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MILLER HOMES LIMITED

HOLLEYHEY DRIVE, NORTHENDEN

AIR QUALITY ASSESSMENT

APRIL 2021

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HOLLYHEY DRIVE, NORTHENDEN

AIR QUALITY ASSESSMENT

APRIL 2021

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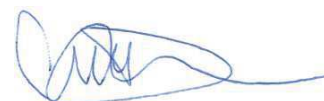
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GM11670-001	Existing and Proposed Sensitive Receptor Locations	1:5,000

EXECUTIVE SUMMARY

An air quality assessment has been undertaken to accompany a planning application for the proposed redevelopment of Manchester College situated off Hollyhey Drive, Northenden. The assessment has considered dust and fine particulate matter emissions during the construction phase and road traffic emissions during the operational phase.

During the construction phase, the risk of dust soiling effects is classed as high for demolition, earthworks and construction and low for trackout; the risk of human health effects is classed as medium for demolition and low for earthworks, construction and trackout. The risk of ecological effects on the nearby Wythenshawe Local Nature Reserve is classed as low for demolition, earthworks, construction and trackout. Mitigation measures are proposed, based on best practice guidance, to further reduce any potential impacts.

For the operational phase assessment, annual mean NO₂, PM₁₀ and PM_{2.5} concentrations have been modelled at fourteen existing sensitive receptor locations, as well as two proposed sensitive receptor locations, using the most recent Emission Factor Toolkit available from DEFRA (EFT v10.1). Predicted annual mean concentrations have been compared to the relevant air quality objectives and target level.

The operational phase assessment concludes that the development will not result in concentrations of NO₂, PM₁₀ and PM_{2.5} exceeding the air quality objectives/target values during either the 2022 opening year or the 2026 future year. Air quality effects are therefore considered to be 'not significant'.

The assessment demonstrates that the proposed development will not lead to an unacceptable risk from air pollution, or to any breach of relevant national planning policies or of national objectives. Therefore, there are no material reasons in relation to air quality why the proposed scheme should not proceed, subject to appropriate planning conditions.

1 INTRODUCTION

1.1 Background

- 1.1.1 Wardell Armstrong LLP (WA) has been commissioned by Miller Homes Limited to undertake an air quality assessment to accompany a planning application for the proposed redevelopment of Manchester College situated off Hollyhey Drive, Northenden. The proposals are for up to approximately 228 dwellings.
- 1.1.2 The proposed development site is situated on the former Manchester College site in Northenden, located within the administrative area of Manchester City Council (MCC). Existing residential properties surround all aspects of the site, with the A5103 Princess Parkway located to the east. It is understood that site access will be provided from Moss Hey Drive, which is located just off the B5166 Sale Road.
- 1.1.3 Sections of the Greater Manchester Air Quality Management Area (AQMA) are located close to the proposed development site, along the A5103 Princess Parkway and the B5166 Sale Road. Therefore, whilst the proposed development site is not located directly within a known area of air quality concern, traffic generated by the scheme is likely to travel through these sections of the AQMA, based on traffic data information supplied by Eddisons (the appointed transport team).
- 1.1.4 This report details the results of the air quality assessment undertaken to accompany an outline planning application for the proposed development. The assessment has considered dust and fine particulate matter emissions during the construction phase and road traffic emissions during the operational phase. Consideration has also been given to the potential air quality impacts for future residents of the proposed development site.

2 LEGISLATION AND POLICY CONTEXT

2.1 Relevant Air Quality Legislation and Guidance

2.1.1 The air quality assessment has been undertaken in accordance with the following legislation and guidance (further details are included in **Appendix A**):

- EU Ambient Air Quality Directive 2008/50/EC (i.e. the CAFE Directive);
- The Environment Act 1995;
- Department of Environment, Food and Rural Affairs, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, July 2007;
- The Air Quality Standards Regulations 2010;
- Department for Environment, Food and Rural Affairs, Local Air Quality Management Technical Guidance LAQM.TG(16), February 2018;
- Ministry of Housing, Communities and Local Government, National Planning Policy Framework, February 2019; and
- Department for Communities and Local Government, Planning Practice Guidance: Air Quality, November 2019.

2.2 Assessment Criteria

2.2.1 The relevant air quality objectives and limit values for this assessment are included within Table 1.

Table 1: Air Quality Objectives and Limit Values Relevant to the Assessment*			
Pollutant	Objective/Limit Value	Averaging Period	Obligation
Nitrogen Dioxide (NO ₂)	200µg/m ³ , not to be exceeded more than 18 times a year	1-hour mean	All local authorities
	40µg/m ³	Annual mean	All local authorities
Particulate Matter (PM ₁₀)	50µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean	England, Wales and Northern Ireland
	40µg/m ³	Annual mean	England, Wales and Northern Ireland
Particulate Matter (PM _{2.5})	Limit Value of 25µg/m ³	Annual mean	England, Wales and Northern Ireland
*In accordance with the Air Quality Standards Regulations 2010			

2.2.2 Further details of where these objectives and limit values apply are detailed in **Appendix A**.

3 ASSESSMENT METHODOLOGY

3.1 Consultation and Scope of Assessment

3.1.1 The assessment methodology was discussed with Ms Rebecca Twigg, Environmental Protection Officer, and Ms Sharon McAndrew, Neighbourhood Officer at Manchester City Council (MCC), via email correspondence between 25th February and 4th March 2021.

3.1.2 A summary of the consultation undertaken is provided in Table 2.

Table 2: Summary of Consultation		
Assessment Stage	Proposed Method	Response
Construction phase assessment to consider dust and fine particulate matter (PM ₁₀)	Qualitative assessment in accordance with Institute of Air Quality Management (IAQM) guidance	No objection to proposed method
Operational phase assessment to consider nitrogen dioxide (NO ₂) and fine particulate matter (PM ₁₀ and PM _{2.5})	Detailed assessment using the ADMS-Roads atmospheric dispersion model, in accordance with Environmental Protection UK (EPUK)/IAQM guidance, and with all predicted concentrations compared to air quality objectives/limit values	No objection to proposed method
	2019 meteorological data from Manchester Airport recording station	No objection to proposed method
	Background concentrations from 2018-based DEFRA default maps	No objection to proposed method
	Assessment undertaken using EFT v10.1 emission factors.	No objection to proposed method
	Model verification using roadside diffusion tube MAN93	No objection to proposed method
	Review of traffic data in relation to nearby Local Nature Reserve to establish if further consideration will be required	No objection to proposed method

3.1.3 Ms Twigg replied via email on 25th February, on behalf of Ms McAndrew, to provide comment on the proposed methodology in Ms McAndrews absence. Ms Twigg requested that cumulative developments were considered within the assessment and provided information relating to MCC's Electric Vehicle Charging Best Practice Recommendations. These matters are discussed further in **Appendix C** and Section 5 of this report, respectively.

3.1.4 Ms McAndrews replied via email on 4th March to state the methodology was satisfactory and that she had 'no additional comments to add' to Ms Twigg's initial response.

3.2 Construction Phase Assessment

3.2.1 To assess the impacts associated with dust and fine particulate matter releases during the construction phase of the development, an assessment has been undertaken in accordance with guidance from the Institute of Air Quality Management (IAQM)¹. Further details of the construction assessment methodology are provided in **Appendix B**.

3.2.2 The closest sensitive human receptors to where construction phase activities will take place are residential and commercial in nature and are detailed in Table 3.

Table 3: Existing Sensitive Receptors Considered in the Construction Phase Assessment		
Receptor	Direction from the Site	Approximate Distance from the Site Boundary (m)
Existing residential dwellings off Hollyhey Drive	North	Immediately adjacent at closest point
Existing residential dwellings off Fairmead Road	East	Immediately adjacent at closest point
Existing residential dwellings off B5166 Sale Road	South	Immediately adjacent at closest point
Existing residential dwellings off Moss Hey Drive	South west	Immediately adjacent at closest point
Existing residential dwellings off Purley Avenue	West	Immediately adjacent at closest point
The Wythenshawe Local Nature Reserve	South	Approximately 55m at closest point

3.2.3 The Wythenshawe Park Local Nature Reserve (LNR) is located approximately 55m from the site and is within 50m of the route(s) to be potentially used by construction vehicles on the public highway (i.e. B5167 Wythenshawe Road). Ecological effects at the LNR have therefore been included within this assessment.

3.2.4 The criteria used to assess the construction impact of the proposed development, and the associated significance of effects, at existing sensitive receptors are included in **Appendix B**.

¹ Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction, February 2014

3.3 Operational Phase Assessment

3.3.1 The air dispersion model ADMS-Roads (CERC, Version 5) has been used to assess the impacts associated with road traffic emissions during the operational phase assessment. The impacts have been assessed in accordance with guidance from Environmental Protection UK (EPUK) and the IAQM². Further details of the modelling and assessment methodology are provided in **Appendix C**.

3.3.2 NO₂, PM₁₀ and PM_{2.5} concentrations have been predicted at existing sensitive receptors, as these are the pollutants considered most likely to exceed the objectives and limit values.

3.3.3 Atmospheric dispersion modelling has been carried out to estimate pollutant concentrations, due to road traffic emissions, for five assessment scenarios as follows:

- **Scenario 1:** 2019 Verification and Base Year, the most recent year for which traffic flow information, local monitored pollution data and meteorological data are all available;
- **Scenario 2:** 2022 Opening Year, without the proposed development in place;
- **Scenario 3:** 2022 Opening Year, with the proposed development in place;
- **Scenario 4:** 2026 Future Year, without the development in place; and,
- **Scenario 5:** 2026 Future Year, with the development in place.

3.3.4 The traffic data utilised in the air quality assessment, provided by Eddisons, is based upon the traffic generated by a total of 236 residential dwellings. The actual number of proposed residential dwellings has now fallen to 228 units, and so the air quality assessment is considered to be overly robust. Therefore, it is considered likely that the actual pollutant concentrations detailed within this report will be slightly lower than those predicted in this report.

