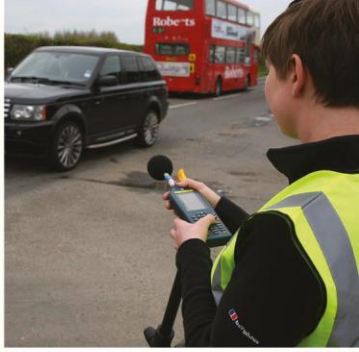




PROPOSED RESIDENTIAL DEVELOPMENT BERRY HILL ROAD, ADDERBURY, BANBURY

AIR QUALITY ASSESSMENT

MARCH 2022

REPORT REF: 27085-04-AQA-01 REV A

Noise, Vibration, Air Quality and Odour

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CLIENT: Hayfield Homes Construction Ltd

ENGINEER: Mewies Engineering Consultants Ltd
The Old Chapel
Station Road
Hugglescote
Leicestershire
LE67 2GB

Tel: 01530 264 753
Email group@m-ec.co.uk

Report Prepared By:

[redacted]

.....

Daniel Newbery BSc MIOA
Senior Noise & Air Quality Consultant

Report Checked By:

.....

Neil S Forsdyke
Senior Noise & Air Quality Consultant

Report Approved By:

.....

Alexander Bennett BSc(Hons) MCIHT MTPS
Director

Rev	Comments	Prep.	Check.	App.
- March 2022	Initial Issue	DN	NF	AB
A March 2022	Client Comments	RB	DN	AB

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APPENDICES

1.0 INTRODUCTION

1.1 Mewies Engineering Consultants Ltd (M-EC), has been commissioned by Hayfield Homes Construction Ltd (hereafter referred to as 'the Client') to undertake an Air Quality Assessment to support a planning application for a proposed residential development on Land at Berry Hill Road, Adderbury, Banbury (hereafter referred to as 'the Site'). This assessment has been produced pursuant to the requirements of planning condition 20, as attached to the outline planning consent (19/00963/OUT).'

Assessment Scope

1.2 The assessment has 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, and the 'Guidance on the Assessment of the Impacts of Construction on Air Quality and the Determination of their Significance' 2014.

1.3 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, 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 developmental impacts are provided in section 6.0. Our conclusions are presented in Section 7.0.

Disclaimer

1.4 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.

1.5 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 Site lies within Adderbury, and is bound by green land to the north, arable land to the east, Berry Hill Road to the south, with existing residential development and open land to the west. The principal source of emissions affecting the site will be from Berry Hill Road.

2.2 An approximate redline boundary is presented in Figure 2-1.

Figure 2-1: Approximate Redline Boundary

Development Proposals

2.3 Development proposals are for a residential development consisting of 40 dwellings, together with associated infrastructure and vehicular access via Berry Hill Road.

2.4 The proposed site layout is provided in Appendix A.

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 air quality standards and objectives. Although the AQ Standards (AQS) 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 AQ Objectives (AQO) 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 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 3-1 below. Definitions of units and terms used to quantify air pollutant concentrations are provided in Appendix B.

Table 3-1: 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)

3.5 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.

3.6 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

3.7 The latest National Planning Policy Framework (NPPF), issued by the Ministry of Housing, Communities and Local Government in 2021, 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.*

3.8 *Paragraph* 174 of the NPPF advises that, 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*".

3.9 Further, paragraph 186 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

3.10 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 C.

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

3.11 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.

3.12 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.

3.13 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 3-2 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 3-2: 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.

3.14 The criteria in Table 3-3 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 3-3: 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 and small vans<3.5t gross vehicle weight)	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA - more than 500 AADT elsewhere
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 3-3 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 3-4. 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 3-4: 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 3-4, 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.

Construction Dust Nuisance

3.20 There is no specific guidance relating to the assessment of construction dust nuisance within Government documents such as the DMRB. Consequently, guidance from relevant national bodies provides the best advice for establishing the potential impacts from dust. Research carried out by the Buildings Research Establishment (BRE) indicates that the likelihood of complaints concerning dust nuisance is related to the distance of receptors from a construction site and the duration of dust raising activities. This relationship is shown in Table 3-5.

Table 3-5: Likelihood of Dust Complaints by Distance

Duration of dust raising activity onsite	Distance from site			
	< 20 m	20 – 50 m	50 – 100 m	100 – 150 m
	Likelihood of complaint			
> 12 months	Very Likely	Very Likely	Likely	Potential Likelihood
6 – 12 months	Very Likely	Likely	Likely	Potential Likelihood
< 6 months	Very Likely	Likely	Potential Likelihood	Not Likely

Note: Beyond 150 m dust nuisance is considered largely unlikely (Upton & Kukadia, 2002, Measurements of PM_{10} from a Construction Site: A Case Study, prepared by BRE Environment for National Society for Clean Air).

3.21 Further empirically derived measures of the maximum distance from a source of airborne dust within which significant adverse effects are likely to be observed, are presented in Table 3-6. These values reflect qualitative estimates derived from historical data presented within environmental assessment reports and expert evidence.

Table 3-6: Qualitative Construction Dust Assessment Criteria

Source Descriptors		Zone for Potentially Significant Effects (Distance from Source)	
Source	**Duration**	**Soiling**	**PM_{10}***
Large construction sites	1 year or more	100 m	25-50 m
Moderate sized construction sites	Months	50 m	15-30 m
Minor construction sites	Weeks	25 m	10-20 m

*Based on 35 permitted exceedances of 50 µg/m^3 in a year, as defined in The Air Quality (England) Regulations.

Source: Adapted from Thames Gateway Bridge – Environmental Statement (Laxen, 2004)

Dust Risk Assessment

3.22 The Institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction, February 2014, provides a framework for the assessment of risk.

3.23 The guidance divides activities on construction sites into four types to reflect their different potential impacts. These are:

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

3.24 The assessment methodology considers the following three separate dust effects, with account being taken of the distance of the receptors that may experience these effects.

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

3.25 The assessment procedures and risk categories for each of the four phases of construction where the potential for dust is high, i.e. those listed above, are summarised in Appendix D.

3.26 Step 1 establishes that an assessment will normally be required where there are dwellings within 350m of the site boundary.

