Bloor Homes and the Sandleford Farm Partnership

Proposed Mixed Use Development Sandleford Park, Newbury, West Berkshire

Air Quality Assessment

January 2020

Executive Park, Avalon Way, Anstey, Leicester, LE7 7GR
Tel: +44 (0)116 234 8143
Email: daniel.clampin@wyg.com

Document Control

Project:	Proposed Mixed Use Development, Sandleford Park, Newbury, West Berkshire		
Client:	Bloor Homes and the Sandleford Farm Partnership		
Job Number:	A106825-1		
File Origin:	O:\Acoustics Air Quality and Noise\Active Projects		
Document Checking:			
Prepared by:	Rebecca Jeffs *Environmental Consultant*	Initialled:	RJ
Checked by:	Daniel Clampin *Senior Environmental Consultant*	Initialled:	DC
Verified by:	Nigel Mann *Director*	Initialled:	NM

Issue	Date	Status
1	6th September 2019	First Issue
2	17th December 2019	Second Issue – Updated Layout & Traffic Data
3	9th January 2020	Third Issue – Updated with Minor Amendments
4	15th January 2020	Fourth Issue – Updated with Minor Amendments

Contents Page

Figures

Appendices

Non-Technical Summary

WYG have undertaken an Air Quality Assessment for the proposed development at Sandleford Park, Newbury, West Berkshire.

The following assessment stages have been undertaken as part of this assessment:

- Baseline evaluation;
- Assessment of potential air quality impacts during the construction phase;
- Assessment of potential air quality impacts associated with traffic emissions; and,
- Identification of mitigation measures (as required).

Construction

The potential effects during the construction phase include fugitive dust emissions from site activities, such as demolition, earthworks, construction and trackout. During the construction phase, site specific mitigation measures detailed within this assessment will be implemented. With these mitigation measures in place, the effects from the construction phase are not predicted to be significant.

Operational Phase

The effects have been considered for the relevant sensitive residential and ecological receptors. The impacts during the operational phase take into account exhaust emissions from additional road traffic generated due to the proposed development.

The effects during the construction phase have been assessed semi-quantitatively using the latest guidance provided by the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM).

The effects for the operational phase have been assessed using the detailed dispersion modelling (ADMS-Roads). The latest tools and guidance provided by Defra are used in undertaking the assessment. The model predictions are compared with the EU and national air quality standards to determine any exceedances. The model predictions have been verified using local monitoring data. The impact description of the effects, during construction and operational phases, has been assessed using the latest guidance provided by EPUK and IAQM.

Changes in emissions to air because of additional traffic due to the development, during the operational phase are predicted to be negligible at the modelled sensitive receptor locations.

1. Introduction

Bloor Homes Limited and the Sandleford Farm Partnership have commissioned WYG Environment Planning Transport (WYG) to prepare an Air Quality Assessment to support an application for the proposed development at Sandleford Park, Newbury, West Berkshire.

1.1 Site Location and Context

The approximate United Kingdom National Grid Reference (NGR) is 446800, 164550. It is bounded to the north by Monks Lane, to the east by Newtown Road, to the west by residential dwellings and to the south by open grassland and the River Enborne. Reference should be made to Figure 1 for a map of the proposed development site and surrounding area.

The following assessment stages have been undertaken as part of this assessment:

- Baseline evaluation;
- Assessment of potential air quality impacts during the construction phase;
- Assessment of potential air quality impacts during the operational phase; and,
- Identification of mitigation measures (as required).

The results of the assessment are detailed in the following sections of this report.

The construction phase assessment considers the potential effects of dust and particulate emissions from site activities and materials movement based on a qualitative risk assessment method based on the IAQM's 'Guidance on the Assessment of Dust from Demolition and Construction' document, published in 2014.

The assessment of the potential air quality impacts that are associated with the operational phase has focused on the predicted impact of changes in ambient nitrogen dioxide (NO_2) and particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}) and less than 2.5µm ($PM_{2.5}$) as a result of the development at key local receptor locations. The changes have been referenced to EU air quality limits and UK air quality objectives and the magnitude and impact description of the changes have been referenced to non-statutory guidance issued by the IAQM and EPUK.

Ecological receptors have been assessed against the relevant critical levels for protection of vegetation and habitats and assessed in line with the criteria set out in "A guide to the assessment of air quality impacts on designated nature conservation sites, Version 1.0, June 2019".

2. Policy and Legislative Context

2.1 Documents Consulted

The following documents were consulted during the undertaking of this assessment:

Legislation and Best Practice Guidance

- National Planning Policy Framework, Ministry for Housing, Communities and Local Government, (Revised) February 2019;
- Planning Practice Guidance: Air Quality, Ministry for Housing, Communities and Local Government, November 2019;
- The Air Quality Standards Regulation (Amendments), 2016;
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, 2007;
- The Environment Act, 1995;
- Local Air Quality Management Technical Guidance LAQM.TG16, Defra, 2018;
- Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, LA 105 Air quality, November 2019;
- Guidance on the Assessment of Dust from Demolition and Construction, IAQM, 2014.
- Land-Use Planning & Development Control: Planning for Air Quality, EPUK & IAQM, 2017;
- Guidance on Monitoring in the Vicinity of Demolition and Construction Sites, IAQM, October 2018; and,
- A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites (Version 1.0), IAQM, June 2019.

Websites Consulted

- Google maps (maps.google.co.uk);
- The UK National Air Quality Archive (www.airquality.co.uk);
- Department for Transport Matrix (www.dft.go.uk/matrix);
- emapsite.com;
- Multi-Agency Geographic Information for the Countryside (http://magic.defra.gov.uk/);
- Planning Practice Guidance (http://planningguidance.planningportal.gov.uk/); and
- West Berkshire Council (http://www.westberks.gov.uk/).

Site Specific Reference Documents

- West Berkshire Council Air Quality Annual Status Report, June 2019;
- West Berkshire District Local Plan 1991-2006 (Saved Policies 2007);
- West Berkshire Council Core Strategy (2006-2026), Adopted July 2012; and
- Sandleford Park Supplementary Planning Document, March 2015

2.2 Air Quality Legislative Framework

European Legislation

European air quality legislation is consolidated under Directive 2008/50/EC, which came into force on 11th June 2008. This Directive consolidates previous legislation, which was designed to deal with specific pollutants in a consistent manner and provides new air quality objectives for fine particulates. The consolidated Directives include:

- **Directive 1999/30/EC** – the First Air Quality "Daughter" Directive – sets ambient air limit values for NO_2 and oxides of nitrogen, sulphur dioxide, lead and PM_{10};
- **Directive 2000/69/EC** – the Second Air Quality "Daughter" Directive – sets ambient air limit values for benzene and carbon monoxide; and,
- **Directive 2002/3/EC** – the Third Air Quality "Daughter" Directive – seeks to establish long-term objectives, target values, an alert threshold and an information threshold for concentrations of ozone in ambient air.

The fourth daughter Directive was not included within the consolidation and is described as:

- **Directive 2004/107/EC** – sets health-based limits on polycyclic aromatic hydrocarbons, cadmium, arsenic, nickel and mercury, for which there is a requirement to reduce exposure to as low as reasonably achievable.

UK Legislation

The Air Quality Standards Regulations (Amendments) 2016 seek to simplify air quality regulation and provide a new transposition of the Air Quality Framework Directive, First, Second and Third Daughter Directives and transpose the Fourth Daughter Directive within the UK. The Air Quality Limit Values are transposed into the updated Regulations as Air Quality Standards, with attainment dates in line with the European Directives. SI 2010 No. 1001, Part 7 Regulation 31 extends powers, under Section 85(5) of the Environment Act (1995), for the Secretary of State to give directions to Local Authorities (LAs) for the implementation of these Directives.

The UK Air Quality Strategy is the method for implementation of the air quality limit values in England, Scotland, Wales and Northern Ireland and provides a framework for improving air quality and protecting human health from the effects of pollution.

For each nominated pollutant, the Air Quality Strategy sets clear, measurable, outdoor air quality standards and target dates by which these must be achieved; the combined standard and target date is referred to as the Air Quality Objective (AQO) for that pollutant. Adopted national standards are based on the recommendations of the Expert Panel on Air Quality Standards (EPAQS) and have been translated into a set of Statutory Objectives within the Air Quality (England) Regulations (2000) SI 928, and subsequent amendments.

The AQOs for pollutants included within the Air Quality Strategy and assessed as part of the scope of this report are presented in Table 2.1 along with European Commission (EC) Directive Limits and World Health Organisation (WHO) Guidelines.

Table 2.1 Air Quality Standards, Objectives, Limit and Target Values

Pollutant	Applies	Objective	Concentration Measured as[10]	Date to be achieved and maintained thereafter	European Obligations	Date to be achieved and maintained thereafter	New or existing
PM_{10}	UK	50µg/m^3 by end of 2004 (max 35 exceedances a year)	24-hour Mean	1st January 2005	50µg/m^3 by end of 2004 (max 35 exceedances a year)	1st January 2005	Retain Existing
	UK	40µg/m^3 by end of 2004	Annual Mean	1st January 2005	40µg/m^3	1st January 2005	
$PM_{2.5}$	UK	25µg/m^3	Annual Mean	31st December 2010	25µg/m^3	1st January 2010	Retain Existing
NO_2	UK	200µg/m^3 not to be exceeded more than 18 times a year	1-Hour Mean	31st December 2005	200µg/m^3 not to be exceeded more than 18 times a year	1st January 2010	Retain Existing
	UK	40µg/m^3	Annual Mean	31st December 2005	40µg/m^3	1st January 2010	

Table 2.2 Ecological Air Quality Standards, Objectives, Limit and Target Values

Pollutant	Applies	Objective	Concentration Measured as
NO_X	UK	30µg/m^3	Annual Mean

Within the context of this assessment, the annual mean objectives are those against which facades of residential receptors will be assessed and the short-term objectives apply to all other receptor locations, where people may be exposed over a short duration, both residential and non-residential such as using gardens, balconies, walking along streets, using playgrounds, footpaths or external areas of employment uses.

Local Air Quality Management

Under Section 82 of the Environment Act (1995) (Part IV) Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves assessing present and likely future air quality against the AQOs. If it is predicted that levels at the façade of buildings where members of the public are regularly present (normally residential properties) are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA, the LA is required to produce an Air Quality Action Plan (AQAP), the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

2.3 Planning and Policy Guidance

National Policy

The National Planning Policy Framework (NPPF), revised February 2019, principally brings together and summarises the suite of Planning Policy Statements (PPS) and Planning Policy Guidance (PPG) which previously guided planning policy making. The NPPF 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 or 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 or travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan'*

The Planning Practice Guidance (PPG) web-based resource was updated by the Ministry for Housing, Communities and Local Government (MHCLG) on 1st November 2019 to support the National Planning Policy Framework and make it more accessible. A review of PPG: Air Quality identified the following guidance:

> *"The 2008 Ambient Air Quality Directive sets legally binding limits for concentrations in outdoor air of major air pollutants that affect public health such as particulate matter (PM_{10} and $PM_{2.5}$) and nitrogen dioxide (NO_2).*
>
> *The UK also has national emission reduction commitments for overall UK emissions of 5 damaging air pollutants:*
>
> - *fine particulate matter ($PM_{2.5}$)*
> - *ammonia (NH_3)*

- *nitrogen oxides (NO_x)*
- *sulphur dioxide (SO_2)*
- *non-methane volatile organic compounds (NMVOCs)*

As well as having direct effects on public health, habitats and biodiversity, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems. Odour and dust can also be a planning concern, for example, because of the effect on local amenity."

Local Policy

The West Berkshire Local Plan includes the Core Strategy Development Plan Document (DPD) (adopted July 2012), the Housing Site Allocations DPD (adopted May 2017) and the West Berkshire District Local Plan (Saved Policies 2007). Whilst there are no policies specific to air quality, the following policies have been identified as relevant to air quality;

"***Environmental nuisance and pollution control (OVS. 5):***

The Council will only permit development proposals where they do not give rise to an unacceptable pollution of the environment. In order to minimise the adverse impact on the environment or loss of amenity proposals should have regard to:

a) the need to ensure the adequate storage and disposal of waste materials; and
b) the installation of equipment to minimise the harmful effects of emissions; and
c) the hours, days or seasons of operations; and
d) locating potential nuisance or pollution activities onto the least sensitive parts of the site or where the impacts can be best contained by physical or other appropriate measures."

"***Policy CS 13: Transport;***

Development that generates a transport impact will be required to:

…

Minimise the impacts of all forms of travel on the environment and help tackle climate change."

3. Assessment Methodology

The potential environmental effects of the operational phase of the proposed development are identified as far as current knowledge of the site and development allows. The impact description of potential environmental effects is assessed according to the latest guidance produced by EPUK and IAQM in January 2017 '*Land-Use Planning & Development Control: Planning for Air Quality*' and June 2019 '*A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites*'.

The methodology used to determine the potential air quality effects of the construction phase of the proposed development has been derived from the IAQM '*Guidance on the Assessment of the Impacts of Dust from Demolition and Construction'* document and is summarised in Section 5.

3.1 Determining the Impact Magnitude of the Air Quality Effects

The impact magnitude of the effects during the operational phase of the development is based on the latest guidance produced by EPUK and IAQM in January 2017. The guidance provides a basis for a consistent approach that could be used by all parties associated with the planning process to professionally judge the overall impact description of the air quality effects based on severity of air quality impacts.

The following rationale is used in determining the severity of the air quality effects at individual receptors:

1. The change in concentration of air pollutants, air quality effects, are quantified and evaluated in the context of AQOs. The impacts are provided as a percentage of the Air Quality Objective (AQO), which may be an AQO, EU limit or target value;
2. The absolute concentrations are also considered in terms of the AQO and are divided into categories for long term concentration. The categories are based on the sensitivity of the individual receptor in terms of harm potential. The degree of harm potential to change increases as absolute concentrations are close to or above the AQO;
3. Severity of the effect is described as qualitative descriptors; negligible, slight, moderate or substantial, by taking into account in combination the harm potential and air quality effect. This means that a small increase at a receptor which is already close to or above the AQO will have higher severity compared to a relatively large change at a receptor which is significantly below the AQO;
4. The impacts can be adverse when pollutant concentrations increase or beneficial when concentration decrease as a result of development;
5. The judgement of overall impact description of the effects is then based on severity of effects on all the individual receptors considered; and,
6. Where a development is not resulting in any change in emissions itself, the impact description of effect is based on the effect of surrounding sources on new residents or users of the development, i.e., will they be exposed to levels above the AQO.

Table 3.1 Impact Descriptors for Individual Receptors

Long term average concentration at receptor in assessment year	% Change in concentration relative to AQO			
	1	2-5	6-10	>10
≤75% of AQO	Negligible	Negligible	Slight	Moderate
76-94% of AQO	Negligible	Slight	Moderate	Moderate
95-102% of AQO	Slight	Moderate	Moderate	Substantial
103-109 of AQO	Moderate	Moderate	Substantial	Substantial
≥110 of AQO	Moderate	Substantial	Substantial	Substantial

In accordance with explanation note 2 of Table 6.3 of the EPUK & IAQM guidance, the Table is intended to be used by rounding the change in percentage pollutant concentration to whole numbers, which then makes it clearer which cell the impact falls within. The user is encouraged to treat the numbers with recognition of their likely accuracy and not assume a false level of precision. Changes of 0%, i.e. less than 0.5%, will be described as Negligible.

4. Baseline Conditions

4.1 Air Quality Review

This section provides a review of the existing air quality in the vicinity of the proposed development site in order to provide a benchmark against which to assess potential air quality impacts of the proposed development. Baseline air quality in the vicinity of the proposed development site has been defined from a number of sources, as described in the following sections.

Local Air Quality Management (LAQM)

As required under section 82 of the Environment Act 1995, WBC has conducted an ongoing exercise to review and assess air quality within its area of jurisdiction. The assessments have indicated that concentrations of NO_2 are above the relevant AQOs at a number of locations of relevant public exposure within West Berkshire. WBC has therefore designated two AQMAs, which are described as:

- West Berkshire Thatcham AQMA: Part of the A4 in Thatcham from the Harts Hill Road junction to the junction with the Broadway; and,
- Newbury AQMA: An area encompassing the roundabout junction of the A339, A343 and Greenham Road in Newbury.

The proposed development site is located approximately 1.2 km south-west of the Newbury AQMA. Given that traffic flows from the proposed development will influence existing flows within the AQMA, the assessment has considered the air quality impacts within the Newbury AQMA.

Air Quality Monitoring

Monitoring of air quality within WBC is undertaken through continuous and non-continuous monitoring methods. These have been reviewed in order to provide an indication of existing air quality in the area surrounding the proposed development site.

Continuous Monitoring

WBC operated one continuous monitoring station in 2018 which monitored NO_2. The automatic monitoring station is located approximately 1.2 km north of the proposed site boundary.

Table 4.1 Monitored Annual Mean NO_2 Concentrations at Automatic Monitoring Station

ID	Site Description	Site Type	Distance from Kerb (m)	Inlet Height (m)	2018 NO_2 Annual Mean Concentration (µg/m^3)
CM1*	Newbury A343, A339 & Greenham Road Junction	Roadside	4.7	1.8	36.0
*Located within the AQMA					

As indicated in Table 4.1, the automatic monitoring station CM1, located within the AQMA did not monitor a NO_2 concentration above the AQO (40µg/m^3 annual mean) in 2018.

Non - Continuous Monitoring

WBC operated a network of 36 diffusion tube sites during 2018. The closest diffusion tube, WB20, is located adjacent to the eastern site boundary. Reference should be made to Figure 1 for the locations of the diffusion tubes within the council's jurisdiction.

The representative diffusion tube data is from 2018, which is presented in Table 4.2.

Table 4.2 Monitored Annual Mean NO_2 Concentrations at Diffusion Tubes

ID	2018 Report Reference	Site Description	Site Type	Distance from Kerb (m)	Inlet Height (m)	2018 NO_2 Annual Mean Concentration (µg/m^3)
WB1	D1	A339 Newbury Central	Kerbside	1.90	2.30	29.4
WB15	D22	44 Hambridge Road Newbury	Urban Background	4.30	2.45	26.0
WB16	D23	42 Kings Road Newbury	Roadside	11.30	1.85	23.0
WB17*	D24	1 Winchester Court Newbury	Roadside	4.95	3.00	36.0
WB18*	D25	Continuous monitor 1, A343, A339 and Greenham Road Newbury	Roadside	4.70	1.80	36.3
WB19	D28	64 Greenham Road Newbury	Roadside	2.00	2.20	26.2
WB20	D29	20 Deadmans Lane Greenham	Suburban	10.50	2.10	23.0
WB22	D31	3 Howard Road Newbury	Roadside	11.00	2.60	22.0
WB23	D32	1 St John's Road Newbury	Roadside	4.80	2.25	31.0
WB24*	D33	63 St John's Road Newbury	Urban Background	6.20	2.20	25.0
WB25	D34	40 Bartholomew Street Newbury	Roadside	2.70	2.20	29.0
WB26	D35	6 Market Street Newbury	Urban Centre	1.30	2.10	24.9
WB31	D44	Abbeydale Monks Lane Newbury	Kerbside	2.00	2.50	15.4
WB32	D45	A343 Andover Road Wash Common	Kerbside	0.75	2.25	14.2
*Located in the AQMA						

As indicated in Table 4.2, all identified diffusion tubes monitored NO_2 concentrations below the AQO (40 µg/m^3 annual mean) in 2018.

4.2 Meteorology

Meteorological conditions have significant influence over air pollutant concentrations and dispersion. Pollutant levels can vary significantly from hour to hour as well as day to day, thus any air quality predictions need to be based on detailed meteorological data. The ADMS model calculates the dispersion of pollutants on an hourly basis using a year of local meteorological data. The 2018 meteorological data used in the assessment is derived from Middle Wallop Meteorological Station. This is the nearest meteorological station, which is considered representative of the development site, with all the complete parameters necessary for the ADMS model. Reference should be made to Figure 2 for an illustration of the prevalent wind conditions at the Middle Wallop Meteorological Station site.

4.3 Emission Sources

A desktop assessment has identified that traffic movements are likely to be the most significant local source of pollutants affecting the site and its surroundings. The principal traffic derived pollutants likely to impact local receptors are NO_2, PM_{10} and $PM_{2.5}$.

The assessment has therefore modelled all roads within the immediate vicinity of the proposed development site which are considered likely to experience significant changes in traffic flow as a result of the proposed development. Reference should be made to Figure 1 for a graphical representation of the traffic data utilised within the ADMS Roads 4.1.1 model.

It should be noted that the pollutant contribution of minor roads and rail sources that are not included within the dispersion model is considered to be accounted for via the use of background air quality levels.

4.4 Sensitive Receptors

Receptors that are considered as part of the air quality assessment are primarily those existing receptors that are situated along routes predicted to experience significant changes in traffic flow as a result of the proposed development.

The existing receptor locations are summarised in Table 4.3 and the spatial locations of all of the receptors are illustrated in Figure 1.

Table 4.3 Modelled Existing Sensitive Receptor Locations

Discrete Sensitive Receptor		Modelled Receptor Height (m)	UK NGR (m)	
			X	Y
R1	7 Penwood Road, The Chestnuts,	1.5	445196	163149
R2	325a Andover Road	1.5	445515	163704
R3	266 Andover Road	1.5	445595	164010
R4	The Annex at New Warren Farm	1.5	446098	164372
R5	Kendrick Road Kimberleys	1.5	445866	164397

Discrete Sensitive Receptor		Modelled Receptor Height (m)	UK NGR (m)	
			X	Y
R6	257 Andover Road	1.5	445799	164429
R7	Park House School South Building	1.5	446060	164570
R8	Warren Road	1.5	445985	164569
R9	241 Warren Road (N façade)	1.5	445868	164590
R10	176 Andover Road	1.5	445911	164810
R11	17 Dormer Road	1.5	446028	164826
R12	225 Andover Road	1.5	446014	164988
R13	77 Monks Lane	1.5	446217	165061
R14	211b Andover Road	1.5	446095	165087
R15	35 Bodin Gardens (adjacent to A339)	1.5	446242	165309
R16	125 Andover Road	1.5	446497	165736
R17	79 Andover Road	1.5	446622	165995
R18	34 Andover Road	1.5	446752	166248
R19	1 St Johns Road	1.5	447035	166436
R20*	63 St Johns Road	1.5	447375	166534
R21*	1 Winchester Court	1.5	447409	166559
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	1.5	447414	166539
R23	8 Eeklo Place (adjacent to A339)	1.5	447475	166332
R24	66 Priory Road (adjacent to A339)	1.5	447409	166014
R25	61 Dickens Walk (adjacent to A339)	1.5	447450	165730
R26	35 Bodin Gardens (adjacent to A339)	1.5	447434	165548
R27	2 Sandleford Parade (adjacent to A339)	1.5	447331	165314
R28	4 Deadmans Lane (adjacent to A339)	1.5	447504	164857
R29	7 Sandleford Farm (adjacent to A339)	1.5	447519	164583
R30	32 Monks Lane	1.5	446971	165317
R31	52 Monks Lane	1.5	446813	165286
R32	2 Heather Gardens	1.5	446485	165169
*Located in the AQMA				

Additionally, to determine the predicted exposure at the Proposed Development Site, 26 proposed sensitive receptors have been assessed. The spatial locations of the receptors are illustrated within Figure 2.