Existing Sensitive Receptors

3.3.5 A number of representative existing sensitive receptors (identified as ESR 1 to ESR 14) have been selected for consideration in the air quality assessment. These have been chosen based on their sensitivity and their proximity to roads which will be affected by development generated traffic.

² Moorcroft and Barrowcliffe et al, Land-Use Planning and Development Control: Planning for Air Quality (v1.2), January 2017

3.3.6 Details of the receptors considered are provided in Table 4, and their locations are shown on drawing GM11670-001.

Table 4: Existing Sensitive Receptors Considered in Operational Phase Assessment				
Receptor	Address	Grid Reference		Receptor Type
		Easting	Northing	
ESR 1	Moss Hey Drive	381995	390293	Residential
ESR 2*	B5166 Sale Road	381937	390305	Residential
ESR 3		382031	390216	Residential
ESR 4*		382103	390104	Residential
ESR 5*		382175	390073	Residential
ESR 6*	B5167 Wythenshawe Road	382101	390073	Residential
ESR 7		381652	390109	Residential
ESR 8	Yewtree Lane	382072	390564	Residential
ESR 9	Palatine Road	382386	390005	Residential
ESR 10	Yewtree Road	381930	390586	Residential
ESR 11	Pioneer House High School, Yewtree Road	381654	390636	School
ESR 12	B5166 Sale Road	381824	390406	Residential
ESR 13		381566	390583	Residential
ESR 14	Palatine Road [†]	382386	390005	Residential
*Situated within an Air Quality Management Area				
[†] Modelled at a height of 4m to represent an upstairs apartment				

3.3.7 The criteria used to assess the operational impact of the proposed development, and the associated significance of effects, at existing sensitive receptors are included in **Appendix C**.

Proposed Sensitive Receptors

3.3.8 Two proposed sensitive receptors (referred to as PR 1 to PR 2) have been selected within the development site boundary. These receptors are considered to be representative of the proposed residential areas which will be closest to the main

existing source(s) of pollution. In this case, the main source is considered to be vehicle emissions from B5166 Sale Road and the proposed site access road.

3.3.9 Pollutant concentrations at the proposed receptors have been predicted for scenarios 3 and 5 (as detailed in paragraph 3.3.3). It is only necessary to consider the 'with development' scenarios for the proposed receptors as they will not experience any 'without development' conditions. It is not therefore necessary to consider the changes in pollutant concentrations at the proposed receptors.

3.3.10 Details of the proposed sensitive receptors are provided in Table 5, and the location is shown on drawing GM11670-001.

Table 5: Proposed Sensitive Receptors Considered in the Operational Phase Assessment			
Receptor Point	Location	Grid Reference	
		Easting	Northing
PR 1	Locations considered to be representative of the closest proposed residential properties to B5166 Sale Road and the Site Access Road	382019	390284
PR 2	Location considered to be representative of a proposed residential development towards the middle of the development in close proximity to the Site Access Road.	382111	390384

3.3.11 The predicted concentrations at the proposed receptors have been assessed against the appropriate air quality objectives and limit values, as detailed in Table 1.

3.4 Limitations and Uncertainties

3.4.1 A recent study provides evidence that the previous version of the Emission Factor Toolkit (EFT), EFT v9.0, may be relied upon to predict the 'most likely' future emissions reductions where model verification has been undertaken using monitored data from 2016 or later³.

3.4.2 A further study in September 2020 concluded that the differences between the current EFT v.10.1 and the previous EFT v.9.0.1 are sufficiently small that the previous work to validate the EFT remains valid for the most recent edition⁴. The IAQM has yet to comment on these studies but has withdrawn previous guidance which stated a precautionary approach should be adopted whereby a sensitivity analysis is also undertaken as part of any air quality assessment.

³ <https://www.aqconsultants.co.uk/news/march-2020/defra%E2%80%99s-emission-factor-toolkit-now-matching-measu>

⁴ Air Quality Consultants, Comparison of EFT v10 with EFT v9, September 2020

3.4.3 Several steps have been taken to ensure the model is as accurate and representative as possible. These comprise:

- Consultation has been undertaken with MCC to confirm their agreement with the methodology used within the assessment;
- Detailed traffic data has been obtained from the appointed transport consultant following consultation to ensure its appropriateness and robustness;
- The latest Defra LAQM tools have been incorporated into the assessment following their release in August 2020;
- Meteorological data, obtained from a representative meteorological recording station, has been incorporated into the assessment;
- The nearby Council operated diffusion tube monitoring location (REF: MAN93) has been considered within the assessment to allow for model verification. Model verification factor(s) have been applied to modelled NO_x concentrations, which are then input into the Defra NO_x to NO₂ calculator tool, to predict total NO₂ concentrations at each receptor considered in the assessment; and
- Extensive detailed modelling of the roads included in the study area has been undertaken. Individual road lengths, widths and vehicle speeds have been reviewed in detail, as have the locations of the ESRs and diffusion tube(s), in relation to their proximity to the modelled roads, to ensure all information is as accurate as possible.

3.5 The Wythenshawe Local Nature Reserve (LNR)

3.5.1 Guidance prepared by the IAQM provides criteria for when a detailed ecological assessment may be required. The relevant criteria for a residential development include the following for any road within 200m of a designated habitat site that will see an increase in vehicle movements as a result of a proposed development:

- A change in traffic volume of 1,000 AADT or more;
- A change in Heavy Duty Vehicles (HDV) of 200 AADT or more.

3.5.2 Consideration should be given to the net increase in vehicle movements from the proposed development both in isolation and in combination with vehicle movements

associated with other committed developments in the area.

- 3.5.3 The Wythenshawe LNR is situated to the south of the proposed development and is approximately 55m away at its closest point. The B1566 Sale Road is located within 200m of the Wythenshawe LNR and, from information provided by Eddisons, it is understood that a small number of vehicles from the proposed development will travel along this road.
- 3.5.4 Wythenshawe Road runs adjacent to the LNR but will not see an increase in vehicle movements as a result of the proposed development.
- 3.5.5 Considering the proposed development in isolation, traffic data provided by Eddisons indicates that the B1566 Sale Road will see an increase of 586 AADT, which falls below the criteria outlined above to undertake a more detailed ecological assessment. It should be noted that the traffic data utilised in the air quality assessment indicates that all roads included in the assessment are not likely to see an increase in vehicle movements that exceed the above criteria.
- 3.5.6 For the purpose of this assessment, it has been confirmed by the appointed transport consultant for the project, Eddisons, that there are currently no committed developments in the local area. Consequently, it is not possible or necessary to undertake an 'in combination' assessment.
- 3.5.7 Therefore, air quality impacts on the Wythenshawe LNR have not been considered further within this assessment.

4 BASELINE SITUATION

4.1 Manchester City Council Local Air Quality Management

- 4.1.1 The proposed development site is located within the administrative area of MCC, which is responsible for the management of local air quality.
- 4.1.2 MCC is part of the Greater Manchester Combined Authority (GMCA) which oversees the management of air quality across the entirety of Greater Manchester.
- 4.1.3 GMCA currently has one declared Air Quality Management Area (AQMA), the Greater Manchester AQMA, which lies in parts of all of the 10 districts of Greater Manchester. It should be noted this AQMA is not region-wide and predominantly covers busy main roads within the GMCA including arterial routes, district centres and the airport.
- 4.1.4 The proposed development site is not situated within the Greater Manchester AQMA, however it is situated close to sections of the AQMA along roads which are likely to see an increase in vehicle movements as a result of the proposed development.
- 4.1.5 A review of the 2019 Air Quality Annual Status Report (ASR) for GMCA (the latest report available) indicates numerous air quality monitoring locations within MCC's borough.
- 4.1.6 There is one air quality monitoring location situated close to the proposed development site (REF: MAN93). According to the 2019 NO₂ diffusion tube dataset published by MCC on their website⁵, this tube recorded an annual mean, bias adjusted, NO₂ concentration of 42.90 µg/m³ in 2019. This therefore exceeds the NO₂ annual mean objective of 40 µg/m³.

4.2 Background Air Pollutant Concentrations

- 4.2.1 The air quality assessment needs to take into account background concentrations upon which the local, traffic derived, pollution is superimposed.
- 4.2.2 As there are currently no representative NO₂, PM₁₀ or PM_{2.5} background monitoring locations in the vicinity of the proposed development site, background concentrations have been obtained from the 2018-based Defra default concentration maps for the appropriate grid squares⁶.

⁵ https://www.manchester.gov.uk/downloads/download/6992/monitoring_data_reports

⁶ Accessed through the Defra Local Air Quality Management webpages (<http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>)

4.2.3 The background pollutant concentrations used in this assessment are detailed in Table 6.

Table 6: Background Pollutant Concentrations Used in the Air Quality Assessment*				
Pollutant	Annual Mean Concentrations (µg/m³)			
	NO _x	NO ₂	PM ₁₀	PM _{2.5}
2019 Base Year				
ESR 1-2, 7 & 10 – 13 (381500, 390500)	26.48	18.81	12.77	8.50
ESR 3-6, 8-9 & 14 (382500, 390500)	32.76	22.62	13.35	8.79
2022 Opening Year				
ESR 1-2, 7 & 10 – 13 (381500, 390500)	22.47	16.28	12.30	8.17
ESR 3-6, 8-9 & 14 (382500, 390500)	27.45	19.43	12.90	8.46
2026 Future Year				
ESR 1-2, 7 & 10 – 13 (381500, 390500)	18.68	13.77	11.98	7.93
ESR 3-6, 8-9 & 14 (382500, 390500)	22.29	16.13	12.58	8.21
*Obtained from the Defra 2018-based background maps				

4.3 Modelled Baseline Concentrations at Existing Sensitive Receptors

4.3.1 The baseline assessment (i.e. scenarios 1, 2 and 4) has been carried out for the existing sensitive receptors considered, in accordance with Defra guidance (i.e. using EFT v10.1). The adjusted NO₂ and unadjusted PM₁₀ and PM_{2.5} concentrations are detailed in Table 7.