4.0 CHERWELL DISTRICT COUNCIL'S AIR QUALITY REVIEW AND ASSESSMENT

4.1 Cherwell District Council (CDC) currently has four Air Quality Management Areas (AQMA) within the district, declared for exceedances to the annual mean nitrogen dioxide (NO_2) objective level. The location of the AQMAs are as follows:

- Hennef Way, Banbury – AQMA No. 1:
- Banbury – AQMA No. 2;
- Bicester Road, Kidlington – AQMA No. 3; and
- Bicester – AQMA No. 4.

4.2 CDC's most recently published 2020 ASR states that *"The monitoring results in 2019 showed background NO_2 concentrations trending downwards from those observed in 2017 and 2018. Eight monitoring locations showed very minor increases compared with 2018, two of these were urban background locations. Only two of the sites showed increases greater than 1 µg/m^3.*

In AQMA No.1 (Hennef Way, Banbury) there was a further decrease in concentrations continuing the downward trend started in 2018.

In AQMA No.2 (Central Banbury) there were reduced concentrations across all but one of the monitoring locations. Only the High Street monitoring location showed an increase in concentrations when compared to the previous year. The monitoring location at Horsefair, which had exceeded the annual mean target for NO_2 in 2017 continued to decrease in 2019, although the decrease was very small. In 2018 the annual mean objective was not exceeded at any of the locations, this was still the case in 2019.

In AQMA No.3 (Bicester Road, Kidlington) there was a significant decrease in NO_2 levels, meaning the monitored levels are considerably lower than the annual mean objective and more than 10% below the objective for the second year. Cherwell will continue to work with Oxfordshire County Council to improve traffic conditions in the area and, if there is another significant decrease in NO_2 levels next year, consider whether this AQMA can be revoked.

In AQMA No.4 (Bicester) the annual mean NO_2 concentration at King's End South showed a small decrease compared with 2018 but is still slightly higher than annual mean objective for NO_2. All other monitoring locations within the AQMA remain considerably lower than the annual mean objective.

The NO_2 levels across the district continue to trend downwards, however the monitoring still supports retention of all four AQMAs."

4.3 CDC undertook non-automatic (passive) monitoring of NO_2 at 42 sites during 2019, and concentrations for the nearest tube to the proposed development are presented in Table 4-1.

Table 4-1: Annual Mean NO_2 Concentrations

Site ID	OS Co-ordinates	Site Type	Annual Mean Concentrations (µg/m^3)				
			2015	2016	2017	2018	2019
The Green	447403, 235723	Diffusion Tube	28	28.3	26.8	25.3	25.5

4.4 The information in Table 4-1 indicates that annual mean concentrations of NO_2 in the vicinity of the proposed development lie below the objective level of 40 µg/m^3.

4.5 In conclusion, air quality within the District of Cherwell is generally good and, with the exception of the AQMAs, air quality objective levels are met throughout the District. The closest AQMA to the site is located approximately 5.3 km away and will therefore, have no effect on, nor be affected by, the proposed development. Since 'relevant exposure' is already present adjacent to the site, i.e. existing residential dwellings are present adjacent to the site and local roads, and these have already been considered within CDC's reviews and assessments, the same conclusions will apply for new dwellings on the application site. Namely, all air quality objectives will be satisfied on the site and at dwellings adjacent to the routes to the proposed development site.

4.6 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 3-2), 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 Milton Road/Berry Hill Road have been derived from the TRICS data presented within the Transport Statement prepared for the site by Croft Transport Solutions (report ref: 1899), and flows obtained from the Department for Transport (DfT) website (https://roadtraffic.dft.gov.uk/#6/55.254/-6.064/basemap-regions-countpoints), of which the count point locations are identified in Appendix E.

5.3 The derived traffic flow information is presented in Table 5-1 for a baseline situation in 2019 for Oxford Road, which was utilised within the verification process, and a baseline situation without and with proposed development traffic in 2037 (15-year future design year), which has been 'growthed' to the relevant assessment year using the local growth factors within TEMPro.

Table 5-1: Annual Average Daytime Traffic Flows

Situation	Year	AADT	%HGV	Speed (kph)	Distance (m)
Oxford Road Baseline (diffusion tube location 'The Green')	2019	10279	3%	50	N/A
Milton Road/Berry Hill Road (Future Year)	2037	5956	3%	50	8
Milton Road/Berry Hill Road (Future Year + proposed development)	2037	6148	3%		

Local TEMPro Factors: 1.035 (2009-2011)
1.167 (2011-2019)
1.208 (2019-2037)

5.4 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.

5.5 The traffic flow data has been used to calculate ambient concentrations of air pollution at selected receptors representing existing dwellings adjacent to the road, i.e. at a distance 8m from the road centreline.

5.6 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. It is also important to make sure that the local traffic contributions that might be present at the source of the background concentrations chosen do not encompass those included in the modelling at the development site, otherwise this will lead to an element of 'double counting' of local traffic emissions. The background concentrations used in this assessment are defined in the following section.

Background Concentrations

5.7 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. The projections in the 2018 LAQM background maps are based on assumptions which were current before the Covid-19 outbreak in the UK. In consequence, these maps do not reflect short or longer term impacts on emissions in 2020 and beyond resulting from behavioural change during the national or local lockdowns.

5.8 Average background pollutant concentrations for local 1 x 1 km grid squares are available for all future years, and Table 5-2 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 5-2: Background Concentrations, Annual Mean (µg/m^3)

Location	OS Co-ordinates	Year	NO_x	NO_2	PM_{10}
The Green (council monitor)	447500,235500	2019	10.98	8.49	13.61
		2030	7.67	6.05	12.5
Proposed Site	446500,234500	2019	9.48	7.40	14.20
		2030	6.86	5.44	13.11

5.9 To correct any over or under estimation of pollutant concentrations, LAQM.TG(16) recommends a verification process that should be applied. Verification involves a comparison between predicted and measured ‘road traffic contributions’ at one or more local sites and adjustment of the modelled concentrations if necessary.

5.10 The most recent annual mean NO_2 concentrations measured by the Council at their most representative diffusion tube site (The Green) along Oxford Road is shown in Table 5-3.

Table 5-3: CDC Monitoring Data Used in Verification

Site ID	OS Co-ordinates	Distance to Kerb (m)	2019 Annual Mean Concentrations (µg/m^3)
The Green	447403, 235723	1	25.5

5.11 The derived adjustment is 3.1, and has been applied to all calculated road contributions. Details of this verification process are included in Appendix F for information. All modelled concentrations have been corrected by 3.1, and the corrected modelling results presented in Appendix F.

