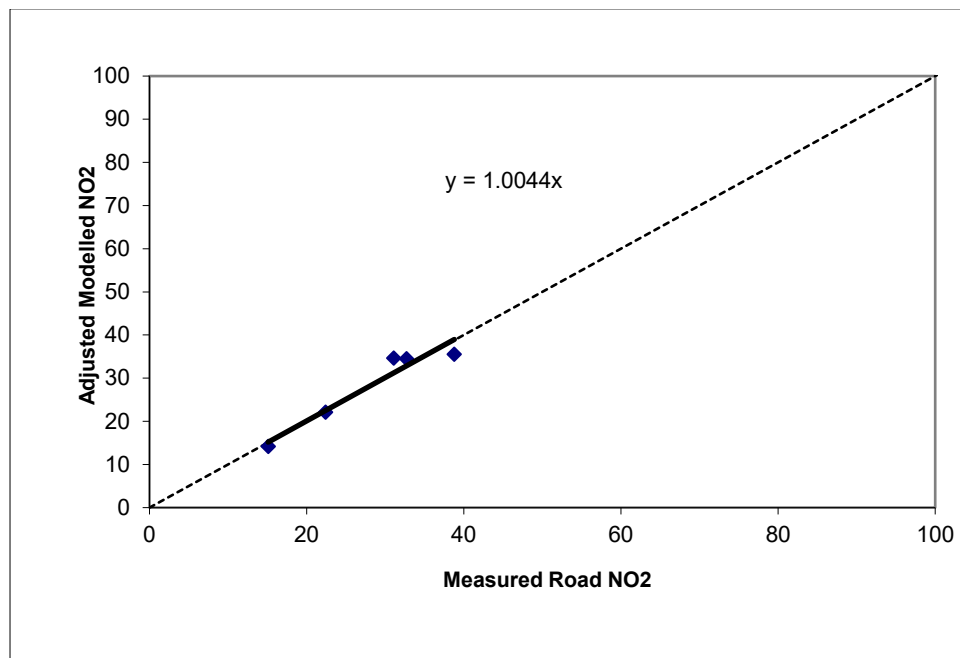


Figure D2: Comparison of Modelled NO₂ with Measured NO_x

After carrying out an initial adjustment there was a need for only a very small secondary adjustment of NO₂. The final adjustment modelled values are shown in Figure D3 and are within 10% of monitored concentrations.

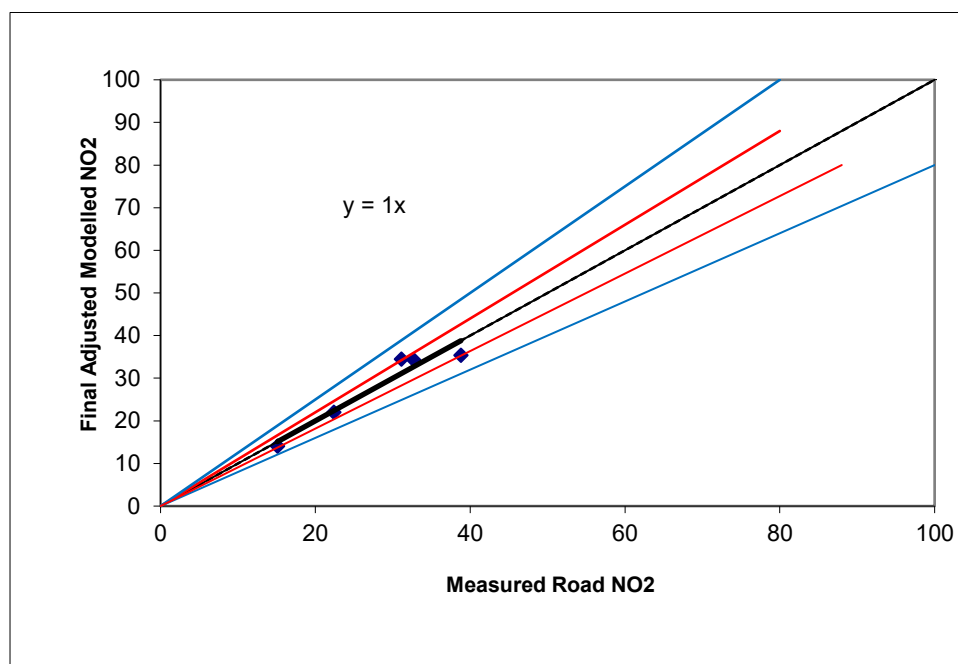


Figure D3: Comparison of Adjusted Modelled NO₂ with Measured NO_x

Further review of the verification process was undertaken to determine the uncertainty of the model results and subsequent adjusted model results. The Root Mean Square Error (RMSE) was calculated for both the unadjusted and adjusted model results. LAQM.TG(22) recommends that the RMSE should be within 10% of the air quality objective, which equates to 4 µg/m³ for NO₂.

The RMSE of the unadjusted results was calculated as 18.1 µg/m³ reducing to 2.6 µg/m³ following adjustment of the results.