Table 7: Predicted Adjusted NO ₂ and Unadjusted PM ₁₀ and PM _{2.5} Concentrations at Existing Sensitive Receptors for Scenarios 1 and 2									
Receptor	Calculated Annual Mean Concentrations (µg/m³)								
	Scenario 1: 2019 Base Year			Scenario 2: 2022 Opening Year, Without Development			Scenario 4: 2026 Future Year, Without Development		
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
ESR 1	25.42	13.96	9.19	21.06	13.51	8.85	16.88	13.23	8.62
ESR 2	28.58	14.50	9.51	23.38	14.06	9.16	18.43	13.80	8.93

Table 7: Predicted Adjusted NO₂ and Unadjusted PM₁₀ and PM_{2.5} Concentrations at Existing Sensitive Receptors for Scenarios 1 and 2

Receptor	Calculated Annual Mean Concentrations (µg/m ³)								
	Scenario 1: 2019 Base Year			Scenario 2: 2022 Opening Year, Without Development			Scenario 4: 2026 Future Year, Without Development		
	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}	NO ₂	PM ₁₀	PM _{2.5}
ESR 3	34.32	15.49	10.03	27.96	15.06	9.67	21.75	14.82	9.43
ESR 4	34.69	15.43	10.00	28.28	15.00	9.64	21.97	14.75	9.40
ESR 5	<u>45.99</u>	16.80	10.84	36.63	16.35	10.42	27.58	16.13	10.17
ESR 6	33.55	15.21	9.88	27.53	14.78	9.51	21.53	14.53	9.28
ESR 7	23.67	13.64	9.01	20.12	13.19	8.67	16.44	12.91	8.44
ESR 8	27.81	14.36	9.37	23.23	13.92	9.03	18.63	13.64	8.79
ESR 9	<u>43.05</u>	16.97	10.90	34.36	16.54	10.50	25.96	16.34	10.27
ESR 10	22.27	13.41	8.87	18.82	12.95	8.54	15.44	12.65	8.30
ESR 11	21.42	13.23	8.77	18.19	12.77	8.43	15.03	12.46	8.20
ESR 12	27.70	14.32	9.40	22.74	13.88	9.06	18.01	13.61	8.82
ESR 13	26.85	14.15	9.30	22.13	13.70	8.96	17.62	13.43	8.72
ESR 14	<u>41.49</u>	16.74	10.77	33.19	16.32	10.37	25.17	16.11	10.14
<i>NO₂ concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO₂ calculator⁷ in accordance with LAQM.TG(16)</i>									

4.3.2 The results show that all predicted NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant objectives and limit values at all receptors considered except for ESR's 5, 9 and 14 in the 2019 base year, which all exceed the NO₂ annual mean objective. ESR 5 is located within the Greater Manchester AQMA whilst ESR 9 and 14 are adjacent to a section of the AQMA. Therefore, elevated concentrations at these locations would be expected.

⁷ Defra Local Air Quality Management webpages (<http://laqm.defra.gov.uk/tools-monitoring-data/no-calculator.html>)

- 4.3.3 It should be noted that ESRs 9 and 14 are the same residential property, which has been modelled at both ground floor and first floor heights, given the close proximity of the receptor to an elevated section of the A5103 Princess Parkway.

5 IMPACT ASSESSMENT

5.1 Construction Phase Assessment

Step 2 – Impact Assessment

- 5.1.1 In accordance with the IAQM guidance, the main activities to be considered during the construction phase of the proposed development are demolition, earthworks, construction and trackout.
- 5.1.2 Demolition will involve the removal of the existing Manchester College buildings within the site. Earthworks cover the processes of soil-stripping, ground-levelling, excavation and landscaping. Construction activities will focus on the proposed buildings, access roads car parking areas. Trackout is defined as the transport of dust and dirt by vehicles travelling from a construction site on to the public road network. This may occur through the spillage of dusty materials onto road surfaces or through the transportation of dirt by vehicles that have travelled over muddy ground on the site. This dust and dirt can then be deposited and resuspended by other vehicles.

Step 2A

- 5.1.3 Step 2A of the assessment defines the potential dust emission magnitude from demolition, earthworks, construction and trackout in the absence of site-specific mitigation.
- 5.1.4 Examples of the criteria for the dust emission classes are detailed in **Appendix B**. The results of this step are detailed in Table 8.

Step 2B

- 5.1.5 Step 2B of the construction phase dust assessment defines the sensitivity of the area, taking into account the significance criteria detailed in **Appendix B**, for demolition, earthworks, construction and trackout. The sensitivity of the area to each activity is assessed for potential dust soiling, human health effects and ecological effects (as applicable).
- 5.1.6 For demolition, earthworks and construction, there are currently between 10 and 100 receptors (all residential) within 20m of where these activities may take place, which is assumed to be the site boundary for the purposes of this assessment. The

Wythenshawe Park LNR is located approximately 55m from where these activities may take place.

5.1.7 The routing of construction vehicles is unknown at this stage. Therefore, for the purpose of this assessment, worst case routing scenarios have been assumed for assessment of potential trackout impacts at nearby receptors.

5.1.8 As a result, for trackout, there are between 10 and 100 receptors (residential and ecological) within 20m of where trackout may occur for a distance of up to 500m from the site entrance.

Step 2C

5.1.9 Step 2C of the construction phase dust assessment defines the risk of impacts from each activity, by combining the dust emission magnitude with the sensitivity of the surrounding area.

5.1.10 The risk of dust impacts from each activity, with no mitigation in place, has been assessed in accordance with the criteria detailed in **Appendix B**. The results of this step are detailed in Table 8.

Summary of Step 2

5.1.11 Table 8 details the results of Step 2 of the construction phase assessment for human receptors.

Table 8: Construction Phase Dust Assessment for Human Receptors				
	Activity			
	Demolition	Earthworks	Construction	Trackout
Step 2A				
Dust Emission Magnitude	Large ^a	Large ^b	Large ^c	Medium ^d
Step 2B				
Sensitivity of Closest Receptors	High	High	High	High
Sensitivity of Area to Dust Soiling Effects	High	High	High	High
Sensitivity of Area to Human Health Effects	Low ^e	Low ^e	Low ^e	Low ^e
Sensitivity of Ecological Receptors	Low ^f	Low ^f	Low ^f	Low ^f

Table 8: Construction Phase Dust Assessment for Human Receptors				
	Activity			
	Demolition	Earthworks	Construction	Trackout
Step 2C				
Dust Risk: Dust Soiling	High Risk	High Risk	High Risk	Medium Risk
Dust Risk: Human Health	Medium Risk	Low Risk	Low Risk	Low Risk
Dust Risk: Ecological Receptors	Medium Risk	Low Risk	Low Risk	Low Risk
a. Total building volume estimated to be >50,000m³ b. Total site area estimated to be over 10,000m² c. Total building volume estimated to be over 100,000m³, with potentially dusty construction materials d. Number of construction phase vehicles estimated to be between 10 and 50 movements per day e. Background annual mean PM₁₀ concentration is taken from the LAQM Defra default concentration maps, for the appropriate grid square for 2019 f. Local Nature Reserves classed as low sensitivity in accordance with IAQM guidance				

Step 3 – Mitigation

- 5.1.12 During the construction phase, the implementation of effective mitigation measures will substantially reduce the potential for nuisance dust and fine particulate matter to be generated.
- 5.1.13 Step 2C of the assessment has identified that the risk of dust soiling, human health and ecological effects is not negligible for all the activities and therefore site-specific mitigation will need to be implemented to ensure dust effects from these activities will be not significant.

Recommendations for Site-Specific Mitigation

- 5.1.14 Specific mitigation relating to dust control may be in the form of construction best practices or could include a dust management plan. Recommendations for mitigation within the IAQM guidance include:
- Soft strip inside buildings before demolition;
 - Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as water can be directed to where it is needed;

- Bag and remove any biological debris or damp down such material before demolition;
- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Protection of surfaces and exposed material from winds until disturbed areas are sealed and stable;
- Dampening down of exposed stored materials, which will be stored as far from sensitive receptors as possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place;
- Avoidance of activities that generate large amounts of dust during windy conditions;
- 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;
- Avoid dry sweeping of large areas;
- 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 to be in use continuously;
- Ensure vehicles entering and leaving the site are covered to prevent escape of materials during transport;
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable);
- Minimisation of vehicle movements and limitation of vehicle speeds – the slower the vehicle speeds, the lower the dust generation;
- Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever the site size and layout permits; and
- Access gates to be located at least 10m from receptors, where possible.

5.1.15 All dust and air quality complaints should be recorded, and appropriate measures be taken to identify causes and reduce emissions in a timely manner. Exceptional incidents which cause dust and/or emissions, and the action taken to resolve the situation, should be recorded in a logbook and made available to MCC on request.

- 5.1.16 It is recognised that the final design solutions will be developed with the input of the Contractor to maximise construction efficiencies, to use modern construction techniques and sustainable materials and to incorporate the particular skills and experience offered by the appointed contractor.

Step 4 – Residual Effects

- 5.1.17 Step 4 of the construction phase dust assessment has been undertaken to determine the significance of the dust effects arising from demolition, earthworks, construction and trackout associated with the proposed development.
- 5.1.18 The implementation of effective mitigation measures during the construction phase, such as those detailed in Step 3, will substantially reduce the potential for nuisance dust and particulate matter to be generated and any residual impact should be **not significant**.

5.2 Operational Phase Assessment

Existing Sensitive Human Receptors

- 5.2.1 The impact assessment has been carried out for the representative existing sensitive receptors considered (i.e. ESR 1 to ESR 14).
- 5.2.2 Table 9 details the predicted NO₂ concentrations for the 2022 Opening Year, for both the 'Without Development' and 'With Development' scenarios, in accordance with Defra guidance (i.e. using EFT v10.1). The impact has been assessed in accordance with the descriptors included in **Appendix C**.

