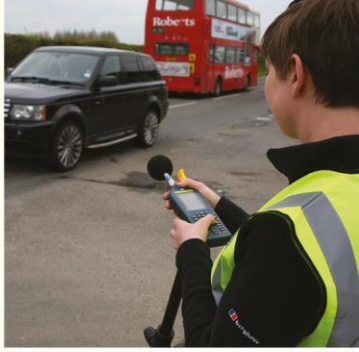




ASHLAND ROAD WEST, SUTTON IN ASHFIELD

AIR QUALITY ASSESSMENT

FEBRAURY 2020

REPORT REF: 25412-04-AQA-01 REV B

Noise, Vibration, Air Quality and Odour

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REGISTRATION OF AMENDMENTS

REV	COMMENTS AND CHANGES
First Issue Oct 2019	Final issue for Planning
A Feb 2020	Updated Masterplan
B Feb 2020	Updated Location Plan

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Mewies Engineering Consultants Ltd (M-EC Acoustic Air) has been commissioned by Bellway Homes Ltd (East Midlands) to prepare an air quality assessment for the proposed residential development on land at Ashland Road West, Sutton in Ashfield. A site location plan is provided in Appendix A.

Assessment Scope

1.2 M-EC has undertaken scoping discussions with the relevant Environmental Health Officer (EHO) at Ashfield District Council (ADC). Due to the scale of the development and the local air quality conditions surrounding the site, an air quality assessment for exposure to emissions has been undertaken in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 1 'Air Quality' simple screening method.

1.3 The assessment has also been undertaken with reference to the advice provided within the Land-Use Planning and Development Control: Planning for Air Quality, and 'Guidance from Environmental Protection UK, the Institute of Air Quality Management for the consideration of air quality within the land-use planning and development control processes', May 2017.

1.4 A site description is provided in Section 2.0 of this report. Air quality standards, including those applicable to the construction phase are summarised in Section 3.0 of this report, and a review of the Local Planning Authority's air quality review and assessments is presented in Section 4.0. The air quality assessment for the proposed development is presented in Section 5.0, and mitigation measures to offset associated air quality impacts are presented in section 6.0. Our conclusions are presented in Section 7.0.

1.5 M-EC has completed this report for the benefit of the individuals referred to in paragraph 1.1 and any relevant statutory authority which may require reference in relation to approvals for the proposed development. Other third parties should not use or rely upon the contents of this report unless explicit written approval has been gained from M-EC.

1.6 M-EC accepts no responsibility or liability for:

a) The consequence of this documentation being used for any purpose or project other than that for which it was commissioned;

b) The issue of this document to any third party with whom approval for use has not been agreed.

2.0 SITE DESCRIPTION

Existing Site

2.1 The application site is located adjacent to Ashland Road West, which runs adjacent to part of the south eastern site boundary. Brierley Forest Park is located to the north, with existing residential to the east, south and west. The principle sources of emissions affecting the site is from road traffic using Ashland Road West.

2.2 A site location plan is provided in Appendix A.

Development Proposals

2.3 The development proposals are for the erection of approximately 300 residential dwellings subject to final design.

2.4 The site masterplan is provided in Appendix B.

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3.0 AIR QUALITY STANDARDS

3.1 The principal air quality standards applied within the UK are the standards and objectives that were initially formulated within the Air Quality (England) Regulations 2000 (AQR) as amended in 2002. These were enacted as part of the UK National Air Quality Strategy (AQS) under Section 80 of the Environment Act 1995, and implement relevant directives of the European Union (EU). The latest version of the UK AQS was published in 2007.

3.2 It is important to note the distinction between standards and objectives. Although the AQS standards define concentration levels that will avoid or minimise risks to health, they do not necessarily reflect levels that are presently technically feasible or economically efficient. In contrast, the AQS objectives have been set with regard to what is realistically achievable within a specified timetable. The approach adopted by the Strategy is to apply the objectives, where members of the public, in a non-occupational capacity and at locations close to ground level, are likely to be exposed over the averaging time of the objective, for example, over 1-hour, 24-hour or annual periods as appropriate.

3.3 Under the Environment Act 1995, Local Authorities must review and document local air quality within their areas by way of a staged appraisal and respond accordingly, with the aim of meeting the air quality objectives by the years defined in the Regulations. Where the objectives of the Regulations are not likely to be achieved by the objective year, an authority is required to designate an Air Quality Management Area (AQMA). For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it will try to meet air quality standards in future.

3.4 The Air Quality Strategy is an ongoing mechanism that will be regularly reviewed and updated to take account of evolving European Union (EU) legislation, technical and policy developments and the latest research on health effects of air pollution.

3.5 The Strategy's objectives for particles (PM_{10}), benzene and carbon monoxide were reviewed in 2000/2001 and in February 2003, in the light of more recent scientific knowledge and policy changes, the Government updated the Air Quality Strategy (AQS) by way of an Addendum. The revisions provide alterations or extensions to four of the eight existing pollutant objectives, and the addition of a ninth pollutant, polycyclic aromatic hydrocarbons (PAHs). Further revisions to the objectives were promulgated in the 2007 version of the AQR and the current air quality objectives for the protection of human health are summarised in Table 1 below. Definitions of units and terms used to quantify air pollutant concentrations are provided in Appendix C.