Impact Assessment

5.12 The 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 road and dwellings closest to the road. The results of the DMRB assessment are presented in Appendix G.

5.13 The results indicate that for a baseline situation in 2037, receptors adjacent to Milton Road and Berry Hill Road have values below the current annual mean air quality objectives for NO_2 and PM_{10}, which is consistent with CDC's air quality review and assessments.

5.14 With traffic generated by development in 2037, the absolute concentrations remain below the current air quality objectives and the level of change due to traffic generated by development is small (less than 0.4 µg/m^3 to annual mean concentrations of NO_2 and PM_{10}), which would not have a significant impact upon local air quality.

5.15 The ambient concentrations of local traffic emissions are predicted to be less than 75% of the Air Quality Assessment Level (AQAL) (see Table 3-4), and the % change in concentration relative to the AQAL due to proposed development is calculated to be less than 1%. On this basis, the development's impact on local air quality will be 'negligible'.

5.16 Using the significance flowchart in Appendix C, 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.

5.17 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.

Construction Dust

5.18 Nuisance dust impacts are likely to be temporary and episodic (most noticeable during dry windy conditions) and would not persist beyond completion of construction.

5.19 Where dust raising activities are present for 12 months or more, dust complaints are considered to be very likely for those closest receptors to the site that lie between 10-30m from the site boundary. Approximately three dwellings fall within 10-30m of the site boundary and therefore, appropriate dust mitigation measures will be required to minimize dust emissions from the site.

5.20 In addition, the qualitative dust assessment criteria in Table 3-5 indicates that existing premises adjacent to the site will lie within the zone for potentially significant effects for soiling and ambient concentrations of PM_{10}.

5.21 Applying IAQM risk assessment procedures as set out in Appendix D requires an assessment where there are sensitive receptors within 350m of the site boundary of the works and/or within 100m of the routes used by construction vehicles on the public highway up to 500m from the site entrance. Existing premises fall within 350m zone which triggers the initial screening criterion.

5.22 The stages considered by the dust risk assessment are presented in Table 5-4. The assessments and conclusions are based upon the classifications for a 'large' construction site for 'earthworks' because the total working area for the various activities is above 10,000m^2, a 'medium' construction site for construction, as the total building volume may lie between 25,000-100,000m^3, and a 'small' construction site for demolition, because the total building volume lies below 20,000m^3. However, not all of the site would require intensive earthworks, nor would it require large numbers of plant or significant amounts of spoil removal, nor are the types of construction work or soil conditions likely to lead to anything more than being 'moderately dusty'. Distances from the main dust generating areas to the closest dwellings are approximately 30m or more for the few dwellings immediately adjacent to the site boundary, and generally more than 100m for all other dwellings. There are no known ecological areas within 50m of the works.

5.23 Due to the overall size of the site, it is possible that the number of heavy duty vehicles visiting the site/day may exceed 25, and the distances of unpaved roads on the site are likely to be greater than 100m, therefore, the site is classified as medium in relation to the risk of dust being tracked out of the site.

Table 5-4: Dust Risk Assessment

Step	Consideration	Demolition	Earthworks	Construction	Track-out
2a	Scale/nature of works	Small	Large	Medium	Medium
2b	Sensitivity of area:				
	To dust soiling	Low	Medium	Medium	Medium
	To PM10 health effects	Low	Low	Low	Low

Step	Consideration	Demolition	Earthworks	Construction	Track-out
	To ecological effects	Low	Low	Low	Low
2c	Risk of impacts	Low Risk	Medium Risk	Medium Risk	Medium Risk

5.24 The assessments in Table 5-4 and the IAQM matrices have been used to define the site-specific mitigation requirements for the construction phases and the overall risk assessment for dust from the construction works is summarised in Table 5-5.

Table 5-5: Summary Dust Risk Table to Define Site-Specific Mitigation

Source	Dust Soiling Effects	PM_{10} Effects	Ecological Effects
Demolition	Negligible	Low Risk Site	Negligible
Earthworks	Medium Risk Site	Low Risk Site	Negligible
Construction	Medium Risk Site	Low Risk Site	Negligible
Track-out	Medium Risk Site	Low Risk Site	Negligible

5.25 With regard to dust soiling, the risk assessment indicates that on the basis of no mitigation being present, the earthworks, construction and track-out phases would present a 'medium risk', whilst the demolition phase would present a 'negligible risk'.

5.26 With regard to PM_{10} effects, the risk assessment indicates that on the basis of no mitigation being present, all phases would present a low risk to health.

5.27 The IAQM guidance on the mitigation measures needed to deal with low, medium or high risk effects is set out in Appendix H.

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.

6.2 Nevertheless, to assist in offsetting incremental creep in pollutant emissions, a number of sustainable travel measures should be considered, these are follows:

- Electric vehicle charging – in accordance with Approved Document S, which would come in to force in June 2022.
- Low NOx heating and boilers;
- Monitored Travel Plan;
- Measures to support public transport infrastructure and promote use; and
- Measures to support cycling and walking infrastructure;

Construction Dust

6.7 It is recommended that the relevant mitigation presented in Appendix H, appropriate for a 'medium risk' site, should be routinely included in the site's dust management plan for the relevant phase of construction. Key measures known to minimize dust emissions and represent good practice guidance are summarized in Table 6-1.

Table 6-1: Key Dust Mitigation Measures

Aspect	Mitigation Measures
Site Planning	No bonfires
	Plan site layout - machinery and dust causing activities should be located away from sensitive receptors
Construction Traffic	All vehicles should switch off engines when not in active use – no idling vehicles
	Wash or clean all vehicles effectively before leaving the site if close to sensitive receptors
	All loads entering and leaving site to be covered
	No site runoff of water or mud
	All non-road mobile machinery (NRMM) to use ultra low sulphur tax-exempt diesel (ULSD) where available
Demolition Works	Use water as dust suppressant

Aspect	Mitigation Measures
	Cutting equipment to use water as suppressant or suitable local exhaust ventilation systems
	Securely cover skips and minimize drop heights
Site Activities	To employ best practicable means in the control of dust
	Minimise dust generation activities
	Use water as dust suppressant where possible
	Keep stockpiles for the shortest possible times
Site Management	Appointment of a site agent whose contact details are provided to the LPA's Environmental Health Department and local residents prior to construction works starting.
	Agent to provide immediate response to any complaints by logging details of complaint and investigating source of complaint to establish whether routine mitigation measures have been properly implemented. If necessary, appropriate steps to be taken to mitigate against any adverse effects, and details of actions to be logged.