The adjustment factor of 4.43 has been applied to the modelled road-NO_x concentrations predicted at each receptor location located within the AQMA (receptors R23, R24, R26 to R29 and R34 to R39). The predicted road-NO₂ concentrations, calculated using the NO_x-NO₂ converter tool, have subsequently been added to background NO₂ and adjusted by 0.996 to provide the final predicted annual mean NO₂ concentrations at each receptor.

As there is no suitable monitoring of PM data to allow verification of the PM results, these factors have also been used to adjust the predicted PM₁₀ and PM_{2.5} concentrations in accordance with guidance set out in LAQM.TG(22).

Verification within the Street Canyon

Verification of the model results has been carried out against local monitoring site 32, to represent receptors located within the Silver Street street canyon.

The model has predicted NO_x concentrations at the monitoring site during 2024.

The model output of road-NO_x (i.e. the component of total NO_x coming from road traffic) has been compared with the 'measured' road-NO_x (Figure D4). The 'measured' road-NO_x has been calculated from the measured NO₂ concentrations by using the DEFRA NO_x from NO₂ calculator available on the UK-AIR website.

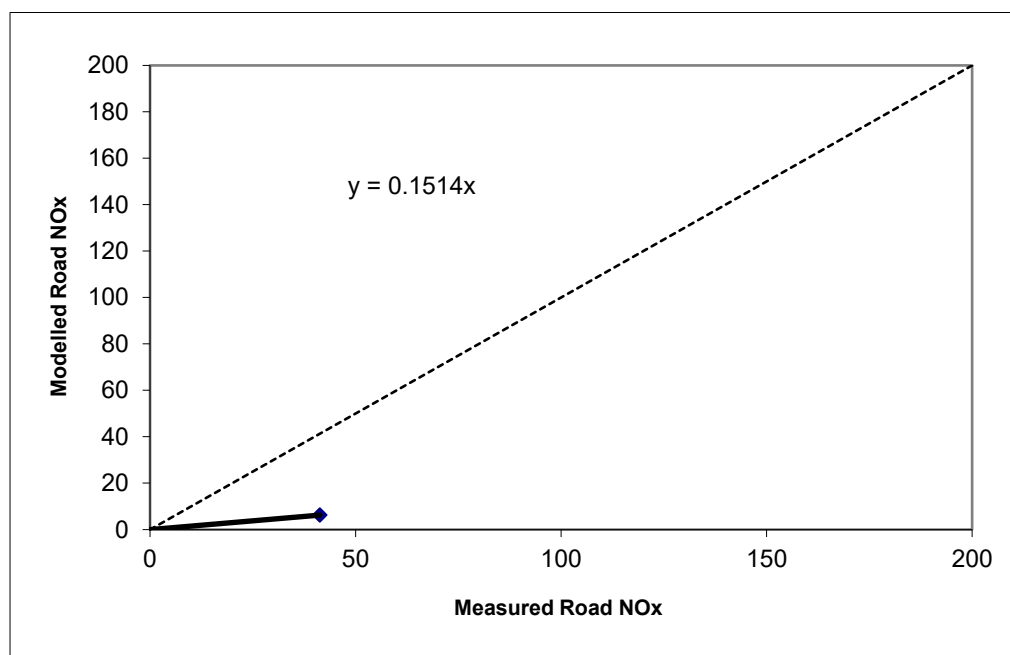


Figure D4: Comparison of Modelled Road NO_x with Measured Road NO_x

Figure D4 shows that the ADMS model is under-predicting the road-NO_x concentrations at the monitoring location. An adjustment factor has been determined to reduce the level of under prediction at the site.

The adjustment factor has been determined as the ratio between the measured road-NO_x contribution and the modelled road-NO_x contribution, forced through zero ($1/0.1514 = 6.61$). This factor has been applied to the modelled road-NO_x concentration for each location to provide an adjusted modelled road-NO_x concentration.

The annual mean road-NO₂ concentration was determined using the DEFRA NO_x:NO₂ spread sheet calculation tool and added to the background NO₂ concentration to produce a total adjusted NO₂ concentration.

Figure D5 shows the adjusted modelled total NO₂ vs monitored NO₂. There is good agreement between the adjusted concentration and monitored concentration and therefore no secondary adjustment is required.

