



AIR QUALITY ASSESSMENT

on behalf of

LIDL GREAT BRITAIN LIMITED

for

LIDL, FALLOWFIELD RETAIL PARK

REPORT DATE: 18TH MARCH 2024

REPORT NUMBER: 102451-2 V2

Miller Goodall Ltd
Ground Floor
Ashworth House
Deakins Business Park
Blackburn Road
Egerton
Bolton
Lancashire
BL7 9RP

Tel: 01204 596166

www.millergoodall.co.uk

Company registration number 5201673

Summary

This air quality report has been prepared to accompany a planning application for a proposed commercial development at Lidl, Fallowfield Retail Park. It assesses the potential changes in air quality due to the construction and operation of the proposed development and whether these potential changes would significantly alter air quality.

The assessment of dust soiling and human health impacts during the demolition and construction phase of the development results in the proposal of dust mitigation measures. The implementation of these will ensure that residual dust impacts during the demolition and construction phase are not significant.

Concentrations of NO₂ and PM₁₀ are likely to be below their respective long and short-term objectives at the proposed development site which is therefore considered suitable for commercial use with regards to air quality. Concentrations of PM_{2.5} are expected to be below the annual mean target.

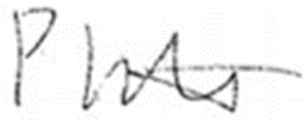
The proposed development is not expected to have a significant impact on local air quality.

There is, therefore, no reason for this application to be refused on the grounds of air quality.

Prepared By Philip Walton

Reviewed By Melody Horan, Unam Ejaz

Signed



Signed

pp.



Date

18th March 2024

Date

18th March 2024

Record of changes

Version	Date	Change	Initials
1	17 th October 2023	First issue	PW
2	18 th March 2024	Updated dust assessment with latest 2024 guidance	UE

Contents

Summary	2
Contents	3
1 Introduction.....	4
2 Site Description	4
3 Proposed Development	4
4 Policy Context.....	5
4.1 Air Quality Objectives	5
4.2 Manchester City Council Air Quality & Planning Technical Guidance	6
4.3 Greater Manchester Action Plan 2016-2021	6
5 Methodology	7
5.1 Data Sources.....	7
5.2 IAQM Construction Dust Assessment	8
5.3 Road Traffic Emissions Assessment	8
6 Baseline Air Quality.....	11
6.1 Local Air Quality	11
6.2 Air Quality Monitoring	12
6.3 Background Concentrations	12
7 Construction Dust Impact Assessment	13
7.1 Step 1 – Requirement for a Detailed Assessment.....	13
7.2 Step 2 – Assess the Risk of Dust Impacts.....	13
7.3 Step 3 – Site-Specific Mitigation.....	15
7.4 Step 4 – Determine Significant Effects	15
8 Road Traffic Assessment	15
8.1 Baseline Assessment	15
8.2 Impact Assessment.....	16
9 Mitigation.....	18
10 Summary of Impacts and Conclusion	19
APPENDICES	20
Glossary of Terms	39

1 Introduction

- 1.1 Miller Goodall Ltd has been instructed to prepare an air quality assessment to accompany a planning application for a proposed commercial development at Lidl, Fallowfield Retail Park. The site lies within the administrative boundary of Manchester City Council (MCC).
- 1.2 The report provides a review of the existing air quality in proximity to the proposed development site and assesses the potential impact of the proposed development on local air quality following Local Air Quality Management Technical Guidance¹ and EPUK and IAQM guidance².
- 1.3 The report provides an assessment of the potential air quality impacts associated with the construction and operational phases of the proposed development. The potential air quality changes at existing sensitive receptors adjacent to the site and roads subject to increased vehicle generation from the development are assessed.
- 1.4 The main pollutants of health concern from road traffic exhaust releases are nitrogen dioxide (NO₂) and fine particulates, normally assessed as the fraction of airborne particles of mean aerodynamic diameter less than ten micrometres (PM₁₀) and 2.5 micrometres (PM_{2.5}) since these pollutants are most likely to approach their respective air quality objectives in proximity to major roads and congested areas. This assessment has therefore focused on the impact of the proposed development on concentrations of NO₂, PM₁₀ and PM_{2.5}.

2 Site Description

- 2.1 The proposed development site is located to the east of Birchfields Road and within the Fallowfield Retail Park. The proposed Lidl store would be located in the southern part of the retail park. The land is currently occupied by existing retail units which would be demolished as part of these proposals.
- 2.2 Existing retail units in Fallowfield Retail Park border the site to the north, and beyond these is Birchfields Primary School. Woodland and a railway line border the site to the east. Moseley road borders the site to the south with a mix of commercial and residential uses beyond. Birchfields Road borders the site to the west with residential dwellings bordering the road on the opposite side to the retail park.
- 2.3 Patches of the Greater Manchester Combined Authority (GMCA) Air Quality Management Area (AQMA), declared for exceedance of the NO₂ annual mean, are present near the development site. These includes patches along Birchfields Road and Moseley Road. The patch on Moseley Road extends slightly into the development site. The site location and its relationship to the surrounding AQMAs are shown in **Appendix A**.

3 Proposed Development

- 3.1 The proposed development is for a Lidl supermarket and sub-let unit, with 102 parking spaces. Two electric vehicle (EV) charging points would be provided at the development. The existing retail units would be demolished as part of this proposal. The red line boundary for the proposed development is shown in **Appendix A**.

¹ Department for the Environment Food and Rural Affairs (2022). Local Air Quality Management Technical Guidance Document LAQM.TG(22)

² EPUK and IAQM (January 2017) Land Use Planning and Development Control: Planning for Air Quality (v1.2)

4 Policy Context

4.1 Air Quality Objectives

- 4.1.1 The standards and objectives relevant to the LAQM framework have been prescribed through the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations 2002; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance.
- 4.1.2 The United Kingdom left the European Union on 31st January 2020 and is no longer a member state. However, the current framework of air quality legislation was converted into domestic law through the European Union (Withdrawal) Act 2018^[3].
- 4.1.3 The relevant air quality standards and objectives are presented in **Table 1**. Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health.

Table 1: Air Quality Strategy Objectives (England) for the Purposes of Local Air Quality Management

Pollutant	Air Quality Objective	
	Concentration	Measured As
Nitrogen dioxide (NO ₂)	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)	50 µg/m ³	24-hour mean not to be exceeded more than 35 per year
	40 µg/m ³	Annual mean
Particles (PM _{2.5})	25 µg/m ³	Annual mean (target)

- 4.1.4 Where an air quality objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMAs) and take action to work towards meeting the objectives. Following the designation of an AQMA, local authorities are required to develop an Air Quality Action Plan (AQAP) to work towards meeting the objectives and to improve air quality locally.
- 4.1.5 Possible exceedances of air quality objectives are generally assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

³ UK Parliament (2018): <http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted>

- 4.1.6 As the development is for commercial use, the annual mean air quality objectives do not apply; however, the short-term objectives still apply¹.

4.2 Manchester City Council Air Quality & Planning Technical Guidance

- 4.2.1 MCC has published the Air Quality & Planning Technical Guidance, 2022 ^[4] to assist developers with air quality matters. The Guidance provides a summary of local air quality, the department overseeing air quality matters, local policy, but broadly for air quality it considers three overarching topics:

- Construction & demolition – assessment of dust and particulate matter emissions. The Guidance refers to assessment using the Institute of Air Quality Management 'Guidance on the assessment of dust from demolition and construction' 2014. Concerning Non-Road Mobile Machinery (NRMM) emissions, the Guidance specifies *"MCC recommends that NRMM used on the site of any major development within Manchester city centre for the purpose of construction or demolition works should meet Stage IV of EU directive 97/68/EC, and Stage IIIA as a minimum."*
- Development Planning – assessment of air quality change to existing residents and predictions of air quality concentrations for future receptors. The Guidance refers to an assessment using the Environmental Protection UK 'Land-use Planning & Development Control: Planning for Air Quality' 2017.
- Electric vehicle charging – MCC encourages the adoption of electric vehicle charging for developments. Best practice is outlined in Appendix IV of the Guidance. MCC recommend 1 charging point per residential unit with allocated parking and 20% allocation for commercial uses with more than 11 parking spaces. The Guidance continues and specifies the capacities and electric requirements.