Table 9: Predicted Adjusted NO ₂ Concentrations at Existing Sensitive Receptors for Scenarios 2 and 3 – Using the Emission Factor Toolkit v10.1					
Receptor	Calculated Annual Mean NO ₂ Concentrations (µg/m ³) ^a				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact ^b
		Concentration	Percentage in Relation to AQAL		
ESR 1	21.06	21.51	<75%	1%	Negligible
ESR 2	23.38	23.57	<75%	0.5%	Negligible
ESR 3	27.96	28.16	<75%	0.5%	Negligible
ESR 4	28.28	28.42	<75%	0.5%	Negligible
ESR 5	36.63	36.91	76-94%	1%	Negligible
ESR 6	27.53	27.62	<75%	0.5%	Negligible
ESR 7	20.12	20.13	<75%	0.5%	Negligible
ESR 8	23.23	23.26	<75%	0.5%	Negligible
ESR 9	34.36	34.51	76-94%	0.5%	Negligible
ESR 10	18.82	18.85	<75%	0.5%	Negligible
ESR 11	18.19	18.23	<75%	0.5%	Negligible
ESR 12	22.74	22.89	<75%	0.5%	Negligible
ESR 13	22.13	22.28	<75%	0.5%	Negligible
ESR 14	33.19	33.32	76-94%	0.5%	Negligible
a. NO₂ concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO₂ calculator, in accordance with LAQM.TG(16) b. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix C. Changes of less than 0.5% should be described as negligible					

5.2.3 Table 10 details the PM₁₀ concentrations for the 2022 Opening Year, for both the 'Without Development' and 'With Development' scenarios. The impact has been assessed in accordance with the descriptors included in **Appendix C**.

Table 10: Predicted Unadjusted PM₁₀ Concentrations at Existing Sensitive Receptors for Scenarios 2 and 3 – Using the Emission Factor Toolkit v10.1					
Receptor	Calculated Annual Mean PM₁₀ Concentrations (µg/m³)				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact^a
		Concentration	Percentage in Relation to AQAL		
ESR 1	13.51	13.59	<75%	<0.5%	Negligible
ESR 2	14.06	14.10	<75%	<0.5%	Negligible
ESR 3	15.06	15.11	<75%	<0.5%	Negligible
ESR 4	15.00	15.03	<75%	<0.5%	Negligible
ESR 5	16.35	16.40	<75%	<0.5%	Negligible
ESR 6	14.78	14.79	<75%	<0.5%	Negligible
ESR 7	13.19	13.19	<75%	<0.5%	Negligible
ESR 8	13.92	13.92	<75%	<0.5%	Negligible
ESR 9	16.54	16.57	<75%	<0.5%	Negligible
ESR 10	12.95	12.96	<75%	<0.5%	Negligible
ESR 11	12.77	12.77	<75%	<0.5%	Negligible
ESR 12	13.88	13.91	<75%	<0.5%	Negligible
ESR 13	13.70	13.73	<75%	<0.5%	Negligible
ESR 14	16.32	16.34	<75%	<0.5%	Negligible
<i>a. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix C. Changes of less than 0.5% should be described as negligible</i>					

5.2.4 Table 11 details the PM_{2.5} concentrations for the 2022 Opening Year, for both the 'Without Development' and 'With Development' scenarios. The impact has been assessed in accordance with the descriptors included in **Appendix C**.

Table 11: Predicted Unadjusted PM_{2.5} Concentrations at Existing Sensitive Receptors for Scenarios 2 and 3 – Using the Emission Factor Toolkit v10.1					
Receptor	Calculated Annual Mean PM_{2.5} Concentrations (µg/m³)				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact^a
		Concentration	Percentage in Relation to AQAL		
ESR 1	8.85	8.90	<75%	<0.5%	Negligible
ESR 2	9.16	9.18	<75%	<0.5%	Negligible
ESR 3	9.67	9.69	<75%	<0.5%	Negligible
ESR 4	9.64	9.65	<75%	<0.5%	Negligible
ESR 5	10.42	10.45	<75%	<0.5%	Negligible
ESR 6	9.51	9.52	<75%	<0.5%	Negligible
ESR 7	8.67	8.68	<75%	<0.5%	Negligible
ESR 8	9.03	9.03	<75%	<0.5%	Negligible
ESR 9	10.50	10.52	<75%	<0.5%	Negligible
ESR 10	8.54	8.54	<75%	<0.5%	Negligible
ESR 11	8.43	8.44	<75%	<0.5%	Negligible
ESR 12	9.06	9.08	<75%	<0.5%	Negligible
ESR 13	8.96	8.98	<75%	<0.5%	Negligible
ESR 14	10.37	10.39	<75%	<0.5%	Negligible
<i>a. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix C. Changes of less than 0.5% should be described as negligible</i>					

5.2.5 Table 12 details the predicted NO₂ concentrations for the 2026 Future Year, for both the ‘Without Development’ and ‘With Development’ scenarios, in accordance with Defra guidance (i.e. using EFT v10.0). The impact has been assessed in accordance with the descriptors included in **Appendix C**.

Table 12: Predicted Adjusted NO₂ Concentrations at Existing Sensitive Receptors for Scenarios 4 and 5– Using the Emission Factor Toolkit v10.1

Receptor	Calculated Annual Mean NO ₂ Concentrations (µg/m ³) ^a				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact ^b
		Concentration	Percentage in Relation to AQAL		
ESR 1	16.88	17.18	<75%	1%	Negligible
ESR 2	18.43	18.54	<75%	0.5%	Negligible
ESR 3	21.75	21.87	<75%	0.5%	Negligible
ESR 4	21.97	22.06	<75%	0.5%	Negligible
ESR 5	27.58	27.78	<75%	1%	Negligible
ESR 6	21.53	21.58	<75%	0.5%	Negligible
ESR 7	16.44	16.44	<75%	0.5%	Negligible
ESR 8	18.63	18.65	<75%	0.5%	Negligible
ESR 9	25.96	26.07	<75%	0.5%	Negligible
ESR 10	15.44	15.46	<75%	0.5%	Negligible
ESR 11	15.03	15.05	<75%	0.5%	Negligible
ESR 12	18.01	18.10	<75%	0.5%	Negligible
ESR 13	17.62	17.70	<75%	0.5%	Negligible
ESR 14	25.17	25.26	<75%	0.5%	Negligible
a. NO₂ concentrations obtained by inputting predicted NO_x concentrations into the NO_x to NO₂ calculator, in accordance with LAQM.TG(16) b. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix C. Changes of less than 0.5% should be described as negligible					

5.2.6 Table 13 details the PM₁₀ concentrations for the 2026 Future Year, for both the 'Without Development' and 'With Development' scenarios. The impact has been assessed in accordance with the descriptors included in **Appendix C**.

Table 13: Predicted Unadjusted PM₁₀ Concentrations at Existing Sensitive Receptors for Scenarios 4 and 5 – Using the Emission Factor Toolkit v10.1					
Receptor	Calculated Annual Mean PM₁₀ Concentrations (µg/m³)				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact^a
		Concentration	Percentage in Relation to AQAL		
ESR 1	13.23	13.31	<75%	<0.5%	Negligible
ESR 2	13.80	13.83	<75%	<0.5%	Negligible
ESR 3	14.82	14.86	<75%	<0.5%	Negligible
ESR 4	14.75	14.78	<75%	<0.5%	Negligible
ESR 5	16.13	16.17	<75%	<0.5%	Negligible
ESR 6	14.53	14.54	<75%	<0.5%	Negligible
ESR 7	12.91	12.91	<75%	<0.5%	Negligible
ESR 8	13.64	13.65	<75%	<0.5%	Negligible
ESR 9	16.34	16.36	<75%	<0.5%	Negligible
ESR 10	12.65	12.66	<75%	<0.5%	Negligible
ESR 11	12.46	12.47	<75%	<0.5%	Negligible
ESR 12	13.61	13.64	<75%	<0.5%	Negligible
ESR 13	13.43	13.46	<75%	<0.5%	Negligible
ESR 14	16.11	16.13	<75%	<0.5%	Negligible
<i>a. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix C. Changes of less than 0.5% should be described as negligible</i>					

5.2.7 Table 14 details the PM_{2.5} concentrations for the 2026 Future Year, for both the 'Without Development' and 'With Development' scenarios. The impact has been assessed in accordance with the descriptors included in **Appendix C**.

Table 14: Predicted Unadjusted PM_{2.5} Concentrations at Existing Sensitive Receptors for Scenarios 4 and 5 – Using the Emission Factor Toolkit v10.1					
Receptor	Calculated Annual Mean PM_{2.5} Concentrations (µg/m³)				
	Without Development	With Development		Concentration Change as Percentage of AQAL	Impact^a
		Concentration	Percentage in Relation to AQAL		
ESR 1	8.62	8.66	<75%	<0.5%	Negligible
ESR 2	8.93	8.95	<75%	<0.5%	Negligible
ESR 3	9.43	9.46	<75%	<0.5%	Negligible
ESR 4	9.40	9.42	<75%	<0.5%	Negligible
ESR 5	10.17	10.20	<75%	<0.5%	Negligible
ESR 6	9.28	9.29	<75%	<0.5%	Negligible
ESR 7	8.44	8.44	<75%	<0.5%	Negligible
ESR 8	8.79	8.79	<75%	<0.5%	Negligible
ESR 9	10.27	10.28	<75%	<0.5%	Negligible
ESR 10	8.30	8.30	<75%	<0.5%	Negligible
ESR 11	8.20	8.20	<75%	<0.5%	Negligible
ESR 12	8.82	8.84	<75%	<0.5%	Negligible
ESR 13	8.72	8.74	<75%	<0.5%	Negligible
ESR 14	10.14	10.16	<75%	<0.5%	Negligible
<i>a. Assessed using the Impact Descriptors from the EPUK/IAQM guidance, included in Appendix C. Changes of less than 0.5% should be described as negligible</i>					

5.2.8 The results of the assessment show that all predicted NO₂, PM₁₀ and PM_{2.5} concentrations, in both the opening year and future year scenarios, are below the relevant objectives and limit values.