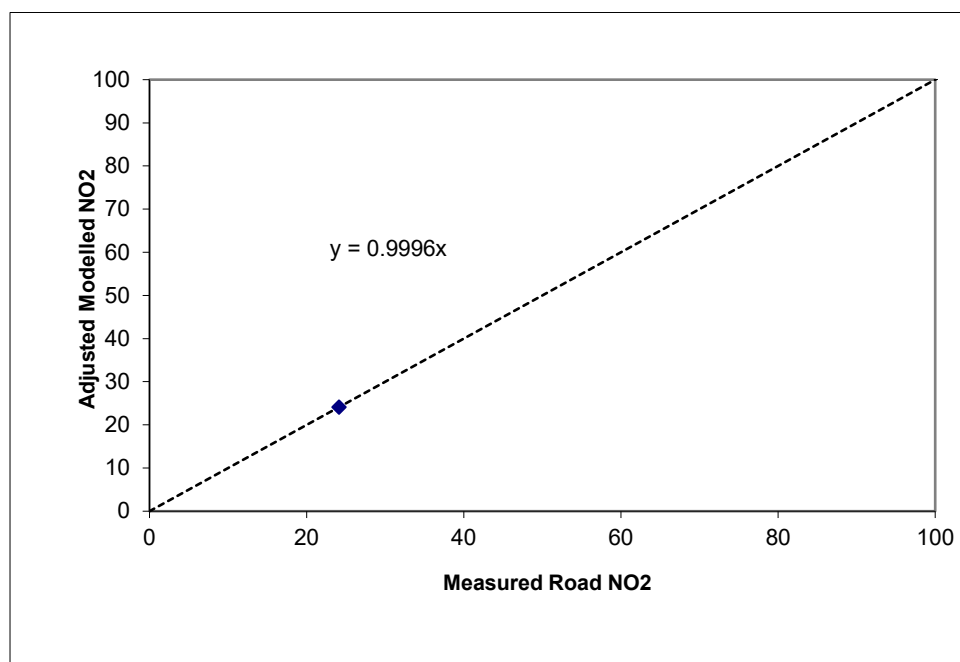


Figure D5: Comparison of Modelled NO₂ with Measured NO_x

The RMSE of the unadjusted results was calculated as 7.5 µg/m³ reducing to 0 µg/m³ following adjustment of the results.

The adjustment factor of 6.61 has been applied to the modelled road-NO_x concentrations predicted at each receptor location located within the Silver Street canyon (receptors R30 to R33). The predicted road-NO₂ concentrations, calculated using the NO_x-NO₂ converter tool, have subsequently been added to background NO₂ to provide the final predicted annual mean NO₂ concentrations at each receptor.

As there is no suitable monitoring of PM data to allow verification of the PM results, these factors have also been used to adjust the predicted PM₁₀ and PM_{2.5} concentrations in accordance with guidance set out in LAQM.TG(22).

Verification Outside the AQMA

Verification of the model results has been carried out against local monitoring site 36, to represent receptors located outside the AQMA.

The model has predicted NO_x concentrations at the monitoring site during 2024.

The model output of road-NO_x (i.e. the component of total NO_x coming from road traffic) has been compared with the 'measured' road-NO_x (Figure D6). The 'measured' road-NO_x has been calculated from the measured NO₂ concentrations by using the DEFRA NO_x from NO₂ calculator available on the UK-AIR website.

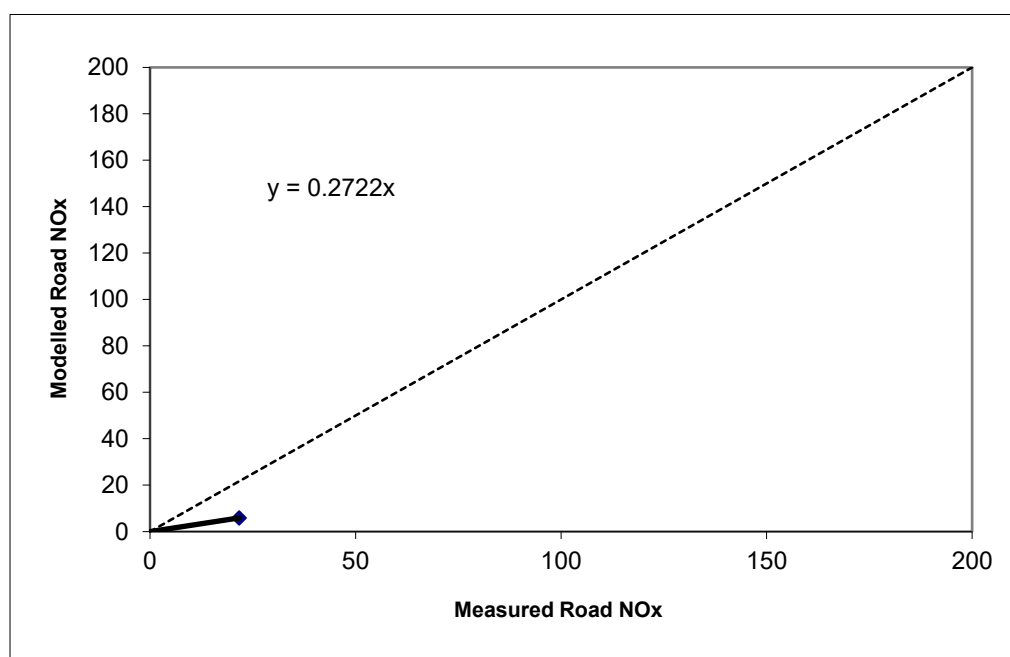


Figure D6: Comparison of Modelled Road NO_x with Measured Road NO_x

Figure D6 shows that the ADMS model is under-predicting the road-NO_x concentrations at the monitoring location. An adjustment factor has been determined to reduce the level of under prediction at the site.

The adjustment factor has been determined as the ratio between the measured road-NO_x contribution and the modelled road-NO_x contribution, forced through zero ($1/0.2722 = 3.67$). This factor has been applied to the modelled road-NO_x concentration for each location to provide an adjusted modelled road-NO_x concentration.

The annual mean road-NO₂ concentration was determined using the DEFRA NO_x:NO₂ spread sheet calculation tool and added to the background NO₂ concentration to produce a total adjusted NO₂ concentration.