7.0 CONCLUSIONS

7.1 Mewies Engineering Consultants Ltd (M-EC Acoustic Air), has been commissioned by Hayfield Homes Construction Ltd to undertake an Air Quality Assessment to support a reserved matters application for 40 dwellings on land off Berry Hill Road, Adderbury, Banbury.

7.2 Air quality within the District of Cherwell is generally good and, with the exception of the AQMAs, air quality objective levels are met throughout the District. The closest AQMA to the site is located approximately 5.3 km away and will therefore, have no effect on, nor be affected by, the proposed development. Since 'relevant exposure' is already present adjacent to the site, i.e. existing residential dwellings are present adjacent to the site and local roads, and these have already been considered within CDC's reviews and assessments, the same conclusions will apply for new dwellings on the application site. Namely, all air quality objectives will be satisfied on the site and at dwellings adjacent to the routes to the proposed development site.

7.3 Assessments in accordance with Local Air Quality Management guidance indicate that for a baseline situation in 2037, receptors adjacent to Milton Road and Berry Hill Road have values below the current annual mean air quality objectives for NO_2 and PM_{10}, which is consistent with CDC's air quality review and assessments.

7.4 With traffic generated by development in 2037, the absolute concentrations remain below the current air quality objectives and the level of change due to traffic generated by development is small (less than 0.4 µg/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 less than 75% of the Air Quality Assessment Level (AQAL), and the % change in concentration relative to the AQAL due to development is calculated to be less than 1% for all roads. On this basis, the development's impact on local air quality will be 'negligible'.

7.6 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.

7.7 Mitigation measures have been proposed to minimise the potential effects associated with increased air pollutant concentrations.

7.8 With regard to dust soiling, the risk assessment indicates that on the basis of no mitigation being present, the earthworks, construction and track-out phases would present a 'medium risk', whilst the demolition phase would present a 'negligible risk'.

7.9 With regard to PM_{10} effects, the risk assessment indicates that on the basis of no mitigation being present, all phases would present a low risk to health.

7.10 The relevant mitigation measures presented in the IAQM guidance for a medium risk site should be routinely included in the site's dust management plan for the relevant earthworks and track-out phases.

APPENDIX A

*LANDSCAPE DESIGN TO BE ADDED

Drain

Tank

Path (um)

BERRY HILL ROAD

BERRY HILL ROAD (30MPH)

NEW 3M WIDE PEDICYCLE LINK

2.4x120M

R6.0M

Crofton

Berry Cottage

Three Spires

Shaldon

Last House

Schedule

House Type	Bedrooms	No: of	Beds	Mix
Private Sale				
STANTON	2	1	2	23%
LAVINGTON	2	5		
STRATFORD	3	1	3	19%
FAIRFORD	3	2		
OAKLEY	3	2		
KINGSTON	4	1	4+	58%
HENLEY	4	2		
HENLEY (CT)	4	1		
HANWELL	5	2		
HANWELL (CT)	5	1		
BOURTON	5	2		
EATON	5	2		
EATON (CT)	5	4		
Total		**26**		
Affordable				
A1 (CT)	1	4	1	29%
A2+	2	7	2	50%
A3+	3	3	3	21%
Total		**14**		
Grand Total		**40**		

Areas and Densities			
	Acres		**Hectares**
Developable Area	3.95		1.60
Redline Area	9.90		4.01
Square feet per acre (Net)	13,558		
Units per acre (Net)	10.1		

N W E S 0 5 10 20m

BERRY HILL ROAD, ADDERBURY - **SITE LAYOUT**

Pegasus Design

PLANNING | DESIGN | ENVIRONMENT | ECONOMICS | WWW.PEGASUSGROUP.CO.UK | TEAM/DRAWN BY: EJT | APPROVED BY P.M: EJT | DATE: 23/03/22 | SCALE: 1:500 @A1 | DRWG: **P21-2984**_01 REV: L | CLIENT: **HAYFIED HOMES** |

APPENDIX B

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.

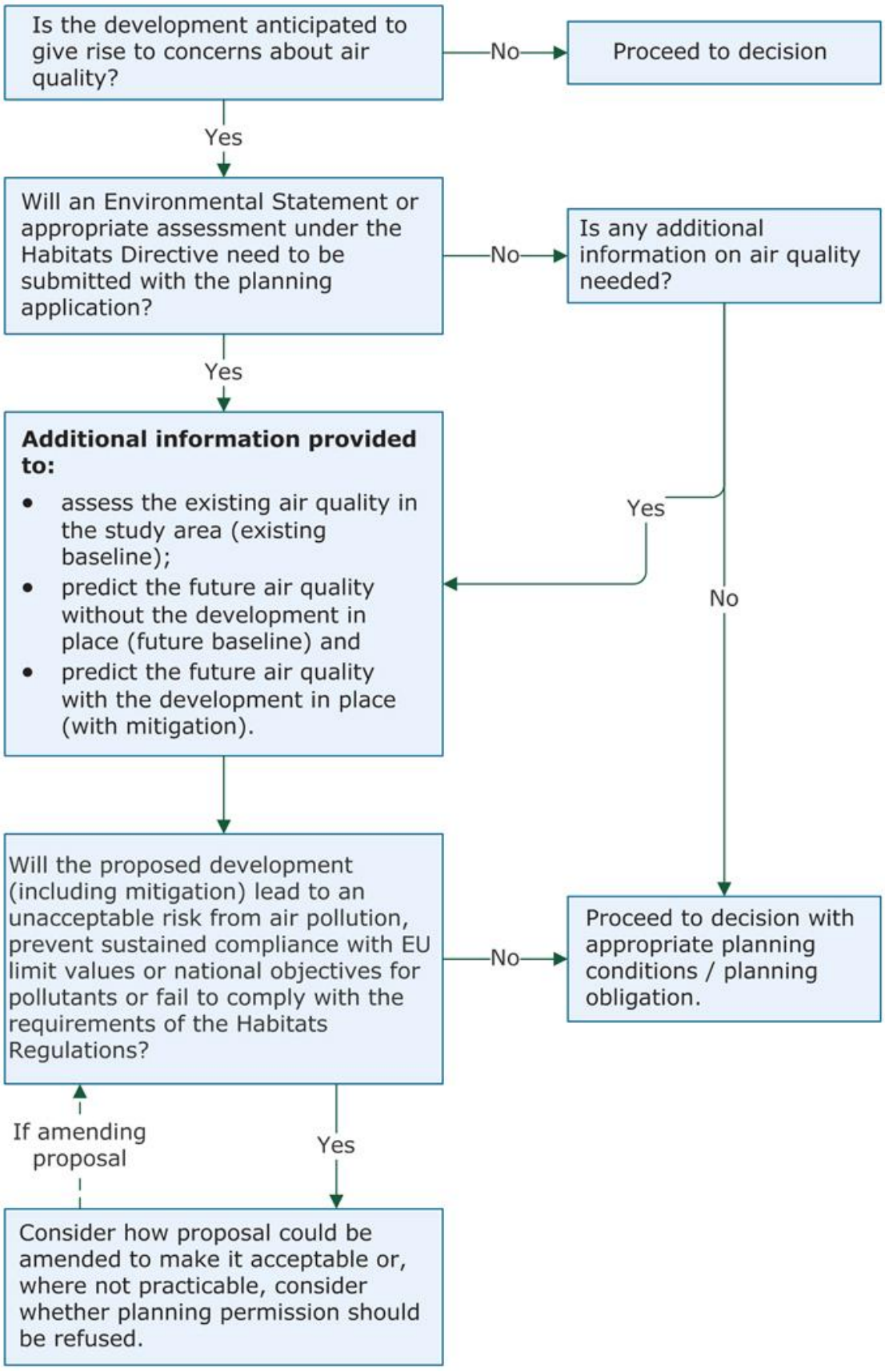
24-hour mean the average of the concentrations measured for twenty four hours.