Proposed Sensitive Receptors

5.2.9 Pollutant concentrations have been modelled for the proposed sensitive receptors for the 2022 opening and 2026 future year scenarios, as detailed in Table 15.

Table 15: Predicted NO ₂ , PM ₁₀ and PM _{2.5} Concentrations at the Proposed Sensitive Receptors for Scenario 3			
Proposed Sensitive Receptor	Calculated Annual Mean Concentrations (µg/m ³)		
	NO ₂	PM ₁₀	PM _{2.5}
2022			
PR 1	24.39	14.17	9.17
PR 2	24.52	14.29	9.23
2026			
PR 1	19.37	13.90	8.93
PR 2	19.43	14.02	8.99

5.2.10 All predicted pollutant concentrations are below the relevant objectives/limit values, at both proposed sensitive receptors considered, in both scenarios considered.

Assessment of Significance for Human Receptors

5.2.11 The significance of the overall effects of the proposed development has been assessed in accordance with the EPUK/IAQM guidance. This assessment is based on professional judgement and details of the assessor's experience is included in **Appendix D**.

5.2.12 The assessment of significance has taken into account a number of factors, including:

- Baseline pollutant concentrations in 2019 are below the relevant annual mean objective at all receptors considered, except for ESR 5, 9 and 14. It should be noted that ESR 9 and 14 are the same residential receptor which has been modelled at ground floor and first floor height due to the close proximity of an elevated section of the A5103 Princess Parkway.
- ESR 5 is located within the Greater Manchester AQMA, and ESR 9 and 14 are located adjacent to the AQMA, so elevated NO₂ concentrations are expected at these locations.
- Baseline pollutant concentrations in 2022 and 2026 are below the relevant annual mean objectives and limit values at all existing receptors considered.
- The assessment predicts a negligible impact on concentrations of NO₂, PM₁₀ and PM_{2.5} at all existing sensitive receptors considered, with the development

in place. The proposed development does not lead to an exceedance of the objectives.

- Pollutant concentrations within the proposed development site are predicted to be well below the relevant objectives and limit values.

5.2.13 Based on the above factors, in accordance with the EPUK/IAQM guidance, the air quality effect of the proposed development is considered to be **not significant**.

Recommendations for Mitigation

5.2.14 The impact of the proposed development is predicted to be not significant for human receptors. However, mitigation measures will assist in reducing any potential impact and general best practice measures in relation to air quality could be implemented.

5.2.15 In accordance with MCC's Electric Vehicle Charging Best Practice Recommendations, the following is recommended for residential developments:

- On-site/allocated parking: 1 EV charge point (minimum 7kW) for each dwelling.
- Unallocated parking: minimum 20% EV (minimum 7kW) charge points, and cable routes for all other spaces.

5.2.16 It is understood that Miller Homes has incorporated an EV charging point at each residential dwelling into the design of the proposed development.

6 CONCLUSIONS

6.1 Construction Phase

6.1.1 The construction phase assessment has been undertaken to determine the risk and significance of dust and fine particulate matter effects from demolition, earthworks, construction and trackout associated with the proposed development, in accordance with guidance published by the IAQM.

6.1.2 With site specific mitigation measures in place, the significance of dust and fine particulate matter effects from demolition, earthworks, construction and trackout is considered to be **not significant**.

6.2 Operational Phase

Existing Sensitive Receptors

6.2.1 An air quality assessment has been undertaken to consider the potential impact of development generated vehicles on air quality at fourteen existing sensitive human receptors.

6.2.2 The assessment has been undertaken in accordance with Defra guidance, by using the latest vehicle emission factors from EFT v10.1.

6.2.3 Pollutant concentrations in 2022 and 2026, with the development in place, are below the relevant annual mean objectives and limit values at the receptors considered.

6.2.4 The assessment predicts that the development will have a negligible impact on concentrations of NO₂, PM₁₀ and PM_{2.5} at all fourteen existing sensitive receptors considered in 2022 and 2026. The effect of the proposed development on human receptors is therefore considered to be **not significant**.

6.3 Summary

6.3.1 The assessment demonstrates that the proposed development will not lead to an unacceptable risk from air pollution, nor will it lead to any breach of relevant national planning policies or of national objectives as required by national policy. There are no material reasons in relation to air quality why the proposed scheme should not proceed.

APPENDICES

Appendix A: Air Quality Legislation and Guidance

National Air Quality Strategy

- A.1 The Environment Act 1995 requires the UK government to prepare a national Air Quality Strategy. The first UK strategy was published in March 1997, setting out policies for the management of ambient air quality. This was subsequently updated in 2007¹.
- A.2 The 2007 strategy establishes the framework for air quality management in England, Scotland, Wales and Northern Ireland. Air quality standards and objectives are set out for eight pollutants which may potentially occur at levels that give cause for concern. The strategy also provides details of the role that local authorities are required to take in working towards improvements in air quality, known as the Local Air Quality Management (LAQM) regime.

Air Quality Standards and Objectives

- A.3 Air quality standards and objectives are set out in the strategy for the following pollutants: nitrogen dioxide (NO₂), sulphur dioxide (SO₂), carbon monoxide (CO), lead (Pb), fine particulate matter (PM₁₀), benzene (C₆H₆), 1, 3-butadiene (C₄H₆) and ozone (O₃).
- A.4 Objectives for each pollutant, except O₃, were first given statutory status in the Air Quality Regulations 2000² and Air Quality (Amendment) Regulations 2002³. These objectives are defined in the strategy as:
- “the maximum ambient concentration not to be exceeded, either without exception or with a permitted number of exceedances, within a specified timescale.”*
- A.5 EU limit values, set out within the Ambient Air Quality Directive 2008/50/EC⁴ (i.e. the CAFE Directive), were transposed into UK legislation on 11th June 2011 as The Air Quality Standards Regulations 2010. These are mostly the same as the air quality objectives in terms of concentrations; however, there are differences in determining how compliance is achieved. Although the UK is no longer part of the EU, no changes

¹ Department of Environment, Food and Rural Affairs, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. July 2007

² The Air Quality Regulations 2000. SI No 928

³ The Air Quality (Amendment) Regulations 2002

⁴ Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe

have yet been made to the objectives and limit values used in the management and assessment of air quality.

- A.6 Whilst there is no specific objective for PM_{2.5} in England and Wales, a limit value of 25µg/m³ is referred to in the regulations, which has been adopted for use in this assessment (as recommended by the LAQM Helpdesk). An objective has been set for PM_{2.5} in Scotland since early 2016.
- A.7 Examples of where these objectives and limit values apply are detailed in the Defra LAQM Technical Guidance document LAQM.TG(16)⁵ and are included in Table A1.

Table A1: Examples of Where the Air Quality Objectives Should Apply		
Averaging Period	Objectives Should Apply at:	Objectives Should Generally Not Apply at:
Annual mean	All locations where members of the public might be regularly exposed. Building façades of residential properties, schools, hospitals, care homes, etc.	Building facades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
24-hour mean and 8-hour mean	All locations where the annual mean objectives would apply, together with hotels. Gardens of residential properties ^a	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term
1-hour mean	All locations where the annual mean and 24 and 8-hour objectives apply. Kerbside sites (e.g. pavements of busy shopping streets). Those parts of car parks and railway stations etc. which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations to which the public might reasonably be expected to spend one hour or longer	Kerbside sites where public would not be expected to have regular access
15-minute mean	All locations where members of the public might reasonably be exposed for a period of 15 minutes or longer	

⁵ Department for Environment, Food and Rural Affairs, Local Air Quality Management Technical Guidance LAQM.TG(16), February 2018

Table A1: Examples of Where the Air Quality Objectives Should Apply		
Averaging Period	Objectives Should Apply at:	Objectives Should Generally Not Apply at:
<i>a. Such locations should represent parts of the garden where relevant public exposure is likely, for example where there is seating or play areas. It is unlikely that relevant public exposure to pollutants would occur at the extremities of the garden boundary, or in front gardens, although local judgement should always be applied</i>		

Local Air Quality Management

- A.8 LAQM legislation in the Environment Act 1995 requires local authorities to conduct the periodic review and assessments of air quality. These aim to identify all those areas where the objectives are being, or are likely to be, exceeded. Where exceedances are likely to occur, local authorities are required to declare an Air Quality Management Area (AQMA).
- A.9 LAQM.TG(16) presents a streamlined approach for LAQM in England and Scotland; however, Wales and Northern Ireland are still considering changes to LAQM and therefore work according to the previous regimes.
- A.10 Local authorities in England are required to produce Annual Status Reports (ASRs), and in Scotland, Annual Progress Reports (APRs). These replace all other reports which previously had to be submitted including Updating and Screening Assessments, Progress Reports and Detailed Assessments (which would be produced to assist with an AQMA declaration).
- A.11 Local authorities now have the option of a fast track AQMA declaration option. This allows more expert judgement to be used and removes the need for a Detailed Assessment where a local authority is confident of the outcome. Detailed Assessments should however still be used if there is any doubt.
- A.12 As part of the UK Government's requirement to improve air quality, selected local authorities in England are also currently investigating the feasibility of setting up Clean Air Zones (CAZs). These are areas where targeted action and co-ordinated resources aim to improve air quality within an urban setting, in order to achieve compliance with the EU limit values within the shortest possible time.
- A.13 Five local authorities outside of London were initially selected to implement a CAZ by 2020 (Birmingham, Leeds, Nottingham, Derby and Southampton). A further 23 local authorities were subsequently chosen to investigate the feasibility of establishing a

CAZ, and 33 local authorities may potentially have to proceed to this stage where compliance is not achieved.