Table 1: UK Air Quality Objectives for Protection of Human Health

Pollutant	Concentration	Measured as *
Benzene		
All authorities	16.25 μg/m^3	Running annual mean
England and Wales only	5 μg/m^3	Annual mean
Scotland and N. Ireland	3.25 μg/m^3	Running annual mean
1,3 Butadiene	2.25 μg/m^3	Running annual mean
Carbon Monoxide		
England, Wales and N. Ireland	10 mg/m^3	Maximum daily running 8-hour mean
Scotland only	10 mg/m^3	Running 8-hour mean
Lead	0.5 μg/m^3	Annual mean
	0.25 μg/m^3	Annual mean
Nitrogen dioxide	200 μg/m^3	1 hour mean not to be exceeded more than 18 times per year
	40 μg/m^3	Annual mean
Particles (PM_{10} gravimetric)		
All authorities	50 μg/m^3	Daily mean not to be exceeded more than 35 times a year
	40 μg/m^3	Annual mean
Scotland only	50 μg/m^3	Daily mean not to be exceeded more than 7 times a year
	18 μg/m^3	Annual mean
Particles ($PM_{2.5}$ gravimetric)	25 μg/m^3 (target)	Annual mean
England only	Work towards reducing emissions/concentrations of fine particulate matter ($PM_{2.5}$)	Annual mean
Scotland only	10 μg/m^3 (limit)	Annual mean
Sulphur dioxide	350 μg/m^3	1-hour mean not to be exceeded more than 24 times a year
	125 μg/m^3	24-hour mean not to be exceeded more than 3 times a year
	266 μg/m^3	15-minute mean not to be exceeded more than 35 times a year
Objectives not yet Prescribed in Regulations for the Purposes of Local Air Quality Management		
Polycyclic aromatic hydrocarbons	0.25 ng/m^3	Annual mean
Ozone	100 μg/m^3	8 hourly running or hourly mean, not to be exceeded more than 10 times a year

Notes: * how the objectives are to be measured is set out in the UK Air Quality (England) Regulations (2000 and 2002)

3.6 The EU has also set NO_2 objectives for 2010 that must be met by all member states, although these 2010 EU NO_2 objectives are equal to the UK Air Quality Strategy NO_2 2005 objectives.

3.7 Of the pollutants mentioned above, the majority of the UK SO_2 emissions derive from stationary combustion plant rather than traffic emissions. Therefore, this pollutant is not significant for this assessment. Similarly, the concentration of lead in vehicle fuels has been reduced to negligible levels in the past 10 to 15 years, particularly since the introduction of unleaded fuel, and this pollutant is also no longer of concern for this study. Of the remaining pollutants, the standards for carbon monoxide, benzene and 1,3 butadiene are generally met in urban areas. The pollutants of most concern to planning authorities in urban areas, due to the high concentrations presently encountered (of which local road traffic makes a large contribution) are NO_2 and PM_{10}.

National Planning Policy Framework

3.8 The latest National Planning Policy Framework (NPPF), issued by the Ministry of Housing, Communities and Local Government in 2019, sets out the Government's planning policies for England and how these are to be expected to be applied. The NPPF must be taken into account in the preparation of local and neighbourhood plans, and is to be a *material consideration in planning decisions.*

3.9 *Paragraph* 170 of the NPPF advises that, with respect to noise, planning policies and decisions should contribute to and enhance the natural and local environment by *"...preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans*".

3.10 Further, paragraph 181 advises that "*Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan*.".

Planning Practice Guidance

3.11 In March 2014 the Department for Communities & Local Government updated its on-line planning guidance to assist with interpretation of the NPPF. The guidance covers general matters such as relevance of air quality issues, role of the Local Plan, information sources, assessment approaches and mitigation. How considerations about air quality fit into the development management process

is summarised by the guidance in a flowchart, which is included here in Appendix D with other relevant flowcharts.

Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) – Land-Use Planning & Development Control: Planning for Air Quality 2017

3.12 Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have produced this guidance to ensure that air quality is adequately considered in the land-use planning and development control processes.

3.13 The guidance clarifies when an air quality assessment is required and what it should contain. It sets out how impacts should be described and assessed. Importantly it sets out a recommended approach that can be used to assess the significance of the air quality impacts, taking account of the advice issued by IAQM. An important focus of this guidance is on minimising the air quality impacts of all developments for which air quality assessments have been requested by the planning authority; this will be through good design and application of appropriate mitigation measures.

3.14 Stage 1 of the assessment in the local area seeks to screen out smaller development and/or developments where impacts can be considered to have insignificant effects. The Stage 1 criteria are set out in Table 2 and require any of the criteria in row A, coupled with any of the criteria in row B, to apply before an assessment proceeds to Stage 2. If none of the criteria are met then the impacts can be considered to be insignificant and there is no requirement to carry out an air quality assessment.

Table 2: Stage 1 Criteria

Criteria to Proceed to Stage 2
A. If any of the following apply: • 10 or more residential units or a site of more than 0.5 ha • more than 1,000 m^2 of floor space for all other uses or a site area greater than 1 ha
B. Coupled with any of the following: • the development has more than 10 parking spaces • the development will have a centralised energy facility or other centralised combustion process
Note: Consideration should still be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

3.7 The criteria in Table 3 provide more specific guidance as to when an air quality assessment is likely to be required to assess the impacts of the proposed development on the local area.

Table 3: Indicative Criteria for Requiring an Air Quality Assessment

The development will:	**Indicative Criteria to Proceed to an Air Quality Assessment**
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment
and small vans<3.5t gross vehicle weight)	
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight)	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA - more than 100 AADT elsewhere.
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20m of a relevant receptor Coupled with the car park having more than 100 movements per day (total in and out)
7. Have one or more substantial combustion processes.	Where the combustion unit is: - any centralised plant using bio fuel - any combustion plant with single or combined thermal input >300kW - a standby emergency generator associated with a centralised energy centre (if likely to be tested/used >18 hours a year)
8. Have a combustion process of any size.	Where the pollutants are exhausted from a vent or stack in a location and at a height that may give rise to impacts at receptors through insufficient dispersion. This criterion is intended to address those situations where a new development may be close to other buildings that could be residential and/or which could adversely affect the plume's dispersion by way of their size and/or height.