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.

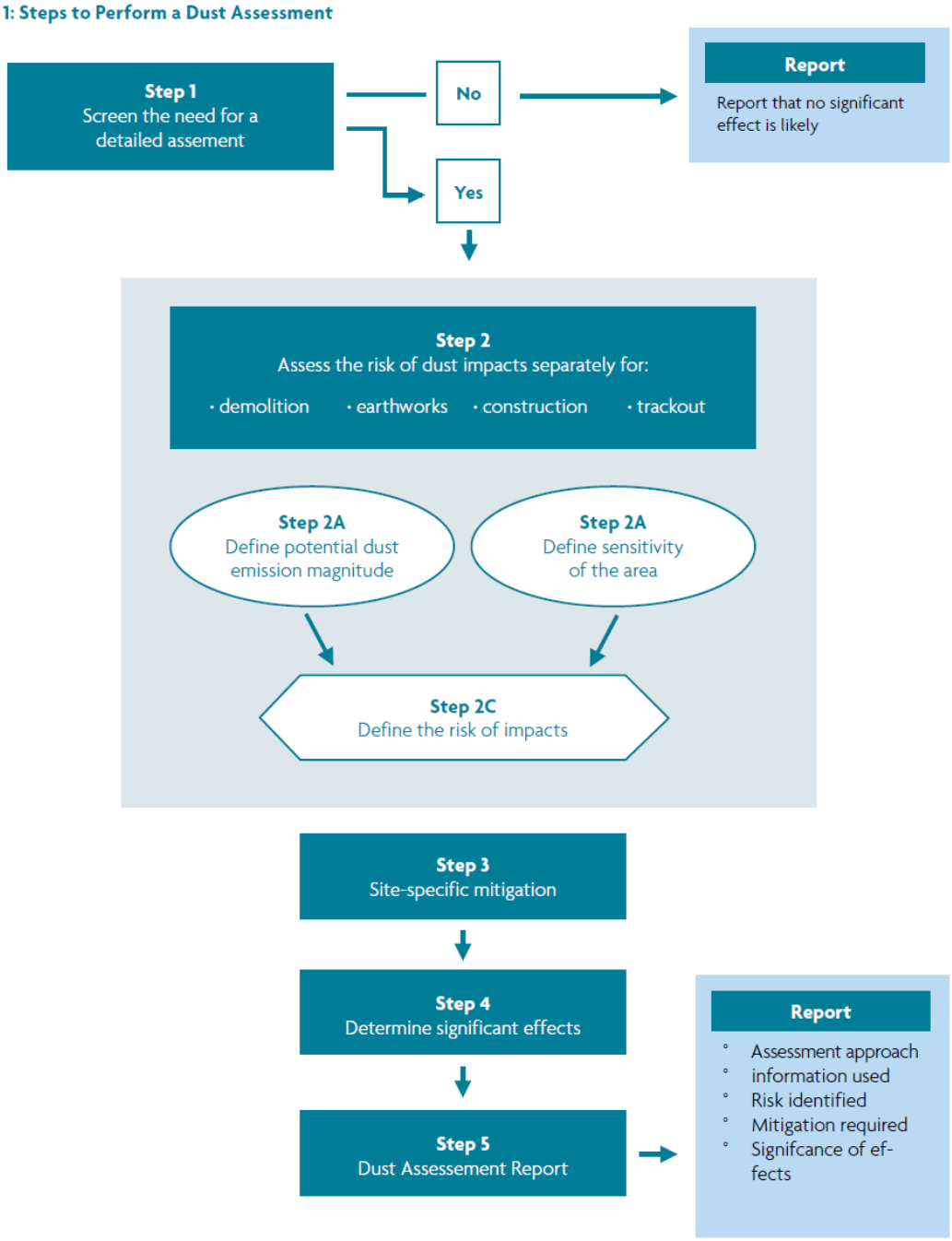
Exceedance a period of time when the concentration of a pollutant is greater than, or equal to, the relevant air quality standard.

APPENDIX C


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 D

Figure 1: Steps to Perform a Dust Assessment



Demolition

Examples:

- **Large**: Total building volume >50 000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20 m above ground level;
- **Medium**: Total building volume 20 000 m^3 – 50 000m^3, potentially dusty construction material, demolition activities 10-20 m above ground level; and
- **Small**: Total building volume <20 000 m^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

Examples:

- **Large**: Total site area >10 000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100 000 tonnes;
- **Medium**: Total site area 2 500 m^2 – 10 000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 4 m - 8 m 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

Examples:

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

Trackout

Examples:

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

These numbers are for vehicles that leave the site after moving over unpaved ground, where they will accumulate mud and dirt that can be tracked out onto the public highway.