4.5 Ecological Receptors

Air quality impacts associated with the proposed re-development have the potential to impact on receptors of ecological sensitivity within the vicinity of the site. The IAQM guidance on 'Air Quality Impacts on Designated Nature Conservation Sites' (2019) document outlines the types of designated nature sites within 2 km of the proposed development which require air quality assessment. These are inclusive of;

- Sites of Special Scientific Interest (SSSIs);
- Special Areas of Conservation (SACs);
- Special Protection Areas (SPAs);
- Ramsar Sites;
- Areas of Special Scientific Interest (ASSIs);
- National Nature Reserves (NNRs);

- Local Nature Reserves (LNRs);
- Local Wildlife Sites (LWSs); and,
- Areas of Ancient Woodland (AW).

The Conservation of Habitats and Species Regulations (2017) additionally requires competent authorities to review planning applications and consents that have the potential to impact on European designated sites (e.g. Special Protection Areas).

A study was undertaken to identify any statutory designated sites of ecological or nature conservation importance within the extents of the dispersion modelling assessment. This was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) web-based interactive mapping service, which draws together information on key environmental schemes and designations.

Following a search within a 2 km radius of the site boundary, twenty ecological receptors were identified which are outlined below in Table 4.4.

Table 4.4 Ecological Receptors

Site ID	Site	Designation	UK NGR (m)		Distance from Site (m)	Distance from Nearest Affected Road (m)
			X	Y		
E1	Herbert Plantation	LNR	447375	162322	1,665	631
E2	Greenham and Crookham Commons	SSSI	447910	164712	574	401
E3	Greenham and Crookham Commons	SSSI	447971	164030	665	2
E4	Ancient Woodland ID 1487149	AW	446702	164033	0	453
E5	Ancient Woodland ID 1495577	AW	446586	164544	0	65
E6	Ancient Woodland ID 1495139	AW	449056	163944	1,450	26
E7	Ancient Woodland ID 1495279	AW	448947	164309	1,538	349
E8	Barn Copse	AW	446224	164748	0	295
E9	Crambow Gully	AW	447786	163394	1,005	440
E10	Crooks Copse	AW	446897	165180	0	94
E11	High Wood	AW	446760	164870	0	53
E12	High Wood	AW	447220	164444	0	274
E13	Newtown Grange Wood	AW	447262	163187	959	242
E14	Lillismoor Copse	AW	449076	163213	1,784	693
E15	Peckmoor Copse	AW	448226	163933	882	2
E16	Peckmoor Copse	AW	448180	163980	878	2
E17	Reddings Copse	AW	444703	164410	1,674	1,022
E18	Oaken Copse	AW	444791	165080	1,452	1,160
E19	Young Copse	AW	448550	165981	1,660	1,096
E20	West Wood	AW	448123	165810	1,247	708

In accordance with the IAQM Guidance, several receptor locations have been positioned on the conservation site. This is to determine the effects at different locations of the site.

It should be noted that the IAQM Guidance only requires the assessment of ecological receptors which are located within 200 m of the affected road network. For robustness, all ecological receptors within the proposed development site and those within 200 m of the affected road network have been included within the air quality assessment.

In accordance with the above, ecological receptors E1, E2, E7, E9, E13, E14, E17, E18, E19 and E20 have been scoped out of this air quality assessment.

5. Assessment of Air Quality Impacts - Construction Phase

5.1 Pollutant Sources

The main emissions during construction are likely to be dust and particulate matter generated during earth moving (particularly during dry months) or from construction materials. The main potential effects of dust and particulate matter are:

- Visual - dust plume, reduced visibility, coating and soiling of surfaces leading to annoyance, loss of amenity, the need to clean surfaces;
- Physical and/or chemical contamination and corrosion of artefacts;
- Coating of vegetation and soil contamination; and,
- Health effects due to inhalation e.g. asthma or irritation of the eyes.

A number of other factors such as the amount of precipitation and other meteorological conditions will also greatly influence the amount of particulate matter generated.

Construction activities can give rise to short-term elevated dust/PM_{10} concentrations in neighbouring areas. This may arise from vehicle movements, soiling of the public highway, demolition or windblown stockpiles.

5.2 Particulate Matter

The UK Air Quality Standards seek to control the health implications of respirable PM_{10} and $PM_{2.5}$. However, the majority of particles released from construction will be greater than this in size.

Construction works on site have the potential to elevate localised PM_{10} and $PM_{2.5}$ concentrations in the area. On this basis, mitigation measures should still be taken to minimise these emissions as part of good site practice.

5.3 Dust

Particles greater than 10µm are likely to settle out relatively quickly and may cause annoyance due to their soiling capability. Although there is no formal standards or criteria for nuisance caused by deposited particles, the IAQM 'Guidance on Monitoring in the Vicinity of Demolition and Construction Sites' (October 2018) and the Environment Agency Technical Guidance Note (TGN) M17 states that dust is usually compared with a 'complaints likely' guideline of 200mg/m^2/day. Therefore, a deposition rate of 200mg/m^2/day is often presented as a threshold for serious nuisance though this is usually only applied to long term exposure as people are generally more tolerant of dust for a short or defined period. Significant nuisance is likely when the dust coverage of surfaces is visible in contrast with adjacent clean areas, especially when it happens regularly. Severe dust nuisance occurs when the dust is perceptible without a clean reference surface.

Construction activities have the potential to suspend dust, which could result in annoyance of residents surrounding the site. Measures will be taken to minimise the emissions of dust as part of good site practice. Recommended mitigation measures proportionate to the risk associated with the development and based on best practice guidance are discussed in the following sections.

5.4 Methodology

The construction phase assessment utilises the IAQM Guidance on the Assessment of Dust from Demolition and Construction document published in February 2014.

Four construction processes are considered; these are demolition, earthworks, construction and trackout. For each of these phases, the impact description of the potential dust impacts is derived following the determination of a dust emission magnitude and the distance of activities to the nearest sensitive receptor, therefore assessing worst-case impacts. A full explanation of the methodology is contained in Appendix A.

5.5 Assessment Results

Based on the methodology detailed in Appendix A, the scale of the anticipated works has determined the potential dust emission magnitude for each process, as presented in the Table 5.1 below.

Table 5.1 Dust Emission Magnitude

Construction Process	Site Criteria	Dust Emission Magnitude
Demolition	No Demolition Proposed	N/A
Earthworks	Total Site Area >10,000m^2	Large
Construction	Total Building Volume >100,000m^3	Large
Trackout	Assumed worse case >50 HDV Outward Movements Per Day	Large

The sensitivity of the surrounding area to each construction process has been determined following stage 2B of the IAQM guidance. The assessment has determined the area sensitivities as shown in the Table 5.2.

Table 5.2 Sensitivity of the Area

Source	Area Sensitivity					
	Dust Soiling		Health Effects of PM_{10}		Ecological	
Demolition	N/A					
Earthworks	High	10-100 Highly Sensitive Receptors within 20m	Low	PM_{10} Concentrations of <24 µg/m^3 10-100 Highly Sensitive Receptors within 20m	High	
Construction						
Trackout						

The dust emission magnitude determined in Table 5.1 has been combined with the sensitivity of the area determined in Table 5.2, to determine the risk of impacts prior to the implementation of appropriate

mitigation measures. The potential impact description of dust emissions associated with the construction phase, without mitigation, is presented below.

Table 5.3 Impact Description of Construction Activities without Mitigation

Source	Summary Risk of Impacts Prior to Mitigation		
	Dust Soiling	Health Effects of PM_{10}	Ecological
Demolition	N/A	N/A	N/A
Earthworks	High	Low	High
Construction	High	Low	High
Trackout	High	Low	High

Appropriate mitigation measures are detailed and presented in Section 7. Following the adoption of these measures, the subsequent impact description of the construction phase is not predicted to be described as significant.

6. Assessment of Air Quality Impacts - Operational Phase

In the context of the proposed development, transportation has been identified as the dominant emission source that is likely to cause potential risk of exposure of air pollutants at receptors.

The operational phase assessment therefore consists of the quantified predictions of the change in NO_2, PM_{10} and $PM_{2.5}$ for the operational phase of the development due to changes in traffic movement. Predictions of air quality at the site have been undertaken for the operational phase of the development using ADMS Roads.

In accordance with the provided traffic data, as contained within the supporting Traffic Assessment (TA), the operational phase assessment has been undertaken with an assumed operational opening year of 2031. The assessment scenarios are therefore:

- 2018 Baseline = Existing Baseline Conditions;
- 2031 "Do Minimum" = Baseline Conditions + Committed Development Flows;
- 2031 "Do Something 1" = Baseline Conditions + Committed Development Flows + Proposed Development Flows (with Bloor Homes Development – three accesses); and,
- 2031 "Do Something 2" = Baseline Conditions + Committed Development Flows + Proposed Development Flows (with Strategic Development including full Sandleford Park West Scheme– four accesses).

6.1 Existing and Predicted Traffic Flows

Baseline 2017 data and projected 2031 'do minimum', 'do something (DS1)' and 'do something (DS2)' traffic data has been obtained for the operational phase assessment in the form of Annual Average Daily Traffic figures (AADT). Baseline 2017, 2031 'do minimum', 2031 'do something' scenarios AADT have been provided by Vectos Transport Consultants.

A TEMPro factor of 1.01 has been applied to the 2017 traffic data to provide 2018 baseline data. Additionally, traffic data (baseline 2018 and 'do minimum' and 'do something' 2031) from surrounding Air Quality Assessments have been obtained to include as part of the assessment. Due to the availability of traffic data, the "Do Something 1" traffic data also includes traffic flows associated with 100 dwellings as part of the adjacent Sandleford Park West Scheme.

Emission factors for the 2018 baseline and 2031 projected 'do minimum' and 'do something' scenarios have been calculated using the Emission Factor Toolkit (EFT) Version 9.0 (May 2019). The EFT and Defra NO_x-to-NO_2 Calculator only calculate emissions up to the year 2030. With our operational year being 2031, it is thought that the emissions will be greater during 2030. Therefore, with the emissions being greater during 2030 this assessment will be higher than 2031 predictions would be and have been used in this assessment.

It is assumed the average vehicle speeds on the local road network in an opening year of 2031 will be broadly the same as the ones in 2018. Where unavailable, traffic speeds have been estimated based on site observations and national speed limits.

A 50m 20km/hr slow down phase is included on each link at every junction and roundabout within the assessment. All of the roads within the dispersion model are illustrated in Figure 1. Detailed traffic figures are provided in the Table 6.1.

Table 6.1 Traffic Data

Link	Speed	2018		2031					
		AADT	%HGV	Do Minimum		Do Something 1		Do Something 2	
				AADT	%HGV	AADT	%HGV	AADT	%HGV
SPW Site Access	48	1356	5.0	1521	4.0	5055	4.0	5055	4.0
Andover Road (South of Double Mini)	48	10750	0.4	13973	1.5	15135	1.4	14176	1.5
Monks Lane (West)	48	11370	0.3	11924	2.0	11622	1.9	11393	2.0
Andover Road (North of Double Mini)	48	17840	2.0	15025	2.0	17083	2.0	17083	2.0
Essex Street, Newbury	48	6980	0.2	7081	2.1	6969	2.0	7559	1.9
A343 Andover Road South (West of Newtown Road)	48	13024	0.1	17384	1.2	18649	1.2	18530	1.1
Bloor Western Site Access	48	0	0.0	0	0.0	2500	0.0	2500	0.0
Monks Lane (Central)	48	12473	5.0	16010	4.0	15346	4.0	15346	4.0
Bloor Eastern Site Access	48	0	0.0	0	0.0	798	0.0	798	0.0
Monks Lane (East)	48	10750	0.4	10125	2.0	7227	2.1	11457	1.7
Monks Lane East (Pinchington Junction Approach)	48	12482	5.0	16035	4.0	16279	4.0	16279	4.0
A339 South (South of Pinchington Lane)	80	24327	3.9	26028	3.4	26402	3.5	26242	3.5
A339 North (North of Pinchington Lane)	80	26071	8.0	32928	7.0	30755	7.0	30755	7.0
Pinchington Lane Newbury	48	997	2.1	10708	2.3	9928	2.3	10287	2.0
A343 St Johns Road	48	17840	2.0	15025	2.0	17083	2.0	17083	2.0
A339 Newbury (North of Retail Park)	65	23785	3.3	43726	2.9	44787	2.9	45115	2.8
Greenham Road, Newbury	48	5847	0.3	4712	1.3	4900	1.5	5225	1.6
A339 Newbury (South of Robin Hood)	65	39667	2.2	39245	3.0	40285	2.9	41048	2.8
B3421 Kings Road, Newbury	48	7295	0.5	10749	1.7	11074	1.6	10990	1.4
A339 East of Swan Roundabout	80	21873	3.9	27250	3.4	26458	3.5	29988	3.1
A343 South of A34	96	9864	0.4	10215	1.7	9831	1.8	13497	1.3
New A339 Access	48	0	0	596	0	3236	0	3236	0

It should be noted that some receptors are expected to experience a decrease in AADT as a result of associated with the proposed junction improvements.

6.2 Background Concentrations

The use of background concentrations within the modelling process ensures that pollutant sources other than traffic are represented appropriately. Background sources of pollutants include industrial, domestic and rail emissions within the vicinity of the study site. Several sources have been used to obtain representative background levels as discussed below.

The background concentrations used within the assessment have been determined with reference to the IAQM Guidance and TG (16).

The IAQM Guidance states:

> "*A matter of judgement should take into account the background and future background air quality and whether it is likely to approach or exceed the value of the AQO.*"

Additionally, TG (16) states:

> "*Typically only the process contributions from local sources are represented within and output by the dispersion model. In these circumstances, it is necessary to add an appropriate background concentration(s) to the modelled source contributions to derive the total pollutant concentrations.*"

Defra Published Background Concentrations for 2018

The background concentrations shown in Table 6.2 below were referenced from the UK National Air Quality Information Archive database based on the National Grid Co-ordinates of 1 x 1 km grid squares nearest to the development site. In May 2019, Defra issued revised 2017 based background maps for nitrogen oxide (NO_X), NO_2, PM_{10} and $PM_{2.5}$.

Table 6.2 Published Background Air Quality Levels (µg/m³)

Receptor Location	2018			
	NO_2	NO_x	PM_{10}	$PM_{2.5}$
Local Authority Monitoring				
CM1*	15.10	21.42	14.29	10.01
WB1	15.78	22.48	14.22	9.85
WB16	15.10	21.42	14.29	10.01
WB17*	15.10	21.42	14.29	10.01
WB18*	15.10	21.42	14.29	10.01
WB22	15.10	21.42	14.29	10.01
WB23	15.10	21.42	14.29	10.01
WB32	11.41	15.60	13.37	9.24
Existing Sensitive Receptors				
R1	10.75	14.59	13.53	8.95
R2	10.75	14.59	13.53	8.95

Receptor Location	2018			
	NO_2	NO_x	PM_{10}	$PM_{2.5}$
R3	11.41	15.60	13.37	9.24
R4	9.95	13.44	13.48	8.94
R5	11.41	15.60	13.37	9.24
R6	11.41	15.60	13.37	9.24
R7	9.95	13.44	13.48	8.94
R8	11.41	15.60	13.37	9.24
R9	11.41	15.60	13.37	9.24
R10	11.41	15.60	13.37	9.24
R11	9.95	13.44	13.48	8.94
R12	9.95	13.44	13.48	8.94
R13	11.46	15.68	13.54	9.42
R14	11.46	15.68	13.54	9.42
R15	11.46	15.68	13.54	9.42
R16	11.46	15.68	13.54	9.42
R17	11.46	15.68	13.54	9.42
R18	12.84	17.86	13.96	9.77
R19	15.10	21.42	14.29	10.01
R20*	15.10	21.42	14.29	10.01
R21*	15.10	21.42	14.29	10.01
R22*	15.10	21.42	14.29	10.01
R23	15.10	21.42	14.29	10.01
R24	15.10	21.42	14.29	10.01
R25	12.31	16.97	13.79	9.60
R26	12.31	16.97	13.79	9.60
R27	12.31	16.97	13.79	9.60
R28	11.07	15.08	13.70	9.09
R29	11.07	15.08	13.70	9.09
R30	11.46	15.68	13.54	9.42
R31	11.46	15.68	13.54	9.42
R32	11.46	15.68	13.54	9.42
Sensitive Receptors				
PR1	11.46	15.68	13.54	9.42
PR2	11.46	15.68	13.54	9.42
PR3	11.46	15.68	13.54	9.42
PR4	11.46	15.68	13.54	9.42
PR5	11.46	15.68	13.54	9.42
PR6	11.46	15.68	13.54	9.42
PR7	11.46	15.68	13.54	9.42
PR8	11.46	15.68	13.54	9.42
PR9	12.31	16.97	13.79	9.60
PR10	12.31	16.97	13.79	9.60
PR11	12.31	16.97	13.79	9.60
PR12	12.31	16.97	13.79	9.60
PR13	12.31	16.97	13.79	9.60
PR14	12.31	16.97	13.79	9.60
PR15	12.31	16.97	13.79	9.60
PR16	11.07	15.08	13.70	9.09
PR17	11.07	15.08	13.70	9.09
PR18	9.95	13.44	13.48	8.94

Receptor Location	2018			
	NO_2	NO_x	PM_{10}	$PM_{2.5}$
PR19	9.95	13.44	13.48	8.94
PR20	9.95	13.44	13.48	8.94
PR21	9.95	13.44	13.48	8.94
PR22	9.95	13.44	13.48	8.94
PR23	9.95	13.44	13.48	8.94
PR24	9.95	13.44	13.48	8.94
PR25	9.95	13.44	13.48	8.94
PR26	9.95	13.44	13.48	8.94
*Located within the AQMA				

All the Defra background concentrations detailed in Table 6.2 for 2018, show that the background levels are predicted to be below the relevant AQO within the study area.

Due to no other alternate background source data being available for the area, Defra backgrounds in Table 6.2 have been utilised at all existing and proposed receptors. At the request of West Berkshire Council, all included ecological receptors have had their background concentrations determined from the APIS database and are outlined in Table 6.3 below.

Table 6.3 APIS Ecological Receptor Background NO_x Concentrations

Receptor ID	NO_x (µg/m^3)
E3	15.90
E4	14.15
E5	14.15
E6	15.41
E8	14.15
E10	16.73
E11	14.15
E12	15.90
E15	15.60
E16	15.60

6.3 Model Verification

Model verification involves the comparison of modelled data to monitored data in order to gain the best possible representation of current pollutant concentrations for the assessment years. The verification process is in general accordance with that contained in Section 7 of the TG16 guidance note and uses the most recently available diffusion tube monitoring data to best represent this.

The verification process consists of using the monitoring data and the published background air quality data in the UK National Air Quality Information Archive to calculate the road traffic contribution of NO_X at the monitoring locations. Outputs from the ADMS Roads model are provided as predicted road traffic contribution NO_X emissions. These are converted into predicted roadside contribution NO_2 exposure at the relevant receptor locations based on the updated approach to deriving NO_2 from NO_X for road traffic sources published

in Local Air Quality Management TG16. The calculation was derived using the NO_X to NO_2 worksheet in the online LAQM tools website hosted by Defra. Table 6.4 summarises the final model/monitored data correlation following the application of the model correction factor.

Table 6.4 Comparison of Roadside Modelling & Monitoring Results for NO_2

Tube location	NO_2 µg/m^3		
	Monitored NO_2	Modelled NO_2	Difference (%)
CM1	36.00	40.08	11.33
WB1	29.40	26.51	-9.84
WB16	23.00	23.87	3.77
WB17	36.00	33.28	-7.55
WB18	36.30	37.94	4.51
WB22	22.00	20.03	-8.97
WB23	31.00	23.13	-25.39
WB32	14.20	15.72	10.68
*Located within the AQMA			

The final model produced data at the monitoring locations to within 25 % of the monitoring results, as the requirement by TG16 guidance.

The final verification model correlation coefficient (representing the model uncertainty) is 1.01[1]. This figure demonstrates that the model predictions were in line with the road traffic emissions at the monitoring locations. The 'ideal value' correlation coefficient recommended in Box 7.17 of TG16 is 1.00. The model is therefore considered to be verified and suitably representative of local emissions and exposures.

6.4 Summary of Model Inputs

Table 6.5 Summary of ADMS Roads Model Inputs

Parameter	Description	Input Value
Chemistry	A facility within ADMS-Roads to calculate the chemical reactions in the atmosphere between Nitric Oxide (NO), NO_2, Ozone (O_3) and Volatile organic compounds (VOCs).	No atmospheric chemistry parameters included
Meteorology	Representative meteorological data from a local source	**Middle Wallop Meteorological Station**, hourly sequential data
Surface Roughness	A setting to define the surface roughness of the model area based upon its location.	**1m** representing a typical surface roughness for **Cities and Woodlands** for both the Site data and Met. Measurement Site.
Latitude	Allows the location of the model area to be set	United Kingdom = **51.3**
Monin-Obukhov Length	This allows a measure of the stability of the atmosphere within the model area to be specified depending upon its character.	Cities and Large Towns = **30m** for both the Site data and Met. Measurement Site.
Elevation of Road	Allows the height of the road link above ground level to be specified.	All road links were set at ground level = **0m**.
Road Width	Allows the width of the road link to be specified.	Road width used depended on data obtained from OS map data for the specific road link

[1] This was achieved by applying a model correction factor of 1.09 to roadside predicted NO_X concentrations before converting to NO_2

Parameter	Description	Input Value
Topography	This enables complex terrain data to be included within the model in order to account for turbulence and plume spread effects of topography	No topographical information used
Time Varied Emissions	This enables daily, weekly or monthly variations in emissions to be applied to road sources	No time varied emissions used
Road Type	Allows the effect of different types of roads to be assessed.	**Rural (Not London)** settings were used for the relevant links
Road Speeds	Enables individual road speeds to be added for each road link	Based on the provided traffic data sourced from adjacent Development Sites..
Canyon Height	Allows the model to take account turbulent flow patterns occurring inside a street with relatively tall buildings on both sides, known as a "street canyon".	No canyons used within the model
Road Source Emissions	Road source emission rates are calculated from traffic flow data using the in-built EFT database of traffic emission factors.	The **EFT** Version **9.0 (May 2019)** dataset was used.
Year	Predicted EFT emissions rates depend on the year of emission.	**2018 data** for verification and baseline operational phase assessment **2031** data for the operational phase assessment.