3.15 Where an air quality assessment is identified as being required, this may be either a Simple or a Detailed Assessment. A Simple Assessment is one relying on already published information and without quantification of impacts, in contrast to a Detailed Assessment that is completed with the aid of a predictive technique, such as a dispersion model. Passing a criterion in Table 3 does not automatically lead to the requirement for a Detailed Assessment. Once again, where none of the criteria are met the impacts can be considered to be insignificant and there is no requirement to carry out an air quality assessment.

3.16 The purpose of the air quality assessment is to define the likely quantitative or qualitative changes in air quality or exposure to air pollution as a result of the proposed development.

3.17 The suggested framework for describing the impacts on the basis set out above is set out in Table 4. The term Air Quality Assessment Level (AQAL) is used to include air quality objectives or limit

values, where these exist. The Table is only intended to be used with annual mean concentrations, and all % changes are rounded up or down to whole numbers. At exposures less than 75% of the AQAL, the degree of harm is described as likely to be small. As the exposure encroaches and exceeds the AQAL the degree of harm increases, and the change becomes more important when the result is an exposure that is approximately equal to or greater than the AQAL.

Table 4: Impact Descriptors for Individual Receptors

Long term average Concentration at receptor in assessment year	**% Change in concentration relative to Air Quality Assessment Level (AQAL)**			
	1	**2-5**	**6-10**	**>10**
75% or less of AQAL	Negligible	Negligible	Slight	Moderate
76-94% of AQAL	Negligible	Slight	Moderate	Moderate
95-102% of AQAL	Slight	Moderate	Moderate	Substantial
103-109% of AQAL	Moderate	Moderate	Substantial	Substantial
110% or more of AQAL	Moderate	Substantial	Substantial	Substantial

3.18 A judgement of the significance of the impacts is to be made by a competent professional who is suitably qualified, and the reasons for reaching the conclusions should be transparent and set out logically. Whilst the starting point for the assessment of significance is the degree of impact, as defined by Table 4, this should be seen as only one of the factors for consideration, not least because the outcome of this assessment procedure applies to a receptor and not the overall impact of the scheme on the locality.

3.19 The guidance also makes it clear that the presence of an AQMA should not halt all development, but where development is permitted, the planning system should ensure that any impacts are minimised as far as is practicable. Even where developments are proposed outside of AQMAs, and where pollutant concentrations are predicted to be below the objectives/limit values, it remains important that the proposed development incorporates good design principles and best practice measures and that emissions are fully minimised.

4.0 ASHFIELD DISTRICT COUNCIL'S AIR QUALITY REVIEW AND ASSESSMENT

4.1 Ashfield District Council (ADC) completed its Stage One and Two of the review and assessment process in 2000 and found that of the seven pollutants in question, no further assessment was required for Benzene, 1,3-Butadiene, Carbon Monoxide and Lead. Further assessment was required for Nitrogen Dioxide (NO_2) in relation to the Rolls Royce Fuel Burning Engine Facility in Hucknall; Particulate Matter (PM_{10}) adjacent to the M1 Motorway, and Sulphur Dioxide (SO_2) immediately adjacent to Kings Mill Hospital Boiler Plant.

4.2 A review of the modelling/monitoring results from the Stage Three review and assessment process found there was no need to declare Air Quality Management Areas (AQMA) in relation to any of the three pollutants requiring further assessment mentioned above, namely, NO_2, PM_{10} and SO_2.

4.3 The 2003 Updating and Screening Assessment (USA) concluded that of the seven pollutants, only the 24-hour PM_{10} objective may be compromised at Pinxton Green. It was therefore recommended that a Detailed Assessment of PM_{10} be undertaken at this location.

4.4 The Detailed Assessment undertaken in Pinxton Green concluded that the air quality objectives were achieved in this location and as a result, there was no need to declare an AQMA.

4.5 An initial assessment was undertaken for Oakfield Avenue and presented in the 2003 Updating and Screening Assessment. The report concluded that there was no requirement for ADC to undertake a Detailed Assessment based upon the data evaluated at this location. However, subsequent monitoring at this location revealed that there were three significant episodes of PM_{10} recorded. Therefore, a Detailed Assessment was carried out for PM_{10}, which concluded that the air quality objectives would be achieved in this location and there was no need to declare an AQMA.

4.6 All Progress Reports and USA between 2005 to 2010 found no exceedances of any air quality objectives and no requirement to proceed to a Detailed Assessment for any pollutant. However, the 2010 Progress Report did highlight the need to secure capital investment for the replacement of air monitoring equipment, as this would enable more accurate and in–depth monitoring to occur.

4.7 All Progress Reports and USA between 2011 to 2015 again found no exceedances of any air quality objectives and no requirement to proceed to a Detailed Assessment for any pollutant.

4.8 The 2016 and 2017 Annual Status Reports (ASR) compared the ratified and adjusted monitored NO_2 annual mean concentrations for their respective previous 5-year periods with the air quality objective of 40µg/m^3. During both 2015 and 2016, there were no exceedances of the air quality objective and subsequently, no requirement to undertake a Detailed Assessment or declare an AQMA.

4.9 Ashfield District Council's most recently published 2018 ASR states that, the Council undertook non-automatic (passive) diffusion tube monitoring of NO_2 at 17 sites during 2017. Of the 17 sites, there

were again no exceedances of the air quality objective and subsequently, no requirement to undertake a Detailed Assessment or declare an AQMA.