Table 2: Sensitivity of the Area to Dust Soiling Effects on People and Property [a b]

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)[c]			
		‹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

[a] The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See **STEP 2B**, **Box 6** and **Box 9.**

[b] Estimate the total number of receptors within the stated distance. Only the *highest level* of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors ‹ 20m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors ‹ 50 m is 102. The sensitivity of the area in this case would be high.

[c] For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50m from the edge of the road.

Table 3: Sensitivity of the Area to Human Health Impacts [a b]

Receptor Sensitivity	Annual Mean PM_{10} concentration[c]	Number of Receptors[d]	Distance from the Source (m)[e]				
			‹20	‹50	‹100	‹200	‹350
High	›32 µg/m³ (›18 µg/m³ in Scotland)	**›100**	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m³ (16-18 µg/m³ in Scotland)	**›100**	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m³ (14-16 µg/m³ in Scotland)	**›100**	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	‹24 µg/m³ (‹14 µg/m³ in Scotland)	**›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

[a] The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout. See **STEP 2B**, **Box 7** and **Box 9**.
[b] Estimate the total within the stated distance (e.g. the total within 350m and not the number between 200 and 350m), noting that only the highest level of area sensitivity from the table needs to be considered. For example, if there are 7 high sensitivity receptors ‹ 20m of the source and 95 high sensitivity receptors between 20 and 50 m, then the total of number of receptors ‹ 50 m is 102. If the annual mean PM_{10} concentration is 29µg/m³, the sensitivity of the area would be high.
[c] Most straightforwardly taken from the national background maps, but should also take account of local sources. The values are based on 32µg/m³ being the annual mean concentration at which an exceedence of the 24-hour objective is likely in England, Walesand Northern Ireland. In Scotland there is an annual mean objective of 18µg/m³.
[d] In the case of high sensitivity receptors with high occupancy (such as schools or hospitals) approximate the number of people likely to be present. In the case of residential dwellings, just include the number of properties
[e] For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50 m from the edge of the road.

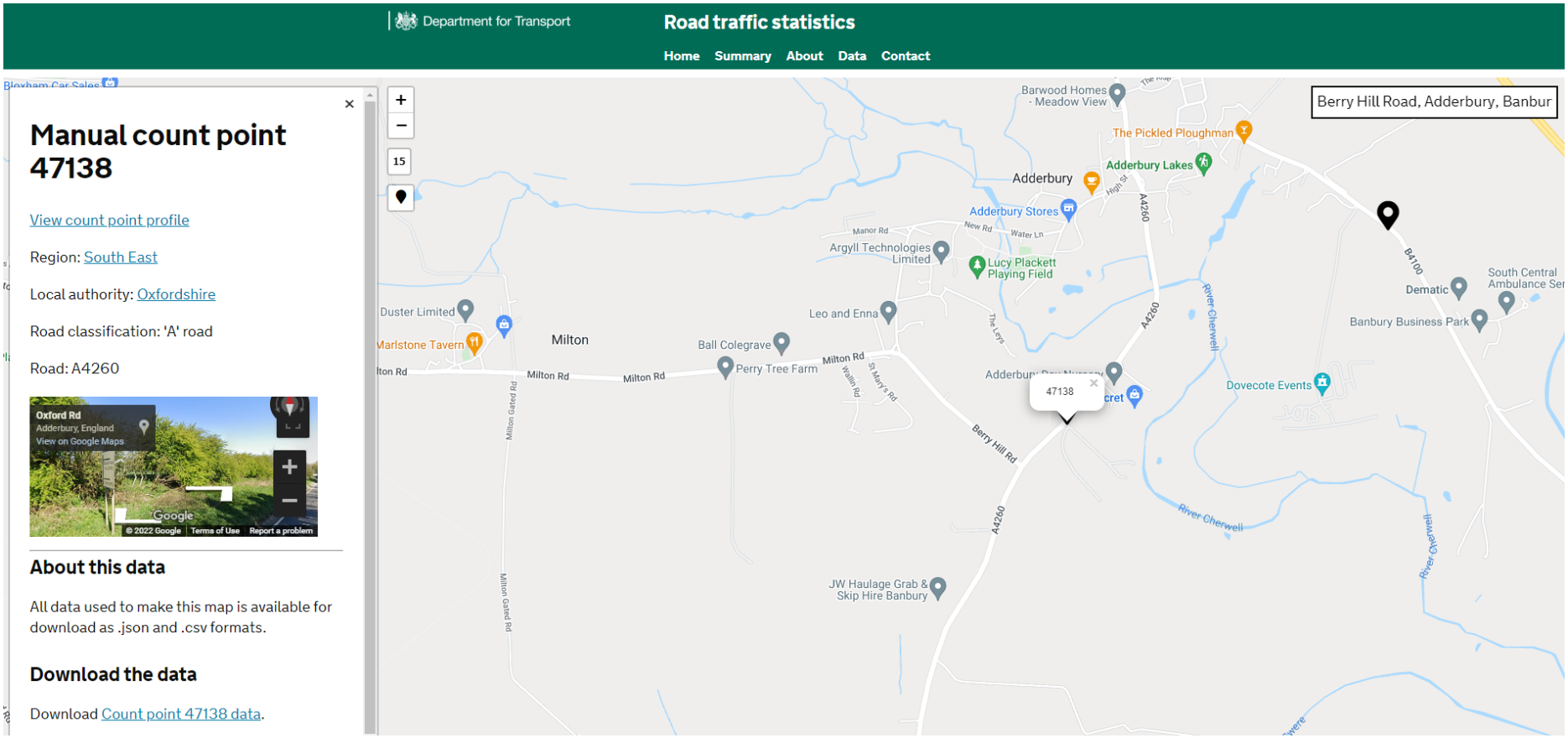
Table 4: Sensitivity of the Area to Ecological Impacts [a b]

Receptor Sensitivity	Distance from the Source (m)[c]	
	‹20	‹50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

[a] The sensitivity of the area should be derived for each of the four activities: demolition, construction, earthworks and trackout and for each designated site. See **STEP 2B**, **Box 8** and **Box 9**.
[b] Only the highest level of area sensitivity from the table needs to be considered.
[c] For trackout, the distances should be measured from the side of the roads used by construction traffic. Without site-specific mitigation, trackout may occur from roads up to 500 m from large sites, 200 m from medium sites and 50 m from small sites, as measured from the site exit. The impact declines with distance from the site.