- 4.2.2 The MCC Guidance also specifies guidance for chimney stacks, however, it is not relevant to this assessment. All of the bullet points and referenced guidance are considered in this report.

4.3 Greater Manchester Action Plan 2016-2021

- 4.3.1 The Greater Manchester Combined Authority (GMCA) Air Quality Action Plan 2016-2021⁵ provides information in respect of the actions planned by the Greater Manchester Authorities in relation to declared AQMAs. Action Plans are the mechanism by which the local authorities, in collaboration with national agencies and others, outline their plans for working towards achieving the air quality objectives through the powers available to them. In relation to managing new development, the action plan states that:

"Action 1.1

Greater Manchester (GM)councils to adopt the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction as current best practice to assess and mitigate emissions from construction sites.
i. Where a key priority area is affected by a proposed scheme, a high level of mitigation control will be requested.

Action 1.2

GM local authorities will adopt the most recent IAQM/EPUK guidance for air quality assessment as current best practice, to help ensure that planning applications consider potential local air quality impacts and opportunities to improve air quality are realised. i. Where a Key Priority Area is significantly adversely affected by a proposed

⁴ Manchester City Council, 2022. Air Quality & Planning Technical Guidance

⁵ GMCA (2016) Greater Manchester Air Quality Action Plan 2016-2021

scheme, a high level of mitigation control will be requested. ii. The IAQM/EPUK guidance will also be used to screen and assess industrial sources, such as boilers or large stationary engines. GM local authorities to recommend mitigation controls in accordance with the most recent guidance and the other actions in this document for new developments that contribute to a deterioration of air quality in Air Quality Management Areas (AQMAs). Where an air quality assessment is triggered, it should include a review of monitoring data. Where monitoring is not currently undertaken, it may be requested to inform the application or to confirm the effects.”

4.3.2 At the time of writing, there has been no update of the 2021 end date. The Clean Air Greater Manchester website indicates updates are in the process of review. It is assumed the Action Plan still applies.

5 Methodology

5.1 Data Sources

5.1.1 The air quality assessment has been undertaken and prepared with reference to information from several sources, as detailed in **Table 2**.

Table 2: Key Information Sources

Data Source	Reference
Manchester City Council (MCC) / Greater Manchester Combined Authority (GMCA)	MCC / GMCA (2016) <i>Greater Manchester Air Quality Action Plan 2016-2021</i>
	MCC / GMCA (2022) <i>2022 Air Quality Annual Status Report for Greater Manchester</i>
	GMCA Clean Air Greater Manchester (website)
Institute of Air Quality Management (IAQM)	IAQM “Guidance on the assessment of dust from demolition and construction” v2.2 2024
Department for Environment Food and Rural Affairs (Defra)	Defra <i>Local Air Quality Management Technical Guidance TG(22), updated 2022</i>
Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM)	EPUK and IAQM (January 2017) <i>Land Use Planning and Development Control: Planning for Air Quality (v1.2)</i>
Ministry of Housing, Communities & Local Government	Planning Practice Guidance: Air Quality, November 2019
	National Planning Policy Framework (NPPF), December 2023
Defra’s LAQM Support Tools	Local Air Quality Management 1 km x 1 km grid background pollutant maps
	NOx to NO2 Calculator

Data Source	Reference
SCP Transportation Planning:Infrastructure Design	Traffic Data
Atmospheric Dispersion Modelling Ltd/ Air Pollution Services	Meteorological data from Manchester Airport for the year 2022

5.2 IAQM Construction Dust Assessment

5.2.1 The IAQM has produced guidance⁶ on the assessment of air quality impacts arising from dust associated with construction and demolition activities and provides a methodology by which to complete such assessments. The IAQM methodology provides a risk assessment structure to determine the likely impact of the development on nearby receptor locations and recommends mitigation measures that should be implemented to reduce any such impact. The methodology for the assessment is shown in **Appendix B**. The study area in relation to dust and the zones of interest used within the assessment (<20 m, 20 m – 50 m and 50 – 100 m from the site) are shown in **Appendix C**. The dust assessment informed the recommended mitigation outlined in **Appendix D**.

5.3 Road Traffic Emissions Assessment

Air Dispersion Model

5.3.1 The validated Atmospheric Dispersion Modelling System for Roads (ADMS-Roads) v5.0.1.3 was used to assess the local air quality impact of development-generated vehicle exhaust emissions on concentrations of NO₂, PM₁₀ and PM_{2.5} at existing receptors located adjacent to the assessed road network.

5.3.2 A qualitative comparison to the short-term air quality objectives has been undertaken as future sensitive receptors at the site would not be exposed to the annual mean air quality objective.

Assessment Scenarios

5.3.3 The assessment considered the following scenarios:

- Scenario 1: 2022 - base year;
- Scenario 2: 2025 - opening year 'without development'; and
- Scenario 3: 2025 - opening year 'with development'.

5.3.4 No committed developments were identified. Instead, a Tempro Growth Factor has been applied as this form a standard base for growth and should be inclusive of new development.

Traffic Data

⁶ Institution of Air Quality Management, 2024. Guidance on the assessment of dust from demolition and construction" v2.2

- 5.3.5** The spatial scope for the assessment focused on those routes affected by the proposed development. The traffic data used in the assessment and a map of the road network is provided in **Appendix E**. Details on the committed developments considered within the traffic data are also provided in **Appendix E**.
- 5.3.6** Vehicles within the study area have been modelled at posted speed limits apart from the approach to junctions where queuing traffic sections are included in the model at 5 kph where appropriate following Defra guidance.
- 5.3.7** The traffic flows associated with the proposed development will be 2,170 AADT. However, 50% of the vehicles using the supermarket are already expected to be on the road network and are instead defined as pass-by trips. Pass-by is existing vehicle trips that are already present on the road network and passing the site, which merely visit the supermarket and then return to the original journey (for example, commuting). The number of new trips associated with the proposal is 1,090 AADT (0.4% HDV composition). This approach is also used in the Transport Assessment.
- 5.3.8** LAQM.TG(22) recommends temporal variations to be considered within air quality modelling. Therefore, a 7-day profile based on the Department for Transport's statistics was used within the model.

Meteorological Data

- 5.3.9** Meteorological data for 2022 from the Manchester Airport recording station was used in the ADMS-Roads model. This is the most representative recording station for the development site.
- 5.3.10** The wind rose for 2022 from Manchester Airport recording station is provided in **Appendix E**. Dispersion values for the site and meteorological station have been used. The factors applied for surface roughness (m) and the minimum monin-obukhov length (m) are outlined in **Appendix E**.

Sensitive Receptors

- 5.3.11** Seven existing sensitive receptor locations were selected based on their proximity to road links affected by the proposed development, where the potential effect of development-related traffic emissions on local air pollution would be most significant.
- 5.3.12** Predicted changes in NO₂, PM₁₀ and PM_{2.5} concentrations, as a result of development-generated traffic, were calculated at these locations. The ESR receptor locations are detailed in **Table 3** and shown in **Appendix A**.

Table 3: Existing Sensitive Receptor Locations

Receptor	Grid Ref	
ESR 1	386420	394081
ESR 2	386424	394067
ESR 3	386425	394050
ESR 4	386417	394099
ESR 5	386441	393960
ESR 6	386418	393913

Receptor	Grid Ref	
ESR 7	386381	393914

Conversion of NO_x to NO₂

5.3.13 Oxides of nitrogen (NO_x) concentrations were predicted using the ADMS-Roads model. The modelled road contribution of NO_x at the identified receptor locations was then converted to NO₂ using the NO_x to NO₂ calculator (v8.1, 2020)⁷ following Defra guidance.

Emission Factors

5.3.14 Defra's Emission Factor Toolkit (EFT)⁸ (V11.0, 2021) was used within the ADMS-Roads model to predict emissions from road vehicles for all scenarios.

Background Concentrations

5.3.15 The ADMS model requires the derivation of background pollutant concentration data that are factored to the year of assessment, to which the contributions from the assessed roads are added.