6.5 ADMS Modelling Results

Traffic Assessment

The ADMS Model has predicted concentrations of NO_2, PM_{10} and $PM_{2.5}$ at relevant receptor locations adjacent to roads likely to be affected by the development, as summarised in the following tables. Only receptors close to roads where there is predicted to be a change in emissions have been assessed.

Assessment Scenarios

For the operational year of 2031, assessment of the effects of emissions from the proposed traffic associated with the scheme, have been undertaken as follows:

- 2018 Baseline = Existing Baseline Conditions;
- 2031 "Do Minimum" = Baseline Conditions + Committed Development Flows;
- 2031 "Do Something 1" = Baseline Conditions + Committed Development Flows + Proposed Development Flows (with Bloor Homes Development – three accesses); and,
- 2031 "Do Something 2" = Baseline Conditions + Committed Development Flows + Proposed Development Flows (with Strategic Development – four accesses).

An additional theoretical scenario has also been undertaken using emission factors from 2018 for the 'do minimum' and 'do something' for the operational year of 2031, based on a recent appeal decision that favoured the uncertainty of emissions forecasts. It should be noted that this is a theoretical scenario which assumes that the government (Defra) predictions for reduction in emissions over the forthcoming years will not occur. However, this should be not be considered as a 'more correct' scenario in accordance with the 2010 note [http://laqm.defra.gov.uk/laqm-faqs/faq5.html] which confirms that: *'There is no evidence to suggest that background concentrations associated with the other (non-traffic) source contributions should*

not behave as forecast. This disparity in the historical data highlights the uncertainty of future year projections of both NO_x and NO_2, but at this stage there is no robust evidence upon which to base any revised road traffic emissions projections.'

- 2031 'Do Minimum' Theoretical Scenario = Baseline + Committed Development (**using 2018 traffic emission factors**);
- 2031 'Do Something 1' Theoretical Scenario = Baseline + Committed Development + Proposed Development Flows (with Bloor Homes Development – three accesses) (**using 2018 traffic emission factors**)'; and,
- 2031 'Do Something 2' Theoretical Scenario = Baseline + Committed Development + Proposed Development Flows (with Strategic Development – four accesses) (**using 2018 traffic emission factors**)'.

The additional theoretical scenario results are presented in Appendix B.

6.5.1 Scenario 1 ('Do Something 1') Assessment Results – With Bloor Homes Development – three accesses

Nitrogen Dioxide

Table 6.6 presents a summary of the predicted change in NO_2 concentrations at relevant receptor locations, due to changes in traffic flow associated with the development, based on modelled 'do minimum' and 'do something' scenarios.

Table 6.6 Predicted Annual Average Concentrations of NO_2 at Receptor Locations

Receptor		NO_2 (µg/m^3)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R1	7 Penwood Road, The Chestnuts,	12.18	11.24	11.28	0.04
R2	325a Andover Road	13.34	11.64	11.73	0.09
R3	266 Andover Road	13.75	12.22	12.28	0.06
R4	The Annex at New Warren Farm	10.32	10.07	10.91	0.84
R5	Kendrick Road Kimberleys	12.24	11.70	11.74	0.04
R6	257 Andover Road	14.36	12.43	12.53	0.10
R7	Park House School South Building	10.75	10.23	10.62	0.39
R8	Warren Road	12.64	11.86	12.43	0.57
R9	241 Warren Road (N façade)	14.38	12.45	12.91	0.46
R10	176 Andover Road	13.81	12.22	12.30	0.08
R11	17 Dormer Road	11.08	10.33	10.37	0.04
R12	225 Andover Road	17.19	12.30	12.45	0.15
R13	77 Monks Lane	14.48	12.46	12.47	0.01
R14	211b Andover Road	15.88	12.88	13.03	0.15
R15	35 Bodin Gardens (adjacent to A339)	16.11	12.95	13.15	0.20
R16	125 Andover Road	14.77	12.52	12.66	0.14

Receptor		NO_2 (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R17	79 Andover Road	18.33	13.70	13.98	0.28
R18	34 Andover Road	16.13	14.03	14.11	0.08
R19	1 St Johns Road	24.17	18.07	18.41	0.34
R20	63 St Johns Road	28.64	20.03	20.08	0.05
R21	1 Winchester Court	36.76	23.33	23.39	0.06
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	29.05	20.41	20.33	-0.08
R23	8 Eeklo Place (adjacent to A339)	18.97	16.70	16.63	-0.07
R24	66 Priory Road (adjacent to A339)	19.26	16.90	16.80	-0.10
R25	61 Dickens Walk (adjacent to A339)	15.28	13.56	13.49	-0.07
R26	35 Bodin Gardens (adjacent to A339)	16.68	14.15	14.05	-0.10
R27	2 Sandleford Parade (adjacent to A339)	19.49	14.61	14.58	-0.03
R28	4 Deadmans Lane (adjacent to A339)	15.48	12.46	12.51	0.05
R29	7 Sandleford Farm (adjacent to A339)	21.09	14.33	14.38	0.05
R30	32 Monks Lane	13.89	12.48	12.45	-0.03
R31	52 Monks Lane	13.99	12.54	12.53	-0.01
R32	2 Heather Gardens	14.03	12.32	12.32	<0.01
PR1	Proposed Residential Receptor	-	-	13.05	-
PR2	Proposed Residential Receptor	-	-	12.29	-
PR3	Proposed Residential Receptor	-	-	12.85	-
PR4	Proposed Residential Receptor	-	-	11.96	-
PR5	Proposed Residential Receptor	-	-	12.00	-
PR6	Proposed Residential Receptor	-	-	12.57	-
PR7	Proposed Residential Receptor	-	-	12.32	-
PR8	Proposed Residential Receptor	-	-	11.98	-
PR9	Proposed Residential Receptor	-	-	13.15	-
PR10	Proposed Residential Receptor	-	-	12.91	-
PR11	Proposed Residential Receptor	-	-	12.68	-
PR12	Proposed Residential Receptor	-	-	12.64	-
PR13	Proposed Residential Receptor	-	-	12.65	-
PR14	Proposed Residential Receptor	-	-	12.62	-
PR15	Proposed Residential Receptor	-	-	12.57	-
PR16	Proposed Residential Receptor	-	-	11.34	-
PR17	Proposed Residential Receptor	-	-	11.35	-
PR18	Proposed Residential Receptor	-	-	10.41	-
PR19	Proposed Residential Receptor	-	-	10.21	-
PR20	Proposed Residential Receptor	-	-	10.38	-
PR21	Proposed Residential Receptor	-	-	10.14	-
PR22	Proposed Residential Receptor	-	-	10.11	-
PR23	Proposed Residential Receptor	-	-	10.32	-
PR24	Proposed Residential Receptor	-	-	10.05	-
PR25	Proposed Residential Receptor	-	-	10.08	-
PR26	Proposed Residential Receptor	-	-	10.33	-
Annual Mean AQO		**40 µg/m³**			
*Located in the AQMA					

All modelled existing receptors are predicted to be below the AQO for NO_2 in both the 'do minimum' and 'do something' scenarios.

As indicated in Table 6.6, the maximum predicted increase in the annual average exposure to NO_2 at any existing receptor, due to changes in traffic movements associated with development is 0.84 µg/m^3 at The Annex at New Warren Farm (R4).

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements.

Although the maximum increase is predicted to be along Warren Road (Sandelford Park West site access), this is associated with Sandleford Park West scheme. The traffic which travels along this route is associated with the 100 dwellings at Sandleford Park West scheme and therefore, no considered to be as a result of the Proposed Development.

The maximum predicted NO_2 concentrations, at any ground floor proposed receptor is 13.15 µg/m^3. This is predicted to be below the AQO for NO_2 and therefore, no additional mitigation is required.

All modelled receptors predict NO_2 concentrations of well below 60 µg/m^3 in all scenarios. Therefore, it is unlikely for any exceedances of the short-term NO_2 AQO to occur as outlined in LAQM TG16 technical guidance and therefore, a short-term effect can be scoped out of this assessment.

The impact description of changes in traffic flow associated with the development with respect to annual mean NO_2 exposure has been assessed with reference to the criteria in Section 3. The outcomes of the assessment are summarised in Table 6.7.

Table 6.7 Impact Description of the Effects at Key Receptors (NO_2)

Impact Description of NO_2 Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R1	0.04	0.10	0%	≤75% of AQO	Negligible
R2	0.09	0.23	0%	≤75% of AQO	Negligible
R3	0.06	0.15	0%	≤75% of AQO	Negligible
R4	0.84	2.10	2-5%	≤75% of AQO	Negligible
R5	0.04	0.10	0%	≤75% of AQO	Negligible
R6	0.10	0.25	0%	≤75% of AQO	Negligible
R7	0.39	0.98	1%	≤75% of AQO	Negligible
R8	0.57	1.43	1%	≤75% of AQO	Negligible
R9	0.46	1.15	1%	≤75% of AQO	Negligible
R10	0.08	0.20	0%	≤75% of AQO	Negligible
R11	0.04	0.10	0%	≤75% of AQO	Negligible
R12	0.15	0.38	0%	≤75% of AQO	Negligible
R13	0.01	0.03	0%	≤75% of AQO	Negligible
R14	0.15	0.38	0%	≤75% of AQO	Negligible
R15	0.20	0.50	1%	≤75% of AQO	Negligible
R16	0.14	0.35	0%	≤75% of AQO	Negligible
R17	0.28	0.71	1%	≤75% of AQO	Negligible

Impact Description of NO_2 Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R18	0.08	0.20	0%	≤75% of AQO	Negligible
R19	0.34	0.86	1%	≤75% of AQO	Negligible
R20	0.05	0.13	0%	≤75% of AQO	Negligible
R21	0.06	0.15	0%	≤75% of AQO	Negligible
R22*	-0.08	-0.20	0%	≤75% of AQO	Negligible
R23	-0.07	-0.18	0%	≤75% of AQO	Negligible
R24	-0.10	-0.25	0%	≤75% of AQO	Negligible
R25	-0.07	-0.18	0%	≤75% of AQO	Negligible
R26	-0.10	-0.25	0%	≤75% of AQO	Negligible
R27	-0.03	-0.08	0%	≤75% of AQO	Negligible
R28	0.05	0.13	0%	≤75% of AQO	Negligible
R29	0.05	0.13	0%	≤75% of AQO	Negligible
R30	-0.03	-0.08	0%	≤75% of AQO	Negligible
R31	-0.01	-0.03	0%	≤75% of AQO	Negligible
R32	<0.01	0.00	0%	≤75% of AQO	Negligible
0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
*Located in the AQMA					

The magnitude of the effects of changes in traffic flow as a result of the proposed development, with respect to NO_2 exposure for existing sensitive receptors, is determined to be 'negligible' based on the methodology outlined in section 3.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the confidence of the assessment is deemed to be 'high'.

Particulate Matter – PM_{10}

Table 6.8 presents a summary of the predicted change in annual mean PM_{10} concentrations at relevant receptor locations, due to changes in traffic flow associated with the development, based on modelled 'no development' and 'with development' scenarios.

Table 6.8 Predicted Annual Average Concentrations of PM_{10} at Receptor Locations

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	**Do Minimum 2031**	**Do Something 2031**	**Development Contribution**
R1	7 Penwood Road, The Chestnuts,	13.71	13.67	13.69	0.02
R2	325a Andover Road	13.86	13.80	13.82	0.02
R3	266 Andover Road	13.67	13.61	13.63	0.02
R4	The Annex at New Warren Farm	13.53	13.52	13.71	0.19
R5	Kendrick Road Kimberleys	13.48	13.46	13.47	0.01
R6	257 Andover Road	13.75	13.68	13.71	0.03
R7	Park House School South Building	13.58	13.57	13.68	0.11
R8	Warren Road	13.53	13.51	13.69	0.18
R9	241 Warren Road (N façade)	13.74	13.68	13.79	0.11

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R10	176 Andover Road	13.68	13.62	13.64	0.02
R11	17 Dormer Road	13.62	13.59	13.60	0.01
R12	225 Andover Road	14.24	14.06	14.09	0.03
R13	77 Monks Lane	13.93	13.84	13.85	0.01
R14	211b Andover Road	14.10	13.97	14.01	0.04
R15	35 Bodin Gardens (adjacent to A339)	14.14	14.00	14.06	0.06
R16	125 Andover Road	13.97	13.87	13.91	0.04
R17	79 Andover Road	14.44	14.23	14.32	0.09
R18	34 Andover Road	14.38	14.32	14.34	0.02
R19	1 St Johns Road	15.21	14.99	15.06	0.07
R20	63 St Johns Road	15.72	15.53	15.55	0.02
R21	1 Winchester Court	16.62	16.35	16.37	0.02
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	15.76	15.64	15.62	-0.02
R23	8 Eeklo Place (adjacent to A339)	14.84	14.85	14.82	-0.03
R24	66 Priory Road (adjacent to A339)	14.90	14.94	14.90	-0.04
R25	61 Dickens Walk (adjacent to A339)	14.22	14.24	14.21	-0.03
R26	35 Bodin Gardens (adjacent to A339)	14.42	14.44	14.41	-0.03
R27	2 Sandleford Parade (adjacent to A339)	14.53	14.37	14.36	-0.01
R28	4 Deadmans Lane (adjacent to A339)	14.34	14.15	14.16	0.01
R29	7 Sandleford Farm (adjacent to A339)	15.21	14.77	14.79	0.02
R30	32 Monks Lane	13.86	13.86	13.86	<0.01
R31	52 Monks Lane	13.87	13.89	13.88	-0.01
R32	2 Heather Gardens	13.88	13.80	13.80	<0.01
PR1	Proposed Residential Receptor	-	-	14.03	-
PR2	Proposed Residential Receptor	-	-	13.79	-
PR3	Proposed Residential Receptor	-	-	13.98	-
PR4	Proposed Residential Receptor	-	-	13.69	-
PR5	Proposed Residential Receptor	-	-	13.69	-
PR6	Proposed Residential Receptor	-	-	13.89	-
PR7	Proposed Residential Receptor	-	-	13.81	-
PR8	Proposed Residential Receptor	-	-	13.70	-
PR9	Proposed Residential Receptor	-	-	14.05	-
PR10	Proposed Residential Receptor	-	-	13.97	-
PR11	Proposed Residential Receptor	-	-	13.90	-
PR12	Proposed Residential Receptor	-	-	13.89	-
PR13	Proposed Residential Receptor	-	-	13.89	-
PR14	Proposed Residential Receptor	-	-	13.88	-
PR15	Proposed Residential Receptor	-	-	13.87	-
PR16	Proposed Residential Receptor	-	-	13.78	-
PR17	Proposed Residential Receptor	-	-	13.78	-
PR18	Proposed Residential Receptor	-	-	13.62	-
PR19	Proposed Residential Receptor	-	-	13.56	-
PR20	Proposed Residential Receptor	-	-	13.61	-
PR21	Proposed Residential Receptor	-	-	13.54	-
PR22	Proposed Residential Receptor	-	-	13.53	-
PR23	Proposed Residential Receptor	-	-	13.59	-
PR24	Proposed Residential Receptor	-	-	13.52	-

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
PR25	Proposed Residential Receptor	-	-	13.52	-
PR26	Proposed Residential Receptor	-	-	13.58	
Annual Mean AQO		**40 µg/m³**			
*Receptor in AQMA					

All modelled receptor locations are predicted to be below the AQO for PM_{10} in both the 'do minimum' and 'do something' scenarios.

As indicated in Table 6.8, the maximum predicted increase in the annual average exposure to PM_{10} at any existing receptor, due to changes in traffic movements associated with the development, is 0.19 µg/m³ at The Annex at New Warren Farm (R4).

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements.

Although the maximum increase is predicted to be along Warren Road (Sandelford Park West site access), this is associated with Sandleford Park West scheme. The traffic which travels along this route is associated with the 100 dwellings at Sandleford Park West scheme and therefore, no considered to be as a result of the Proposed Development.

The maximum predicted PM_{10} concentrations, at any ground floor proposed receptor is 14.05 µg/m³. This is predicted to be below the AQO for PM_{10} and therefore, no additional mitigation is required.

The impact description of changes in traffic flow associated with the development with respect to annual mean PM_{10} exposure has been assessed with reference to the criteria in section 3. The outcomes of the assessment are summarised in Table 6.9.

Table 6.9 Impact Description of Effects at Key Receptors (Particulate Matter)

Impact Description of PM_{10} Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m³)	% of AQO	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.02	0.05	0%	≤75% of AQO	Negligible
R2	0.02	0.05	0%	≤75% of AQO	Negligible
R3	0.02	0.05	0%	≤75% of AQO	Negligible
R4	0.19	0.49	0%	≤75% of AQO	Negligible
R5	0.01	0.03	0%	≤75% of AQO	Negligible
R6	0.03	0.07	0%	≤75% of AQO	Negligible
R7	0.11	0.28	0%	≤75% of AQO	Negligible
R8	0.18	0.45	0%	≤75% of AQO	Negligible
R9	0.11	0.28	0%	≤75% of AQO	Negligible
R10	0.02	0.05	0%	≤75% of AQO	Negligible
R11	0.01	0.03	0%	≤75% of AQO	Negligible

Impact Description of PM_{10} Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R12	0.03	0.08	0%	≤75% of AQO	Negligible
R13	0.01	0.03	0%	≤75% of AQO	Negligible
R14	0.04	0.10	0%	≤75% of AQO	Negligible
R15	0.06	0.15	0%	≤75% of AQO	Negligible
R16	0.04	0.10	0%	≤75% of AQO	Negligible
R17	0.09	0.22	0%	≤75% of AQO	Negligible
R18	0.02	0.05	0%	≤75% of AQO	Negligible
R19	0.07	0.18	0%	≤75% of AQO	Negligible
R20	0.02	0.05	0%	≤75% of AQO	Negligible
R21	0.02	0.06	0%	≤75% of AQO	Negligible
R22*	-0.02	-0.04	0%	≤75% of AQO	Negligible
R23	-0.03	-0.07	0%	≤75% of AQO	Negligible
R24	-0.04	-0.09	0%	≤75% of AQO	Negligible
R25	-0.03	-0.08	0%	≤75% of AQO	Negligible
R26	-0.03	-0.08	0%	≤75% of AQO	Negligible
R27	-0.01	-0.02	0%	≤75% of AQO	Negligible
R28	0.01	0.04	0%	≤75% of AQO	Negligible
R29	0.02	0.05	0%	≤75% of AQO	Negligible
R30	<0.01	0.00	0%	≤75% of AQO	Negligible
R31	-0.01	-0.01	0%	≤75% of AQO	Negligible
R32	<0.01	0.00	0%	≤75% of AQO	Negligible
0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
*Located in the AQMA					

The magnitude of the effects of changes in traffic as a result of the proposed development, with respect to annual mean PM_{10} exposure, for existing sensitive receptors, is determined to be 'negligible' based on the methodology outlined in section 3.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the confidence of the assessment is deemed to be 'high'.

Particulate Matter – $PM_{2.5}$

Table 6.10 presents a summary of the predicted change in annual mean $PM_{2.5}$ concentrations at relevant receptor locations, due to changes in traffic flow associated with the development, based on modelled 'no development' and 'with development' scenarios.

Table 6.10 Predicted Annual Average Concentrations of $PM_{2.5}$ at Receptor Locations

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R1	7 Penwood Road, The Chestnuts,	9.06	9.03	9.04	0.01
R2	325a Andover Road	9.16	9.10	9.12	0.02
R3	266 Andover Road	9.43	9.38	9.39	0.01
R4	The Annex at New Warren Farm	8.96	8.96	9.07	0.11
R5	Kendrick Road Kimberleys	9.30	9.29	9.29	<0.01
R6	257 Andover Road	9.48	9.42	9.43	0.01
R7	Park House School South Building	9.00	8.99	9.05	0.06
R8	Warren Road	9.34	9.32	9.42	0.10
R9	241 Warren Road (N façade)	9.47	9.42	9.48	0.06
R10	176 Andover Road	9.43	9.38	9.39	0.01
R11	17 Dormer Road	9.02	9.00	9.01	0.01
R12	225 Andover Road	9.42	9.27	9.30	0.03
R13	77 Monks Lane	9.67	9.60	9.60	<0.01
R14	211b Andover Road	9.77	9.67	9.70	0.03
R15	35 Bodin Gardens (adjacent to A339)	9.80	9.69	9.72	0.03
R16	125 Andover Road	9.69	9.61	9.64	0.03
R17	79 Andover Road	9.98	9.82	9.88	0.06
R18	34 Andover Road	10.03	9.97	9.99	0.02
R19	1 St Johns Road	10.61	10.42	10.47	0.05
R20	63 St Johns Road	10.94	10.75	10.75	<0.01
R21	1 Winchester Court	11.53	11.23	11.25	0.02
R22	A339 (20 m south of the continuous monitoring station at Newbury)	10.97	10.81	10.80	-0.01
R23	8 Eeklo Place (adjacent to A339)	10.35	10.33	10.32	-0.01
R24	66 Priory Road (adjacent to A339)	10.39	10.38	10.36	-0.02
R25	61 Dickens Walk (adjacent to A339)	9.86	9.85	9.84	-0.01
R26	35 Bodin Gardens (adjacent to A339)	9.99	9.97	9.95	-0.02
R27	2 Sandleford Parade (adjacent to A339)	10.07	9.94	9.93	-0.01
R28	4 Deadmans Lane (adjacent to A339)	9.48	9.35	9.35	<0.01
R29	7 Sandleford Farm (adjacent to A339)	10.02	9.71	9.72	0.01
R30	32 Monks Lane	9.62	9.61	9.60	-0.01
R31	52 Monks Lane	9.63	9.62	9.62	<0.01
R32	2 Heather Gardens	9.63	9.58	9.57	-0.01
PR1	Proposed Residential Receptor	-	-	9.71	-
PR2	Proposed Residential Receptor	-	-	9.57	-
PR3	Proposed Residential Receptor	-	-	9.68	-
PR4	Proposed Residential Receptor	-	-	9.51	-
PR5	Proposed Residential Receptor	-	-	9.51	-
PR6	Proposed Residential Receptor	-	-	9.63	-
PR7	Proposed Residential Receptor	-	-	9.58	-
PR8	Proposed Residential Receptor	-	-	9.51	-
PR9	Proposed Residential Receptor	-	-	9.74	-
PR10	Proposed Residential Receptor	-	-	9.70	-
PR11	Proposed Residential Receptor	-	-	9.66	-
PR12	Proposed Residential Receptor	-	-	9.65	-
PR13	Proposed Residential Receptor	-	-	9.65	-
PR14	Proposed Residential Receptor	-	-	9.65	-

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
PR15	Proposed Residential Receptor	-	-	9.64	-
PR16	Proposed Residential Receptor	-	-	9.13	-
PR17	Proposed Residential Receptor	-	-	9.13	-
PR18	Proposed Residential Receptor	-	-	9.01	-
PR19	Proposed Residential Receptor	-	-	8.98	-
PR20	Proposed Residential Receptor	-	-	9.01	-
PR21	Proposed Residential Receptor	-	-	8.97	-
PR22	Proposed Residential Receptor	-	-	8.96	-
PR23	Proposed Residential Receptor	-	-	9.00	-
PR24	Proposed Residential Receptor	-	-	8.95	-
PR25	Proposed Residential Receptor	-	-	8.96	-
PR26	Proposed Residential Receptor	-	-	8.99	-
Annual Mean AQO		**25 µg/m³**			

All modelled receptor locations are predicted to meet the AQO for $PM_{2.5}$ in both the 'do minimum' and 'do something' scenarios.