4.10 In conclusion, air quality within the District of Ashfield is good and to date, no Air Quality Management Areas have been designated. Since 'relevant exposure' is already present adjacent to the proposed development, i.e. existing residential dwellings are present in Ashland Road West, and these have already been considered within ADC's reviews and assessments, the same conclusions for these will equally apply for new dwellings at the proposed development. Namely, at the locations of proposed new dwellings, air quality objectives will be satisfied and the site is acceptable for residential development.

4.11 Nevertheless, it will be important that the air quality assessment for the proposed development looks at the potential effects of traffic generated by development upon existing dwellings adjacent to local roads to establish that there will be no adverse effects upon their existing standards of air quality. This matter is covered in the following section.

5.0 AIR QUALITY ASSESSMENT

5.1 The number of new dwellings within the proposed development exceeds the threshold of 10 in the EPUK/IAQM guidance (Table 2), therefore, the assessment proceeds to Stage 2, which considers the number of vehicles generated by development.

Traffic Data

5.2 Baseline and 'with development' Annual Average Daytime Traffic (AADT) flows and % heavy goods vehicles for local roads adjacent to the site have been prepared by the scheme's traffic engineers (ADC Infrastructure Limited). This information is presented in Table 5 for a baseline situation in 2019, and a baseline situation without and with proposed development traffic in 2024.

Table 5: Annual Average Daytime Traffic Flows

Road/Situation	Year	AADT	%HGV	kph	Receptor Distance (m)
B6026 Sutton Rd Base	2019	9297	1.5	48	7
B6026 Sutton Rd Base	2024	9969	1.5		
B6026 Sutton Rd Base+Dev	2024	10649	1.4		
Ashland Rd Base	2019	1247	0.9		9
Ashland Rd Base	2024	1337	0.9		
Ashland Rd Base+Dev	2024	2390	0.5		
B6026 Huthwaite Rd Base	2019	8930	1.6		9
B6026 Huthwaite Rd Base	2024	9576	1.6		
B6026 Huthwaite Rd Base+Dev	2024	9998	1.5		
Ashalnd Rd (w of access) Base	2019	1247	0.9		9
Ashland Rd (w of access) Base	2024	1337	0.9		
Ashland Rd (w of access) Bse+Dev	2024	2390	0.5		
Ashalnd Rd (e of access) Base	2019	1247	0.9		9
Ashland Rd (e of access) Bse	2024	1337	0.9		
Ashland Rd (e of access) Base+Dev	2024	1899	0.7		
Ashalnd Rd (w of Highfield) Base	2019	303	2.6		9
Ashland Rd (w of Highfield) Base	2024	325	2.6		
Ashland Rd (w of Highfield) Base+Dev	2024	887	0.9		
Highfield Rd Base	2019	926	1.5		12
Highfield Rd Base	2024	993	1.5		
Highfield Rd Base+Dev	2024	1367	1.1		
Ashland Rd (e of Highfield) Base	2019	855	1.6		9
Ashland Rd (e of Highfield) Base	2024	917	1.6		
Ashland Rd (e of Highfield) Base+Dev	2024	993	1.5		
Westbourne Rd South Base	2019	2001	0.5		10
Westbourne Rd South Base	2024	2146	0.5		
Westbourne Rd South Base+Dev	2024	2277	0.5		
Riley Av Base	2019	675	0.6		10
Riley Av Base	2024	724	0.6		

Road/Situation	Year	AADT	%HGV	kph	Receptor Distance (m)
Riley Av Base+Dev	2024	912	0.5		
Westbourne Rd North Base	2019	1737	0.3		10
Westbourne Rd North Base	2024	1863	0.3		
Westbourne Rd North Base+Dev	2024	1920	0.3		
B6026 Huthwaite Rd (w of Westbourne) Base	2019	10706	1.4		9
B6026 Huthwaite Rd (w of Westbourne) Base	2024	11480	1.4		
B6026 Huthwaite Rd (w of Westbourne) Base+Dev	2024	11902	1.3		
Westbourne Rd Base	2019	2501	0.2		12
Westbourne Rd Base	2024	2681	0.2		
Westbourne Rd Base+Dev	2024	2813	0.1		
B6026 Huthwaite Rd (e of Westbourne) Base	2019	12370	1.2		9
B6026 Huthwaite Rd (e of Westbourne) Base	2024	13265	1.2		
B6026 Huthwaite Rd (e of Westbourne) Base+Dev	2024	13769	1.1		

5.3 An air quality screening assessment has been undertaken using the methodology defined by the Government's Design Manual for Roads and Bridges (DMRB), which is also an approved screening model (version 2007) under the LAQM guidance. The need for any detailed dispersion modelling is determined from the results of the DMRB screening.

5.4 The traffic flow data has been used to calculate ambient concentrations of air pollution at selected receptors representing existing dwellings adjacent to the roads, i.e. at the stated distances in Table 5, from the road centreline of the respective roads.

5.5 For determining compliance with air quality objectives, it is important that the contribution of emissions from baseline traffic is added to background concentrations already present in the area; as defined below.

Background Concentrations

5.6 Suitable estimates of background air quality have been derived in accordance with LAQM.TG(16) using the air pollution background concentration maps published by Defra. The maps are updated by Defra periodically to reflect changes to underlying data including emissions factors. In recent years there have been annual updates due to new information on NO_x emissions from diesel vehicles, and fleet and vehicle activity data have also been updated. Average background pollutant concentrations for local 1 x 1 km grid squares are available for all future years, and Table 6 shows the background concentrations that were used in this assessment. Background values for NO_x are presented, as they are required in the conversion of modelled NO_x concentrations to total NO_2. Only those pollutants of real concern to the local authority, namely NO_2 and PM_{10}, are considered.