5.3.16 There is one NO₂ background monitoring site administered by MCC in the vicinity of the development and selected sensitive receptors; reference MAN81. Future year calculations of background concentrations were completed in accordance with LAQM.TG(22). The calculations and results of the background concentrations used are shown in **Appendix E**.

5.3.17 There is no background monitoring of PM₁₀ or PM_{2.5} carried out in close proximity to the development. Therefore, background PM₁₀ levels from Defra were used within the assessment.

Model Verification

5.3.18 Model verification is the process of adjusting model outputs to improve the consistency of modelling results with respect to available monitored data.

5.3.19 There are no roadside or kerbside local authority monitoring points within the study area, model verification was, therefore, not possible for this assessment. In this study, model uncertainty was minimised following Defra and EPUK guidance.

Relevant Objectives

5.3.20 As the development is for residential use, both the annual mean and the short-term objectives apply.

5.3.21 The proposed development is commercial in nature and future sensitive receptors are would not be relevant receptors in relation to annual mean air quality objectives due to the length of their exposure. Short-term objectives do apply to future users of the development.

⁷ [Background maps. Tools. Local Air Quality Management Support - Defra, UK](#)

⁸ [Emissions Factors Toolkit \(defra.gov.uk\)](#)

5.3.22 LAQM.TG(22) provides a qualitative screening approach to determine whether there is a risk of exceedance of the one-hour NO₂ air quality objective. If the ambient NO₂ annual mean concentration is above 60 µg/m³ there is a risk that the one-hour objective (200 µg/m³) may be exceeded. A qualitative comparison to this screening method has been undertaken for this assessment.

5.3.23 The annual mean and short-term objectives apply to the ESR.

Assessment Significance Criteria

5.3.24 Guidance is provided by EPUK and IAQM² on criteria for determining the significance of a development's impact on local air quality. **Table 4** details the impact descriptors used for individual receptors in relation to annual mean pollutant concentrations. The overall significance of impacts was determined using professional judgement. Changes of 0%, i.e. less than 0.5%, will be described as Negligible.

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

*AQAL = Air Quality Assessment Level, which may be an air quality objective, EU limit or target value, or an Environment Agency 'Environmental Assessment Level (EAL)'

6 Baseline Air Quality

6.1 Local Air Quality

6.1.1 Baseline air quality at the proposed development has been established by examining monitoring data produced by MCC (provided on the Clean Air Greater Manchester webpages) and background concentration maps provided by Defra for the grid squares covering the proposed development.

6.1.2 The Greater Manchester AQMA has been declared based on the outputs of air dispersion modelling conducted in 2016. All locations across Greater Manchester that were predicted to be above an NO₂ annual mean of 35 µg/m³ were declared as part of the AQMA. The annual mean objective is 40 µg/m³, the selection of 35 µg/m³ as the threshold was selected to account for model uncertainty.

6.1.3 The southern part of the site is located within the GMCA AQMA. This AQMA also covers Moseley Road and AQMA patches are present along Birchfields Road. The AQMAs on Birchfields Road are declared on the road, rather than any sensitive receptor locations due to the methodology used to declare the AQMA. The site location and its relationship to the AQMA are shown in **Appendix A**.

6.2 Air Quality Monitoring

Nitrogen Dioxide (NO₂)

6.2.1 MCC operate one urban background diffusion tube approximately 50 m east of the site. There are no representative roadside monitors near the site. The results from the diffusion tube are shown in **Table 5** and the monitor locations are shown in **Appendix A**.

Table 5: Annual Mean NO₂ Concentrations Monitored by MCC within the Study Area

Site ID & Classification	Location		Annual Mean NO ₂ Concentrations (µg/m ³)				
			2018	2019	2020	2021	2022
MAN81 (Urban Background)	386589	394083	21.80	23.10	16.60	18.10	18.80
Annual Mean NO ₂ air quality objective							40 µg/m ³

6.2.2 The monitoring results in **Table 5** indicate that annual mean concentrations of NO₂ were below the NO₂ annual mean objective at the identified monitoring sites during the period shown.

6.2.3 The results indicate that the short-term objective for NO₂ was unlikely to be exceeded at the identified monitoring sites as monitored annual mean concentrations were well below the indicative screening concentration of 60 µg/m³ during the period shown.

Particulate Matter (PM₁₀ & PM_{2.5})

6.2.4 MCC does not undertake PM₁₀ or PM_{2.5} monitoring in the vicinity of the proposed development site, neither is there any nearby representative monitoring available.

6.3 Background Concentrations

6.3.1 NO₂ concentrations have been derived from urban background monitor MAN81, and these concentrations all applied to all ESR. Background concentrations of PM₁₀ and PM_{2.5} were obtained from the background concentration maps provided by Defra for the grid squares covering the proposed development and receptor locations⁹ are shown in **Table 6**.

⁹ <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>

Table 6: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Squares Covering the Site and Receptor Locations*

Grid Square	Pollutant	2022	2025
		($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)
386500, 394500 (ESR 1 – 4)	NO ₂	18.80	17.02
	PM ₁₀	12.23	11.90
	PM _{2.5}	8.32	8.08
386500, 393500 (ESR 5 – 7)	NO ₂	18.80	17.02
	PM ₁₀	12.45	12.13
	PM _{2.5}	8.59	8.36

* Background concentrations obtained from the latest 2018 based background maps

7 Construction Dust Impact Assessment

7.1 Step 1 – Requirement for a Detailed Assessment

- 7.1.1 There are sensitive receptors located within 250m of the site boundary, therefore, a detailed assessment of the construction phase of the development has been undertaken. There are no ecological designations within 50m of the site boundary or 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s) which require assessment.

7.2 Step 2 – Assess the Risk of Dust Impacts

Step 2A Dust Emission Magnitude

- 7.2.1 The potential dust emission magnitude in relation to the development has been determined using the criteria detailed in **Table B1** in **Appendix B**. The scale and nature of works onsite were considered to determine the potential dust emission magnitude for demolition, earthwork activities, construction and trackout activities.
- 7.2.2 Information to determine the classification has been estimated from the site plans, Google Earth and information provided by the Applicant. The dust emission magnitude is outlined in **Table 7**.

Table 7: Dust Emission Magnitudes for Each Activity

Activity	Dust Emission Magnitudes	Justification for Sensitivity Classification
Demolition	Medium	<ul style="list-style-type: none"> The total building volume to be demolished is between 12,000 m³ - 75,000 m³.
Earthworks	Small	<ul style="list-style-type: none"> the site area is less than 18,000 m².
Construction	Medium	<ul style="list-style-type: none"> total building volume estimated to be constructed is between 12,000 to 75,000 m³.
Trackout	Small	<ul style="list-style-type: none"> there are likely to be less than 20 HDV outward movements in any one day

Step 2B Sensitivity of the Receptors to Dust Soiling and Health Effects

- 7.2.3 Dwellings are located within a distance of 50 m from demolition, earthworks and construction, and 20 m of road edges used by traffic associated with the site construction. In accordance with the criteria in **Table B2** in **Appendix B** and the IAQM guidance, the sensitivity of human receptors is **high**.

Step 2B Sensitivity of the Area to Dust Soiling and Human Health Effects of PM₁₀

- 7.2.4 The sensitivity of the area for dust soiling and human health effects has been determined using the criteria detailed in **Table B3** and **Table B4** respectively in **Appendix B**.
- 7.2.5 The sensitivity of the area to dust soiling and human health for each activity is summarised in **Table 8**.

Table 8: Outcome of Defining the Sensitivity of the Area

Pollution	Activity	Sensitivity of the Surrounding Area	Justification for Sensitivity Classification
Dust Soiling	Demolition	Medium	There are 10 – 100 highly sensitive receptors within 50 m of demolition activity.
	Earthworks	Medium	There are 10 – 100 highly sensitive receptors within 50 m of the site boundary.
	Construction	Medium	There are 10 – 100 highly sensitive receptors within 50 m of construction activity.
	Trackout	High	There are 10 – 100 highly sensitive receptors within 20 m of the trackout route, up to 200 m of the site exit.
Human Health	Demolition	Low	There are 10 – 100 highly sensitive receptors within 50 m of demolition activity. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .
	Earthworks	Low	There are 10 – 100 highly sensitive residential receptors within 50 m of the site boundary. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .
	Construction	Low	There are 10 – 100 highly sensitive receptors within 50 m of construction activity. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .
	Trackout	Low	There are 10 – 100 highly sensitive receptors within 20 m of the trackout route, up to 200 m of the site exit. Background PM ₁₀ pollutant concentrations are below 24 µg/m ³ .