Figure D7 shows the adjusted modelled total NO₂ vs monitored NO₂. There is good agreement between the adjusted concentration and monitored concentration and therefore no secondary adjustment is required.

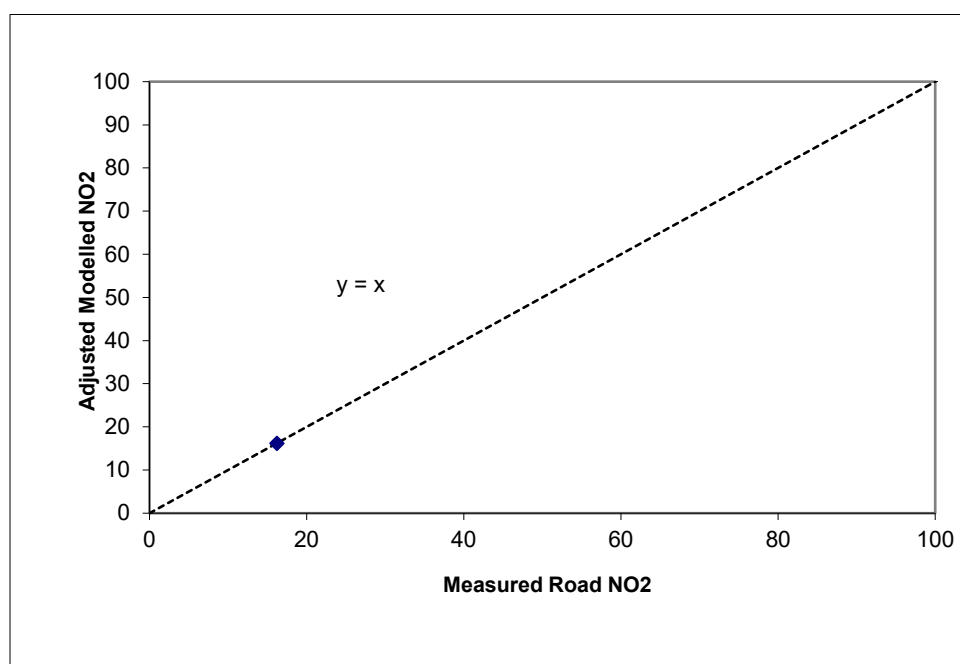


Figure D7: Comparison of Modelled NO₂ with Measured NO_x

The RMSE of the unadjusted results was calculated as 3.6 µg/m³ reducing to 0 µg/m³ following adjustment of the results.

The adjustment factor of 3.67 has been applied to the modelled road-NO_x concentrations predicted at each receptor location located outside of the AQMA (receptors R1 to R23 and R25). The predicted road-NO₂ concentrations, calculated using the NO_x-NO₂ converter tool, have subsequently been added to background NO₂ to provide the final predicted annual mean NO₂ concentrations at each receptor.

As there is no suitable monitoring of PM data to allow verification of the PM results, these factors have also been used to adjust the predicted PM₁₀ and PM_{2.5} concentrations in accordance with guidance set out in LAQM.TG(22).

Appendix E – Receptors used in ADMS Modelling

Table E1: Receptors used in ADMS Modelling Assessment			
Receptor Number	Location	OS Grid Reference	Height above Ground (m)
R1	263 Trowbridge Road	383388, 159738	1.5
R2	1 Moulton Drive	383331, 159783	1.5
R3	32 Fitzmaurice Close	383287, 159788	1.5
R4	6 Harton Close	383148, 159745	1.5
R5	1 Baileys Barn	382624, 159844	1.5
R6	The Saw Mills	382477, 159867	1.5
R7	34 Spencer's Orchard	382472, 159982	1.5
R8	40 Frome Road	382519, 160263	1.5
R9	1 St Katherine Quay	382562, 160295	1.5
R10	1-4 Frome Road	382560, 160383	1.5
R11	Culver House	382577, 160500	1.5
R12	1 Lorne Villas	382599, 160514	1.5
R13	2B Junction Road	382646, 160567	1.5
R14	256 Trowbridge Road	383282, 159919	1.5
R15	199 Trowbridge Road	383242, 160012	1.5
R16	147 Trowbridge Road	383115, 160151	1.5
R17	186 Trowbridge Road	383071, 160162	1.5

Table E1: Receptors used in ADMS Modelling Assessment			
Receptor Number	Location	OS Grid Reference	Height above Ground (m)
R18	142 Trowbridge Road	382961, 160253	1.5
R19	103 Trowbridge Road	382916, 160335	1.5
R20	28 St Margrets Street	382667, 160604	1.5
R21	22 St Margrets Street	382604, 160696	1.5
R22	Prospect House	382589, 160703	1.5
R23	15 St Margaret Street	382571, 160741	1.5
R24	Courtside Terrace	382568, 160601	1.5
R25	Frome Road	382564, 160725	1.5
R26	13 St Margarets Street	382555, 160772	1.5
R27	44 St Margarets Street	382533, 160798	1.5
R28	100 St Margarets Street	382541, 160849	1.5
R29	7 Jasmine House	382546, 160828	1.5
R30	Silver Street	382660, 160978	1.5
R31	Silver Street	382684, 161003	1.5
R32	DT32 – Silver Street	382709, 161009	1.5
R33	Silver Street	382712, 161018	1.5
R34	DT33 – Silver Street	382841, 160982	1.5
R35	DT29 – Market Street	282540, 161081	1.5