As indicated in Table 6.11, the maximum predicted increase in the annual average exposure to $PM_{2.5}$ at any existing receptor, due to changes in traffic movements associated with the development, is 0.11 µg/m³ at The Annex at New Warren Farm (R4).

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements.

Although the maximum increase is predicted to be along Warren Road (Sandelford Park West site access), this is associated with Sandleford Park West scheme. The traffic which travels along this route is associated with the 100 dwellings at Sandleford Park West scheme and therefore, no considered to be as a result of the Proposed Development.

The maximum predicted PM_{10} concentrations, at any ground floor proposed receptor is 9.74 µg/m³. This is predicted to be below the AQO for NO_2 and therefore, no additional mitigation is required.

The impact description of changes in traffic flow associated with the development with respect to annual mean $PM_{2.5}$ exposure has been assessed with reference to the criteria in section 3. The outcomes of the assessment are summarised in Table 6.11.

Table 6.11 Impact Description of Effects at Key Receptors (Particulate Matter)

Impact Description of $PM_{2.5}$ Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m³)	% of AQO	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.01	0.03	0%	≤75% of AQO	Negligible
R2	0.02	0.08	0%	≤75% of AQO	Negligible

Impact Description of $PM_{2.5}$ Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R3	0.01	0.05	0%	≤75% of AQO	Negligible
R4	0.11	0.44	0%	≤75% of AQO	Negligible
R5	<0.01	0.00	0%	≤75% of AQO	Negligible
R6	0.01	0.04	0%	≤75% of AQO	Negligible
R7	0.06	0.24	0%	≤75% of AQO	Negligible
R8	0.10	0.42	0%	≤75% of AQO	Negligible
R9	0.06	0.24	0%	≤75% of AQO	Negligible
R10	0.01	0.05	0%	≤75% of AQO	Negligible
R11	0.01	0.03	0%	≤75% of AQO	Negligible
R12	0.03	0.12	0%	≤75% of AQO	Negligible
R13	<0.01	0.01	0%	≤75% of AQO	Negligible
R14	0.03	0.11	0%	≤75% of AQO	Negligible
R15	0.03	0.14	0%	≤75% of AQO	Negligible
R16	0.03	0.12	0%	≤75% of AQO	Negligible
R17	0.06	0.24	0%	≤75% of AQO	Negligible
R18	0.02	0.06	0%	≤75% of AQO	Negligible
R19	0.05	0.19	0%	≤75% of AQO	Negligible
R20	<0.01	0.00	0%	≤75% of AQO	Negligible
R21	0.02	0.08	0%	≤75% of AQO	Negligible
R22*	-0.01	-0.05	0%	≤75% of AQO	Negligible
R23	-0.01	-0.04	0%	≤75% of AQO	Negligible
R24	-0.02	-0.09	0%	≤75% of AQO	Negligible
R25	-0.01	-0.06	0%	≤75% of AQO	Negligible
R26	-0.02	-0.09	0%	≤75% of AQO	Negligible
R27	-0.01	-0.04	0%	≤75% of AQO	Negligible
R28	<0.01	0.00	0%	≤75% of AQO	Negligible
R29	0.01	0.05	0%	≤75% of AQO	Negligible
R30	-0.01	-0.02	0%	≤75% of AQO	Negligible
R31	<0.01	-0.01	0%	≤75% of AQO	Negligible
R32	-0.01	-0.04	0%	≤75% of AQO	Negligible
0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
*Located in the AQMA					

The magnitude of the effects of changes in traffic flow as a result of the proposed development, with respect to $PM_{2.5}$ exposure for existing sensitive receptors, is determined to be 'negligible' based on the methodology outlined in section 3.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the confidence of the assessment is deemed to be 'high'.

Ecologically Sensitive Receptors

Background concentrations at each of the ecologically sensitive sites are determined through a review of the NO_X pollutants published on the APIS website.

The below assessment has been undertaken in accordance with *A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites* (IAQM, 2019).

Table 6.12 Identified Ecological Receptors and Nearest Affected Roads

Recep ID	Site Name	Site Designation	Distance to Road (m)	Nearest Affected Road	AADT		
					Do Minimum (2031)	Do Something (2031)	Difference (DS-DM)
E3	Greenham and Crookham Commons	SSSI	2	A339, East of Swan Roundabout	27250	26458	-792
E4	Ancient Woodland ID 1487149	AW	453	Bloor Western Site Access	0	2500	2500
E5	Ancient Woodland ID 1495577	AW	65	Bloor Western Site Access	0	2500	2500
E6	Ancient Woodland ID 1495139	AW	26	A339, East of Swan Roundabout	27250	26458	-792
E8	Barn Copse	AW	295	Andover Road	13973	15135	1162
E10	Crooks Copse	AW	94	Bloor Eastern Site Access	0	798	798
E11	High Wood	AW	53	Bloor Western Site Access	0	2500	2500
E12	High Wood	AW	274	A339 South (South of Pinchington Lane)	26028	26402	374
E15	Peckmoor Copse	AW	2	A339, East of Swan Roundabout	27250	26458	-792
E16	Peckmoor Copse	AW	2	A339, East of Swan Roundabout	27250	26458	-792

As outlined in Table 6.12 above, ecological receptors E3, E6, E10, E12, E15 and E16 are predicted to experience a difference of less than 1,000 AADT (at the nearest affected road) between the baseline assessment year and predicted operational year. Therefore, these receptors have been screened out and the impacts can be determined to be described as 'negligible'.

Further assessment of ecologically sensitive receptors E4, E5, E8 and E11 have been undertaken due to the increase in AADT of >1,000 AADT (at the nearest affected road) as a result of the proposed development. These receptors have been included within the ADMS model to determine the NO_x contribution from traffic associated with the proposed development. The results of this assessment are outlined below in Table 6.13.

Table 6.13 Modelled NO_x Concentrations at Ecologically Sensitive Receptors

Receptor ID	Ecological Receptor	Predicted Maximum Annual Mean Concentration (µg/m^3)		
		Do Minimum 2031 NO_x	Do Something 2031 NO_x	Process Contribution (PC)
E4	Ancient Woodland ID 1487149	14.28	14.30	0.02
E5	Ancient Woodland ID 1495577	14.34	14.46	0.12
E8	Barn Copse	14.46	14.52	0.06
E11	High Wood	14.42	14.57	0.15
Critical Level (CL)		**30**		

All modelled ecological receptors outlined in Table 6.24 are below the Critical Level for NO_x. Therefore, there are not predicted to be any exceedance of the CL as a result of traffic from the proposed development.

As indicated in Table 6.13, the maximum predicted increase in the annual average exposure to NO_X at any ecological receptor, due to changes in traffic movements associated with the development, is 0.15 µg/m^3 at High Wood (E11).

Section 5.5.4.1 of *A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites*', IAQM 2019 states:

Where the assessment indicates that changes in annual mean NOx concentrations within a designated site cannot be dismissed as imperceptible (i.e. an increase of over 0.4 µg/m³) and the NOx critical level is exceeded, then changes in nutrient nitrogen deposition should be calculated as supporting information to further assist in the evaluation of significance.

As the maximum NO_x contribution is below 0.40 µg/m^3, a full nitrogen deposition assessment is no required.

Ammonia (NH_3) and Sulphur Dioxide (SO_2) emissions from traffic are 0.001 % and 0.4 % of the road NO_x contribution respectively. There is not predicted to be a significant increase in either NH_3 or SO_2 as a result of the proposed development at any ecological receptor as a result of traffic movements from the proposed development.

6.5.2 Scenario 2 ('Do Something 2') Assessment Results – Strategic Development – four accesses

Nitrogen Dioxide

Table 6.14 presents a summary of the predicted change in NO_2 concentrations at relevant receptor locations, due to changes in traffic flow associated with the development, based on modelled 'do minimum' and 'do something' scenarios.

Table 6.14 Predicted Annual Average Concentrations of NO_2 at Receptor Locations

Receptor		NO_2 (µg/m^3)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R1	7 Penwood Road, The Chestnuts,	12.18	11.24	11.25	0.01
R2	325a Andover Road	13.34	11.64	11.66	0.02
R3	266 Andover Road	13.75	12.22	12.23	0.01
R4	The Annex at New Warren Farm	10.32	10.07	10.91	0.84
R5	Kendrick Road Kimberleys	12.24	11.70	11.73	0.03
R6	257 Andover Road	14.36	12.43	12.47	0.04
R7	Park House School South Building	10.75	10.23	10.62	0.39
R8	Warren Road	12.64	11.86	12.43	0.57
R9	241 Warren Road (N façade)	14.38	12.45	12.86	0.41
R10	176 Andover Road	13.81	12.22	12.26	0.04
R11	17 Dormer Road	11.08	10.33	10.36	0.03
R12	225 Andover Road	17.19	12.30	12.37	0.07

Receptor		NO_2 (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R13	77 Monks Lane	14.48	12.46	12.46	<0.01
R14	211b Andover Road	15.88	12.88	13.02	0.14
R15	35 Bodin Gardens (adjacent to A339)	16.11	12.95	13.15	0.20
R16	125 Andover Road	14.77	12.52	12.66	0.14
R17	79 Andover Road	18.33	13.70	13.98	0.28
R18	34 Andover Road	16.13	14.03	14.10	0.07
R19	1 St Johns Road	24.17	18.07	18.40	0.33
R20	63 St Johns Road	28.64	20.03	20.11	0.08
R21	1 Winchester Court	36.76	23.33	23.46	0.13
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	29.05	20.41	20.36	-0.05
R23	8 Eeklo Place (adjacent to A339)	18.97	16.70	16.63	-0.07
R24	66 Priory Road (adjacent to A339)	19.26	16.90	16.80	-0.10
R25	61 Dickens Walk (adjacent to A339)	15.28	13.56	13.50	-0.06
R26	35 Bodin Gardens (adjacent to A339)	16.68	14.15	14.05	-0.10
R27	2 Sandleford Parade (adjacent to A339)	19.49	14.61	14.60	-0.01
R28	4 Deadmans Lane (adjacent to A339)	15.48	12.46	12.50	0.04
R29	7 Sandleford Farm (adjacent to A339)	21.09	14.33	14.37	0.04
R30	32 Monks Lane	13.89	12.48	12.47	-0.01
R31	52 Monks Lane	13.99	12.54	12.54	<0.01
R32	2 Heather Gardens	14.03	12.32	12.31	-0.01
PR1	Proposed Residential Receptor	-	-	13.03	-
PR2	Proposed Residential Receptor	-	-	12.29	-
PR3	Proposed Residential Receptor	-	-	12.86	-
PR4	Proposed Residential Receptor	-	-	11.96	-
PR5	Proposed Residential Receptor	-	-	12.00	-
PR6	Proposed Residential Receptor	-	-	12.58	-
PR7	Proposed Residential Receptor	-	-	12.33	-
PR8	Proposed Residential Receptor	-	-	12.00	-
PR9	Proposed Residential Receptor	-	-	13.37	-
PR10	Proposed Residential Receptor	-	-	13.07	-
PR11	Proposed Residential Receptor	-	-	12.71	-
PR12	Proposed Residential Receptor	-	-	12.67	-
PR13	Proposed Residential Receptor	-	-	12.67	-
PR14	Proposed Residential Receptor	-	-	12.63	-
PR15	Proposed Residential Receptor	-	-	12.58	-
PR16	Proposed Residential Receptor	-	-	11.35	-
PR17	Proposed Residential Receptor	-	-	11.35	-
PR18	Proposed Residential Receptor	-	-	10.41	-
PR19	Proposed Residential Receptor	-	-	10.21	-
PR20	Proposed Residential Receptor	-	-	10.38	-
PR21	Proposed Residential Receptor	-	-	10.14	-
PR22	Proposed Residential Receptor	-	-	10.11	-
PR23	Proposed Residential Receptor	-	-	10.32	-
PR24	Proposed Residential Receptor	-	-	10.06	-
PR25	Proposed Residential Receptor	-	-	10.08	-
PR26	Proposed Residential Receptor	-	-	10.33	-
Annual Mean AQO		**40 µg/m³**			
*Located in the AQMA					

All modelled existing receptors are predicted to be below the AQO for NO_2 in both the 'do minimum' and 'do something' scenarios.

As indicated in Table 6.14, the maximum predicted increase in the annual average exposure to NO_2 at any existing receptor, due to changes in traffic movements associated with development is 0.84 µg/m^3 at The Annex at New Warren Road (R4).

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements within the surrounding area.

The maximum predicted NO_2 concentrations, at any ground floor proposed receptor is 13.37 µg/m^3. This is predicted to be below the AQO for NO_2 and therefore, no additional mitigation is required.

All modelled receptors predict NO_2 concentrations of well below 60 µg/m^3 in all scenarios. Therefore, it is unlikely for any exceedances of the short-term NO_2 AQO to occur as outlined in LAQM TG16 technical guidance and therefore, a short-term effect can be scoped out of this assessment.

The impact description of changes in traffic flow associated with the development with respect to annual mean NO_2 exposure has been assessed with reference to the criteria in Section 3. The outcomes of the assessment are summarised in Table 6.15.

Table 6.15 Impact Description of the Effects at Key Receptors (NO_2)

Impact Description of NO_2 Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R1	0.01	0.03	0%	≤75% of AQO	Negligible
R2	0.02	0.05	0%	≤75% of AQO	Negligible
R3	0.01	0.03	0%	≤75% of AQO	Negligible
R4	0.84	2.10	2-5%	≤75% of AQO	Negligible
R5	0.03	0.08	0%	≤75% of AQO	Negligible
R6	0.04	0.10	0%	≤75% of AQO	Negligible
R7	0.39	0.98	1%	≤75% of AQO	Negligible
R8	0.57	1.43	1%	≤75% of AQO	Negligible
R9	0.41	1.03	1%	≤75% of AQO	Negligible
R10	0.04	0.10	0%	≤75% of AQO	Negligible
R11	0.03	0.08	0%	≤75% of AQO	Negligible
R12	0.07	0.18	0%	≤75% of AQO	Negligible
R13	<0.01	0.00	0%	≤75% of AQO	Negligible
R14	0.14	0.35	0%	≤75% of AQO	Negligible
R15	0.20	0.50	1%	≤75% of AQO	Negligible
R16	0.14	0.35	0%	≤75% of AQO	Negligible
R17	0.28	0.71	1%	≤75% of AQO	Negligible
R18	0.07	0.18	0%	≤75% of AQO	Negligible
R19	0.33	0.83	1%	≤75% of AQO	Negligible
R20	0.08	0.20	0%	≤75% of AQO	Negligible

Impact Description of NO_2 Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R21	0.13	0.33	0%	≤75% of AQO	Negligible
R22*	-0.05	-0.13	0%	≤75% of AQO	Negligible
R23	-0.07	-0.18	0%	≤75% of AQO	Negligible
R24	-0.10	-0.25	0%	≤75% of AQO	Negligible
R25	-0.06	-0.15	0%	≤75% of AQO	Negligible
R26	-0.10	-0.25	0%	≤75% of AQO	Negligible
R27	-0.01	-0.03	0%	≤75% of AQO	Negligible
R28	0.04	0.10	0%	≤75% of AQO	Negligible
R29	0.04	0.10	0%	≤75% of AQO	Negligible
R30	-0.01	-0.03	0%	≤75% of AQO	Negligible
R31	<0.01	0.00	0%	≤75% of AQO	Negligible
R32	-0.01	-0.03	0%	≤75% of AQO	Negligible
0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
*Located in the AQMA					

The magnitude of the effects of changes in traffic flow as a result of the proposed development, with respect to NO_2 exposure for existing sensitive receptors, is determined to be 'negligible' based on the methodology outlined in section 3.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the confidence of the assessment is deemed to be 'high'.

Particulate Matter – PM_{10}

Table 6.16 presents a summary of the predicted change in annual mean PM_{10} concentrations at relevant receptor locations, due to changes in traffic flow associated with the development, based on modelled 'no development' and 'with development' scenarios.

Table 6.16 Predicted Annual Average Concentrations of PM_{10} at Receptor Locations

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	**Do Minimum 2031**	**Do Something 2031**	**Development Contribution**
R1	7 Penwood Road, The Chestnuts,	13.71	13.67	13.68	0.01
R2	325a Andover Road	13.86	13.80	13.80	<0.01
R3	266 Andover Road	13.67	13.61	13.62	0.01
R4	The Annex at New Warren Farm	13.53	13.52	13.71	0.19
R5	Kendrick Road Kimberleys	13.48	13.46	13.46	<0.01
R6	257 Andover Road	13.75	13.68	13.69	0.01
R7	Park House School South Building	13.58	13.57	13.68	0.11
R8	Warren Road	13.53	13.51	13.69	0.18
R9	241 Warren Road (N façade)	13.74	13.68	13.77	0.09
R10	176 Andover Road	13.68	13.62	13.62	<0.01
R11	17 Dormer Road	13.62	13.59	13.60	0.01
R12	225 Andover Road	14.24	14.06	14.07	0.01

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R13	77 Monks Lane	13.93	13.84	13.84	<0.01
R14	211b Andover Road	14.10	13.97	14.01	0.04
R15	35 Bodin Gardens (adjacent to A339)	14.14	14.00	14.06	0.06
R16	125 Andover Road	13.97	13.87	13.91	0.04
R17	79 Andover Road	14.44	14.23	14.32	0.09
R18	34 Andover Road	14.38	14.32	14.34	0.02
R19	1 St Johns Road	15.21	14.99	15.06	0.07
R20	63 St Johns Road	15.72	15.53	15.55	0.02
R21	1 Winchester Court	16.62	16.35	16.39	0.04
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	15.76	15.64	15.63	-0.01
R23	8 Eeklo Place (adjacent to A339)	14.84	14.85	14.83	-0.02
R24	66 Priory Road (adjacent to A339)	14.90	14.94	14.90	-0.04
R25	61 Dickens Walk (adjacent to A339)	14.22	14.24	14.21	-0.03
R26	35 Bodin Gardens (adjacent to A339)	14.42	14.44	14.41	-0.03
R27	2 Sandleford Parade (adjacent to A339)	14.53	14.37	14.37	<0.01
R28	4 Deadmans Lane (adjacent to A339)	14.34	14.15	14.16	0.01
R29	7 Sandleford Farm (adjacent to A339)	15.21	14.77	14.79	0.02
R30	32 Monks Lane	13.86	13.86	13.86	<0.01
R31	52 Monks Lane	13.87	13.89	13.88	-0.01
R32	2 Heather Gardens	13.88	13.80	13.80	<0.01
PR1	Proposed Residential Receptor	-	-	14.02	-
PR2	Proposed Residential Receptor	-	-	13.79	-
PR3	Proposed Residential Receptor	-	-	13.98	-
PR4	Proposed Residential Receptor	-	-	13.69	-
PR5	Proposed Residential Receptor	-	-	13.69	-
PR6	Proposed Residential Receptor	-	-	13.90	-
PR7	Proposed Residential Receptor	-	-	13.81	-
PR8	Proposed Residential Receptor	-	-	13.71	-
PR9	Proposed Residential Receptor	-	-	14.11	-
PR10	Proposed Residential Receptor	-	-	14.02	-
PR11	Proposed Residential Receptor	-	-	13.91	-
PR12	Proposed Residential Receptor	-	-	13.90	-
PR13	Proposed Residential Receptor	-	-	13.90	-
PR14	Proposed Residential Receptor	-	-	13.89	-
PR15	Proposed Residential Receptor	-	-	13.87	-
PR16	Proposed Residential Receptor	-	-	13.78	-
PR17	Proposed Residential Receptor	-	-	13.78	-
PR18	Proposed Residential Receptor	-	-	13.62	-
PR19	Proposed Residential Receptor	-	-	13.56	-
PR20	Proposed Residential Receptor	-	-	13.61	-
PR21	Proposed Residential Receptor	-	-	13.54	-
PR22	Proposed Residential Receptor	-	-	13.53	-
PR23	Proposed Residential Receptor	-	-	13.59	-
PR24	Proposed Residential Receptor	-	-	13.52	-
PR25	Proposed Residential Receptor	-	-	13.52	-
PR26	Proposed Residential Receptor	-	-	13.58	
Annual Mean AQO		**40 µg/m³**			

Receptor	PM_{10} (µg/m³)			
	Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
*Receptor in AQMA				

All modelled receptor locations are predicted to be below the AQO for PM_{10} in both the 'do minimum' and 'do something' scenarios.

As indicated in Table 6.16, the maximum predicted increase in the annual average exposure to PM_{10} at any existing receptor, due to changes in traffic movements associated with the development, is 0.19 µg/m³ at The Annex at New Warren Road (R4).

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements.

The maximum predicted PM_{10} concentrations, at any ground floor proposed receptor is 14.11 µg/m³. This is predicted to be below the AQO for PM_{10} and therefore, no additional mitigation is required.

The impact description of changes in traffic flow associated with the development with respect to annual mean PM_{10} exposure has been assessed with reference to the criteria in section 3. The outcomes of the assessment are summarised in Table 6.17.