Step 2C Risk of Impacts

- 7.2.6 The dust emission magnitude and sensitivity of the area were combined and the risk of impacts have been determined using the criteria detailed in **Table B5** to **Table B8** in **Appendix B**.
- 7.2.7 A summary of the risks, before mitigation measures are applied, for dust soiling and human health are shown in **Table 9**.

Table 9: Risk of Dust Impacts

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Medium	Low	Medium	Low

Potential Impact	Dust Risk			
	Demolition	Earthworks	Construction	Trackout
Human Health	Low	Negligible	Low	Negligible

7.3 Step 3 – Site-Specific Mitigation

- 7.3.1 Step 3 of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to the site risk for each activity. Mitigation measures specific to earthworks, construction and trackout are proposed based on the risk classifications in **Table 9**. Recommended mitigation measures are shown in **Appendix D**.
- 7.3.2 The general mitigation measures (for site management, preparing and maintaining the site, operating vehicle/machinery, operations and waste management), are appropriate for a site with a ‘medium risk’ classification¹⁰.

7.4 Step 4 – Determine Significant Effects

- 7.4.1 The characteristics of the site and the surrounding area suggest that mitigation would not be impracticable or ineffective. With the implementation of the mitigation measures, therefore, the residual impacts from the construction are considered to be not significant when considered following IAQM guidance.

8 Road Traffic Assessment

8.1 Baseline Assessment

- 8.1.1 The ADMS-Roads model was used to estimate contributions of vehicle exhaust emissions to annual NO₂, PM₁₀ and PM_{2.5} concentrations for the ‘baseline’ and ‘without development’ scenarios considered in the assessment.
- 8.1.2 The 24-hour AADT flows used in the assessment are detailed in **Appendix E. Table 10** details the results of the baseline assessment.

Table 10: Predicted Baseline NO₂, PM₁₀ and PM_{2.5} Annual Mean Concentrations (µg/m³) at Existing Sensitive Receptor Locations

Receptor	Receptor Height above Ground Level (m)	Scenario 1: Base Year (2022)			Scenario 2: Without Development (2025)		
		NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
ESR 1	1.5	22.02	12.66	8.57	19.56	12.33	8.33
ESR 2	1.5	21.90	12.70	8.59	19.45	12.37	8.35

¹⁰ For those mitigation measures that are general, the highest risk category should be applied. For example, if the site is medium risk for earthworks and construction, but a high risk for demolition and track-out, the general measures applicable to a high risk site should be applied.

Receptor	Receptor Height above Ground Level (m)	Scenario 1: Base Year (2022)			Scenario 2: Without Development (2025)		
		NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	NO ₂ (µg/m ³)	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)
ESR 3	1.5	21.19	12.66	8.56	18.88	12.33	8.33
ESR 4	1.5	22.25	12.66	8.57	19.76	12.34	8.33
ESR 5	1.5	23.85	13.06	8.94	21.04	12.73	8.70
ESR 6	1.5	21.82	12.91	8.85	19.39	12.58	8.61
ESR 7	1.5	20.83	12.88	8.83	18.58	12.56	8.60
Annual Mean NO ₂ & PM ₁₀ Air Quality Objective						40 (µg/m ³)	
Annual Mean PM _{2.5} Target Level Objective						25 (µg/m ³)	

8.1.3 The baseline air quality assessment for the base year (2022) and opening year 'without development' (2025) scenarios indicate that concentrations of NO₂, and PM₁₀ are below the respective annual mean air quality objectives and the PM_{2.5} annual mean target at all sensitive receptors assessed.

8.2 Impact Assessment

Existing Receptors

8.2.1 Predicted NO₂, PM₁₀ and PM_{2.5} concentrations for the opening year (2025) 'with development' scenario at xx ESR locations are detailed in **Table 11**, **Table 12** and **Table 13**. The predicted change in NO₂, PM₁₀ and PM_{2.5} concentrations at existing sensitive receptors between the 'without development' and 'with development' scenarios were compared to the significance criteria detailed in EPUK and IAQM guidance² and contained within **Table 4**.

Table 11: NO₂ Dispersion Modelling Results and Significance of Development for the Opening Year (2025) Scenario at Existing Receptor Locations

Receptor	Without Development µg/m ³	Concentration with Development µg/m ³	Impact µg/m ³	% of AQAL with Development	% Change relative to AQAL	Impact Descriptor
ESR 1	19.56	19.65	0.09	49.13	0.23	Negligible
ESR 2	19.45	19.54	0.09	48.85	0.23	Negligible
ESR 3	18.88	18.94	0.06	47.35	0.15	Negligible
ESR 4	19.76	19.83	0.07	49.58	0.17	Negligible
ESR 5	21.04	21.10	0.06	52.75	0.15	Negligible
ESR 6	19.39	19.41	0.02	48.53	0.05	Negligible

Receptor	Without Development µg/m³	Concentration with Development µg/m³	Impact µg/m³	% of AQAL with Development	% Change relative to AQAL	Impact Descriptor
ESR 7	18.58	18.59	0.01	46.48	0.03	Negligible
Annual Mean NO ₂ Air Quality Objective					40 (µg/m³)	

Table 12: PM₁₀ Dispersion Modelling Results and Significance of Development for the Opening Year (2025) Scenario at Existing Receptor Locations

Receptor	Without Development µg/m³	Concentration with Development µg/m³	Impact µg/m³	% of AQAL with Development	% Change relative to AQAL	Impact Descriptor
ESR 1	12.33	12.35	0.02	30.88	0.05	Negligible
ESR 2	12.37	12.39	0.02	30.97	0.05	Negligible
ESR 3	12.33	12.35	0.02	30.87	0.05	Negligible
ESR 4	12.34	12.35	0.01	30.88	0.02	Negligible
ESR 5	12.73	12.74	0.01	31.85	0.02	Negligible
ESR 6	12.58	12.59	0.01	31.47	0.02	Negligible
ESR 7	12.56	12.56	0.00	31.41	0.00	Negligible
Annual Mean PM ₁₀ Air Quality Objective					40 (µg/m³)	

Table 13: PM_{2.5} Dispersion Modelling Results and Significance of Development for the Opening Year (2025) Scenario at Existing Receptor Locations

Receptor	Without Development µg/m³	Concentration with Development µg/m³	Impact µg/m³	% of AQAL with Development	% Change relative to AQAL	Impact Descriptor
ESR 1	8.33	8.34	0.01	33.37	0.04	Negligible
ESR 2	8.35	8.36	0.01	33.45	0.04	Negligible
ESR 3	8.33	8.34	0.01	33.35	0.04	Negligible
ESR 4	8.33	8.34	0.01	33.38	0.04	Negligible

Receptor	Without Development $\mu\text{g}/\text{m}^3$	Concentration with Development $\mu\text{g}/\text{m}^3$	Impact $\mu\text{g}/\text{m}^3$	% of AQAL with Development	% Change relative to AQAL	Impact Descriptor
ESR 5	8.70	8.71	0.01	34.84	0.04	Negligible
ESR 6	8.61	8.62	0.01	34.47	0.04	Negligible
ESR 7	8.60	8.60	0.00	34.40	0.00	Negligible
Annual Mean PM _{2.5} Target Level Objective					25 ($\mu\text{g}/\text{m}^3$)	

8.2.2 The results of the ADMS-Roads modelling assessment for 2025 indicate that annual mean concentrations of NO₂ and PM₁₀ would be below the respective annual objectives as well as the PM_{2.5} annual mean target in 2025, at all existing sensitive receptor locations within the study area, for both 'with' and 'without' the development.