National Planning Policy Framework

- A.14 The National Planning Policy Framework (NPPF)⁶, introduced in March 2012 and most recently updated in February 2019, requires 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 AQMAs and CAZs, 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 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 AQMAs and CAZs is consistent with the local air quality action plan.”

Planning Practice Guidance

- A.15 The Planning Practice Guidance (PPG)⁷, updated in November 2019, states that whether or not air quality is relevant to a planning decision will depend on the proposed development and its location. Concerns could arise if the development is likely to generate air quality impacts in an area where air quality is known to be poor. They could also arise where the development is likely to adversely impact upon the implementation of air quality strategies and action plans and/or, in particular, lead to a breach of EU legislation (including that applicable to wildlife).
- A.16 Where a proposed development is anticipated to give rise to concerns about air quality, an appropriate assessment needs to be carried out. Where the assessment concludes that the proposed development (including mitigation) will not lead to an unacceptable risk from air pollution, prevent sustained compliance with national objectives or fail to comply with the requirements of the Habitats Regulations, then

⁶ Ministry of Housing, Communities and Local Government, National Planning Policy Framework, February 2019

⁷ Department for Communities and Local Government. Planning Practice Guidance: Air Quality, March 2014

the local authority should proceed to decision with appropriate planning conditions and/or obligations.

Appendix B: Methodology for Construction Phase Assessment

Institute of Air Quality Management Guidance

- B.1 The methodology for the construction phase dust assessment is set out in guidance from the Institute of Air Quality Management (IAQM)⁸.

Step 1

- B.2 Step 1 is to screen the requirement for a more detailed assessment. The guidance states that an assessment will normally be required where there are existing sensitive human receptors within 350m of the site boundary and/or within 100m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).
- B.3 With regards to ecological receptors, the guidance states that an assessment will normally be required where there are existing receptors within 50m of the site boundary and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 500m from the site entrance(s).
- B.4 Where any of these criteria are met, it is necessary to proceed to Step 2.

Step 2

- B.5 Step 2 determines the potential risk of dust arising in sufficient quantities to cause annoyance and/or health or ecological impacts. The risk is related to:
- The activities being undertaken (demolition, number of vehicles and plant etc);
 - The duration of these activities;
 - The size of the site;
 - The meteorological conditions (wind speed, direction and rainfall);
 - The proximity of receptors to the activity;
 - The adequacy of the mitigation measures applied to reduce or eliminate dust; and
 - The sensitivity of receptors to dust.
- B.6 The risk of dust impacts is determined using four risk categories: negligible, low, medium and high risk. A site is allocated to a risk category based upon the following two factors (known as Step 2A and Step 2B).

⁸ Institute of Air Quality Management, Guidance on the Assessment of Dust from Demolition and Construction, February 2014

B.7 **Step 2A** assesses the scale and nature of the works which determines the potential dust emission magnitude as small, medium or large. Examples of how the magnitude may be defined are included in Table B1.

Table B1: Determining the Dust Emission Magnitude of Construction Phase Activities			
Activity	Dust Emission Class		
	Large	Medium	Small
Demolition	Total building volume >50,000m ³ ; Potentially dusty construction material (e.g. concrete); On-site crushing and screening; Demolition activities >20m above ground level	Total building volume 20,000-50,000m ³ ; Potentially dusty construction material; Demolition activities 10-20m above ground level	Total building volume <20,000m ³ ; Construction material with low potential for dust release (e.g. metal cladding or timber)
Earthworks	Total site area >10,000m ² ; Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size); >10 heavy earth moving vehicles active at any one time; Formation of bunds >8m in height; Total material moved >100,000 tonnes	Total site area 2,500-10,000m ² ; Moderately dusty soil type (e.g. silt); 5-10 heavy earth moving vehicles active at any one time; Formation of bunds 4-8m in height; Total material moved 20,000-100,000 tonnes	Total site area <2,500m ² ; Soil type with large grain size (e.g. sand); <5 heavy earth moving vehicles active at any one time; Formation of bunds <4m in height; Total material moved <20,000 tonnes; Earthworks during wetter months
Construction	Total building volume >100,000m ³ ; On-site concrete batching; Sandblasting	Total building volume 25,000-100,000m ³ ; Potentially dusty construction material (e.g. concrete); On-site batching	Total building volume <25,000m ³ ; Construction material with a low potential for dust release (e.g. metal cladding or timber)
Trackout	>50 HDV (>3.5t) outward movements ^a in any one day ^b ; Potentially dusty surface material (e.g. high clay content); Unpaved road length >100m	10-50 HDV (>3.5t) outward movements ^a in any one day ^b ; Moderately dusty surface material (e.g. high clay content); Unpaved road length 50-100m	<10 HDV (>3.5t) outward movements ^a in any one day ^b ; Surface material with low potential for dust release; Unpaved road length <50m
<i>a. A vehicle movement is a one way journey i.e. from A to B, and excludes the return journey</i> <i>b. HDV movements during a construction project may vary over its lifetime, and the number of movements is the maximum not the average</i>			

B.8 **Step 2B** considers the sensitivity of the area to dust impacts which is defined as low, medium or high. The sensitivity categories for different types of receptors are described in Table B2.

Table B2: Sensitivity Categories for Dust Soiling, Human Health and Ecological Effects			
Sensitivity Category	Dust Soiling Effects	Health effects of PM ₁₀	Ecological Effects
High	Users can reasonably expect to enjoy a high level of amenity; Appearance, aesthetics or value of a property would be diminished; Examples include dwellings, museums and other culturally important collections, medium and long term car parks and car show rooms	Locations where members of the public are exposed over a period of time relevant to the air quality objective for PM ₁₀ ; Examples include residential properties, hospitals, schools, and residential care homes	Locations with an international or national designation and the designated features may be affected by dust soiling; Locations where there is a community of a particularly dust sensitive species; Examples include a Special Area of Conservation with dust sensitive features
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; The appearance, aesthetics or value of their property could be diminished; People or property wouldn't reasonably be expected to be continuously present or regularly for extended periods of time; Examples include parks and places of work	Locations where people are exposed as workers and exposure is over a period of time relevant to the air quality objective for PM ₁₀ ; Examples include office and shop workers but will generally not include workers occupationally exposed to PM ₁₀	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; Locations with a national designation where the features may be affected by dust deposition; Examples include a Site of Special Scientific Interest with dust sensitive features

Table B2: Sensitivity Categories for Dust Soiling, Human Health and Ecological Effects			
Sensitivity Category	Dust Soiling Effects	Health effects of PM ₁₀	Ecological Effects
Low	Enjoyment of amenity would not reasonably be expected; Property would not be diminished in appearance, aesthetics or value; People or property would be expected to be present only for limited periods of time; Examples include playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads	Locations where human exposure is transient; Examples include public footpaths, playing fields, parks and shopping streets	Locations with a local designation where the features may be affected by dust deposition; Examples include a Local Nature Reserve with dust sensitive features

B.9 Based on the sensitivity of individual receptors, the overall sensitivity of the area to dust soiling, human health and ecological effects is then determined using the criteria detailed in Tables B3 to B5, respectively.

Table B3: Sensitivity of the Area to Dust Soiling Effects on People and Property ^{ab}					
Receptor Sensitivity	Number of Receptors	Distance from Source (m) ^c			
		<20m	<50m	<100m	<350m
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 to the area should be derived for each of the four activities b. Estimate the total number of receptors within the stated distance. Only the highest level of sensitivity from the table needs to be considered c. For trackout, distances should be measured from the side of the roads used by construction traffic. Without site specific mitigation, trackout may occur for up to 500m from large sites, 200m from medium sites and 50m from small sites, 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 B4: Sensitivity of the Area to Human Health Impacts ^{ab}							
Receptor Sensitivity	Annual Mean PM ₁₀ Concentration ^c	Number of Receptors ^d	Distance from Source (m) ^e				
			<20m	<50m	<100m	<200m	<350m
High	>32µg/m ³	>100	High	High	High	Medium	Low
		10-100	High	High	Medium	Low	Low
		1-10	High	Medium	Low	Low	Low
	28-32µg/m ³	>100	High	High	Medium	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	High	Medium	Low	Low	Low
	24-28µg/m ³	>100	High	Medium	Low	Low	Low
		10-100	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	<24µg/m ³	>100	Medium	Low	Low	Low	Low
		10-100	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Medium	>32µg/m ³	>10	High	Medium	Low	Low	Low
		1-10	Medium	Low	Low	Low	Low
	28-32µg/m ³	>10	Medium	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	24-28µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
	<24µg/m ³	>10	Low	Low	Low	Low	Low
		1-10	Low	Low	Low	Low	Low
Low	-	>1	Low	Low	Low	Low	Low
a. The sensitivity to the area should be derived for each of the four activities b. Estimate the total number of receptors within the stated distance. Only the highest level of sensitivity from the table needs to be considered 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 exceedance of the 24-hour mean objective is likely in England, Wales and 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, distances should be measured from the side of the roads used by construction traffic							

Table B5: Sensitivity of the Area to Ecological Impacts ^{ab}		
Receptor Sensitivity	Distance from the Source (m) ^c	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low
a. The sensitivity to the area should be derived for each of the four activities b. Only the highest level of sensitivity from the table needs to be considered c. For trackout, distances should be measured from the side of the roads used by construction traffic		

B.10 These two factors are combined in **Step 2C** to determine the risk of dust impacts with no mitigation applied.

B.11 The risk of dust effects is determined for four types of construction phase activities, with each activity being considered separately. If a construction phase activity is not taking place on the site, then it does not need to be assessed. The four types of activities to be considered are:

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

B.12 The risk of dust being generated by demolition activities at the site is determined using the criteria in Table B6.

Table B6: Risk of Dust Impacts for Demolition			
Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible

B.13 The risk of dust being generated by earthworks and construction at the site is determined using the criteria in Table B7.