Table 6.17 Impact Description of Effects at Key Receptors (Particulate Matter)

Impact Description of PM_{10} Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m³)	% of AQO	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.01	0.03	0%	≤75% of AQO	Negligible
R2	<0.01	0.01	0%	≤75% of AQO	Negligible
R3	0.01	0.03	0%	≤75% of AQO	Negligible
R4	0.19	0.48	0%	≤75% of AQO	Negligible
R5	<0.01	0.00	0%	≤75% of AQO	Negligible
R6	0.01	0.02	0%	≤75% of AQO	Negligible
R7	0.11	0.28	0%	≤75% of AQO	Negligible
R8	0.18	0.44	0%	≤75% of AQO	Negligible
R9	0.09	0.24	0%	≤75% of AQO	Negligible
R10	<0.01	0.00	0%	≤75% of AQO	Negligible
R11	0.01	0.02	0%	≤75% of AQO	Negligible
R12	0.01	0.03	0%	≤75% of AQO	Negligible
R13	<0.01	0.00	0%	≤75% of AQO	Negligible
R14	0.04	0.11	0%	≤75% of AQO	Negligible
R15	0.06	0.15	0%	≤75% of AQO	Negligible
R16	0.04	0.10	0%	≤75% of AQO	Negligible
R17	0.09	0.23	0%	≤75% of AQO	Negligible
R18	0.02	0.06	0%	≤75% of AQO	Negligible
R19	0.07	0.18	0%	≤75% of AQO	Negligible
R20	0.02	0.05	0%	≤75% of AQO	Negligible

Impact Description of PM_{10} Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R21	0.04	0.09	0%	≤75% of AQO	Negligible
R22*	-0.01	-0.03	0%	≤75% of AQO	Negligible
R23	-0.02	-0.06	0%	≤75% of AQO	Negligible
R24	-0.04	-0.09	0%	≤75% of AQO	Negligible
R25	-0.03	-0.08	0%	≤75% of AQO	Negligible
R26	-0.03	-0.09	0%	≤75% of AQO	Negligible
R27	<0.01	0.00	0%	≤75% of AQO	Negligible
R28	0.01	0.03	0%	≤75% of AQO	Negligible
R29	0.02	0.05	0%	≤75% of AQO	Negligible
R30	<0.01	-0.01	0%	≤75% of AQO	Negligible
R31	-0.01	-0.03	0%	≤75% of AQO	Negligible
R32	<0.01	-0.01	0%	≤75% of AQO	Negligible
0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
*Located in the AQMA					

The magnitude of the effects of changes in traffic as a result of the proposed development, with respect to annual mean PM_{10} exposure, for existing sensitive receptors, is determined to be 'negligible' based on the methodology outlined in section 3.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the confidence of the assessment is deemed to be 'high'.

Particulate Matter – $PM_{2.5}$

Table 6.18 presents a summary of the predicted change in annual mean $PM_{2.5}$ concentrations at relevant receptor locations, due to changes in traffic flow associated with the development, based on modelled 'no development' and 'with development' scenarios.

Table 6.18 Predicted Annual Average Concentrations of $PM_{2.5}$ at Receptor Locations

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	**Do Minimum 2031**	**Do Something 2031**	**Development Contribution**
R1	7 Penwood Road, The Chestnuts,	9.06	9.03	9.03	<0.01
R2	325a Andover Road	9.16	9.10	9.11	0.01
R3	266 Andover Road	9.43	9.38	9.38	<0.01
R4	The Annex at New Warren Farm	8.96	8.96	9.07	0.11
R5	Kendrick Road Kimberleys	9.30	9.29	9.29	<0.01
R6	257 Andover Road	9.48	9.42	9.42	<0.01
R7	Park House School South Building	9.00	8.99	9.05	0.06
R8	Warren Road	9.34	9.32	9.42	0.10
R9	241 Warren Road (N façade)	9.47	9.42	9.47	0.05
R10	176 Andover Road	9.43	9.38	9.39	0.01
R11	17 Dormer Road	9.02	9.00	9.00	<0.01
R12	225 Andover Road	9.42	9.27	9.29	0.02
R13	77 Monks Lane	9.67	9.60	9.60	<0.01

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R14	211b Andover Road	9.77	9.67	9.70	0.03
R15	35 Bodin Gardens (adjacent to A339)	9.80	9.69	9.72	0.03
R16	125 Andover Road	9.69	9.61	9.64	0.03
R17	79 Andover Road	9.98	9.82	9.88	0.06
R18	34 Andover Road	10.03	9.97	9.99	0.02
R19	1 St Johns Road	10.61	10.42	10.47	0.05
R20	63 St Johns Road	10.94	10.75	10.76	0.01
R21	1 Winchester Court	11.53	11.23	11.25	0.02
R22	A339 (20 m south of the continuous monitoring station at Newbury)	10.97	10.81	10.80	-0.01
R23	8 Eeklo Place (adjacent to A339)	10.35	10.33	10.32	-0.01
R24	66 Priory Road (adjacent to A339)	10.39	10.38	10.36	-0.02
R25	61 Dickens Walk (adjacent to A339)	9.86	9.85	9.84	-0.01
R26	35 Bodin Gardens (adjacent to A339)	9.99	9.97	9.95	-0.02
R27	2 Sandleford Parade (adjacent to A339)	10.07	9.94	9.94	<0.01
R28	4 Deadmans Lane (adjacent to A339)	9.48	9.35	9.35	0.01
R29	7 Sandleford Farm (adjacent to A339)	10.02	9.71	9.71	0.01
R30	32 Monks Lane	9.62	9.61	9.61	<0.01
R31	52 Monks Lane	9.63	9.62	9.62	<0.01
R32	2 Heather Gardens	9.63	9.58	9.57	-0.01
PR1	Proposed Residential Receptor	-	-	9.70	-
PR2	Proposed Residential Receptor	-	-	9.57	-
PR3	Proposed Residential Receptor	-	-	9.68	-
PR4	Proposed Residential Receptor	-	-	9.51	-
PR5	Proposed Residential Receptor	-	-	9.51	-
PR6	Proposed Residential Receptor	-	-	9.63	-
PR7	Proposed Residential Receptor	-	-	9.58	-
PR8	Proposed Residential Receptor	-	-	9.52	-
PR9	Proposed Residential Receptor	-	-	9.78	-
PR10	Proposed Residential Receptor	-	-	9.72	-
PR11	Proposed Residential Receptor	-	-	9.66	-
PR12	Proposed Residential Receptor	-	-	9.66	-
PR13	Proposed Residential Receptor	-	-	9.66	-
PR14	Proposed Residential Receptor	-	-	9.65	-
PR15	Proposed Residential Receptor	-	-	9.64	-
PR16	Proposed Residential Receptor	-	-	9.13	-
PR17	Proposed Residential Receptor	-	-	9.13	-
PR18	Proposed Residential Receptor	-	-	9.01	-
PR19	Proposed Residential Receptor	-	-	8.98	-
PR20	Proposed Residential Receptor	-	-	9.01	-
PR21	Proposed Residential Receptor	-	-	8.97	-
PR22	Proposed Residential Receptor	-	-	8.96	-
PR23	Proposed Residential Receptor	-	-	9.00	-
PR24	Proposed Residential Receptor	-	-	8.95	-
PR25	Proposed Residential Receptor	-	-	8.96	-
PR26	Proposed Residential Receptor	-	-	8.99	-
Annual Mean AQO		**25 µg/m³**			

All modelled receptor locations are predicted to be below the AQO for $PM_{2.5}$ in both the 'do minimum' and 'do something' scenarios.

As indicated in Table 6.18, the maximum predicted increase in the annual average exposure to $PM_{2.5}$ at any existing receptor, due to changes in traffic movements associated with the development, is 0.11 µg/m^3 at The Annex at New Warren Road (R4).

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements.

The maximum predicted $PM_{2.5}$ concentrations, at any ground floor proposed receptor is 9.78 µg/m^3. This is predicted to be below the AQO for $PM_{2.5}$ and therefore, no additional mitigation is required.

The impact description of changes in traffic flow associated with the development with respect to annual mean $PM_{2.5}$ exposure has been assessed with reference to the criteria in section 3. The outcomes of the assessment are summarised in Table 6.19.

Table 6.19 Impact Description of Effects at Key Receptors (Particulate Matter)

Impact Description of $PM_{2.5}$ Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R1	<0.01	0.01	0%	≤75% of AQO	Negligible
R2	0.01	0.04	0%	≤75% of AQO	Negligible
R3	<0.01	0.01	0%	≤75% of AQO	Negligible
R4	0.11	0.44	0%	≤75% of AQO	Negligible
R5	<0.01	0.02	0%	≤75% of AQO	Negligible
R6	<0.01	0.00	0%	≤75% of AQO	Negligible
R7	0.06	0.26	0%	≤75% of AQO	Negligible
R8	0.10	0.41	0%	≤75% of AQO	Negligible
R9	0.05	0.20	0%	≤75% of AQO	Negligible
R10	0.01	0.02	0%	≤75% of AQO	Negligible
R11	<0.01	0.02	0%	≤75% of AQO	Negligible
R12	0.02	0.08	0%	≤75% of AQO	Negligible
R13	<0.01	0.00	0%	≤75% of AQO	Negligible
R14	0.03	0.10	0%	≤75% of AQO	Negligible
R15	0.03	0.14	0%	≤75% of AQO	Negligible
R16	0.03	0.12	0%	≤75% of AQO	Negligible
R17	0.06	0.24	0%	≤75% of AQO	Negligible
R18	0.02	0.08	0%	≤75% of AQO	Negligible
R19	0.05	0.19	0%	≤75% of AQO	Negligible
R20	0.01	0.04	0%	≤75% of AQO	Negligible
R21	0.02	0.07	0%	≤75% of AQO	Negligible
R22*	-0.01	-0.03	0%	≤75% of AQO	Negligible
R23	-0.01	-0.04	0%	≤75% of AQO	Negligible
R24	-0.02	-0.09	0%	≤75% of AQO	Negligible

Impact Description of $PM_{2.5}$ Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R25	-0.01	-0.06	0%	≤75% of AQO	Negligible
R26	-0.02	-0.09	0%	≤75% of AQO	Negligible
R27	<0.01	0.00	0%	≤75% of AQO	Negligible
R28	0.01	0.03	0%	≤75% of AQO	Negligible
R29	0.01	0.03	0%	≤75% of AQO	Negligible
R30	<0.01	-0.01	0%	≤75% of AQO	Negligible
R31	<0.01	-0.01	0%	≤75% of AQO	Negligible
R32	-0.01	-0.04	0%	≤75% of AQO	Negligible
0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
*Located in the AQMA					

The magnitude of the effects of changes in traffic flow as a result of the proposed development, with respect to $PM_{2.5}$ exposure for existing sensitive receptors, is determined to be 'negligible' based on the methodology outlined in section 3.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the confidence of the assessment is deemed to be 'high'.

Ecologically Sensitive Receptors

Background concentrations at each of the ecologically sensitive sites are determined through a review of the NO_X pollutants published on the APIS website.

The below assessment has been undertaken in accordance with *A Guide to the Assessment of Air Quality Impacts in Designated Nature Conservation Sites* (IAQM, 2019).

Table 6.20 Identified Ecological Receptors and Nearest Affected Roads

Recep ID	**Site Name**	**Site Designation**	**Distance to Road (m)**	**Nearest Affected Road**	**AADT**		
					Do Minimum (2031)	**Do Something (2031)**	**Difference (DS-DM)**
E3	Greenham and Crookham Commons	SSSI	2	A339, East of Swan Roundabout	27250	29988	2738
E4	Ancient Woodland ID 1487149	AW	453	Bloor Western Site Access	0	2500	2500
E5	Ancient Woodland ID 1495577	AW	65	Bloor Western Site Access	0	2500	2500
E6	Ancient Woodland ID 1495139	AW	26	A339, East of Swan Roundabout	27250	29988	2738
E8	Barn Copse	AW	295	Andover Road	13973	14176	203
E10	Crooks Copse	AW	94	Bloor Eastern Site Access	0	798	798
E11	High Wood	AW	53	Bloor Western Site Access	0	2500	2500
E12	High Wood	AW	274	A339 South (South of Pinchington Lane)	26028	26242	214

E15	Peckmoor Copse	AW	2	A339, East of Swan Roundabout	27250	29988	2738
E16	Peckmoor Copse	AW	2	A339, East of Swan Roundabout	27250	29988	2738

As outlined in Table 6.20 above, ecological receptors E8, E10 and E12 are predicted to experience a difference of less than 1,000 AADT (at the nearest affected road) between the baseline assessment year and predicted operational year. Therefore, these receptors have been screened out and the impacts can be determined to be described as 'negligible'.

Further assessment of ecologically sensitive receptors E3, E4, E5, E6, E11, E15 and E16 have been undertaken due to the increase in AADT of >1,000 AADT (at the nearest affected road) as a result of the proposed development. These receptors have been included within the ADMS model to determine the NO_x contribution from traffic associated with the Proposed Development. The results of this assessment are outlined below in Table 6.21.

Table 6.21 Modelled NO_x Concentrations at Ecologically Sensitive Receptors

Receptor ID	Ecological Receptor	Predicted Maximum Annual Mean Concentration (µg/m³)		
		Do Minimum 2031 NO_x	Do Something 2031 NO_x	Process Contribution (PC)
E3	Greenham and Crookham Commons	20.15	20.56	0.41
E4	Ancient Woodland ID 1487149	14.28	14.31	0.03
E5	Ancient Woodland ID 1495577	14.34	14.46	0.12
E6	Ancient Woodland ID 1495577	16.99	17.15	0.16
E11	High Wood	14.42	14.57	0.15
E15	Peckmoor Copse	20.59	21.08	0.49
E16	Peckmoor Copse	18.92	19.25	0.33
Critical Level (CL)		**30**		

All modelled ecological receptors outlined in Table 6.21 are below the Critical Level for NO_x. Therefore, there are not predicted to be any exceedance of the CL as a result of traffic from the proposed development.

However, as the NO_x contribution at E3 and E15 is above 0.40 µg/m³, a full nitrogen deposition assessment has been undertaken below.

Ammonia (NH_3) and Sulphur Dioxide (SO_2) emissions from traffic are 0.001% and 0.4% of the road NO_x contribution respectively. There is not predicted to be a significant increase in either NH_3 or SO_2 as a result of the proposed development at any ecological receptor as a result of traffic movements from the proposed development.

Nitrogen Deposition

The dry deposition calculation has used the spreadsheet provided by the Air Quality Modelling and Assessment Unit (AQMAU). These calculations take the predicted maximum annual concentration (µg/m³) and use an assumed deposition velocity to estimate deposition concentration in kgN/ha/year or keq/ha/year.

The available deposition velocity is 0.14 for grasslands or similar habitats, in accordance with in LA 105 (published November 2019). The calculated total nitrogen depositions at the ecological receptors are presented in Table 6.22. The calculated nitrogen deposition was compared to the available critical load of nitrogen deposition.

Table 6.22 The Predicted Total PC Nitrogen Deposition

Ecological Receptor	Long-Term PC of NO_x ($\mu g/m^3$)	Dry PC Nitrogen Deposition (kgN/ha/year)	Background	Total PC Nitrogen Deposition (kgN/ha/year)	Critical load (CL) (kgN/ha/year)	PC as %age of CL
E3	0.41	0.27	15.9	16.17	10 - 15	1.8 - 2.7
E15	0.49	0.35	15.6	15.95	10 - 20	1.75 – 3.5

Critical Load Function Tool

Calculating exceedance of an acidity critical load function, or the impact description of a contribution from a source is complex. Critical Load Function Tool has been used to calculate the exceedance (http://www.apis.ac.uk/critical-load-function-tool). It enables the comparison of acid deposition to the critical load function to help make a decision on the impact description of a process contribution.

Greenham and Crookham Commons (SSSI)

The results of exceedance and deposition as a proportion of the critical level (CL) function for E3, are presented both in Figure 6 and in Table 6.23. The following data have been used in the calculations.

Background deposition: 1.34 (N: 1.31 |S: 0.27) (keg/ha/yr).
CLmax S: 1.66 CLminN: 0.438 CLMaxN: 2.098 (keq/ha/yr)
Nitrogen PC deposition: = 0.41*0.14 = 0.27 kqN/ha/yr

Table 6.23 Exceedance and deposition as a proportion of the CL Function at E15

Source	Exceedance (keq/ha/year)	% of CL function
Process Contribution (PC)	No exceedance of CL function	12.9
Background	No exceedance of CL function	75.3
Predicted Environmental Concentration (PEC)	No exceedance of CL function	88.2

The maximum predicted total acid deposition PC at receptor E15 is **0.27 keqN/ha/yr,** which is "no exceedance of CL function" and 12.9 % of CL function. It can be concluded that the impact of nitrogen depositions from the road at E3 are **negligible**.

Peckmore Copse (AW)

The results of exceedance and deposition as a proportion of the critical level (CL) function for E15, are presented both in Figure 7 and in Table 6.24. The following data have been used in the calculations.

Background deposition: 1.96 (N: 1.81 |S: 0.32) (keg/ha/yr).

CLmax S: 1.662 CLminN: 0.357 CLMaxN: 2.019 (keq/ha/yr)

Nitrogen PC deposition: = 0.49*0.14 = 0.35 keqN/ha/yr

Table 6.24 Exceedance and deposition as a proportion of the CL Function at E15

Source	Exceedance (keq/ha/year)	% of CL function
Process Contribution (PC)	No exceedance of CL function	17.3
Background	0.11	105.5
Predicted Environmental Concentration (PEC)	0.46	122.8

The maximum predicted total acid deposition PC at receptor E15 is **0.35 keqN/ha/yr,** which is "no exceedance of CL function" and 17.3% of CL function. It can be concluded that the impact of nitrogen depositions from the road at E15 are **negligible**.

7. Mitigation

7.1 Construction Phase

The dust risk categories have been determined in Section 5 for each of the four construction activities. The assessment has determined that the potential impact description of dust emissions associated with the construction phase of the proposed development is 'high risk' at the worst affected receptors.

Using the methodology described in Appendix A, appropriate site-specific mitigation measures associated with the determined level of risk can be found in Section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition and Construction. The mitigation measures have been divided into general measures applicable to all sites and measures applicable specifically to demolition, earthworks, construction and trackout. The mitigation measures for the proposed development are detailed in Table 7.1 below:

Table 7.1 Highly Recommended Construction Phase Mitigation Measures

Communications
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
Display the head or regional office contact information
Dust Management
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk, and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site.
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
Make the complaints log available to the local authority when asked.
Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
Hold regular liaison meetings with other high risk construction sites within 500m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of site boundary, with cleaning to be provided if necessary.
Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked
Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period
Avoid site runoff of water or mud.
Keep site fencing, barriers and scaffolding clean using wet methods.
Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
Cover, seed or fence stockpiles to prevent wind whipping.
Ensure all vehicles switch off engines when stationary - no idling vehicles.
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.

Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
Use enclosed chutes and conveyors and covered skips
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods
Avoid bonfires and burning of waste materials.
Earthworks
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
Only remove the cover in small areas during work and not all at once
Construction
Avoid scabbling (roughening of concrete surfaces) if possible
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.
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.
Trackout
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
Avoid dry sweeping of large areas.
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.
Record all inspections of haul routes and any subsequent action in a site log book.
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.
Access gates to be located at least 10m from receptors where possible.

Following the implementation of the mitigation measures detailed in the table above, the impact description of the construction phase is not considered to be significant.

8. Conclusions

WYG have undertaken an Air Quality Assessment for proposed development at Sandleford Park in accordance with the methodology and parameters described within this report.

Construction Phase

Prior to the implementation of appropriate mitigation measures, the potential impact description of dust emissions associated with the construction phase of the proposed development has potential as 'high' at some worst affected receptors without mitigation. However, appropriate site-specific mitigation measures have been recommended based on Section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition, Earthworks, Construction and Trackout. It is anticipated that with these appropriate mitigation measures in place, the risk of adverse effects due to emissions from the construction phase will not be significant.

Operational Phase

All modelled existing and proposed receptors are predicted to be below the relevant long term AQOs for NO_2, PM_{10} and $PM_{2.5}$ in the 2031 'do minimum' and both 'do something' scenarios.

The results of this assessment are considered to be worst-case, given that the EFT and Defra NO_x-to-NO2 Calculator only calculate emissions up to the year 2030. With our operational year being 2031, it is thought that the emissions will be greater during 2030. Therefore, with the emissions being greater during 2030 this assessment will be higher than 2031 predictions would be and have been used in this assessment.

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements.

<u>Scenario 1 – Bloor Homes Development – three accesses</u>

The 2031 assessment of the effects of emissions from the proposed traffic associated with the scheme, has determined the maximum predicted increase in the annual average exposure to NO_2 at any existing receptor is 0.84 µg/m^3 at The Annex at New Warren Farm (R4).

The maximum predicted NO_2 concentrations, at any ground floor proposed receptor is 13.15 µg/m^3. This is predicted to be below the AQO for NO2 and therefore, no additional mitigation is required.

All modelled receptors predict NO_2 concentrations of well below 60 µg/m^3 in all scenarios. Therefore, it is unlikely for any exceedances of the short-term NO_2 AQO to occur as outlined in LAQM TG16 technical guidance and therefore, a short-term effect can be scoped out of this assessment.

For PM_{10}, the maximum predicted increase in the annual average exposure to PM_{10} at any existing receptor, is 0.19 µg/m^3 at The Annex at New Warren Farm (R4). For $PM_{2.5}$, the maximum predicted increase in the annual average exposure to $PM_{2.5}$ at any existing receptor, is 0.11 µg/m^3 at The Annex at New Warren Farm (R4).

An assessment of NO_x emissions at identified ecological receptors determined that there were no exceedances of the Critical Load at any ecological receptor as a result of the proposed development.

The impact description of the effects of changes in traffic flow as a result of the proposed development, with respect to NO_2, PM_{10} and $PM_{2.5}$ exposures for existing receptors, is determined to be 'negligible'.

Scenario 2 – Strategic Development – four accesses

The 2031 assessment of the effects of emissions from the proposed traffic associated with the scheme, has determined the maximum predicted increase in the annual average exposure to NO_2 at any existing receptor is 0.84 µg/m^3 at The Annex at New Warren Road (R4).

The maximum predicted NO_2 concentrations, at any ground floor proposed receptor is 13.37 µg/m^3. This is predicted to be below the AQO for NO2 and therefore, no additional mitigation is required.

All modelled receptors predict NO_2 concentrations of well below 60 µg/m^3 in all scenarios. Therefore, it is unlikely for any exceedances of the short-term NO_2 AQO to occur as outlined in LAQM TG16 technical guidance and therefore, a short-term effect can be scoped out of this assessment.

For PM_{10}, the maximum predicted increase in the annual average exposure to PM_{10} at any existing receptor, is 0.19 µg/m^3 at The Annex at New Warren Road (R4). For $PM_{2.5}$, the maximum predicted increase in the annual average exposure to $PM_{2.5}$ at any existing receptor, is 0.11 µg/m^3 at The Annex at New Warren Road (R4).

An assessment of NO_x emissions at identified ecological receptors determined that there were no exceedances of the Critical Load at any ecological receptor as a result of the proposed development.

A full nitrogen deposition assessment was undertaken for ecological receptor E3 and E15 due to a development NO_x contribution of 0.40 µg/m^3. There were no predicted significant impacts on nitrogen deposition at E15 as a result of the proposed development.

The impact description of the effects of changes in traffic flow as a result of the proposed development, with respect to NO_2, PM_{10} and $PM_{2.5}$ exposures for existing receptors, is determined to be 'negligible'.

Given the quantitative nature of the assessment and the verification of the air quality dispersion model, the confidence of the assessment is deemed to be 'high'. In conclusion, following the adoption of the recommended mitigation measures, the development is not considered to be contrary to any of the national and local planning policies.