8.2.3 Predicted annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} are expected to have an increase of less than 0.5% at all existing sensitive receptors assessed. It is likely that concentrations predicted at individual receptor locations are also representative of worst-case exposure as they are close to the main junctions used by development traffic. The proposed development is therefore predicted to have a **negligible** impact on concentrations of NO₂, PM₁₀ and PM_{2.5} in 2025.

Proposed Receptors

8.2.4 LAQM.TG(22) provides a qualitative screening approach to determine whether there is a risk of exceedance of the one-hour NO₂ air quality objective. If the ambient NO₂ annual mean concentration is above 60 $\mu\text{g}/\text{m}^3$ there is a risk that the one-hour objective (200 $\mu\text{g}/\text{m}^3$) may be exceeded.

8.2.5 The predicted NO₂ concentrations are all well below 60 $\mu\text{g}/\text{m}^3$ and, therefore, when considered in light of guidance in LAQM.TG(22), the 1-hour mean objective is unlikely to be exceeded.

8.2.6 The short term PM₁₀ objective is predicted to be met at the proposed receptor location with no exceedances of the daily mean objective of 50 $\mu\text{g}/\text{m}^3$.

8.2.7 The site is therefore considered suitable for commercial use with regard to air quality.

9 Mitigation

9.1 The development is expected to have a not significant effect on local air quality. Based on the results of this assessment, no further mitigation in relation to the operational phase is deemed to be required.

9.2 The effects of construction dust will be controlled by means of dust mitigation and management, as outlined by the selection of measures in **Appendix D**.

9.3 Any gas-fired boilers installed must meet a minimum standard of <40 mgNO_x/kWh ^[2].

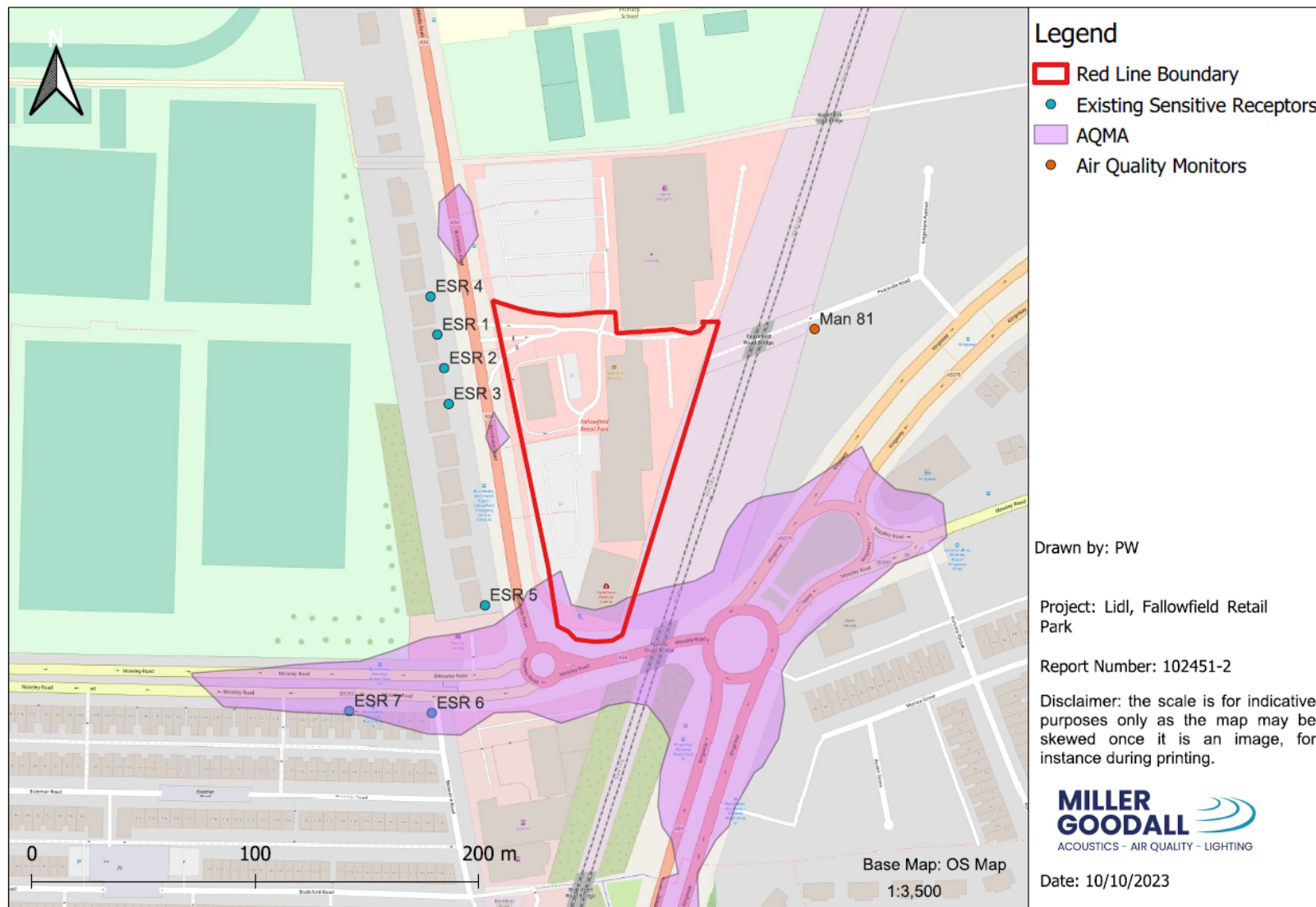
10 Summary of Impacts and Conclusion

- 10.1 This air quality report assesses the potential changes in air quality due to the construction and operation of the proposed development and whether these potential changes would significantly alter air quality.
- 10.2 The assessment of dust soiling and human health impacts during the demolition and construction phase of the development results in the proposal of dust mitigation measures. The implementation of these will ensure that residual dust impacts during the demolition and construction phase are not significant.
- 10.3 Concentrations of NO₂ and PM₁₀ are likely to be below their respective long and short-term objectives at the proposed development site which is therefore considered suitable for commercial use with regards to air quality. Concentrations of PM_{2.5} are expected to be below the annual mean target.
- 10.4 The proposed development is not expected to have a significant impact on local air quality.
- 10.5 There is, therefore, no reason for this application to be refused on the grounds of air quality.

APPENDICES

This page is left blank intentionally

Appendix A: Location of site, AQMA, MCC monitoring and receptors



This page is left blank intentionally

Appendix B: IAQM Dust Risk Assessment Methodology

The following section outlines criteria developed by the IAQM for the assessment of air quality impacts arising from construction and demolition activities⁶. The assessment procedure is divided into four steps and is summarised below:

Step 1: Screen the Need for a Detailed Assessment

An assessment will normally be required where there are human receptors within 250 m of the site boundary and/or within 50 m of the route(s) used by construction vehicles on the public highway, up to 500 m from the site entrance(s). Ecological receptors within 50 m of the site boundary or within 50 m of the route(s) used by construction vehicles on the public highway, up to 200 m from the site entrance(s), are also identified at this stage. An ecological receptor refers to any sensitive habitat affected by dust soiling. For locations with a statutory designation, such as a Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SACs) and Special Protection Areas (SPAs), consideration should be given as to whether the particular site is sensitive to dust. Some non-statutory sites may also be considered if appropriate.

Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is 'negligible' and any effects will not be significant.

Step 2: Assess the Risk of Dust Impacts

In step two, a site is allocated to a risk category on the basis of the scale and nature of the works (Step 2A) and the sensitivity of the area to dust impacts (Step 2B). These two factors are combined in Step 2C to determine the risk of dust impacts before the implementation of mitigation measures. The assigned risk categories may be different for each of the construction activities outlined by the IAQM (construction, demolition, earthworks and trackout). A site can be divided into zones, for example on a large site where there are differing distances to the nearest receptors.

Step 2A: Define the Potential Dust Emission Magnitude

Dust emission magnitude is based on the scale of the anticipated works and is classified as Small, Medium or Large. The IAQM guidance recommends that the dust emission magnitude is determined separately for demolition, earthworks, construction and trackout. **Table B1** describes the potential dust emission class criteria for each outlined activity.