Table 6: Background Concentrations, Annual Mean (µg/m^3)

Year	NO_x	NO_2	PM_{10}
2019	17.17	12.59	13.06
2024	14.10	10.51	12.77

Impact Assessment

5.7 The above information relating to traffic flows and background concentrations has been input to the DMRB screening model along with the distance representing the shortest distance between the centreline of the roads and dwellings closest to the roads. The results of the DMRB assessment are presented in Appendix E.

5.8 The results indicate that for a baseline traffic situation in 2019 and 2024, receptors adjacent to all roads have values below the current annual mean air quality objectives for NO_2 and PM_{10}, which is consistent with ADC's air quality review and assessments.

5.9 With traffic generated by development in 2024, the absolute concentrations still remain below the current air quality objectives and the level of change due to traffic generated by development is very small (less than 0.2 µg/m^3 to annual mean concentrations of NO_2 and PM_{10}), which would not have a significant impact upon local air quality.

5.10 The ambient concentrations of local traffic emissions are predicted to be 75% or less of the Air Quality Assessment Level (AQAL) (see Table 4), and the % change in concentration relative to the AQAL due to development traffic is calculated to be less than 1%. On this basis, the development's impact on local air quality will be negligible.

5.11 Using the significance flowchart in Appendix D, the development would not contribute to air quality exceedances or lead to the designation of a new AQMA, nor would it significantly increase emissions or lead to new exposure to emissions considered to be significant. Therefore, the air quality issues for the proposed development are not deemed to be a significant consideration.

5.12 Therefore, since the air quality assessment indicates that annual mean air quality objectives will be met at the most exposed receptor locations, and since the actual changes due to traffic generated by development are small and insignificant, it can be concluded that the air quality over the site is acceptable for residential development and that baseline plus development traffic will not have any adverse impacts on ambient air quality for existing dwellings. The results do not indicate a requirement for more detailed dispersion modelling.

6.0 MITIGATION

6.1 Assessment has shown that the annual mean air quality objectives will be met at the most exposed receptor locations, and the site is acceptable for residential development. It is therefore considered that development-specific mitigation will not be required to reduce or offset road traffic emissions.

6.2 Nevertheless, a Travel Plan (TP) has been prepared for the site by ADC Infrastructure Limited, which seeks to deliver sustainable transport objectives aimed at reducing road traffic emissions from the proposed development, by introducing ways to reduce the number of vehicle trips generated by the site. The TP involves the development of agreed targets and outcomes which are linked to an appropriate package of measures aimed at encouraging the use of more sustainable travel modes, whilst also reducing both the need to travel, and single occupancy car use, for all trips to and from the development.

6.3 The overall objective of the TP is to minimise the number of new car trips generated by residents and visitors travelling to and from the proposed residential development, by promoting and supporting the use of alternative modes of travel (walking, cycling, public transport, and car sharing), and by reducing the need to travel.

6.4 Some of the potential benefits that the TP would provide for the residents and visitors are listed below:

- a focused approach to influence the travel behaviour of residents and visitors;
- the introduction of safe and viable alternatives to single-occupancy car travel, increasing the choice of travel modes to the site, reducing the number of vehicle trips, and reducing vehicle mileage;
- increased awareness of the potential for, and advantages of, travelling by sustainable modes of travel, including walking, cycling, public transport, and car sharing;
- increased awareness of the social, environmental, and economic costs of individual travel choices;
- a positive change in attitudes towards the use of alternative travel modes;
- provision of practical information on how to travel by more sustainable transport modes, with integration between different transport modes;
- provision of practical initiatives, based on regular appraisal of resident's travel patterns; and
- improved accessibility, safety, and security for people travelling to, from, and within the site, particularly vulnerable road users, such as children, the elderly, and disabled.

6.5 In addition to these benefits, the TP will also seek the following outcomes:

- reduction in the overall need for travel to and from the site;
- reduction in the need for car use, with associated benefits in terms of reduced traffic, congestion, air pollution, and accidents;
- generation of only the minimum number of car movements to and from the development;

  more attractive environments;
- supporting the viability of local public transport services and helping reduce social exclusion;
- increased usage and safety of neighbourhood cycling and walking routes;
- opportunities provided to build healthy exercise into daily life;
- represent good practice and provide an educational tool to help change perceptions about the convenience and benefits of not using the car where alternatives exist; and
- increased marketability of the development as more households seek to change their travel behaviour.

6.6 The TP contains a set of measures that will be implemented as part of the development in order to meet these targets, which will in turn assist in reducing the impact of the development upon local air quality.

7.0 CONCLUSIONS

7.1 Mewies Engineering Consultants Ltd (M-EC Acoustic Air) has been commissioned by Bellway Homes Ltd (East Midlands) to prepare an air quality assessment for the proposed residential development on land at Ashland Road West, Sutton in Ashfield.

7.2 Air quality within the District of Ashfield is good and to date, no Air Quality Management Areas have been designated. Since 'relevant exposure' is already present adjacent to the proposed development, i.e. existing residential dwellings are present in Ashland Road, and these have already been considered within ADC's reviews and assessments, the same conclusions for these will equally apply for new dwellings at the proposed development. Namely, at the locations of proposed new dwellings, air quality objectives will be satisfied and the site is acceptable for residential development.