Table E1: Receptors used in ADMS Modelling Assessment			
Receptor Number	Location	OS Grid Reference	Height above Ground (m)
R36	Masons Lane	282510, 161120	1.5
R37	Masons Lane	382565, 161136	1.5
R38	Masons Lane	382648, 161172	1.5
R39	DT25 – Masons Lane	382709, 161229	1.5

Figure E1: Location of Receptors used in Modelling (Outside AQMA)

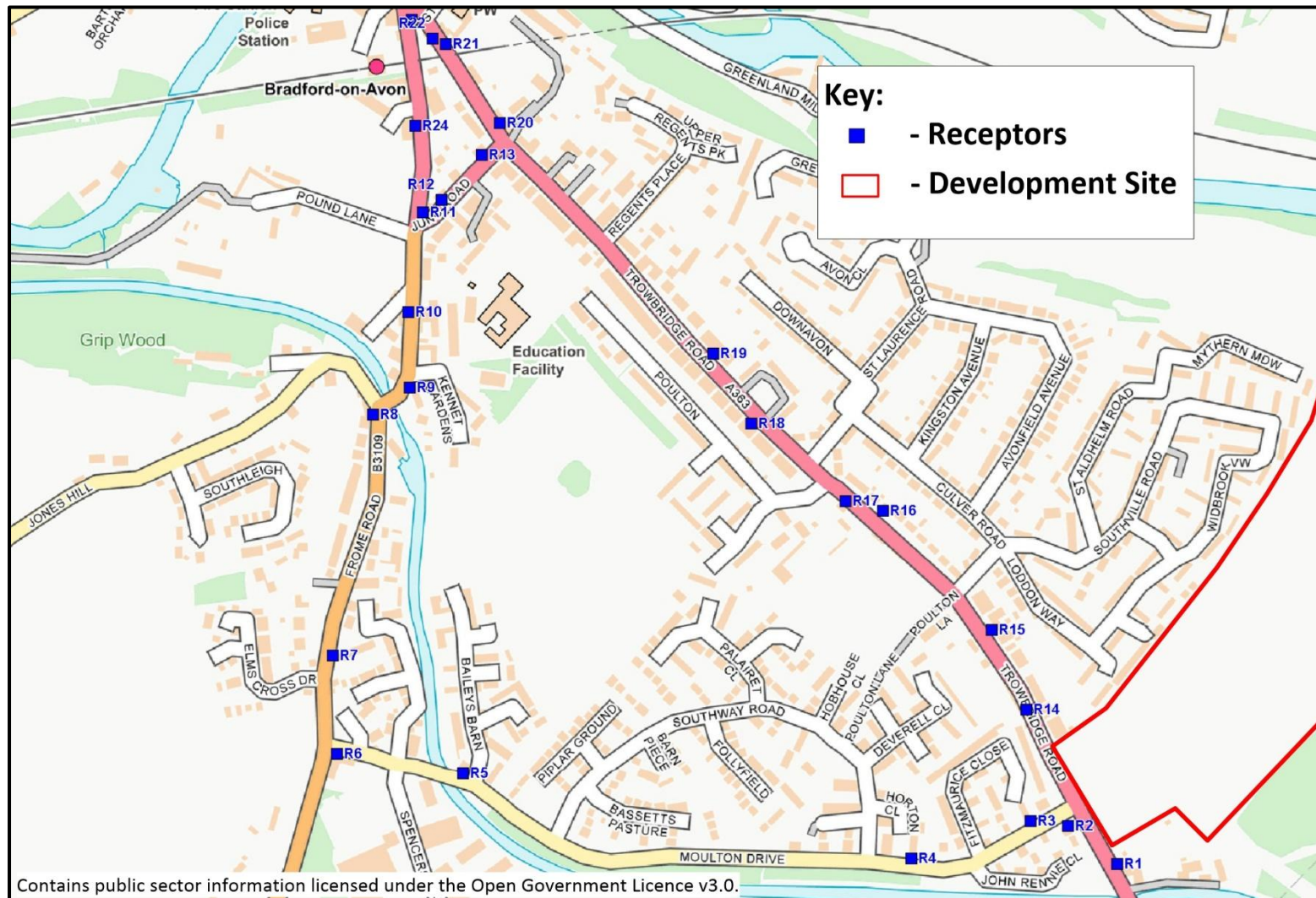
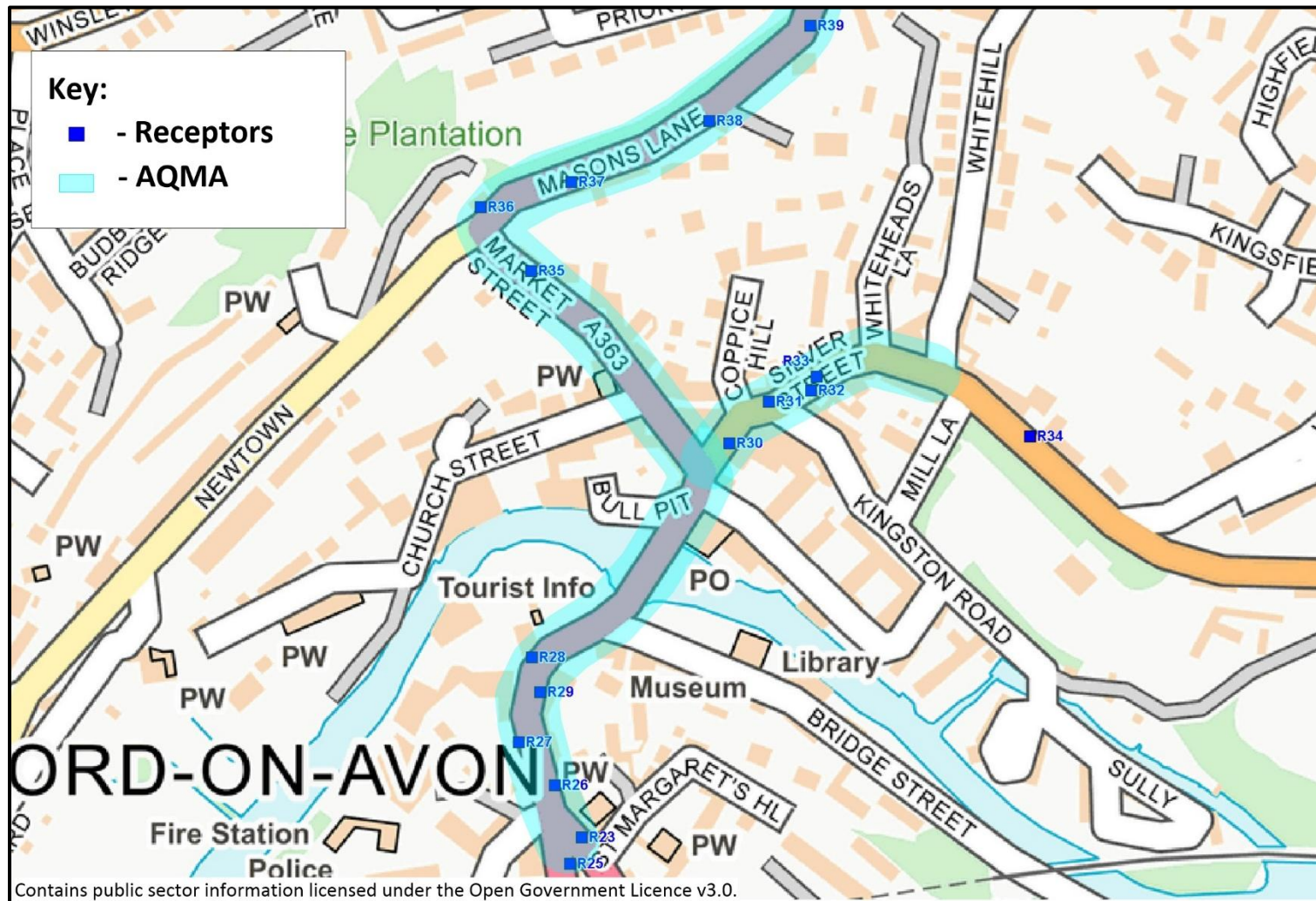