Table B1: Criteria Used in the Determination of Dust Emission Magnitude

Activity	Criteria used to Determine Dust Emission Magnitude		
	Small	Medium	Large
Demolition	Total building volume <12,000 m ³ , construction materials with low potential for dust release.	Total building volume 12,000 m ³ – 75,000 m ³ , potential dusty construction material.	Total building volume >75,000 m ³ , potentially dusty construction material.
Earthworks	Total site area <18,000 m ² , soil type with large grain	Total site area 18,000 – 110,000 m ² , moderately dusty soil type	Total site area >110,000 m ² , potentially dusty soil type
Construction	Total building volume <12,000 m ³ .	Total building volume 12,000 – 75,000 m ³ .	Total building volume >75,000 m ³ .
Trackout	<20 outward HDV trips in any one day. Unpaved road length <50 m.	20-50 outward HDV trips in any one day. Unpaved road length 50-100 m.	>50 outward HDV trips in any one day. Unpaved road length >100 m.

Step 2B: Define the Sensitivity of the Area

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

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

The criteria detailed in **Table B2** is used to determine the sensitivity of the receptor in relation to dust soiling, health effects and ecological effects.

Table B2: Criteria for Determining Sensitivity of Receptors

Sensitivity of Receptor	Criteria for Determining Sensitivity		
	Dust Soiling Effects	Health Effects of PM ₁₀	Ecological Sites
High	Dwellings, museums and other culturally important collections, medium and long-term car parks and car showrooms	Residential properties, hospitals, schools and residential care homes	International or national designation <i>and</i> the features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great Britain
Medium	Parks, places of work	Office and shop workers not occupationally exposed to PM ₁₀	Presence of an important plant species where dust sensitivity is uncertain or locations with a national designation with features that may be affected by dust deposition
Low	Playing fields, farmland, footpaths, short-term car parks and roads	Public footpaths, playing fields, parks and shopping streets	Local designation where features may be affected by dust deposition

Table B3 and **Table B4** are then used to define the sensitivity of the area to dust soiling and human health effects. **Table B5** is used to define the sensitivity of the area to ecological impacts. This should be derived for each of construction, demolition, earthworks and trackout.

Table B3: Sensitivity of the Area to Dust Soiling Effects on People and Property.

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

*distances considered are to the dust source

Table B4: Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Annual Mean PM ₁₀ Concentrations	Number of Receptors	Distance from the Source (m)				
			<20	<50	<100	<200	<350
High	>32 µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32 µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28 µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24 µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32 µg/m ³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32 µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24 µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low

Table B5: Sensitivity of the Area to Ecological Impacts^a

Receptor Sensitivity	Distance from Source (m) ^b	
	<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. Only the highest level of area sensitivity from the table needs to be considered.

^b 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

The sensitivity of the area is then summarised.

Step 2C Define the Risks of Impacts

The dust emission magnitude from **Table B1** and sensitivity of the area and receptors from **Table B2**, **Table B3**, **Table B4** and **Table B5** are combined, and the risk of impacts from each activity (demolition, earthworks, construction and trackout) before mitigation is applied, is determined using the criteria detailed in **Table B6** to **Table B9**.

Table B6: Risk of Dust Impacts - Demolition

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

Table B7: Risk of Dust Impacts- Earthworks

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

Table B8: Risk of Dust Impacts- Construction

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

Table B9: Risk of Dust Impacts- Trackout

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

Step 3 Determine Site Specific Mitigation

Step three of the IAQM guidance identifies appropriate site-specific mitigation. These measures are related to whether the site is a low, medium or high risk site.

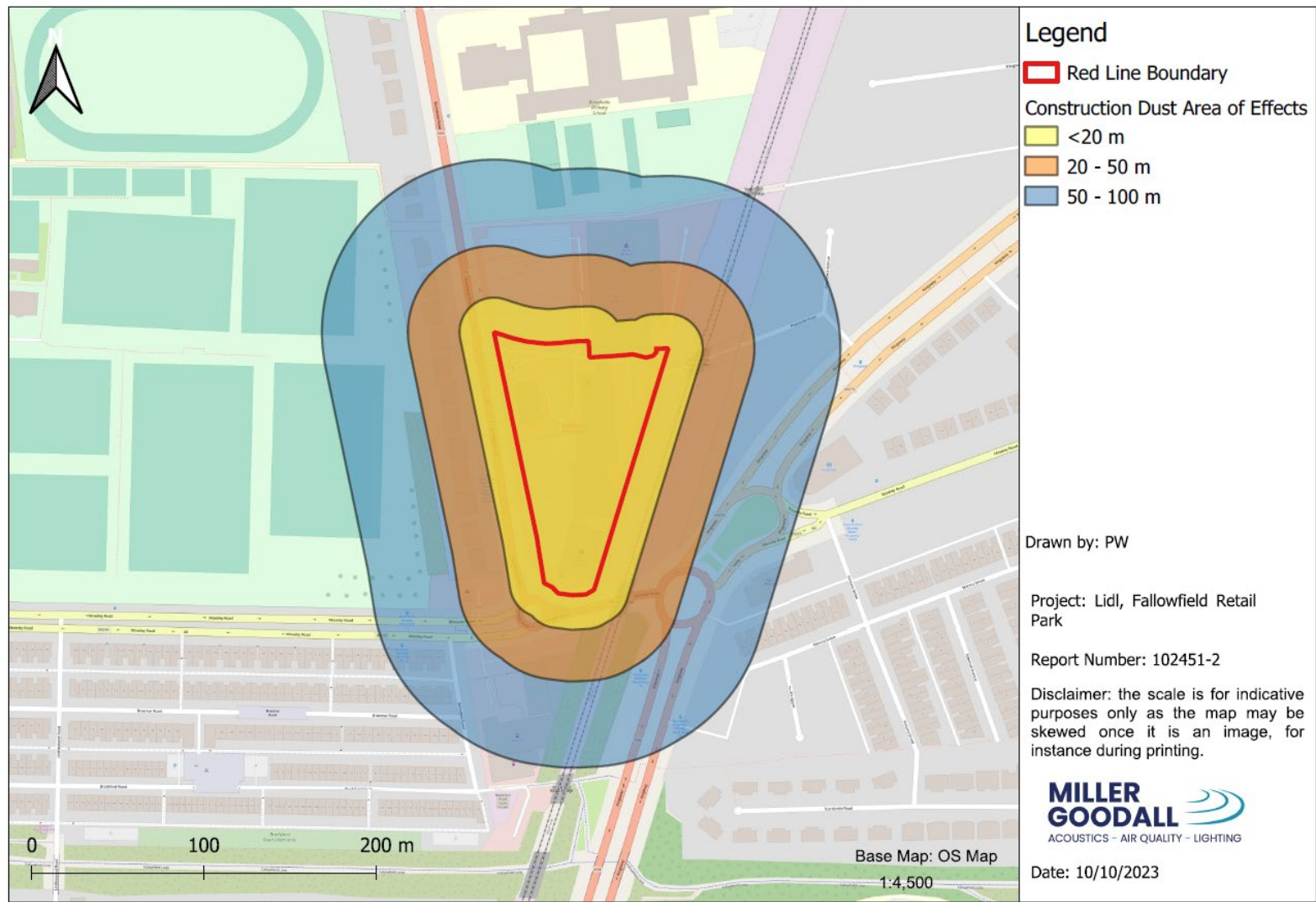
Step 4 Determine Significance of Residual Effects

At step four the significance of residual effects is assessed. For almost all construction activity, the aim should be to prevent significant effects on receptors through the use of effective mitigation. Experience shows that this is normally possible. Hence the residual effect will normally be 'not significant'.

There may be cases where, for example, there is inadequate access to water for dust suppression to be effective, and even with other mitigation measures in place there may be a significant effect. Therefore, it is important to consider the specific characteristics of the site and the surrounding area to ensure that a conclusion of no significant effect is robust.