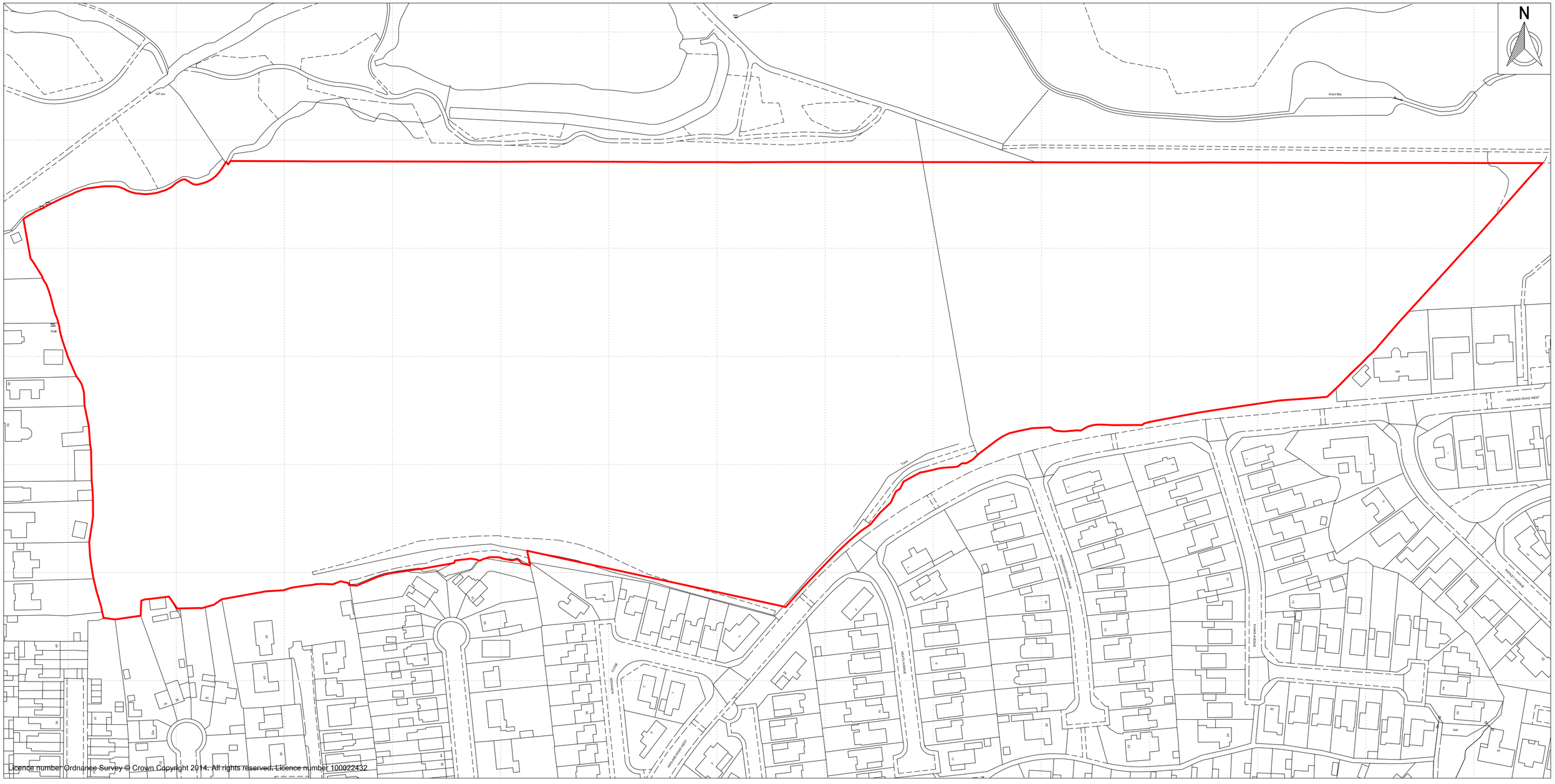
7.3 Assessments in accordance with Local Air Quality Management guidance indicate for a baseline traffic situation in 2019 and 2024, receptors adjacent to all roads have values below the current annual mean air quality objectives for NO_2 and PM_{10}, which is consistent with ADC's air quality review and assessments.

7.4 With traffic generated by development in 2024, the absolute concentrations still remain below the current air quality objectives and the level of change due to traffic generated by development is very small (less than 0.2 $\mu g/m^3$ to annual mean concentrations of NO_2 and PM_{10}), which would not have a significant impact upon local air quality.

7.5 The ambient concentrations of local traffic emissions are predicted to be 75% or less of the Air Quality Assessment Level (AQAL), and the % change in concentration relative to the AQAL due to development traffic is calculated to be less than 1%. On this basis, the development's impact on local air quality will be negligible.

7.6 In conclusion, since the air quality assessment indicates that annual mean air quality objectives are met at the most exposed receptor locations, it can be concluded that the air quality over the site is acceptable for residential development. The results do not indicate a requirement for more detailed dispersion modelling. Therefore, the matter can proceed to a planning decision, with conditions where appropriate.

APPENDIX A



Site Boundary

Scale 1:1250

0 25 50 75m

DLP PLANNING LIMITED
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CLIENT
Bellway Homes (East Midlands)

PROJECT
Ashland Road, Sutton in Ashfield

DRAWING TITLE
Location Plan

Date: 12 March 2019	OS Ref.: 441712, 359410		Drawn By: PMG
Scale: 1:1250 @ A2	Drawing No.: D01		Checked By: JT
Job No.: NTTS5142-1P	Rev.:		

APPENDIX B

Planning | Design | Environment | Economics | Heritage
East Midlands

Ashland Road West, Sutton in Ashfield - **Illustrative Masterplan**

| Drawn by: LJE | Approved by: PS | Date: 24/01/20 | Scale: 1:1250 @ A1 | DRG: P19-1014 007 Sheet No: 1 Rev: B | Client: Bellway Homes |

Pegasus Group

APPENDIX C

DEFINITION OF AIR QUALITY TERMS AND UNITS

ppm parts per million - defines the units of pollution in every million (10^6) units of air.

ppb parts per billion - defines the units of pollution in every billion (10^9) units of air.