Table B7: Risk of Dust Impacts for Earthworks and Construction			
Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

- B.14 The risk of dust being generated by trackout at the site is determined using the criteria in Table B8.

Table B8: Risk of Dust Impacts for Trackout			
Sensitivity of Area	Dust Emission Magnitude		
	Large	Medium	Small
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Low Risk	Negligible
Low	Low Risk	Low Risk	Negligible

Step 3

- B.15 Step 3 of the assessment determines the site-specific mitigation required for each of the activities, based on the risk determined in Step 2. Mitigation measures are detailed in guidance published by the Greater London Authority⁹, recommended for use outside the capital by LAQM guidance, and the IAQM guidance document itself. Professional judgement should be used to determine the type and scale of mitigation measures required.
- B.16 If the risk is classed as negligible, no mitigation measures beyond those required by legislation will be necessary.

Step 4

- B.17 Step 4 assesses the residual effect, with mitigation measures in place, to determine whether or not these are significant.

¹¹ Greater London Authority, The Control of Dust and Emissions from Construction and Demolition: Best Practice Guidance, 2006

Professional Judgement

- B.18 The IAQM guidance makes reference to the use of professional judgement when assessing the risks of dust and fine particulate matter from demolition and construction sites. Details of the experience of the personnel involved with the project are provided in **Appendix D**.

Appendix C: Methodology for Operational Phase Assessment

Air Dispersion Modelling Inputs

- C.1 The air dispersion model ADMS-Roads (CERC, Version 5.0) has been used to assess the potential air quality impacts associated with development-generated road traffic emissions. This dispersion model is widely used and accepted for the purpose of undertaking assessments to support both planning and Environmental Permit applications.

Traffic Flow Data

- C.2 The ADMS-Roads model requires the input of detailed road traffic flow data for those routes which may be affected by the proposed development. Traffic flow data has been provided for this project by Eddisons, the appointed transport consultants for the project. The study extent of the model is shown in Figure C.1.

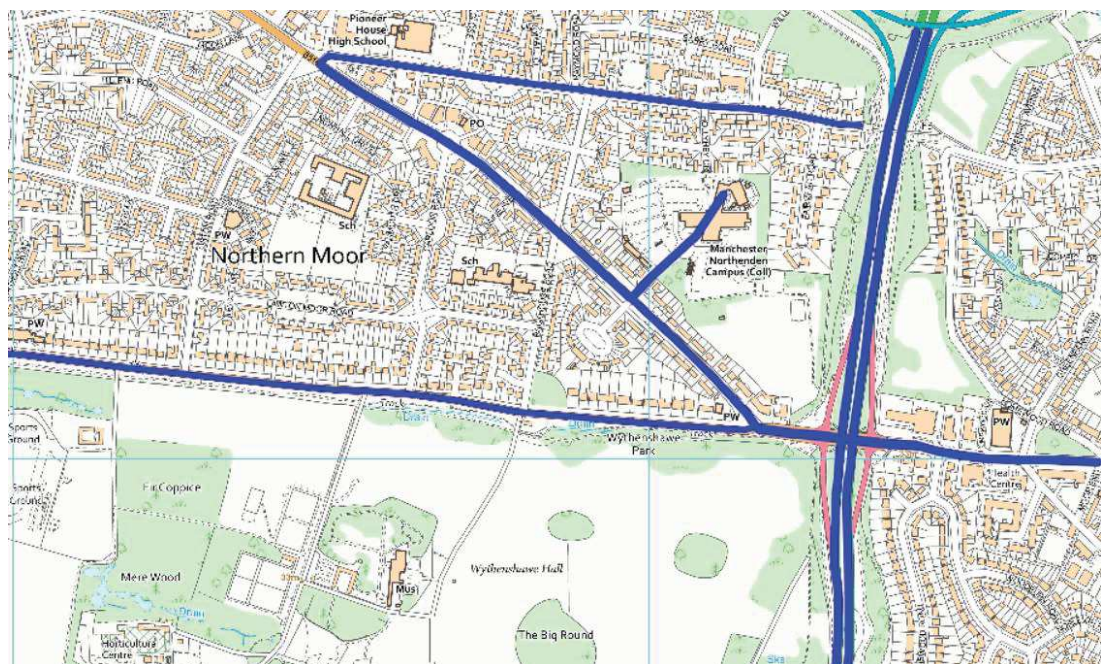


Figure C.1: Study Extent of Air Dispersion Model. The roads modelled in the assessment can be seen in blue ('Reproduced from Ordnance Survey Maps © Crown Copyright All Rights Reserved Licence No. 0100031673')

- C.3 Data has been provided as 24-hour Annual Average Daily Traffic (AADT) flows, with HDV percentages. Average speed information has not been provided and so individual road speed limits have been applied to each road link.
- C.4 The traffic data utilised in the air quality assessment is based upon the traffic generated by a total of 236 residential dwellings. The actual number of proposed residential dwellings has now fallen to 228 units. Therefore, it is considered likely that the actual vehicle numbers generated by the development will be slightly lower than those detailed below.
- C.5 A reduction to 15 has been applied to locations where congestion or the slowing down of vehicles would be expected.
- C.6 The traffic flow data used in the assessment is included in Table C1.

Link	Link Name	Speed Info (kph)	Scenario 1: 2019 Verification and Base Year		Scenario 2: 2022 Opening/Future Year, Without Development		Scenario 3: 2022 Opening/Future Year, With Development		Scenario 4: 2026 Opening/Future Year, Without Development		Scenario 5: 2026 Opening/Future Year, With Development	
			LGV	HGV	LGV	HGV	LGV	HGV	LGV	HGV	LGV	HGV
1	Yewtree Lane (w)	48	1212	0	1283	0	1283	0	1363	0	1363	0
2	Yewtree Lane (e)	48	870	0	922	0	922	0	979	0	979	0
3	B5166 Sale Road (nw)	48	13089	1956	13860	2071	14261	2131	14725	2200	15125	2260
5	B5166 Sale Road (west of B5167 Wythenshaw Road)	48	13141	1964	13915	2079	14424	2155	14783	2209	15293	2285
6	B5167 Wythenshaw Road	48	8705	0	9218	0	9218	0	9793	0	9793	0
7	B5166 Sale Road (east of B5167)	48	20622	3081	21836	3263	22346	3339	23199	3466	23709	3543
8	A5103 Princess Parkway (n)	80	92911	17697	98383	18740	98629	18787	104522	19909	104768	19956
9	A5103 Princess Parkway (s)	80	97807	18630	103568	19727	103814	19774	110031	20958	110277	21005
10	Palatine Road	48	20622	3081	21836	3263	22346	3339	23199	3466	23709	3543
11	Site Access	48	0	0	0	0	1046	0	0	0	1046	0

C.7 Eddisons have confirmed that the traffic data used in the assessment is based upon the following:

- The traffic data utilised in the AQ assessment has been sourced from existing surveyed traffic flows on the local road network and supplemented by data held on the DfT website for the wider area.
- The traffic flows for link 7 (B5166 Sale Road) have been applied to link 10 (Palatine Road) as they are considered representative in the absence of any other data.
- The flows for links are added together to give the total AADT for the development
- No committed developments have been included within the traffic data as Eddisons are not aware of any committed developments in the local area.

Vehicle Emission Factors

C.8 The air quality assessment has used vehicle emission factors calculated using the Emissions Factor Toolkit (EFT) version 10.1 released in August 2020. This is the most up-to-date version of the EFT currently available.

Street Canyons

C.9 LAQM.TG(16) states that '*street canyons can generally be defined as narrow streets where the height of buildings on both sides of the road is greater than the road width*'. The principal effects of a street canyon on the dispersion of pollution from a road source are:

- Pollution is channelled along the canyon;
- Pollution is dispersed across the canyon by circulating flow at road height;
- Pollutants are trapped in recirculation regions;
- Pollutants leave the canyon between gaps in the buildings;
- Pollutants leave the canyon from the canyon top; and
- Pollutants leave the canyon from the downstream end of the canyon.

C.10 The model has not included any street canyons as there are none along the road network considered in the assessment.

Meteorological Data

- C.11 The meteorological data used in the air quality modelling has been obtained from ADM Limited and is from the Manchester recording station, covering the period between 1st January and 31st December 2019.
- C.12 The Manchester recording station is located approximately 5.5km from the proposed development and is considered to be the most representative of the conditions at the proposed development, due to its relative location and similar altitude.
- C.13 The 2019 wind rose for the Manchester Meteorological Recording Station is shown in Figure C2.