APPENDIX E

DFT Count Point Locations



Department for Transport

Road traffic statistics

Home Summary About Data Contact

Manual count point 931319

[View count point profile]

Region: South East

Local authority: Oxfordshire

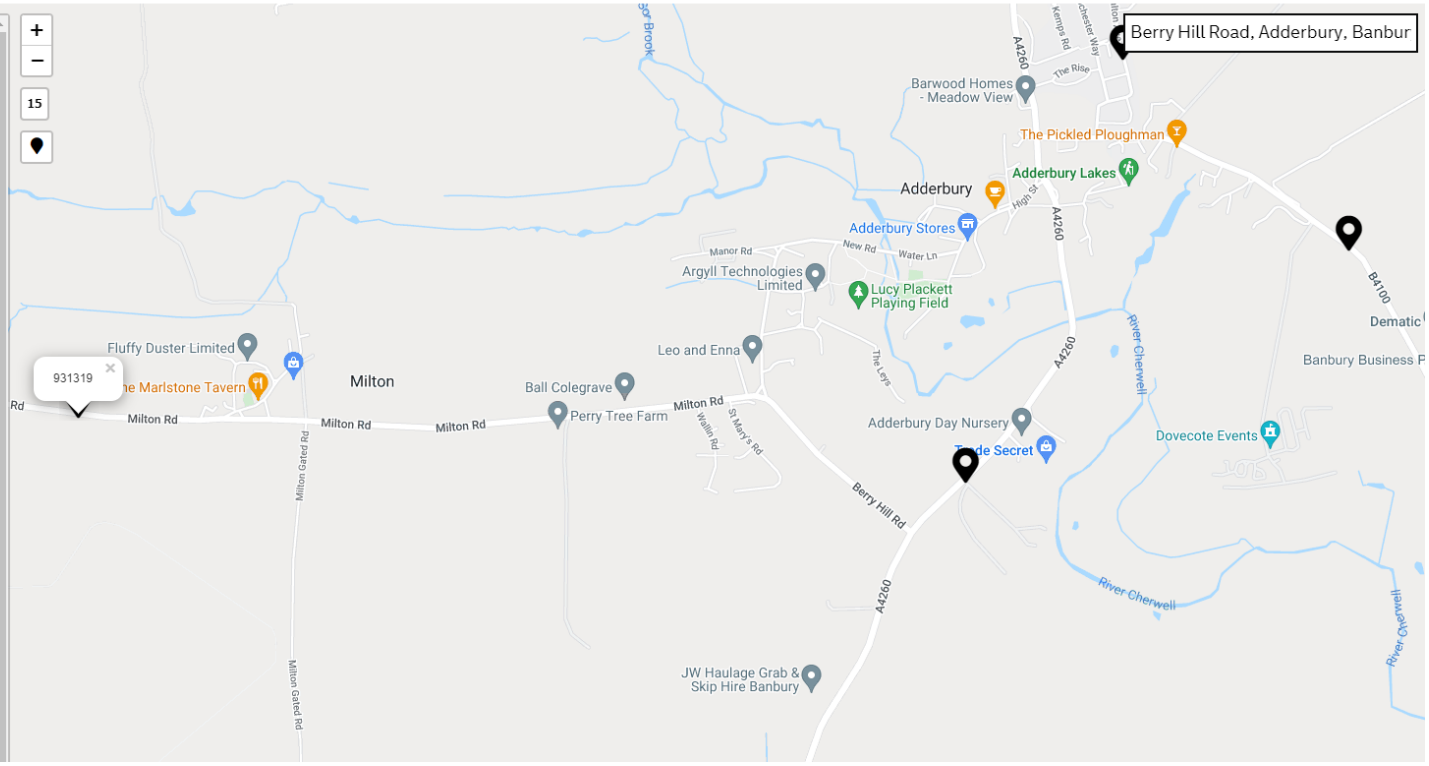
Road classification: 'C' and Unclassified roads

About this data

All data used to make this map is available for download as .json and .csv formats.

Download the data

Download Count point 931319 data.