$\mu g/m^3$ micrograms per cubic metre - one microgramme is one millionth of a gram.

ng/m^3 nanogrammes per cubic metre – one nanogramme is one milliardth (i.e. one thousand millionth of a gram (10^{-9}))

Annual mean the average of the concentrations measured for one year.

1-hour mean the average of the concentrations measured for one hour.

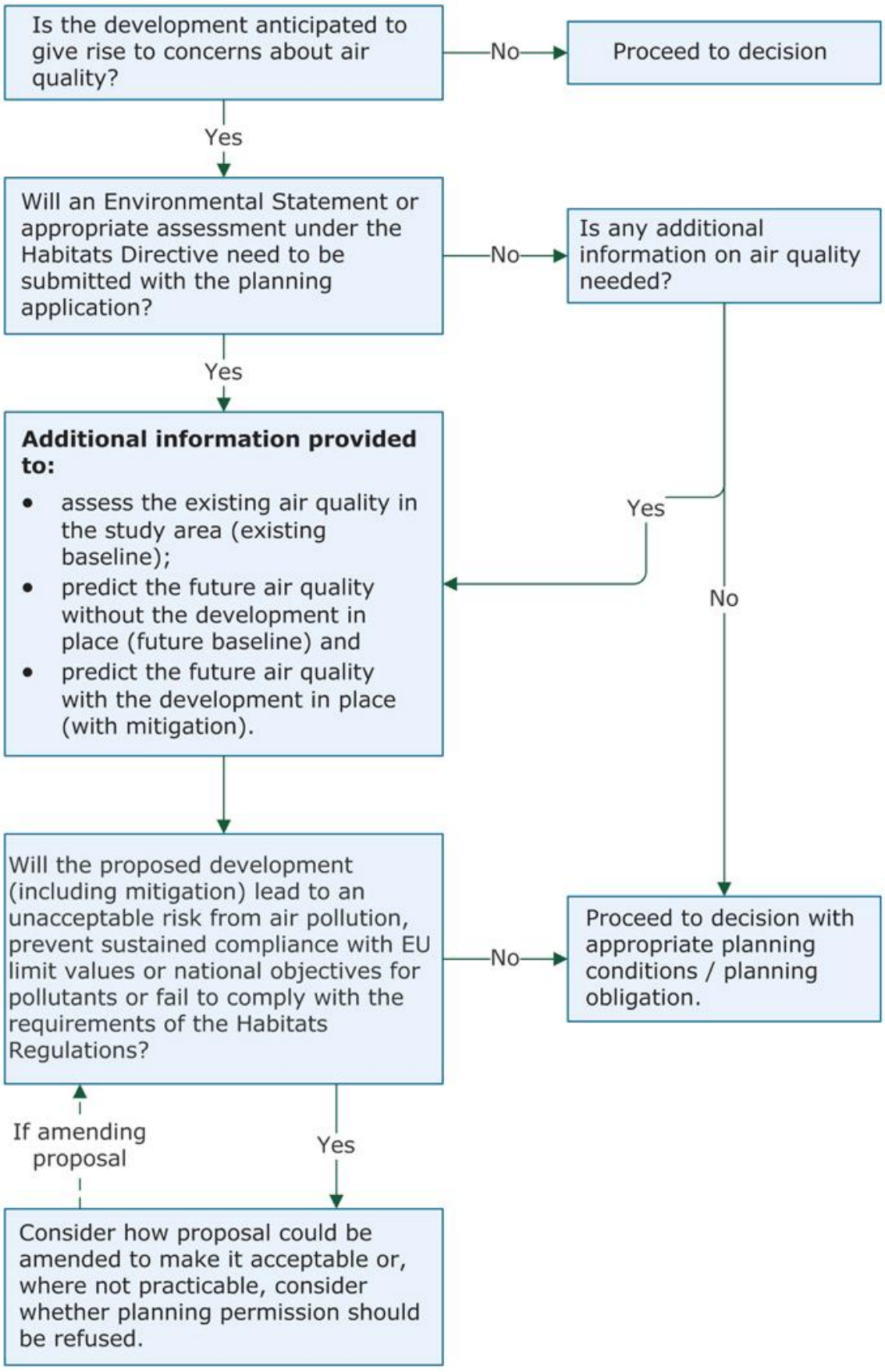
24-hour mean the average of the concentrations measured for twenty four hours.

Running mean the mean or series of means calculated for overlapping time periods. For example, an 8-hour running mean is calculated every hour and averages the values for eight hours. The period of averaging is stepped forward by one hour for each subsequent value so that a degree of overlap exists between successive values. Non-running means are calculated for consecutive time periods so that there is no overlap.

Percentile a value that establishes a particular threshold in a collection of data. For example, the 90^{th} percentile of yearly values is the value that 90% of all the data in the year fall below or equal.

Exceedance a period of time when the concentration of a pollutant is greater than, or equal to, the relevant air quality standard.