This page is left blank intentionally

Appendix C: Construction Dust Area of Effects



This page is left blank intentionally

Appendix D: IAQM Dust Assessment Mitigation

xx Highly Recommended

x Desirable

Measures relevant for demolition, earthworks, construction and trackout

Measures relevant for demolition, earthworks, construction and trackout

Mitigation Measure	Medium Risk
Site Management	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	xx
Develop a Dust Management Plan.	xx
Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the site boundary.	xx
Display the head or regional office contact information.	xx
Record and respond to all dust and air quality pollutant emissions complaints.	xx
Make complaints log available to the local authority when asked.	xx
Carry out regular site inspections to monitor compliance with air quality and dust control procedures, record inspection results, and make an inspection log available to the local authority when asked.	xx
Increase the frequency of site inspections by those accountable for dust and air quality pollutant emissions issues when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions.	xx
Record any exceptional incidents that cause dust and air quality pollutant emissions, either on or off the site, and the action taken to resolve the situation is recorded in the log book.	xx
Preparing and maintaining the site	
Plan site layout: machinery and dust causing activities should be located away from receptors.	xx
Erect solid screens or barriers around dust activities or the site boundary that are, at least, as high as any stockpiles on site.	xx
Fully enclosure site or specific operations where there is a high potential for dust production and the site is active for an extensive period.	xx
Install green walls, screens or other green infrastructure to minimise the impact of dust and pollution.	x
Avoid site runoff of water or mud.	xx
Keep site fencing, barriers and scaffolding clean using wet methods.	xx
Remove materials from site as soon as possible.	xx
Cover, seed or fence stockpiles to prevent wind whipping.	xx
Carry out regular dust soiling checks of buildings within 100m of site boundary and cleaning to be provided if necessary.	x
Agree monitoring locations with the Local Authority.	xx
Where possible, commence baseline monitoring at least three months before phase begins.	xx
Put in place real-time dust and air quality pollutant monitors across the site and ensure they are checked regularly.	xx
Operating vehicle/machinery and sustainable travel	
Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone.	xx
Ensure all non-road mobile machinery (NRMM) comply with the standards set within this guidance.	xx

Mitigation Measure	Medium Risk
Ensure all vehicles switch off engines when stationary – no idling vehicles.	xx
Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where possible.	xx
Impose and signpost a maximum-speed-limit of 10mph on surfaced haul routes 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).	x
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	xx
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).	xx
Operations	
Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.	xx
Ensure an adequate water supply on the site for effective dust/particulate matter mitigation (using recycled water where possible).	xx
Use enclosed chutes, conveyors and covered skips.	xx
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	xx
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.	xx
Waste management	
Reuse and recycle waste to reduce dust from waste materials	xx
Avoid bonfires and burning of waste materials.	xx

Measures specific to demolition

Mitigation Measure	Medium Risk
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).	x
Ensure water suppression is used during demolition operations.	xx
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	xx
Bag and remove any biological debris or damp down such material before demolition.	xx

Measures specific to construction

Mitigation Measure	Medium Risk
Avoid scabbling (roughening of concrete surfaces) if possible	x
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	xx

Mitigation Measure	Medium Risk
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.	x
For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.	x

Measures specific to trackout

Mitigation Measure	Low Risk
Regularly use a water-assisted dust sweeper on the access and local roads, as necessary, to remove any material tracked out of the site.	x
Avoid dry sweeping of large areas.	x
Ensure vehicles entering and leaving sites are securely covered to prevent escape of materials during transport.	x
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	x

This page is left blank intentionally

Appendix E: Assessment and Model Inputs

This appendix outlines the inputs used in the road traffic emissions assessment.

Future Year Background Concentrations

Background concentrations of NO₂ for the opening year (2025) have been determined using the following formula:

$$\text{Future Year Concentration} = \text{Monitored Base Year Concentration} \times \frac{\text{Defra Map Future Year Concentration}}{\text{Defra Map Base Year Concentration}}$$

Table E1 shows the predicted 2025 background NO₂ concentration at each monitoring location.

Table E1: Calculation of 2025 Background NO_x and NO₂ Concentrations

Monitoring Site	Pollutant	2022 Monitored Background Concentration	Defra Map 2022 Concentration	Defra Map 2025 Concentration	Calculated 2025 Background Concentration
MAN81	NO ₂	18.8	15.89	14.39	17.02

Traffic Data

The ADMS-Roads model requires the inclusion of detailed road traffic data for the routes to be affected by the proposed development.

Traffic data has been provided as 24-hour Annual Average Daily Traffic (AADT) and heavy-duty vehicle percentages (HGV%). No average speed traffic survey information was available, therefore, posted speed limits have been utilised in the model. Areas of congestion, queuing and junction locations have been modelled at reduced speed of 5 km/h.

Following review of aerial imagery and Street View© of the study area, it was concluded that additional modelling for street canyons and gradients above 2.5% ^[1] were not necessary.

The traffic data used in the assessment is detailed in **Table E2** and presented in **Figure E1**.

Table E2: Traffic Data used in the Assessment

Link Number	Road	Max Speed (km/h)	2022 Base Year		2025 Without Development		2025 With Development		Total Development AADT Change
			AADT LDV	AADT HDV	AADT LDV	AADT HDV	AADT LDV	AADT HDV	
1	Birchfields Road (North Site Access)	48	12,664	380	13,022	391	13,477	393	457
2	Birchfields Road (South Site Access)	48	12,664	380	13,022	391	13,653	393	633
3	Moseley Road (West)	48	14,161	425	14,562	437	14,722	439	162

Link Number	Road	Max Speed (km/h)	2022 Base Year		2025 Without Development		2025 With Development		Total Development AADT Change
			AADT LDV	AADT HDV	AADT LDV	AADT HDV	AADT LDV	AADT HDV	
4	Moseley Road (East)	48	14,161	425	14,562	437	15,032	439	472
5	Site Access	48	0	0	0	0	1,086	4	1,090