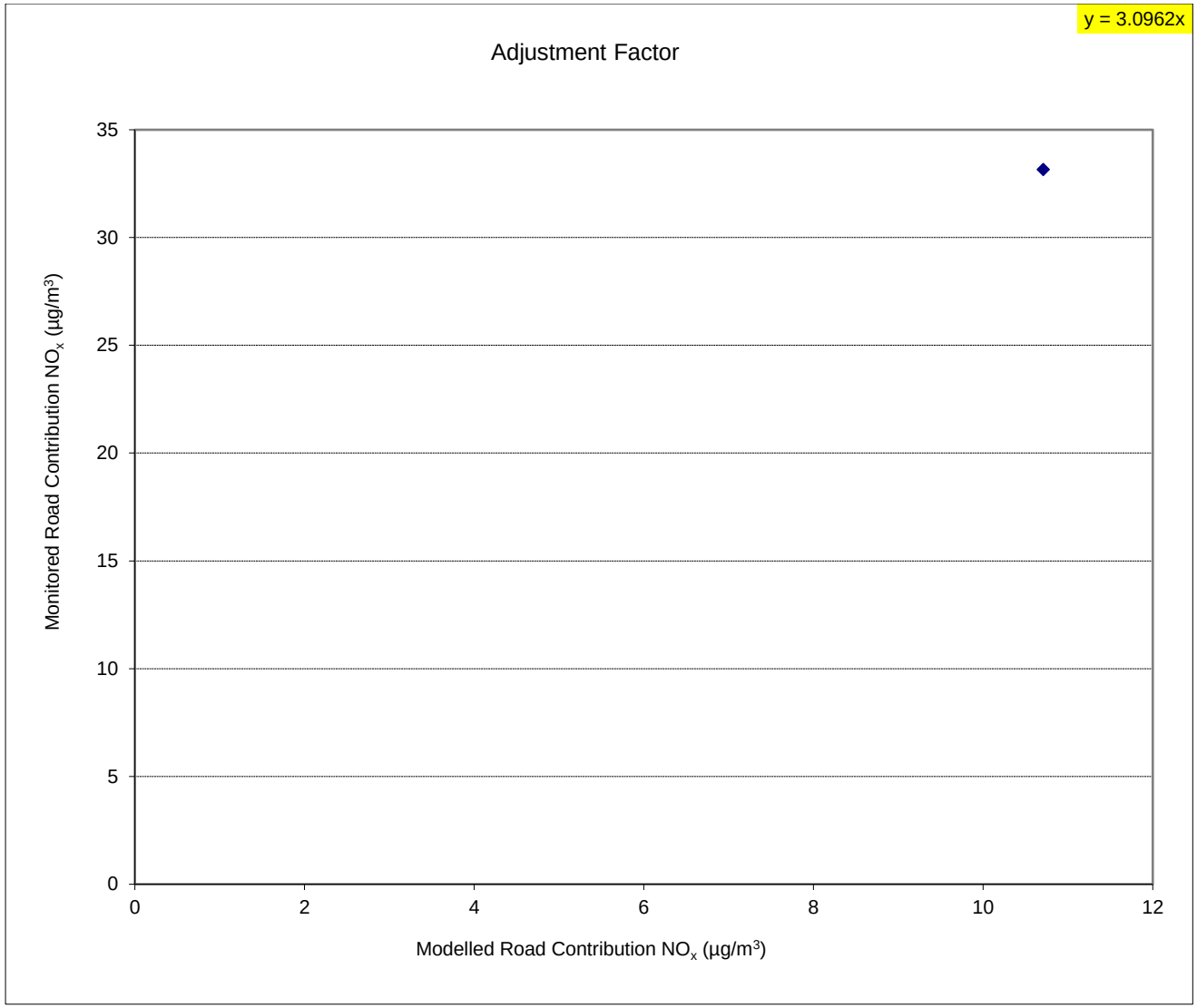


APPENDIX F

Verification (LAQM.TG 16)

Name	Location		Modelled Road Contribution NO_x (ex-background)	Monitored Total NO_2	Monitored Road Contribuition Nox*
	X (m)	Y (m)			
The Green	447403	235723	10.71	25.5	33.16

Verification Factor	3.1


y = 3.0962x
Adjustment Factor
Monitored Road Contribution NOx (µg/m3)
Modelled Road Contribution NOx (µg/m3)
0
5
10
15
20
25
30
35
0
2
4
6
8
10
12

APPENDIX G

Receptor number	Name	Year	NO_2 *	PM_{10}								
			Annual mean µg/m^3	Annual mean µg/m^3								
1	Milton Road 2037DN	2037	6.71	13.51								
2	Milton Road 2037DS	2037	6.82	13.55	NO2		PM10		Precentage Annual Mean		Impact Descriptor	
	Correction Factor		3.8		DS-DN	Percentag	DS-DN	Percentag	NO2	PM10	NO2	PM10
1	Milton Road 2037DN	2037	25.51	13.51					64%	34%	Negligible	Negligible
2	Milton Road 2037DS	2037	25.90	13.55	0.39	1%	0.03	0%	65%	34%	Negligible	Negligible

APPENDIX H

Mitigation for all sites: Communications

Mitigation measure	Low Risk	Medium Risk	High Risk
1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	N	H	H
2. 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.	H	H	H
3. Display the head or regional office contact information	H	H	H

Mitigation for all sites: Dust Management

Mitigation measure	Low Risk	Medium Risk	High Risk
4. 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. In London additional measures may be required to ensure compliance with the Mayor of London's guidance. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections.	D	H	H
Site Management			
5. 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.	H	H	H
6. Make the complaints log available to the local authority when asked.	H	H	H
7. Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.	H	H	H
8. 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.	N	N	H
Monitoring			
9. 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.	D	D	H
10. 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	H	H	H
11. 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.	H	H	H
12. Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	N	H	H
Preparing and maintaining the site			
13. Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	H	H	H
14. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	H	H	H
15. Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period	D	H	H
16. Avoid site runoff of water or mud.	H	H	H
17. Keep site fencing, barriers and scaffolding clean using wet methods.	D	H	H

Mitigation measure	Low Risk	Medium Risk	High Risk
18. 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.	D	H	H
19. Cover, seed or fence stockpiles to prevent wind whipping.	D	H	H
Operating vehicle/machinery and sustainable travel			
20. Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London NRMM standards, where applicable	H	H	H
21. Ensure all vehicles switch off engines when stationary - no idling vehicles.	H	H	H
22. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	H	H	H
23. 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)	D	D	H
24. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	N	H	H
25. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	N	D	H
Operations			
26. 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.	H	H	H
27. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	H	H	H
28. Use enclosed chutes and conveyors and covered skips.	H	H	H
29. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	H	H	H
30. 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.	D	H	H
Waste management			
31. Avoid bonfires and burning of waste materials.	H	H	H

Measures specific to demolition

Mitigation measure	Low Risk	Medium Risk	High Risk
32. Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	D	D	H
33. Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	H	H	H
34. Avoid explosive blasting, using appropriate manual or mechanical alternatives.	H	H	H
35. Bag and remove any biological debris or damp down such material before demolition.	H	H	H

Measures specific to earthworks

Mitigation measure	Low Risk	Medium Risk	High Risk
36. Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable..	N	D	H
37. Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable	N	D	H
38. Only remove the cover in small areas during work and not all at once	N	D	H

Measures specific to construction

Mitigation measure	Low Risk	Medium Risk	High Risk
39. Avoid scabbling (roughening of concrete surfaces) if possible	D	D	H
40. 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.	D	H	H
41. 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.	N	D	H
42. For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.	N	D	D

Measures specific to trackout

Mitigation measure	Low Risk	Medium Risk	High Risk
43. 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.	D	H	H
44. Avoid dry sweeping of large areas.	D	H	H
45. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	D	H	H
46. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	N	H	H
47. Record all inspections of haul routes and any subsequent action in a site log book.	D	H	H
48. Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	N	H	H
49. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	D	H	H
50. 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.	N	H	H
51. Access gates to be located at least 10m from receptors where possible.	N	H	H

Key to Tables:

H	Highly recommended
D	Desirable
N	Not required

- Civil Engineering
- Transport
- Road Safety
- Flood Risk & Drainage
- Structures
- Geo-Environmental
- M-EC Acoustic Air
- Utilities
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Brighton | Leicester

T: 01530 264 753
group@m-ec.co.uk
www.m-ec.co.uk

Consulting Development Engineers