APPENDIX D


Is the development anticipated to give rise to concerns about air quality?
No
Proceed to decision
Yes
Will an Environmental Statement or appropriate assessment under the Habitats Directive need to be submitted with the planning application?
No
Is any additional information on air quality needed?
Yes
Additional information provided to:
assess the existing air quality in the study area (existing baseline);
predict the future air quality without the development in place (future baseline) and
predict the future air quality with the development in place (with mitigation).
Yes
No
Will the proposed development (including mitigation) lead to an unacceptable risk from air pollution, prevent sustained compliance with EU limit values or national objectives for pollutants or fail to comply with the requirements of the Habitats Regulations?
No
Proceed to decision with appropriate planning conditions / planning obligation.
If amending proposal
Yes
Consider how proposal could be amended to make it acceptable or, where not practicable, consider whether planning permission should be refused.

APPENDIX E

Predicted Concentrations of Air Pollution

Name	Year	NO_x	NO_2 *	PM_{10}	
		Annual mean mg/m^3	Annual mean mg/m^3	Annual mean mg/m^3	Days >$50mg/m^3$
B6026 Sutton Rd Base	2019	22.02	14.13	13.66	0.00
B6026 Sutton Rd Base	2024	19.22	12.19	13.42	0.00
B6026 Sutton Rd Base+Dev	2024	19.53	12.28	13.46	0.00
Change		0.31	0.09	0.04	0.00
Ashland Rd Base	2019	17.78	12.79	13.14	0.00
Ashland Rd Base	2024	14.75	10.73	12.86	0.00
Ashland Rd Base+Dev	2024	15.21	10.89	12.93	0.00
Change		0.46	0.16	0.07	0.00
B6026 Huthwaite Rd Base	2019	21.65	14.02	13.61	0.00
B6026 Huthwaite Rd Base	2024	18.83	12.07	13.36	0.00
B6026 Huthwaite Rd Base+Dev	2024	19.00	12.12	13.39	0.00
Change		0.17	0.05	0.02	0.00
Ashalnd Rd (w of access) Base	2019	17.78	12.79	13.14	0.00
Ashland Rd (w of access) Base	2024	14.75	10.73	12.86	0.00
Ashland Rd (w of access) Bse+Dev	2024	15.21	10.89	12.93	0.00
Change		0.46	0.16	0.07	0.00
Ashalnd Rd (e of access) Base	2019	17.78	12.79	13.14	0.00
Ashland Rd (e of access) Bse	2024	14.75	10.73	12.86	0.00
Ashland Rd (e of access) Base+Dev	2024	15.00	10.82	12.89	0.00
Change		0.25	0.09	0.04	0.00
Ashalnd Rd (w of Highfield) Base	2019	17.35	12.65	13.08	0.00
Ashland Rd (w of Highfield) Base	2024	14.29	10.57	12.79	0.00
Ashland Rd (w of Highfield) Base+Dev	2024	14.53	10.66	12.83	0.00
Change		0.24	0.08	0.04	0.00
Highfield Rd Base	2019	17.61	12.74	13.12	0.00
Highfield Rd Base	2024	14.57	10.67	12.83	0.00
Highfield Rd Base+Dev	2024	14.72	10.73	12.85	0.00
Change		0.15	0.05	0.02	0.00
Ashland Rd (e of Highfield) Base	2019	17.62	12.74	13.12	0.00
Ashland Rd (e of Highfield) Base	2024	14.58	10.68	12.83	0.00
Ashland Rd (e of Highfield) Base+Dev	2024	14.61	10.69	12.84	0.00
Change		0.03	0.01	0.00	0.00
Westbourne Rd South Base	2019	18.08	12.89	13.18	0.00
Westbourne Rd South Base	2024	15.07	10.84	12.91	0.00
Westbourne Rd South Base+Dev	2024	15.13	10.86	12.91	0.00

Change		0.06	0.02	0.01	0.00
Riley Av Base	2019	17.48	12.69	13.10	0.00
Riley Av Base	2024	14.43	10.62	12.82	0.00
Riley Av Base+Dev	2024	14.51	10.65	12.83	0.00
Change		0.08	0.03	0.01	0.00
Westbourne Rd North Base	2019	17.94	12.85	13.17	0.00
Westbourne Rd North Base	2024	14.92	10.79	12.89	0.00
Westbourne Rd North Base+Dev	2024	14.95	10.80	12.89	0.00
Change		0.03	0.01	0.00	0.00
B6026 Huthwaite Rd (w of Westbourne) Base	2019	22.45	14.26	13.72	0.00
B6026 Huthwaite Rd (w of Westbourne) Base	2024	19.69	12.33	13.48	0.00
B6026 Huthwaite Rd (w of Westbourne) Base+Dev	2024	19.84	12.38	13.50	0.00
Change		0.16	0.05	0.02	0.00
Westbourne Rd Base	2019	18.21	12.93	13.21	0.00
Westbourne Rd Base	2024	15.21	10.89	12.93	0.00
Westbourne Rd Base+Dev	2024	15.25	10.90	12.94	0.00
Change		0.04	0.01	0.01	0.00
B6026 Huthwaite Rd (e of Westbourne) Base	2019	23.41	14.55	13.87	0.00
B6026 Huthwaite Rd (e of Westbourne) Base	2024	20.45	12.56	13.58	0.00
B6026 Huthwaite Rd (e of Westbourne) Base+Dev	2024	20.64	12.62	13.61	0.00
Change		0.19	0.06	0.03	0.00

Note: The NO_2 criteria are defined in terms of both the annual mean of 40 µg/m^3, and the number of exceedances of a 1-hour mean of 200 µg/m^3. Whilst the annual mean NO_2 value is calculated, the number of exceedances of the hourly standard cannot be calculated from the annual mean with a high degree of confidence. Therefore, only the annual mean NO_2 value is reported.

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