Figure E2: Location of receptors used in Modelling (within AQMA)



Appendix F - Construction Mitigation Measures

The following best practice measures will be incorporated into a CEMP to reduce emissions of dust during the construction phase:

Highly Recommended

-
- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- display the name and contact details of the person accountable for air quality and dust issues on the site boundary (i.e. the environment manager/engineer or site manager);
- display the head or regional office contact details;
- development and implement a Dust Management Plan (DMP) which may include measures to control other emissions and is approved by the LA;
- record all dust and air quality complaints, identify cause, 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 off- site and the action taken to resolve the situation in the log book;
- hold regular liaison meetings with other high risk construction sites within 250m of the site boundary to ensure plans are coordinated and emissions minimised;
- undertake daily on-site and off-site inspections to monitor dust, record inspection results and make log available to the LA when asked. This should include regular dust soiling checks of surfaces within 100m of the site boundary;
- carry out regular site inspections to monitor compliance with the DMP, record inspection results and make inspection log available to WC when asked;
- increase frequency of site inspection 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 periods of dry or windy conditions;
- undertake dust deposition, dust flux or real-time PM10 monitoring where requested by the LA throughout the construction period. Monitoring should be carried out in accordance with the IAQM guidance on monitoring during demolition and construction;
- 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;
- 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 the 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 sand whipping;
- 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 batter powered equipment where practicable;
- impose and signpost a max speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work area;

- produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials;
- Implement a Travel Plan that supports and encourages sustainable travel;
- 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 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 reasonable practicable after the event using wet cleaning methods;
- avoid bonfires and burning of waste materials;
- re-vegetate earthworks and exposed areas/soil stockpiles to stabilize surfaces as soon as practicable;
- use hessian, mulches or trackifiers where its 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;
- avoid scabbling 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 powder materials ensure bags are sealed after use and stored appropriately to prevent dust;
- 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;
- use water-assisted dust sweepers on the access and local roads, to remove, as necessary, any material tracked out of the site;
- avoid dry sweeping of large areas;
- ensure vehicles entering and leaving the site are covered to prevent the 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 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 site;
- Ensure that there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, where site size and layout permits;
- Access gates to be at least 10 m from receptors where possible.