Figure E1: Spatial Model Scope

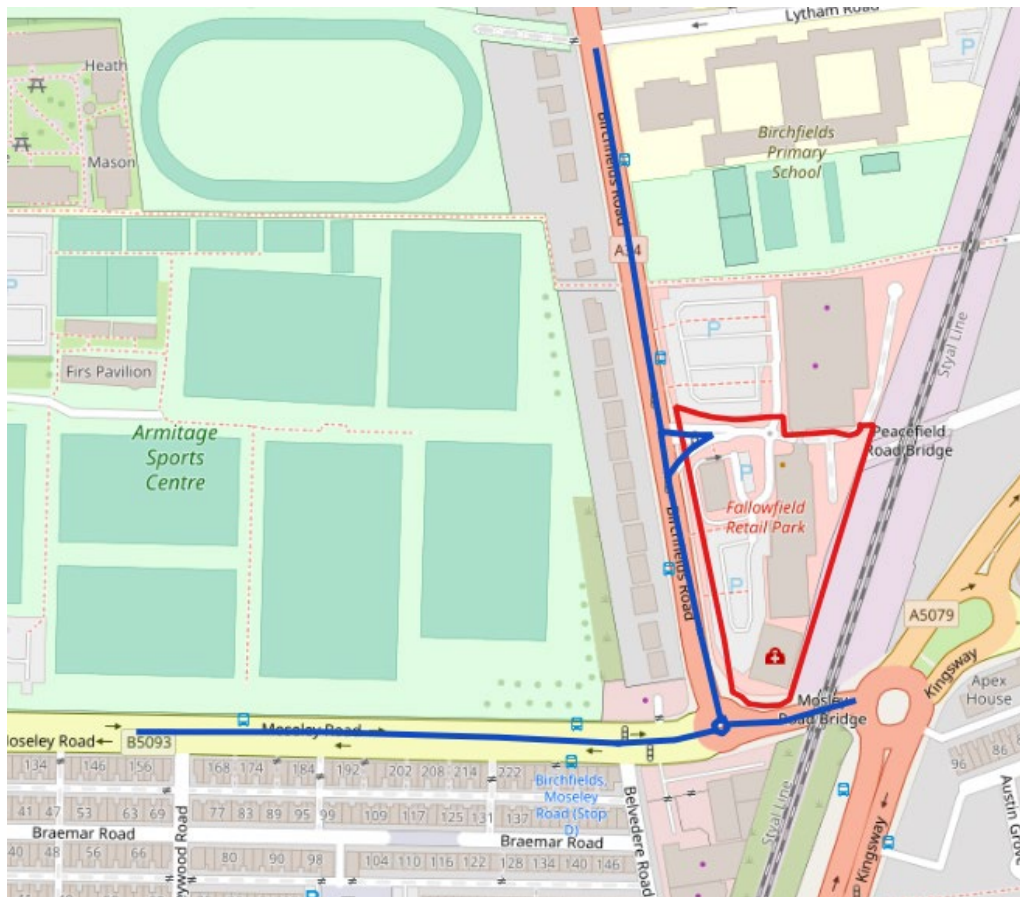


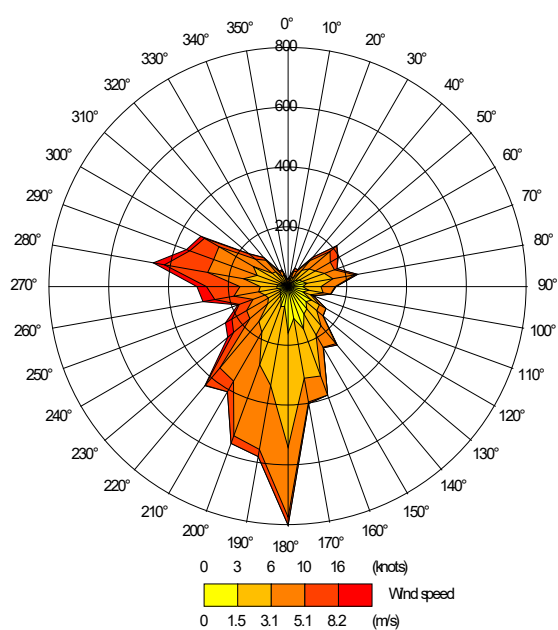
Image displayed on OS OpenMap, a free OS resource for GIS. The model was drawn using OS Mastermap, ensuring each road link was drawn to accurate road widths.

Meteorological Data

The air quality assessment includes the use of the 2022 Manchester Airport meteorological recording station.

The Manchester Airport recording station is located approximately 10.5 km to the south west of the proposed development site and is considered to be the most representative of the site conditions in terms of altitude and distance.

The 2022 wind rose for Manchester Airport recording station is provided in **Figure E2**.

Figure E2: Wind Rose

Dispersion and Meteorological Site Characteristics

The air dispersion characteristics for the site and meteorological recording station differ, therefore, these have been adjusted accordingly within ADMS-Roads. **Table E3** details the adjustments made.

Table E3: Dispersion and Meteorological Site Characteristics

Parameter	Dispersion Site	Meteorological Site
Surface Roughness	0.5 m	0.2 m
Surface Albedo	0.23	0.23
Minimum Monin-Obukhov Length	30 m	30 m
Priestley-Taylor Parameter	1	1

Glossary of Terms

AADT Annual Average Daily Traffic flow

Air Quality Standard Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health and the environment

Air Quality Objective Pollutant Objectives incorporate future dates by which a standard is to be achieved, taking into account economic considerations, practicability and technical feasibility

Annual Mean A mean pollutant concentration value in air which is calculated on a yearly basis, yielding one annual mean per calendar year. In the UK air quality regulations, the annual mean for a particular substance at a particular location for a particular calendar year is:

- (a) in the case of lead, the mean of the daily levels for that year;
- (b) in the case of nitrogen dioxide, the mean of the hourly means for that year;
- (c) in the case of PM₁₀, the mean of the 24-hour means for that year.

Annoyance (Dust) Loss of amenity due to dust deposition or visible dust plumes, often related to people making complaints, but not necessarily sufficient to be a legal nuisance.

AQAP Air Quality Action Plan

AQMA Air Quality Management Area

AQMP Air Quality Management Plan

AQO Air Quality Objective

AQS Air Quality Strategy for England, Scotland, Wales and Northern Ireland

Background Concentrations The term used to describe pollutant concentrations which exist in the ambient atmosphere, excluding local pollution sources such as roads and stacks

Construction Any activity involved with the provision of a new structure (or structures), its modification or refurbishment. A structure will include a residential dwelling, office building, retail outlet, road, etc.

Construction Impact Assessment An assessment of the impacts of demolition, earthworks, construction and trackout. In this Guidance, specifically the air quality impacts.

Defra Department for Environment, Food and Rural Affairs

Demolition Any activity involved with the removal of an existing structure (or structures). This may also be referred to as de-construction, specifically when a building is to be removed a small part at a time.

Deposited Dust that is no longer in the air and which has settled onto a surface. Deposited dust is also sometimes called amenity dust or nuisance dust, with the term nuisance applied in the general sense rather than the specific legal definition.

DMP Dust Management Plan; a document that describes the site-specific methods to be used to control dust emissions.

Dust Solid particles that are suspended in air, or have settled out onto a surface after having been suspended in air. The terms dust and particulate matter (PM) are often used interchangeably, although in some contexts one term tends to be used in preference to the other. In this guidance the term 'dust' has been used to include the particles that give rise to soiling, and to other human health and ecological effects. Note: this is different to the definition given in BS 6069, where dust refers to particles up to 75 µm in diameter.

Earthworks Covers the processes of soil-stripping, ground-levelling, excavation and landscaping.

Effects The consequences of the changes in airborne concentration and/or dust deposition for a receptor. These might manifest as annoyance due to soiling, increased morbidity or mortality due to exposure to PM₁₀ or PM_{2.5} or plant dieback due to reduced photosynthesis. The term 'significant effect' has a specific meaning in EIA regulations. The opposite is an insignificant effect. In the context of construction impacts any effect will usually be adverse, however, professional judgement is required to determine whether this adverse effect is significant based in the evidence presented.

EPUK Environmental Protection UK

HDV Heavy Duty Vehicle

Impacts The changes in airborne concentrations and/or dust deposition. A scheme can have an 'impact' on airborne dust without having any 'effects', for instance if there are no receptors to experience the impact.

LAQM Local Air Quality Management

LDV Light Duty Vehicle

Mg/m³ Microgrammes (of pollutant) per cubic metre of air. A measure of concentration in terms of mass per unit volume. A concentration of 1 µg/m³ means that one cubic metre of air contains one microgramme (millionth of a gramme) of pollutant

NO₂ Nitrogen Dioxide

NO_x A collective term used to represent the mixture of nitrogen oxides in the atmosphere, as nitric oxide (NO) and nitrogen dioxide (NO₂)

NPPF National Planning Policy Framework

Nuisance The term nuisance dust is often used in a general sense when describing amenity dust. However, this term also has specific meanings in environmental law:

Statutory nuisance, as defined in S79(1) of the Environmental Protection Act 1990 (as amended from time to time).

Private nuisance, arising from substantial interference with a person's enjoyment and use of his land.

Public nuisance, arising from an act or omission that obstructs, damages or inconveniences the right of the community.

Each of these applying in so far as the nuisance relates to the unacceptable effects of emissions. It is recognised that a significant loss of amenity may occur at lower levels of emission than would constitute a statutory nuisance.

Note: as nuisance has a specific meaning in environmental law, and to avoid confusion, it is recommended that the term is not used in a more general sense.

PM_{2.5} The fraction of particles with a mean aerodynamic diameter equal to, or less than, 2.5 µm. More strictly, particulate matter which passes through a size selective inlet as defined in the reference method for the sampling and measurement of PM_{2.5}, EN 14907, with a 50% efficiency cut-off at 2.5 µm aerodynamic diameter

PM₁₀ The fraction of particles with a mean aerodynamic diameter equal to, or less than, 10 µm. More strictly, particulate matter which passes through a size selective inlet as defined in the reference method for the sampling and measurement of PM₁₀, EN 12341, with a 50% efficiency cut-off at 10 µm aerodynamic diameter

Running Annual Mean A mean pollutant concentration value in air which is calculated on an hourly basis, yielding one running annual mean per hour. The running annual mean for a particular substance at a particular location for a particular hour is the mean of the hourly levels for that substance at that location for that hour and the preceding 8759 hours

Trackout The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