Figures

Figure 1 Air Quality Assessment Area – LA Monitoring Locations

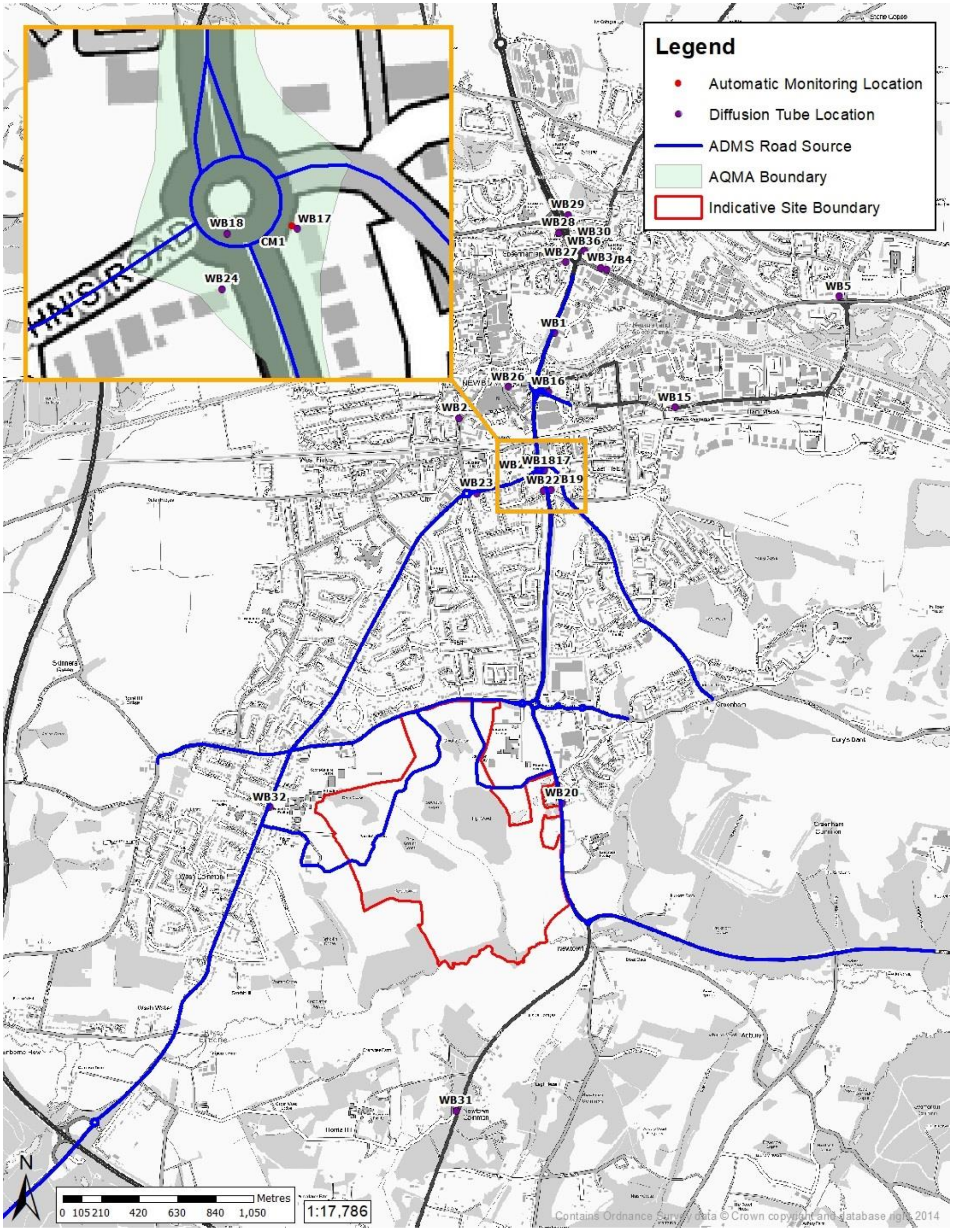


Figure 2 Air Quality Assessment Area – Existing Sensitive Receptor Locations

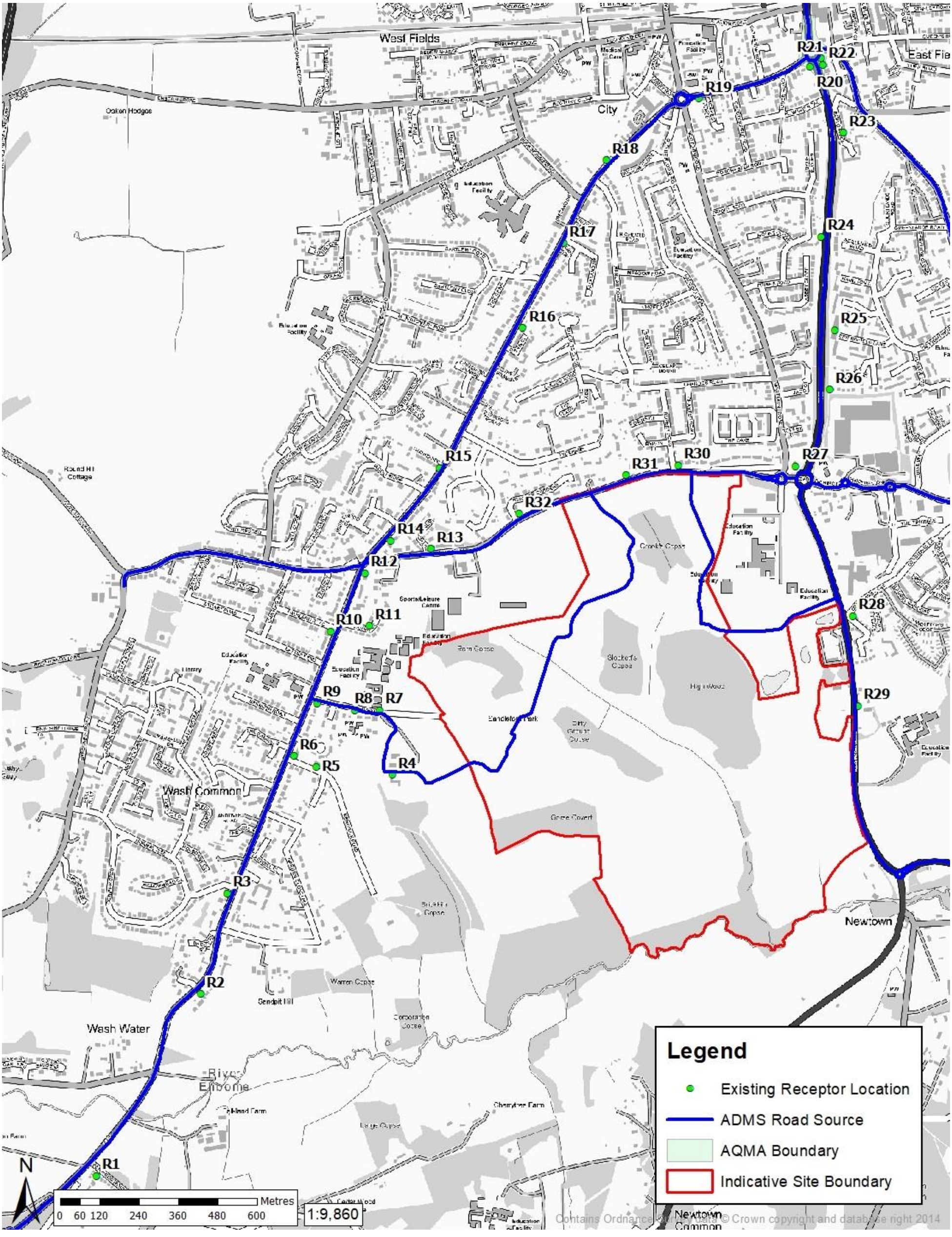


Figure 3 Air Quality Assessment Area – Proposed Sensitive Receptor Locations

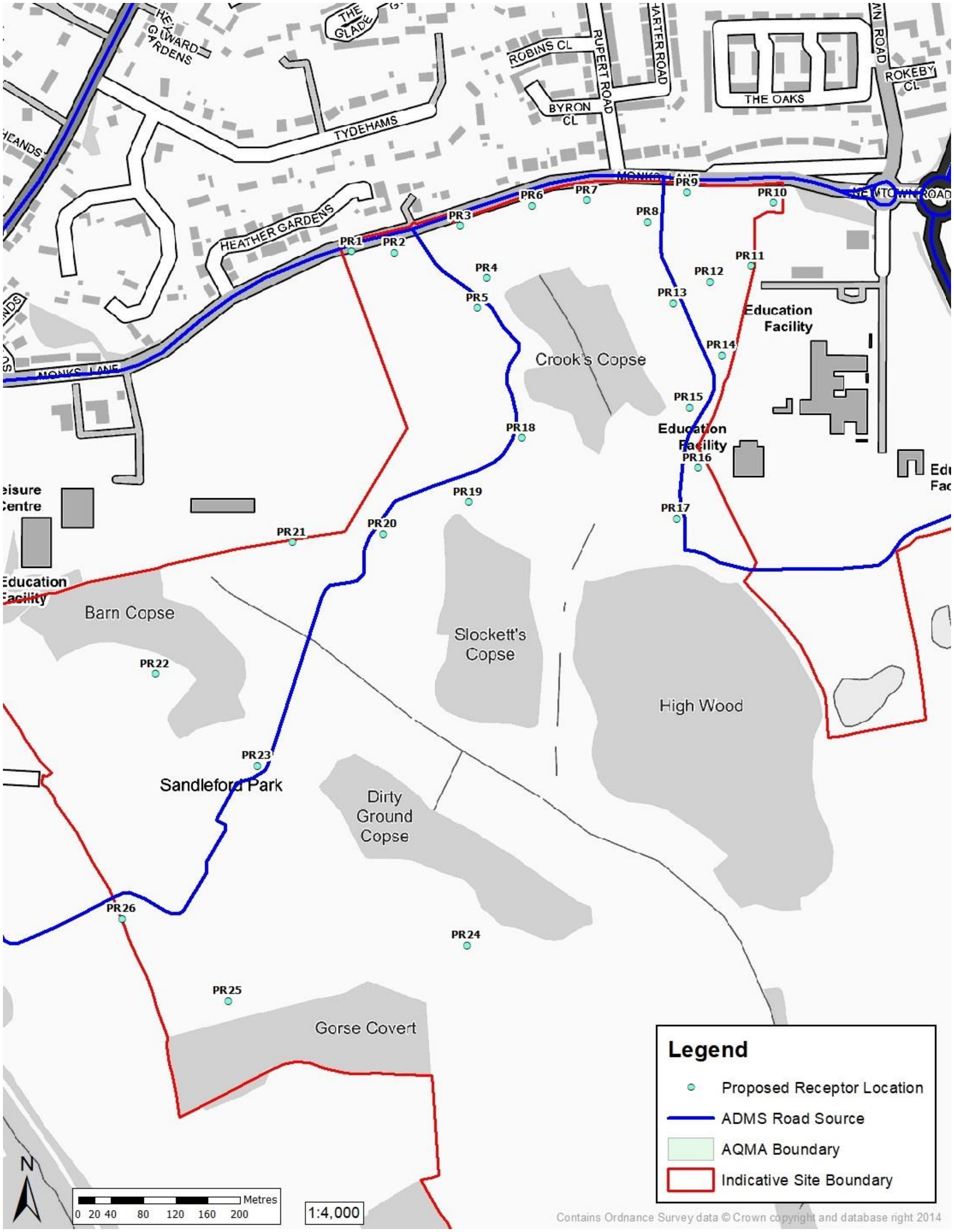


Figure 4 Air Quality Assessment Area – Ecological Sensitive Receptor Locations

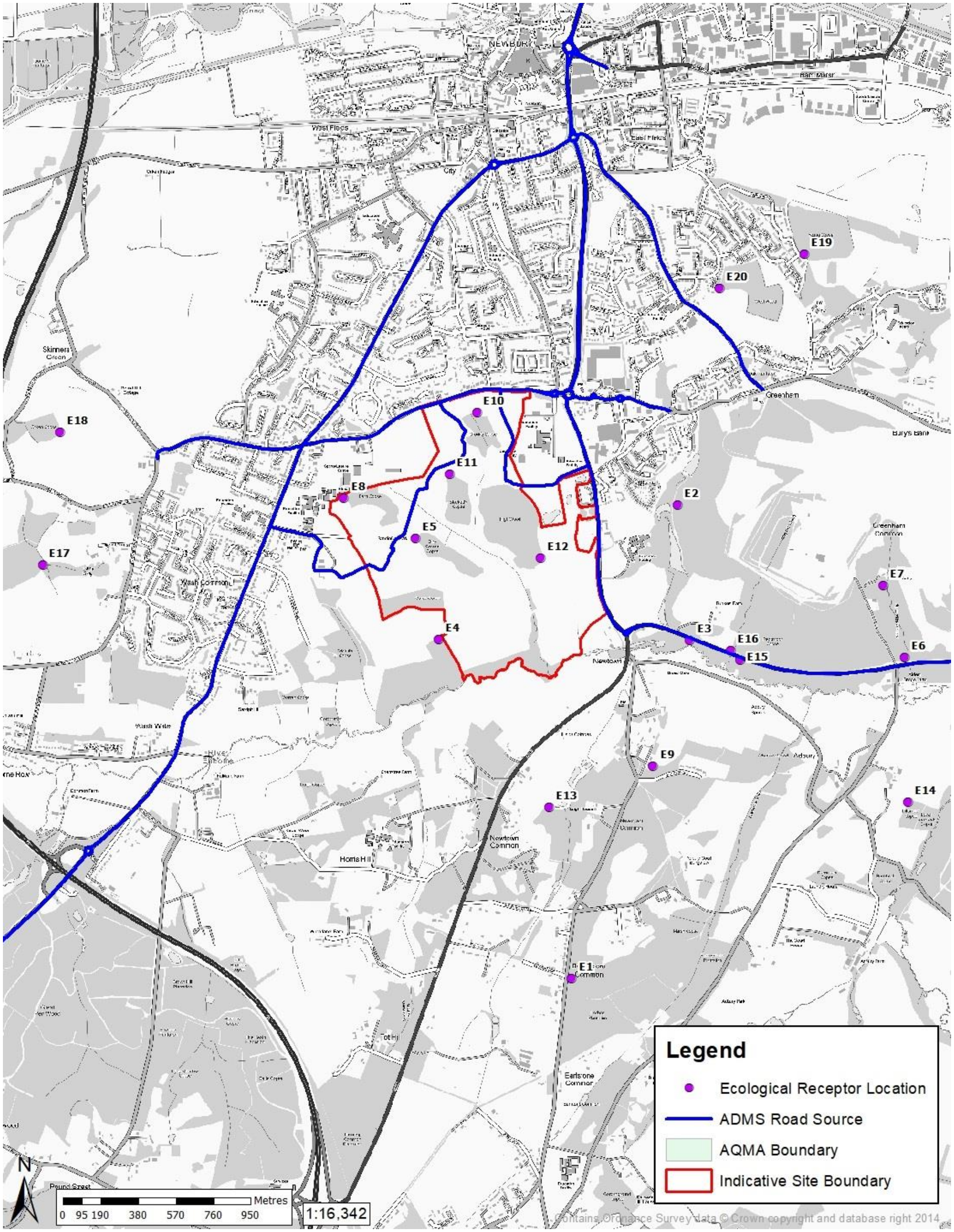


Figure 5 Middle Wallop 2018 Meteorological Station Wind Rose

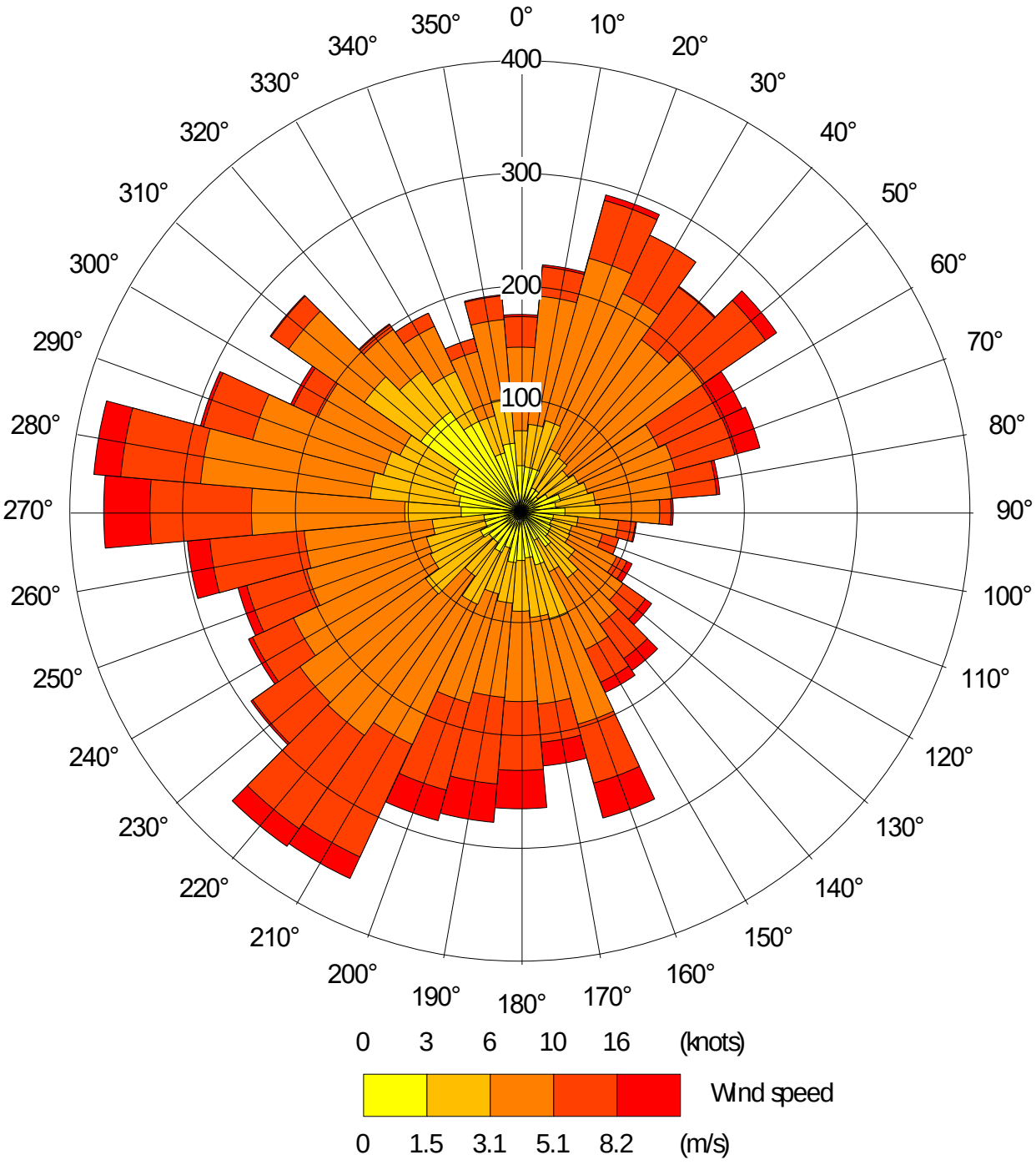


Figure 6 Critical Load Function Tool – E3 (Four Access Scenario Only)