Appendix G – Results of the ADMS Modelling Assessment

Table G1: Predicted Annual Mean NO ₂ Concentrations at Existing Receptor (µg/m ³)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R1	9.0	9.2	9.4	0	Negligible	1	Negligible
R2	7.2	7.2	7.3	0	Negligible	0	Negligible
R3	7.1	7.1	7.2	0	Negligible	0	Negligible
R4	7.1	7.1	7.2	0	Negligible	0	Negligible
R5	7.3	7.3	7.4	0	Negligible	0	Negligible
R6	8.5	8.5	8.6	0	Negligible	0	Negligible
R7	8.7	8.7	8.7	0	Negligible	0	Negligible
R8	8.0	8.0	8.0	0	Negligible	0	Negligible
R9	9.0	9.0	9.1	0	Negligible	0	Negligible
R10	8.7	8.7	8.7	0	Negligible	0	Negligible
R11	12.0	12.2	12.4	0	Negligible	1	Negligible
R12	8.9	9.1	9.2	0	Negligible	1	Negligible
R13	7.9	8.0	8.1	0	Negligible	0	Negligible

Table G1: Predicted Annual Mean NO ₂ Concentrations at Existing Receptor (µg/m ³)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R14	9.2	9.4	9.5	0	Negligible	1	Negligible
R15	7.9	8.0	8.1	0	Negligible	0	Negligible
R16	7.6	7.7	7.8	0	Negligible	0	Negligible
R17	8.3	8.5	8.6	0	Negligible	1	Negligible
R18	7.2	7.3	7.3	0	Negligible	0	Negligible
R19	8.2	8.3	8.4	0	Negligible	1	Negligible
R20	8.3	8.4	8.5	0	Negligible	1	Negligible
R21	9.3	9.5	9.6	0	Negligible	1	Negligible
R22	8.5	8.6	8.7	0	Negligible	0	Negligible
R23	12.1	12.4	12.6	0	Negligible	1	Negligible
R24	9.2	9.3	9.4	0	Negligible	0	Negligible
R25	11.2	11.4	11.5	0	Negligible	1	Negligible
R26	15.5	15.8	16.1	1	Negligible	2	Negligible
R27	9.7	9.9	10.0	0	Negligible	1	Negligible

Table G1: Predicted Annual Mean NO ₂ Concentrations at Existing Receptor (µg/m ³)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R28	11.1	11.3	11.4	0	Negligible	1	Negligible
R29	13.5	13.7	14.0	1	Negligible	1	Negligible
R30	17.8	18.2	18.5	1	Negligible	2	Negligible
R31	18.1	18.5	18.8	1	Negligible	2	Negligible
R32	15.8	16.2	16.4	1	Negligible	2	Negligible
R33	16.6	17.0	17.3	1	Negligible	2	Negligible
R34	10.2	10.3	10.4	0	Negligible	1	Negligible
R35	27.4	28.2	28.7	1	Negligible	3	Negligible
R36	14.5	14.8	15.0	1	Negligible	1	Negligible
R37	26.5	27.2	27.7	1	Negligible	3	Negligible
R38	22.4	22.9	23.4	1	Negligible	3	Negligible
R39	26.2	26.9	27.4	1	Negligible	3	Negligible

Table G2: Predicted Annual Mean PM10 Concentrations at Existing Receptor ($\mu\text{g}/\text{m}^3$)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R1	14.2	14.4	14.5	0	Negligible	1	Negligible
R2	12.8	12.8	12.9	0	Negligible	0	Negligible
R3	12.8	12.8	12.9	0	Negligible	0	Negligible
R4	12.7	12.7	12.8	0	Negligible	0	Negligible
R5	12.0	12.0	12.1	0	Negligible	0	Negligible
R6	12.8	12.8	12.9	0	Negligible	0	Negligible
R7	13.0	13.0	13.0	0	Negligible	0	Negligible
R8	12.9	12.9	12.9	0	Negligible	0	Negligible
R9	13.6	13.6	13.7	0	Negligible	0	Negligible
R10	13.4	13.4	13.4	0	Negligible	0	Negligible
R11	15.9	16.1	16.2	0	Negligible	1	Negligible
R12	13.6	13.7	13.8	0	Negligible	0	Negligible
R13	12.8	12.9	13.0	0	Negligible	0	Negligible
R14	14.3	14.5	14.6	0	Negligible	1	Negligible