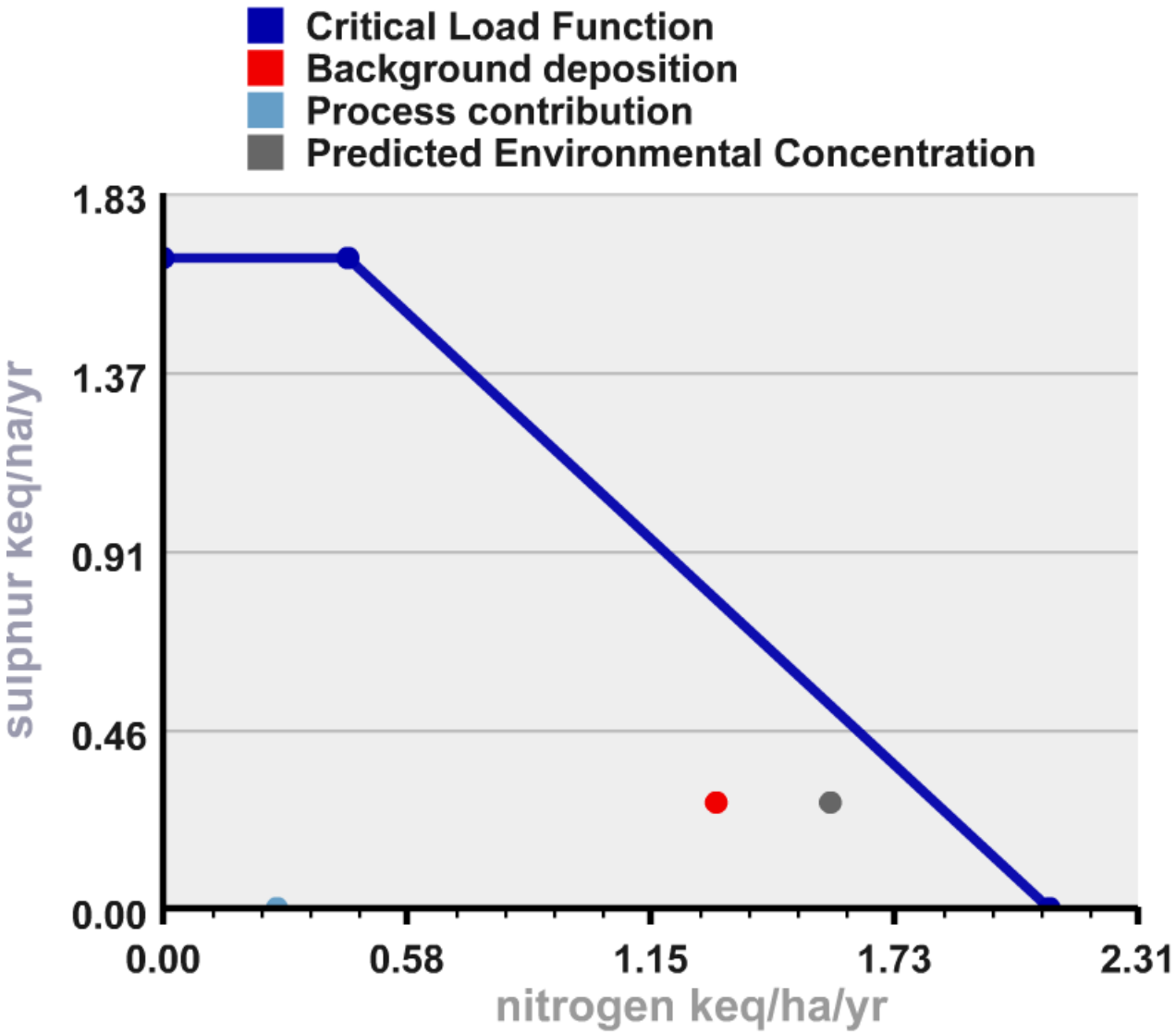
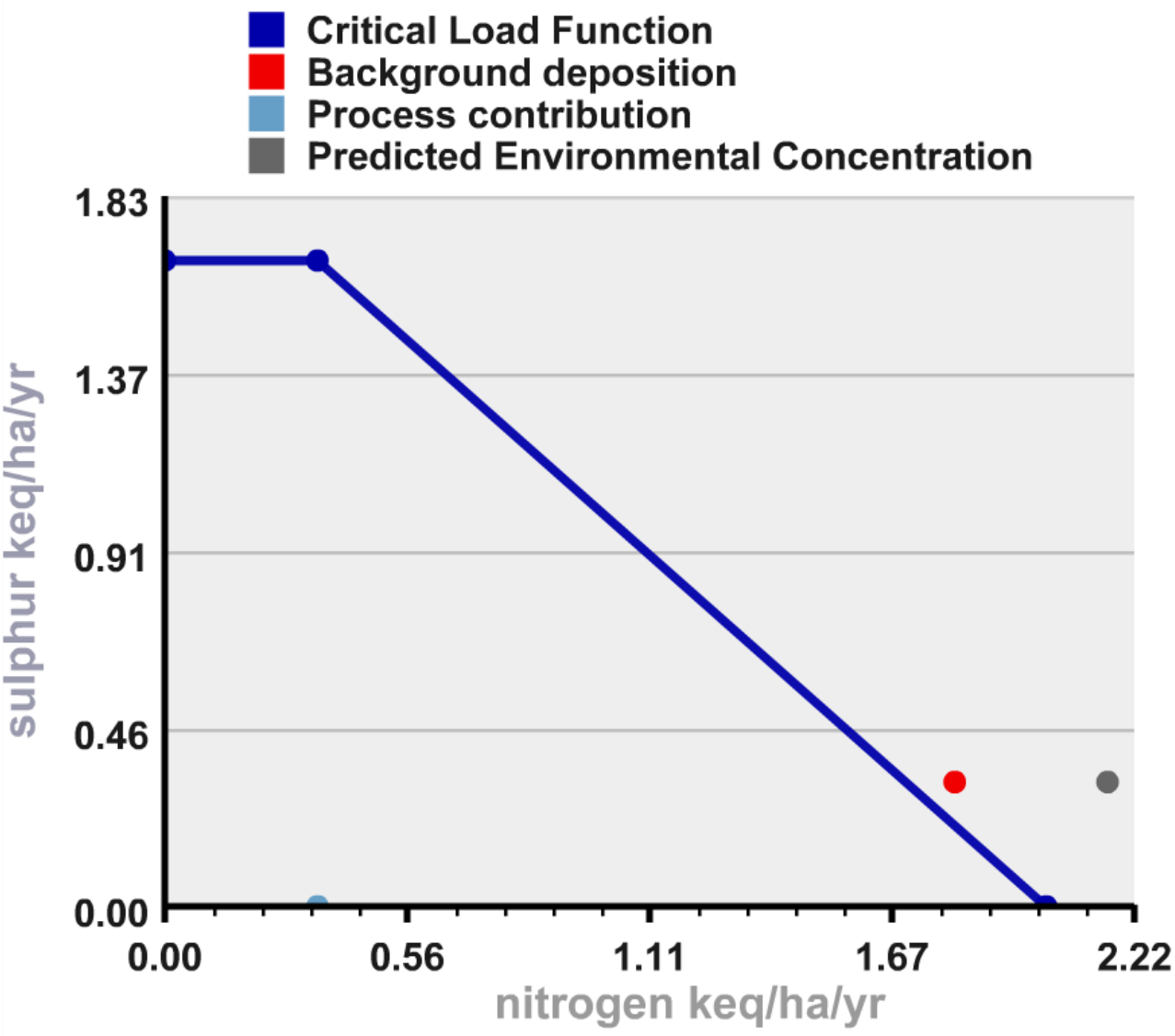


Figure 7 Critical Load Function Tool – E15 (Four Access Scenario Only)



Appendix A Construction Phase Assessment Methodology

The following information sets out the adopted approach to the construction phase impact assessment in accordance with the aforementioned IAQM guidance[2].

Step 1 – Screen the Requirement for a more Detailed Assessment

An assessment is required if there are sensitive receptors within 350m of the site boundary, within 50m of the route(s) used by construction vehicles on the surrounding road network, or within 500m from the site entrance. A detailed assessment is also required if there is an ecological receptor within 50m of the site boundary.

Step 2A – Define the Potential Dust Emission Magnitude

Demolition

The dust emission magnitude for the demolition phase has been determined based on the below criteria:

- *Large*: Total building volume >50 000m^3, potentially dusty construction (e.g. concrete), on-site crushing and screening, demolition activities >20m above ground level;
- *Medium*: Total building volume 20 000m^3 – 50 000m^3, potentially dusty construction material, demolition activities 10-20m above ground level; and,
- *Small*: Total building volume <20 000m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.

Earthworks

The dust emission magnitude for the planned earthworks has been determined based on the below criteria:

- *Large:* Total site area >10 000m^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 >8m in height, total material moved >100 000 tonnes;
- *Medium*: Total site area 2 500m^2 – 10 000m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4m-8m in height, total material moved 20 000 tonnes – 100 000 tonnes; and
- *Small:* Total site area <2 500 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 m in height, total material moved <10 000 tonnes, earthworks during wetter months.

Construction

The dust emission magnitude for the construction phase has been determined based on the below criteria:

- *Large:* Total building volume >100 000m^3, on site concrete batching; sandblasting
- *Medium:* Total building volume 25 000m^3 – 100 000m^3, potentially dusty construction material (e.g. concrete), on site concrete batching; and,
- *Small:* Total building volume <25 000m^3, construction material with low potential for dust release (e.g. metal cladding or timber).

Trackout

The dust emission magnitude for trackout has been determined based on the below criteria:

- *Large:* >50 HGV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m;
- *Medium:* 10-50 HGV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m; and,
- *Small:* <10 HGV (>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

[2] Institute of Air Quality Management 2014. *Guidance on the Assessment of dust from demolition and construction.*

Sensitivities of People to Dust Soiling Effects

- *High:*
  - Users can reasonably expect a enjoyment of a high level of amenity;
  - The appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably expect to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land; and,
  - Indicative examples include dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms.
- *Medium:*
  - Users can reasonably expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home;
  - The appearance, aesthetics or value of their property could be diminished by soiling;
  - The people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land; and,
  - Indicative examples include parks and places of work.
- *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; and,
  - Indicative examples include playing fields, farmland (unless commercially sensitive horticultural), footpaths, short-term car parks and roads.

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table A1– Sensitivity of the Area to Dust Soiling Effects on People and Property

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

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites (as defined in step 2A), 200 m from medium sites and 50 m from small sites, as measured from the site exit.

Sensitivities of People to the Health Effects of PM_{10}

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

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table A2 - Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM_{10} Concentration	Number of Receptors	Distance from the 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	-	>10	High	Medium	Low	Low	Low
	-	1-10	Medium	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites (as defined in step 2A), 200 m from medium sites and 50 m from small sites, as measured from the site exit.

Sensitivities of Receptors to Ecological Effects

- *High:*
  - 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 Data List For Great Britain; and,
  - Indicative examples include a Special Area of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
- *Medium:*
  - Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown;
  - Locations with a national designation where the features may be affected by dust deposition; and,
  - Indicative example is a Site of Special Scientific Interest (SSSI) with dust sensitive features.
- *Low:*
  - Locations with a local designation where the features may be affected by dust deposition; and,
  - Indicative example is a local Nature Reserve with dust sensitive features.

The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout, using the following table:

Table A3 - Sensitivity of the Area to Ecological Impacts

Receptor Sensitivity	Distance from Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Note - The likely routes the construction traffic will use should also be included to enable the presence of trackout receptors to be included in the assessment. As a general guidance, without site-specific mitigation, trackout may occur along the public highway up to 500 m from large sites (as defined in step 2A), 200 m from medium sites and 50 m from small sites, as measured from the site exit.

Step 2C - Defining the Risk of Impacts

The risk of impacts with no mitigation is determined by combining the dust emission magnitude determined in Step 2A and the sensitivity of the area determined in Step 2B.

The following tables provide a method of assigning the level of risk for each activity.

Demolition

Table A4 - Risk of Dust Impacts, Demolition

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

Earthworks

Table A5 - Risk of Dust Impacts, Earthworks

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Construction

Table A6 - Risk of Dust Impacts, Construction

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

Trackout

Table A7 - Risk of Dust Impacts, Trackout

Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

Step 3 – Site Specific Mitigation

The dust risk categories for each of the four activities determined in Step 2C should be used to define the appropriate, site-specific mitigation measures to be adopted.

These mitigation measures are contained within section 8.2 of the IAQM Guidance on the Assessment of Dust from Demolition and Construction.

Appendix B Theoretical Scenario Results

Scenario Context

This additional theoretical scenario uses emission factors for 2018 for the 'do minimum' and 'do something' based on a recent appeal decision (planning reference no.APP/D3830/A/14/22269877) that favoured the uncertainty of emissions forecasts. It should be noted that this is a theoretical scenario which assumes that the government (Defra) predictions for reductions in emissions over the forthcoming years will not occur. This should not be considered as a 'more correct' scenario in accordance with the 2010 note [http://laqm.defra.gov.uk/laqm-faqs/faq5.html] which confirms that: '*There is no evidence to suggest that background concentrations associated with the other (non-traffic) source contributions should not behave as forecast. This disparity in the historical data highlights the uncertainty of future year projections of both NO_X and NO_2, but at this stage there is no robust evidence upon which to base any revised road traffic emissions projections*'.

The two assessment scenarios are defined below:

- 2031 "Do Minimum" = Baseline Conditions + Committed Development Flows (Local Plan) (**using 2018 traffic emission factors**);
- 2031 "Do Something 1" = Baseline Conditions + Committed Development Flows + Proposed Development Flows (with Bloor Homes Development – three accesses) (**using 2018 traffic emission factors**); and,
- 2031 "Do Something 2" = Baseline Conditions + Committed Development Flows + Proposed Development Flows (with Strategic Development – four accesses) (**using 2018 traffic emission factors**).

Scenario 1 ('Do Something 1') Assessment Results – With Bloor Homes Development – three accesses

Table B1 Predicted Theoretical Annual Average Concentrations of NO_2

Receptor		NO_2 (µg/m^3)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R1	7 Penwood Road, The Chestnuts,	12.18	12.05	12.14	0.09
R2	325a Andover Road	13.34	13.12	13.31	0.19
R3	266 Andover Road	13.75	13.53	13.72	0.19
R4	The Annex at New Warren Farm	10.32	10.27	12.65	2.38
R5	Kendrick Road Kimberleys	12.24	12.16	12.27	0.11
R6	257 Andover Road	14.36	14.10	14.35	0.25
R7	Park House School South Building	10.75	10.72	11.78	1.06
R8	Warren Road	12.64	12.62	14.19	1.57
R9	241 Warren Road (N façade)	14.38	14.18	15.43	1.25
R10	176 Andover Road	13.81	13.56	13.77	0.21

Receptor		NO_2 (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R11	17 Dormer Road	11.08	10.95	11.06	0.11
R12	225 Andover Road	17.19	16.18	16.57	0.39
R13	77 Monks Lane	14.48	14.12	14.15	0.03
R14	211b Andover Road	15.88	15.23	15.62	0.39
R15	35 Bodin Gardens (adjacent to A339)	16.11	15.40	15.90	0.50
R16	125 Andover Road	14.77	14.27	14.63	0.36
R17	79 Andover Road	18.33	17.31	18.05	0.74
R18	34 Andover Road	16.13	15.96	16.18	0.22
R19	1 St Johns Road	24.17	23.03	23.92	0.89
R20	63 St Johns Road	28.64	28.59	28.69	0.10
R21	1 Winchester Court	36.76	36.28	36.43	0.15
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	29.05	29.61	29.40	-0.21
R23	8 Eeklo Place (adjacent to A339)	18.97	19.53	19.33	-0.20
R24	66 Priory Road (adjacent to A339)	19.26	20.11	19.82	-0.29
R25	61 Dickens Walk (adjacent to A339)	15.28	15.79	15.59	-0.20
R26	35 Bodin Gardens (adjacent to A339)	16.68	17.38	17.10	-0.28
R27	2 Sandleford Parade (adjacent to A339)	19.49	18.74	18.66	-0.08
R28	4 Deadmans Lane (adjacent to A339)	15.48	14.72	14.85	0.13
R29	7 Sandleford Farm (adjacent to A339)	21.09	19.43	19.58	0.15
R30	32 Monks Lane	13.89	14.25	14.18	-0.07
R31	52 Monks Lane	13.99	14.42	14.39	-0.03
R32	2 Heather Gardens	14.03	13.74	13.74	<0.01
PR1	Proposed Residential Receptor	-	-	15.65	-
PR2	Proposed Residential Receptor	-	-	13.67	-
PR3	Proposed Residential Receptor	-	-	15.25	-
PR4	Proposed Residential Receptor	-	-	12.80	-
PR5	Proposed Residential Receptor	-	-	12.89	-
PR6	Proposed Residential Receptor	-	-	14.49	-
PR7	Proposed Residential Receptor	-	-	13.79	-
PR8	Proposed Residential Receptor	-	-	12.87	-
PR9	Proposed Residential Receptor	-	-	14.57	-
PR10	Proposed Residential Receptor	-	-	13.94	-
PR11	Proposed Residential Receptor	-	-	13.30	-
PR12	Proposed Residential Receptor	-	-	13.22	-
PR13	Proposed Residential Receptor	-	-	13.23	-
PR14	Proposed Residential Receptor	-	-	13.15	-
PR15	Proposed Residential Receptor	-	-	13.03	-
PR16	Proposed Residential Receptor	-	-	11.78	-
PR17	Proposed Residential Receptor	-	-	11.80	-
PR18	Proposed Residential Receptor	-	-	11.14	-
PR19	Proposed Residential Receptor	-	-	10.65	-
PR20	Proposed Residential Receptor	-	-	11.05	-
PR21	Proposed Residential Receptor	-	-	10.47	-
PR22	Proposed Residential Receptor	-	-	10.40	-
PR23	Proposed Residential Receptor	-	-	10.90	-
PR24	Proposed Residential Receptor	-	-	10.23	-
PR25	Proposed Residential Receptor	-	-	10.30	-
PR26	Proposed Residential Receptor	-	-	10.97	-

Receptor	NO_2 (µg/m³)			
	Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
Annual Mean AQO	**40 µg/m³**			
*Located in the AQMA				

Table B2 Impact Description of the Effects at Key Receptors (NO_2)

Impact Description of NO_2 Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m³)	% of AQO	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.09	0.23	0%	≤75% of AQO	Negligible
R2	0.19	0.48	0%	≤75% of AQO	Negligible
R3	0.19	0.48	0%	≤75% of AQO	Negligible
R4	2.38	5.95	6-10%	≤75% of AQO	Slight
R5	0.11	0.28	0%	≤75% of AQO	Negligible
R6	0.25	0.63	1%	≤75% of AQO	Negligible
R7	1.06	2.65	2-5%	≤75% of AQO	Negligible
R8	1.57	3.93	2-5%	≤75% of AQO	Negligible
R9	1.25	3.13	2-5%	≤75% of AQO	Negligible
R10	0.21	0.53	1%	≤75% of AQO	Negligible
R11	0.11	0.28	0%	≤75% of AQO	Negligible
R12	0.39	0.98	1%	≤75% of AQO	Negligible
R13	0.03	0.08	0%	≤75% of AQO	Negligible
R14	0.39	0.98	1%	≤75% of AQO	Negligible
R15	0.50	1.25	1%	≤75% of AQO	Negligible
R16	0.36	0.91	1%	≤75% of AQO	Negligible
R17	0.74	1.85	2-5%	≤75% of AQO	Negligible
R18	0.22	0.56	1%	≤75% of AQO	Negligible
R19	0.89	2.22	2-5%	≤75% of AQO	Negligible
R20	0.10	0.25	0%	≤75% of AQO	Negligible
R21	0.15	0.38	0%	76-94% of AQO	Negligible
R22*	-0.21	-0.53	0%	≤75% of AQO	Negligible
R23	-0.20	-0.51	0%	≤75% of AQO	Negligible
R24	-0.29	-0.73	0%	≤75% of AQO	Negligible
R25	-0.20	-0.50	0%	≤75% of AQO	Negligible
R26	-0.28	-0.71	0%	≤75% of AQO	Negligible
R27	-0.08	-0.20	0%	≤75% of AQO	Negligible
R28	0.13	0.33	0%	≤75% of AQO	Negligible
R29	0.15	0.38	0%	≤75% of AQO	Negligible
R30	-0.07	-0.18	0%	≤75% of AQO	Negligible
R31	-0.03	-0.08	0%	≤75% of AQO	Negligible
R32	<0.01	0.00	0%	≤75% of AQO	Negligible
0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
*Located in the AQMA					

Table B3 Predicted Theoretical Annual Average Concentrations of PM_{10}

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R1	7 Penwood Road, The Chestnuts,	13.71	13.69	13.70	0.01

Receptor		PM_{10} (µg/m^3)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R2	325a Andover Road	13.86	13.83	13.85	0.02
R3	266 Andover Road	13.67	13.64	13.66	0.02
R4	The Annex at New Warren Farm	13.53	13.52	13.75	0.23
R5	Kendrick Road Kimberleys	13.48	13.47	13.48	0.01
R6	257 Andover Road	13.75	13.71	13.75	0.04
R7	Park House School South Building	13.58	13.58	13.71	0.13
R8	Warren Road	13.53	13.52	13.72	0.20
R9	241 Warren Road (N façade)	13.74	13.71	13.84	0.13
R10	176 Andover Road	13.68	13.64	13.67	0.03
R11	17 Dormer Road	13.62	13.61	13.62	0.01
R12	225 Andover Road	14.24	14.14	14.18	0.04
R13	77 Monks Lane	13.93	13.88	13.88	0.00
R14	211b Andover Road	14.10	14.01	14.06	0.05
R15	35 Bodin Gardens (adjacent to A339)	14.14	14.05	14.12	0.07
R16	125 Andover Road	13.97	13.90	13.95	0.05
R17	79 Andover Road	14.44	14.30	14.40	0.10
R18	34 Andover Road	14.38	14.36	14.39	0.03
R19	1 St Johns Road	15.21	15.09	15.18	0.09
R20	63 St Johns Road	15.72	15.73	15.74	0.01
R21	1 Winchester Court	16.62	16.61	16.62	0.01
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	15.76	15.85	15.82	-0.03
R23	8 Eeklo Place (adjacent to A339)	14.84	14.92	14.89	-0.04
R24	66 Priory Road (adjacent to A339)	14.90	15.03	14.98	-0.05
R25	61 Dickens Walk (adjacent to A339)	14.22	14.29	14.26	-0.03
R26	35 Bodin Gardens (adjacent to A339)	14.42	14.52	14.48	-0.04
R27	2 Sandleford Parade (adjacent to A339)	14.53	14.47	14.46	-0.01
R28	4 Deadmans Lane (adjacent to A339)	14.34	14.20	14.22	0.02
R29	7 Sandleford Farm (adjacent to A339)	15.21	14.88	14.91	0.03
R30	32 Monks Lane	13.86	13.90	13.89	-0.01
R31	52 Monks Lane	13.87	13.93	13.92	-0.01
R32	2 Heather Gardens	13.88	13.84	13.83	-0.01
PR1	Proposed Residential Receptor	-	-	14.08	-
PR2	Proposed Residential Receptor	-	-	13.82	-
PR3	Proposed Residential Receptor	-	-	14.03	-
PR4	Proposed Residential Receptor	-	-	13.71	-
PR5	Proposed Residential Receptor	-	-	13.71	-
PR6	Proposed Residential Receptor	-	-	13.93	-
PR7	Proposed Residential Receptor	-	-	13.84	-
PR8	Proposed Residential Receptor	-	-	13.72	-
PR9	Proposed Residential Receptor	-	-	14.08	-
PR10	Proposed Residential Receptor	-	-	13.99	-
PR11	Proposed Residential Receptor	-	-	13.91	-
PR12	Proposed Residential Receptor	-	-	13.90	-
PR13	Proposed Residential Receptor	-	-	13.91	-
PR14	Proposed Residential Receptor	-	-	13.90	-
PR15	Proposed Residential Receptor	-	-	13.88	-
PR16	Proposed Residential Receptor	-	-	13.79	-

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
PR17	Proposed Residential Receptor	-	-	13.79	-
PR18	Proposed Residential Receptor	-	-	13.63	-
PR19	Proposed Residential Receptor	-	-	13.57	-
PR20	Proposed Residential Receptor	-	-	13.62	-
PR21	Proposed Residential Receptor	-	-	13.55	-
PR22	Proposed Residential Receptor	-	-	13.54	-
PR23	Proposed Residential Receptor	-	-	13.60	-
PR24	Proposed Residential Receptor	-	-	13.52	-
PR25	Proposed Residential Receptor	-	-	13.53	-
PR26	Proposed Residential Receptor	-	-	13.59	
Annual Mean AQO		**40 µg/m³**			
*Receptor in AQMA					

Table B4 Predicted Theoretical Annual Average Concentrations of $PM_{2.5}$

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R1	7 Penwood Road, The Chestnuts,	9.06	9.05	9.06	0.01
R2	325a Andover Road	9.16	9.14	9.15	0.01
R3	266 Andover Road	9.43	9.41	9.42	0.01
R4	The Annex at New Warren Farm	8.96	8.96	9.11	0.15
R5	Kendrick Road Kimberleys	9.30	9.30	9.31	0.01
R6	257 Andover Road	9.48	9.45	9.47	0.02
R7	Park House School South Building	9.00	9.00	9.08	0.08
R8	Warren Road	9.34	9.33	9.46	0.13
R9	241 Warren Road (N façade)	9.47	9.45	9.53	0.08
R10	176 Andover Road	9.43	9.41	9.42	0.01
R11	17 Dormer Road	9.02	9.01	9.02	0.01
R12	225 Andover Road	9.42	9.36	9.39	0.03
R13	77 Monks Lane	9.67	9.63	9.64	0.01
R14	211b Andover Road	9.77	9.72	9.75	0.03
R15	35 Bodin Gardens (adjacent to A339)	9.80	9.74	9.78	0.04
R16	125 Andover Road	9.69	9.65	9.68	0.03
R17	79 Andover Road	9.98	9.90	9.96	0.06
R18	34 Andover Road	10.03	10.02	10.03	0.01
R19	1 St Johns Road	10.61	10.53	10.59	0.06
R20	63 St Johns Road	10.94	10.95	10.95	0.00
R21	1 Winchester Court	11.53	11.52	11.53	0.01
R22	A339 (20 m south of the continuous monitoring station at Newbury)	10.97	11.02	11.00	-0.02
R23	8 Eeklo Place (adjacent to A339)	10.35	10.40	10.38	-0.02
R24	66 Priory Road (adjacent to A339)	10.39	10.47	10.44	-0.03
R25	61 Dickens Walk (adjacent to A339)	9.86	9.91	9.89	-0.02
R26	35 Bodin Gardens (adjacent to A339)	9.99	10.05	10.02	-0.03
R27	2 Sandleford Parade (adjacent to A339)	10.07	10.03	10.03	0.00
R28	4 Deadmans Lane (adjacent to A339)	9.48	9.40	9.41	0.01
R29	7 Sandleford Farm (adjacent to A339)	10.02	9.83	9.84	0.01
R30	32 Monks Lane	9.62	9.65	9.64	-0.01
R31	52 Monks Lane	9.63	9.66	9.66	0.00

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R32	2 Heather Gardens	9.63	9.61	9.60	-0.01
PR1	Proposed Residential Receptor	-	-	9.76	-
PR2	Proposed Residential Receptor	-	-	9.60	-
PR3	Proposed Residential Receptor	-	-	9.73	-
PR4	Proposed Residential Receptor	-	-	9.53	-
PR5	Proposed Residential Receptor	-	-	9.53	-
PR6	Proposed Residential Receptor	-	-	9.67	-
PR7	Proposed Residential Receptor	-	-	9.61	-
PR8	Proposed Residential Receptor	-	-	9.53	-
PR9	Proposed Residential Receptor	-	-	9.78	-
PR10	Proposed Residential Receptor	-	-	9.72	-
PR11	Proposed Residential Receptor	-	-	9.67	-
PR12	Proposed Residential Receptor	-	-	9.67	-
PR13	Proposed Residential Receptor	-	-	9.67	-
PR14	Proposed Residential Receptor	-	-	9.66	-
PR15	Proposed Residential Receptor	-	-	9.65	-
PR16	Proposed Residential Receptor	-	-	9.14	-
PR17	Proposed Residential Receptor	-	-	9.14	-
PR18	Proposed Residential Receptor	-	-	9.03	-
PR19	Proposed Residential Receptor	-	-	8.99	-
PR20	Proposed Residential Receptor	-	-	9.02	-
PR21	Proposed Residential Receptor	-	-	8.98	-
PR22	Proposed Residential Receptor	-	-	8.97	-
PR23	Proposed Residential Receptor	-	-	9.01	-
PR24	Proposed Residential Receptor	-	-	8.96	-
PR25	Proposed Residential Receptor	-	-	8.96	-
PR26	Proposed Residential Receptor	-	-	9.01	-
Annual Mean AQO		**25 µg/m³**			

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements.