Table G2: Predicted Annual Mean PM10 Concentrations at Existing Receptor ($\mu\text{g}/\text{m}^3$)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R15	12.9	13.0	13.0	0	Negligible	0	Negligible
R16	12.6	12.7	12.8	0	Negligible	0	Negligible
R17	13.2	13.3	13.4	0	Negligible	0	Negligible
R18	12.3	12.4	12.4	0	Negligible	0	Negligible
R19	13.1	13.2	13.2	0	Negligible	0	Negligible
R20	13.0	13.1	13.2	0	Negligible	0	Negligible
R21	13.8	13.9	14.0	0	Negligible	1	Negligible
R22	13.2	13.3	13.4	0	Negligible	0	Negligible
R23	15.8	16.1	16.2	0	Negligible	1	Negligible
R24	13.8	13.9	14.0	0	Negligible	0	Negligible
R25	15.2	15.4	15.5	0	Negligible	1	Negligible
R26	17.8	18.1	18.3	0	Negligible	1	Negligible
R27	14.0	14.1	14.2	0	Negligible	0	Negligible
R28	15.1	15.2	15.3	0	Negligible	1	Negligible

Table G2: Predicted Annual Mean PM10 Concentrations at Existing Receptor (µg/m³)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R29	16.9	17.1	17.3	0	Negligible	1	Negligible
R30	17.8	18.1	18.2	0	Negligible	1	Negligible
R31	17.9	18.1	18.3	0	Negligible	1	Negligible
R32	16.6	16.8	16.9	0	Negligible	1	Negligible
R33	17.0	17.2	17.4	0	Negligible	1	Negligible
R34	14.0	14.1	14.2	0	Negligible	0	Negligible
R35	16.7	16.9	17.1	0	Negligible	1	Negligible
R36	13.4	13.4	13.5	0	Negligible	0	Negligible
R37	16.4	16.6	16.8	0	Negligible	1	Negligible
R38	15.3	15.5	15.6	0	Negligible	1	Negligible
R39	16.3	16.5	16.7	0	Negligible	1	Negligible

Table G3: Predicted Annual Mean PM2.5 Concentrations at Existing Receptor (µg/m³)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R1	8.0	8.1	8.1	0	Negligible	1	Negligible
R2	7.2	7.2	7.3	0	Negligible	0	Negligible
R3	7.2	7.2	7.3	0	Negligible	0	Negligible
R4	7.2	7.2	7.2	0	Negligible	0	Negligible
R5	7.3	7.3	7.3	0	Negligible	0	Negligible
R6	7.7	7.7	7.8	0	Negligible	0	Negligible
R7	7.8	7.8	7.8	0	Negligible	0	Negligible
R8	8.0	8.0	8.1	0	Negligible	0	Negligible
R9	8.4	8.4	8.5	0	Negligible	0	Negligible
R10	8.3	8.3	8.3	0	Negligible	0	Negligible
R11	9.7	9.7	9.8	0	Negligible	1	Negligible
R12	8.4	8.5	8.5	0	Negligible	0	Negligible
R13	8.0	8.0	8.1	0	Negligible	0	Negligible
R14	8.0	8.1	8.2	0	Negligible	1	Negligible

Table G3: Predicted Annual Mean PM2.5 Concentrations at Existing Receptor (µg/m³)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R15	7.8	7.9	7.9	0	Negligible	0	Negligible
R16	7.7	7.7	7.8	0	Negligible	0	Negligible
R17	8.0	8.1	8.1	0	Negligible	1	Negligible
R18	7.5	7.6	7.6	0	Negligible	0	Negligible
R19	7.9	8.0	8.0	0	Negligible	0	Negligible
R20	7.9	8.0	8.0	0	Negligible	0	Negligible
R21	8.3	8.4	8.4	0	Negligible	1	Negligible
R22	8.0	8.1	8.1	0	Negligible	0	Negligible
R23	9.4	9.5	9.6	0	Negligible	1	Negligible
R24	8.3	8.4	8.4	0	Negligible	0	Negligible
R25	9.1	9.2	9.2	0	Negligible	1	Negligible
R26	10.5	10.6	10.7	0	Negligible	1	Negligible
R27	8.4	8.5	8.5	0	Negligible	0	Negligible
R28	9.0	9.1	9.1	0	Negligible	1	Negligible

Table G3: Predicted Annual Mean PM2.5 Concentrations at Existing Receptor (µg/m³)							
Receptor	2031 Base	2031 DM	2031 DS	Impact of Development 'Alone'		Cumulative Impacts	
				Change due to Proposed Development as a % of NAQO	Significance of Impact (Development Alone)	Cumulative Impact as a % of NAQO	Significance of Impact (Cumulative Impact)
R29	10.0	10.1	10.2	0	Negligible	1	Negligible
R30	10.5	10.6	10.7	0	Negligible	1	Negligible
R31	10.6	10.7	10.8	0	Negligible	1	Negligible
R32	9.9	10.0	10.1	0	Negligible	1	Negligible
R33	10.1	10.2	10.3	0	Negligible	1	Negligible
R34	8.4	8.5	8.5	0	Negligible	0	Negligible
R35	10.0	10.1	10.2	0	Negligible	1	Negligible
R36	8.2	8.2	8.3	0	Negligible	0	Negligible
R37	9.8	9.9	10.0	0	Negligible	1	Negligible
R38	9.2	9.3	9.4	0	Negligible	1	Negligible
R39	9.8	9.9	10.0	0	Negligible	1	Negligible