All modelled existing receptors are predicted to be below the AQO for NO_2. PM_{10} and $PM_{2.5}$ in both the 'do minimum' and 'do something' scenarios.

The maximum predicted increase in annual average exposure to NO_2 at any existing receptor, due to changes in traffic movements associated with the development is 2.38 µg/m³ at The Annex at New Warren Farm (R4).

For PM_{10}, the maximum predicted increase in annual average exposure to PM_{10} at any existing receptor, due to changes in traffic movements associated with the development is 0.23 µg/m³ at The Annex at New Warren Farm (R4). For $PM_{2.5}$, the maximum predicted increase in annual average exposure to $PM_{2.5}$ at any existing receptor, due to changes in traffic movements associated with the development is 0.15 µg/m³ at The Annex at New Warren Farm (R4).

The magnitude of the effects of changes in traffic flow as a result of the proposed development, with respect to NO_2 exposure for existing sensitive receptors, is determined to be '**slight**' at R4, with NO2 exposure predicted to be '**negligible**' at all remaining sensitive receptor. This is based on the methodology outlined in section 3.

All proposed sensitive receptors are predicted to be below the relevant pollutant AQO and therefore, no additional mitigation is required as part of the Proposed Development. All modelled receptors predict NO_2 concentrations of below 60 µg/m^3 in all scenarios. Therefore, it is unlikely for any exceedances of the short-term NO_2 AQO to occur as outlined in LAQM TG16 technical guidance.

Scenario 2 ('Do Something 2) Assessment Results – Strategic Development – four accesses

Table B5 Predicted Theoretical Annual Average Concentrations of NO_2

Receptor		NO_2 (µg/m^3)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R1	7 Penwood Road, The Chestnuts,	12.18	12.05	12.08	0.03
R2	325a Andover Road	13.34	13.12	13.16	0.04
R3	266 Andover Road	13.75	13.53	13.58	0.05
R4	The Annex at New Warren Farm	10.32	10.27	12.64	2.37
R5	Kendrick Road Kimberleys	12.24	12.16	12.24	0.08
R6	257 Andover Road	14.36	14.10	14.19	0.09
R7	Park House School South Building	10.75	10.72	11.77	1.05
R8	Warren Road	12.64	12.62	14.17	1.55
R9	241 Warren Road (N façade)	14.38	14.18	15.29	1.11
R10	176 Andover Road	13.81	13.56	13.66	0.10
R11	17 Dormer Road	11.08	10.95	11.03	0.08
R12	225 Andover Road	17.19	16.18	16.37	0.19
R13	77 Monks Lane	14.48	14.12	14.12	<0.01
R14	211b Andover Road	15.88	15.23	15.61	0.38
R15	35 Bodin Gardens (adjacent to A339)	16.11	15.40	15.90	0.50
R16	125 Andover Road	14.77	14.27	14.63	0.36
R17	79 Andover Road	18.33	17.31	18.05	0.74
R18	34 Andover Road	16.13	15.96	16.16	0.20
R19	1 St Johns Road	24.17	23.03	23.91	0.88
R20	63 St Johns Road	28.64	28.59	28.73	0.14
R21	1 Winchester Court	36.76	36.28	36.51	0.23
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	29.05	29.61	29.44	-0.17
R23	8 Eeklo Place (adjacent to A339)	18.97	19.53	19.34	-0.19
R24	66 Priory Road (adjacent to A339)	19.26	20.11	19.83	-0.28
R25	61 Dickens Walk (adjacent to A339)	15.28	15.79	15.60	-0.19
R26	35 Bodin Gardens (adjacent to A339)	16.68	17.38	17.11	-0.27
R27	2 Sandleford Parade (adjacent to A339)	19.49	18.74	18.71	-0.03
R28	4 Deadmans Lane (adjacent to A339)	15.48	14.72	14.83	0.11
R29	7 Sandleford Farm (adjacent to A339)	21.09	19.43	19.53	0.10
R30	32 Monks Lane	13.89	14.25	14.23	-0.02
R31	52 Monks Lane	13.99	14.42	14.40	-0.02
R32	2 Heather Gardens	14.03	13.74	13.71	-0.03

Receptor		NO_2 (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
PR1	Proposed Residential Receptor	-	-	15.60	-
PR2	Proposed Residential Receptor	-	-	13.66	-
PR3	Proposed Residential Receptor	-	-	15.26	-
PR4	Proposed Residential Receptor	-	-	12.81	-
PR5	Proposed Residential Receptor	-	-	12.90	-
PR6	Proposed Residential Receptor	-	-	14.50	-
PR7	Proposed Residential Receptor	-	-	13.81	-
PR8	Proposed Residential Receptor	-	-	12.94	-
PR9	Proposed Residential Receptor	-	-	15.14	-
PR10	Proposed Residential Receptor	-	-	14.33	-
PR11	Proposed Residential Receptor	-	-	13.38	-
PR12	Proposed Residential Receptor	-	-	13.28	-
PR13	Proposed Residential Receptor	-	-	13.26	-
PR14	Proposed Residential Receptor	-	-	13.18	-
PR15	Proposed Residential Receptor	-	-	13.05	-
PR16	Proposed Residential Receptor	-	-	11.80	-
PR17	Proposed Residential Receptor	-	-	11.81	-
PR18	Proposed Residential Receptor	-	-	11.15	-
PR19	Proposed Residential Receptor	-	-	10.65	-
PR20	Proposed Residential Receptor	-	-	11.05	-
PR21	Proposed Residential Receptor	-	-	10.47	-
PR22	Proposed Residential Receptor	-	-	10.39	-
PR23	Proposed Residential Receptor	-	-	10.90	-
PR24	Proposed Residential Receptor	-	-	10.23	-
PR25	Proposed Residential Receptor	-	-	10.30	-
PR26	Proposed Residential Receptor	-	-	10.97	-
Annual Mean AQO		**40 µg/m³**			
*Located in the AQMA					

Table B6 Impact Description of the Effects at Key Receptors (NO_2)

Impact Description of NO_2 Effects at Key Receptors					
Receptor	Change Due to Development (DS-DM) (µg/m³)	% of AQO	% Change in Concentration Relative to AQO	% Annual Mean Concentration in Assessment Year	Impact Description
R1	0.03	0.08	0%	≤75% of AQO	Negligible
R2	0.04	0.10	0%	≤75% of AQO	Negligible
R3	0.05	0.13	0%	≤75% of AQO	Negligible
R4	2.37	5.93	6-10%	≤75% of AQO	Slight
R5	0.08	0.20	0%	≤75% of AQO	Negligible
R6	0.09	0.23	0%	≤75% of AQO	Negligible
R7	1.05	2.63	2-5%	≤75% of AQO	Negligible
R8	1.55	3.88	2-5%	≤75% of AQO	Negligible
R9	1.11	2.78	2-5%	≤75% of AQO	Negligible
R10	0.10	0.25	0%	≤75% of AQO	Negligible
R11	0.08	0.20	0%	≤75% of AQO	Negligible
R12	0.19	0.48	0%	≤75% of AQO	Negligible
R13	<0.01	0.00	0%	≤75% of AQO	Negligible
R14	0.38	0.96	1%	≤75% of AQO	Negligible

Impact Description of NO_2 Effects at Key Receptors					
Receptor	**Change Due to Development (DS-DM) (µg/m³)**	**% of AQO**	**% Change in Concentration Relative to AQO**	**% Annual Mean Concentration in Assessment Year**	**Impact Description**
R15	0.50	1.25	1%	≤75% of AQO	Negligible
R16	0.36	0.91	1%	≤75% of AQO	Negligible
R17	0.74	1.85	2-5%	≤75% of AQO	Negligible
R18	0.20	0.51	1%	≤75% of AQO	Negligible
R19	0.88	2.20	2-5%	≤75% of AQO	Negligible
R20	0.14	0.35	0%	≤75% of AQO	Negligible
R21	0.23	0.58	1%	76-94% of AQO	Negligible
R22*	-0.17	-0.43	0%	≤75% of AQO	Negligible
R23	-0.19	-0.48	0%	≤75% of AQO	Negligible
R24	-0.28	-0.71	0%	≤75% of AQO	Negligible
R25	-0.19	-0.48	0%	≤75% of AQO	Negligible
R26	-0.27	-0.68	0%	≤75% of AQO	Negligible
R27	-0.03	-0.08	0%	≤75% of AQO	Negligible
R28	0.11	0.28	0%	≤75% of AQO	Negligible
R29	0.10	0.25	0%	≤75% of AQO	Negligible
R30	-0.02	-0.05	0%	≤75% of AQO	Negligible
R31	-0.02	-0.05	0%	≤75% of AQO	Negligible
R32	-0.03	-0.08	0%	≤75% of AQO	Negligible
0% means a change of <0.5% as per explanatory note 2 of table 6.3 of the EPUK IAQM Guidance.					
*Located in the AQMA					

Table B7 Predicted Theoretical Annual Average Concentrations of PM_{10}

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	**Do Minimum 2031**	**Do Something 2031**	**Development Contribution**
R1	7 Penwood Road, The Chestnuts,	13.71	13.69	13.69	<0.01
R2	325a Andover Road	13.86	13.83	13.83	<0.01
R3	266 Andover Road	13.67	13.64	13.65	0.01
R4	The Annex at New Warren Farm	13.53	13.52	13.75	0.23
R5	Kendrick Road Kimberleys	13.48	13.47	13.47	<0.01
R6	257 Andover Road	13.75	13.71	13.72	0.01
R7	Park House School South Building	13.58	13.58	13.71	0.13
R8	Warren Road	13.53	13.52	13.72	0.20
R9	241 Warren Road (N façade)	13.74	13.71	13.82	0.11
R10	176 Andover Road	13.68	13.64	13.65	0.01
R11	17 Dormer Road	13.62	13.61	13.61	<0.01
R12	225 Andover Road	14.24	14.14	14.16	0.02
R13	77 Monks Lane	13.93	13.88	13.88	<0.01
R14	211b Andover Road	14.10	14.01	14.06	0.05
R15	35 Bodin Gardens (adjacent to A339)	14.14	14.05	14.12	0.07
R16	125 Andover Road	13.97	13.90	13.95	0.05
R17	79 Andover Road	14.44	14.30	14.40	0.10
R18	34 Andover Road	14.38	14.36	14.38	0.02
R19	1 St Johns Road	15.21	15.09	15.18	0.09
R20	63 St Johns Road	15.72	15.73	15.75	0.02
R21	1 Winchester Court	16.62	16.61	16.64	0.03

Receptor		PM_{10} (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R22*	A339 (20 m south of the continuous monitoring station at Newbury)	15.76	15.85	15.83	-0.02
R23	8 Eeklo Place (adjacent to A339)	14.84	14.92	14.89	-0.03
R24	66 Priory Road (adjacent to A339)	14.90	15.03	14.98	-0.05
R25	61 Dickens Walk (adjacent to A339)	14.22	14.29	14.26	-0.03
R26	35 Bodin Gardens (adjacent to A339)	14.42	14.52	14.48	-0.04
R27	2 Sandleford Parade (adjacent to A339)	14.53	14.47	14.46	-0.01
R28	4 Deadmans Lane (adjacent to A339)	14.34	14.20	14.21	0.01
R29	7 Sandleford Farm (adjacent to A339)	15.21	14.88	14.90	0.01
R30	32 Monks Lane	13.86	13.90	13.90	<0.01
R31	52 Monks Lane	13.87	13.93	13.92	-0.01
R32	2 Heather Gardens	13.88	13.84	13.83	-0.01
PR1	Proposed Residential Receptor	-	-	14.08	-
PR2	Proposed Residential Receptor	-	-	13.82	-
PR3	Proposed Residential Receptor	-	-	14.03	-
PR4	Proposed Residential Receptor	-	-	13.71	-
PR5	Proposed Residential Receptor	-	-	13.71	-
PR6	Proposed Residential Receptor	-	-	13.94	-
PR7	Proposed Residential Receptor	-	-	13.85	-
PR8	Proposed Residential Receptor	-	-	13.73	-
PR9	Proposed Residential Receptor	-	-	14.15	-
PR10	Proposed Residential Receptor	-	-	14.04	-
PR11	Proposed Residential Receptor	-	-	13.92	-
PR12	Proposed Residential Receptor	-	-	13.91	-
PR13	Proposed Residential Receptor	-	-	13.91	-
PR14	Proposed Residential Receptor	-	-	13.90	-
PR15	Proposed Residential Receptor	-	-	13.88	-
PR16	Proposed Residential Receptor	-	-	13.79	-
PR17	Proposed Residential Receptor	-	-	13.79	-
PR18	Proposed Residential Receptor	-	-	13.63	-
PR19	Proposed Residential Receptor	-	-	13.57	-
PR20	Proposed Residential Receptor	-	-	13.62	-
PR21	Proposed Residential Receptor	-	-	13.55	-
PR22	Proposed Residential Receptor	-	-	13.54	-
PR23	Proposed Residential Receptor	-	-	13.60	-
PR24	Proposed Residential Receptor	-	-	13.52	-
PR25	Proposed Residential Receptor	-	-	13.53	-
PR26	Proposed Residential Receptor	-	-	13.59	
Annual Mean AQO		**40 µg/m³**			
*Receptor in AQMA					

Table B8 Predicted Theoretical Annual Average Concentrations of $PM_{2.5}$

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R1	7 Penwood Road, The Chestnuts,	9.06	9.05	9.05	0.00
R2	325a Andover Road	9.16	9.14	9.14	0.00
R3	266 Andover Road	9.43	9.41	9.41	0.00

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
R4	The Annex at New Warren Farm	8.96	8.96	9.11	0.15
R5	Kendrick Road Kimberleys	9.30	9.30	9.30	0.00
R6	257 Andover Road	9.48	9.45	9.46	0.01
R7	Park House School South Building	9.00	9.00	9.07	0.07
R8	Warren Road	9.34	9.33	9.46	0.13
R9	241 Warren Road (N façade)	9.47	9.45	9.52	0.07
R10	176 Andover Road	9.43	9.41	9.41	0.00
R11	17 Dormer Road	9.02	9.01	9.02	0.01
R12	225 Andover Road	9.42	9.36	9.37	0.01
R13	77 Monks Lane	9.67	9.63	9.63	0.00
R14	211b Andover Road	9.77	9.72	9.75	0.03
R15	35 Bodin Gardens (adjacent to A339)	9.80	9.74	9.78	0.04
R16	125 Andover Road	9.69	9.65	9.68	0.03
R17	79 Andover Road	9.98	9.90	9.96	0.06
R18	34 Andover Road	10.03	10.02	10.03	0.01
R19	1 St Johns Road	10.61	10.53	10.59	0.06
R20	63 St Johns Road	10.94	10.95	10.96	0.01
R21	1 Winchester Court	11.53	11.52	11.53	0.02
R22	A339 (20 m south of the continuous monitoring station at Newbury)	10.97	11.02	11.01	-0.01
R23	8 Eeklo Place (adjacent to A339)	10.35	10.40	10.38	-0.02
R24	66 Priory Road (adjacent to A339)	10.39	10.47	10.44	-0.03
R25	61 Dickens Walk (adjacent to A339)	9.86	9.91	9.89	-0.02
R26	35 Bodin Gardens (adjacent to A339)	9.99	10.05	10.03	-0.02
R27	2 Sandleford Parade (adjacent to A339)	10.07	10.03	10.03	0.00
R28	4 Deadmans Lane (adjacent to A339)	9.48	9.40	9.41	0.01
R29	7 Sandleford Farm (adjacent to A339)	10.02	9.83	9.84	0.01
R30	32 Monks Lane	9.62	9.65	9.65	0.00
R31	52 Monks Lane	9.63	9.66	9.66	0.00
R32	2 Heather Gardens	9.63	9.61	9.60	-0.01
PR1	Proposed Residential Receptor	-	-	9.76	-
PR2	Proposed Residential Receptor	-	-	9.60	-
PR3	Proposed Residential Receptor	-	-	9.73	-
PR4	Proposed Residential Receptor	-	-	9.53	-
PR5	Proposed Residential Receptor	-	-	9.53	-
PR6	Proposed Residential Receptor	-	-	9.67	-
PR7	Proposed Residential Receptor	-	-	9.61	-
PR8	Proposed Residential Receptor	-	-	9.54	-
PR9	Proposed Residential Receptor	-	-	9.82	-
PR10	Proposed Residential Receptor	-	-	9.75	-
PR11	Proposed Residential Receptor	-	-	9.68	-
PR12	Proposed Residential Receptor	-	-	9.67	-
PR13	Proposed Residential Receptor	-	-	9.67	-
PR14	Proposed Residential Receptor	-	-	9.66	-
PR15	Proposed Residential Receptor	-	-	9.65	-
PR16	Proposed Residential Receptor	-	-	9.14	-
PR17	Proposed Residential Receptor	-	-	9.14	-
PR18	Proposed Residential Receptor	-	-	9.03	-
PR19	Proposed Residential Receptor	-	-	8.99	-

Receptor		$PM_{2.5}$ (µg/m³)			
		Baseline 2018	Do Minimum 2031	Do Something 2031	Development Contribution
PR20	Proposed Residential Receptor	-	-	9.02	-
PR21	Proposed Residential Receptor	-	-	8.98	-
PR22	Proposed Residential Receptor	-	-	8.97	-
PR23	Proposed Residential Receptor	-	-	9.01	-
PR24	Proposed Residential Receptor	-	-	8.96	-
PR25	Proposed Residential Receptor	-	-	8.96	-
PR26	Proposed Residential Receptor	-	-	9.00	-
Annual Mean AQO not to be exceeded		**25 µg/m³**			

It should be noted that some receptors are expected to experience a decrease in pollutant concentrations. This is associated with the proposed junction improvements.

All modelled existing receptors are predicted to be below the AQO for NO_2. PM_{10} and $PM_{2.5}$ in both the 'do minimum' and 'do something' scenarios.

The maximum predicted increase in annual average exposure to NO_2 at any existing receptor, due to changes in traffic movements associated with the development is 2.37 µg/m³ at The Annex at New Warren Farm (R4).

For PM_{10}, the maximum predicted increase in annual average exposure to PM_{10} at any existing receptor, due to changes in traffic movements associated with the development is 0.23 µg/m³ at The Annex at New Warren Farm (R4). For $PM_{2.5}$, the maximum predicted increase in annual average exposure to $PM_{2.5}$ at any existing receptor, due to changes in traffic movements associated with the development is 0.15 µg/m³ at The Annex at New Warren Farm (R4).

The magnitude of the effects of changes in traffic flow as a result of the proposed development, with respect to NO_2 exposure for existing sensitive receptors, is determined to be '**slight**' at R4, with NO2 exposure predicted to be '**negligible**' at all remaining sensitive receptor. This is based on the methodology outlined in section 3.

All proposed sensitive receptors are predicted to be below the relevant pollutant AQO and therefore, no additional mitigation is required as part of the Proposed Development. All modelled receptors predict NO_2 concentrations of below 60 µg/m³ in all scenarios. Therefore, it is unlikely for any exceedances of the short-term NO_2 AQO to occur as outlined in LAQM TG16 technical guidance.

Appendix C Report Terms & Conditions

This Report has been prepared using reasonable skill and care for the sole benefit of Bloor Homes Limited and Sandleford Farm Partnership ("the Client") for the proposed uses stated in the report by WYG Environment Planning Transport Limited ("WYG"). WYG exclude all liability for any other uses and to any other party. The report must not be relied on or reproduced in whole or in part by any other party without the copyright holder's permission.

No liability is accepted or warranty given for; unconfirmed data, third party documents and information supplied to WYG or for the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report. WYG does not purport to provide specialist legal, tax or accounting advice.

The report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections'. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times. No investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather-related conditions. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions. The "shelf life" of the Report will be determined by a number of factors including; its original purpose, the Client's instructions, passage of time, advances in technology and techniques, changes in legislation etc. and therefore may require future re-assessment.

The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.