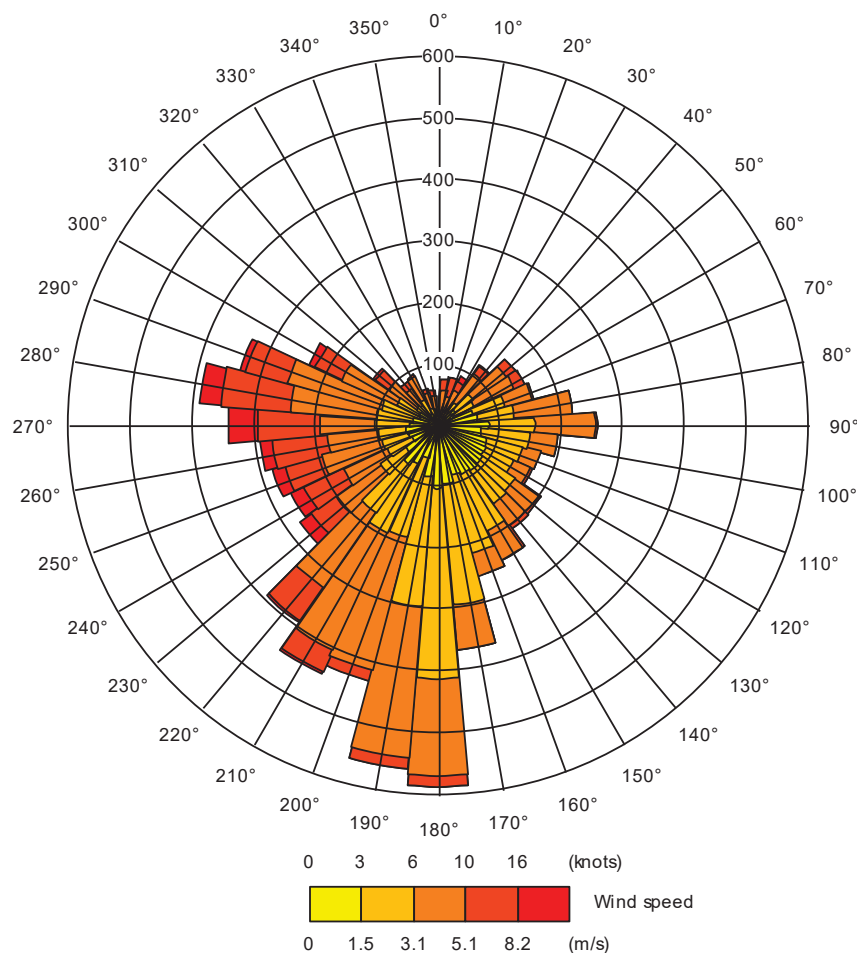


Figure C.2: 2019 Wind Rose for the Manchester Meteorological Station

Dispersion and Meteorological Site Characteristics

- C.14 The characteristics for the dispersion site and the meteorological site, included in the ADMS-Roads model, are detailed in Table C2.

Table C2: Dispersion and Meteorological Site Characteristics		
Setting	Dispersion Site	Meteorological Site
Surface Roughness	1.5m	0.02m
Surface Albedo	0.23	0.23
Minimum Monin-Obukhov Length	30m	1m
Priestley-Taylor Parameter	1	1

NO_x to NO₂ Conversion

- C.15 In accordance with the guidance detailed within LAQM.TG(16), the ADMS-Roads model has been run to predict the road-contribution NO_x concentrations at each receptor location. These have then been converted to NO₂ concentrations using the Defra NO_x to NO₂ calculator¹⁰.

Model Validation and Verification

- C.16 LAQM.TG(16) refers to model validation as *“the general comparison of modelled results against monitoring data carried out by model developers”*. ADMS-Roads is widely accepted by regulatory authorities for use in this type of assessment.
- C.17 Model verification is used to check the performance of the model at a local level. The verification of the ADMS-Roads air dispersion model is achieved by modelling concentration(s) at existing monitoring location(s) in the vicinity of the proposed development, and comparing the modelled concentration(s) with the measured concentration(s).
- C.18 Following review of the 2019 Annual Status Report (ASR) for MCC, it is understood there is one roadside NO₂ monitoring location in the vicinity of the proposed development site. Therefore, this diffusion tube has been used to verify the results of the model.
- C.19 As no PM₁₀ or PM_{2.5} monitoring locations are situated along roads where traffic flow data is available, it has not been possible to carry out model verification for modelled PM₁₀ or PM_{2.5} concentrations.

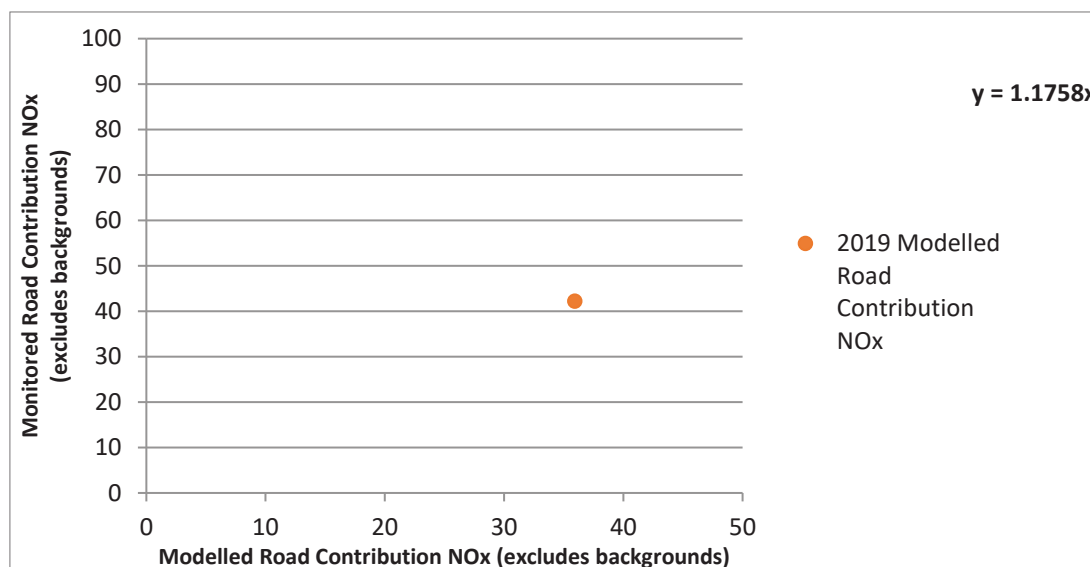
¹⁰ Defra Local Air Quality Management web pages (<http://laqm.defra.gov.uk/tools-monitoring-data/no-calculator.html>)

C.20 The monitoring data that has been used in the model verification procedure is detailed in Table C3.

Table C3: NO ₂ Monitoring Data Used for Verification Purposes				
Monitoring Location Reference	Type	Approximate Grid Reference		2019 Bias Adjusted NO ₂ Annual Average Concentration (µg/m ³)
		Easting	Northing	
MAN93	Roadside Diffusion Tube	382419	390010	42.90

C.21 The modelled road-contribution NO_x concentrations for the diffusion tube has been compared against the measured road-contribution NO_x concentrations for the same location. The measured concentrations have been derived using the Defra NO_x to NO₂ calculator, taking into account the background NO_x concentration for the local area.

C.22 The comparison is shown in the graph below. The equation of the trend line is based on linear regression through zero, which provides an overall adjustment factor of 1.1758.



C.23 This adjustment factor has been applied to the modelled road-contribution NO_x concentrations. The total NO₂ concentrations have been derived by combining the adjusted road-contribution NO_x concentration and background NO₂ concentration, using the Defra NO_x to NO₂ calculator.

- C.24 A final comparison has been made between the total measured NO₂ concentrations and total modelled NO₂ concentrations, as shown in Table C4. Following adjustment, modelled concentrations are within 10% of measured concentrations.

Table C4: Comparison Between Measured and Monitored NO ₂ Concentrations			
Monitoring Location Reference	Measured Total NO ₂ Concentration (µg/m ³)	Modelled Total NO ₂ Concentration (µg/m ³)	Difference (%)
MAN93	42.90	42.90	0.00

Assessment Criteria

Assessing the Impact of a Proposed Development on Human Receptors

- C.25 Guidance has been prepared by Environmental Protection UK (EPUK) and the IAQM¹¹ with relation to the assessment of the air quality impacts of proposed developments and their significance.
- C.26 The impact of a development is usually assessed at specific receptors, and takes into account both the long-term background concentrations, in relation to the relevant Air Quality Assessment Level (AQAL) at these receptors, and the change with the development in place.
- C.27 The impact descriptors for individual receptors are detailed in Table C6.

Table C6: Impact Descriptors for Individual Receptors				
Long Term Average Concentration at Receptor in Assessment Year*	Percentage 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

¹¹ Moorcroft and Barrowcliffe et al, Land-Use Planning and Development Control: Planning for Air Quality (v1.2), January 2017

Table C6: Impact Descriptors for Individual Receptors				
Long Term Average Concentration at Receptor in Assessment Year*	Percentage Change in Concentration Relative to Air Quality Assessment Level (AQAL)*			
	1%	2-5%	6-10%	>10
*Percentage pollutant concentrations have been rounded to whole numbers, to make it easier to assess the impact. Changes of 0% (i.e. less than 0.5% or 0.2µg/m ³) should be described as Negligible				

Determining the Significance of Effects

- C.28 Impacts on air quality, whether adverse or beneficial, will have an effect on human receptors that can be judged as either 'significant' or 'not significant'.
- C.29 Once the impact of the proposed development has been assessed for the individual impacts, the overall significance is determined using professional judgement. This takes into account a number of factors such as:
- The existing and future air quality in the absence of the development;
 - The extent of the current and future population exposure to the impacts; and
 - The influence and validity of any assumptions adopted when undertaking the prediction of impacts.

Appendix D: Professional Experience of Assessors

D.1 The assessment of air quality impacts, and the significance of the associated effects, takes into account the professional judgement of the assessor. Details of the experience of the personnel involved with the project are provided below:

Paul Threlfall
BSc (Hons), MSc

**Senior Environmental Scientist (Air
Quality & Odour)**

Paul joined Wardell Armstrong in October 2017 as an Air Quality Scientist, after completing his MSc Water, Energy and the Environment at Liverpool John Moores University. The majority of his work is carried out in support of planning applications and, therefore, he has experience of undertaking air quality assessments for a wide range of projects including residential developments, commercial developments and mixed-use developments. Paul has a good range of skills and knowledge of air quality modelling and monitoring through his involvement in air quality projects, both as individual commissions and as part of Environmental Impact Assessments (EIAs). Paul also has extensive knowledge and experience of undertaking odour assessments, ranging from qualitative desk-based assessments to more detailed odour dispersion modelling assessments using AERMOD, as well as extensive experience of undertaking odour 'sniff test' observations.

Dr. Steven Lees
BSc (Hons), PhD

Associate Director (Air Quality)

Steven holds a PhD on the effects of nitrogen pollution on designated conservation sites and BSc (Hons) in Environmental Science. Following completion of his PhD, Steven has accumulated seven years of experience in air quality consultancy and currently leads a team of air quality consultants. Steven is involved in managing and undertaking air quality impact studies for a wide range of development proposals, including schemes which require EIA, and has also provided expert evidence for planning inquiries.

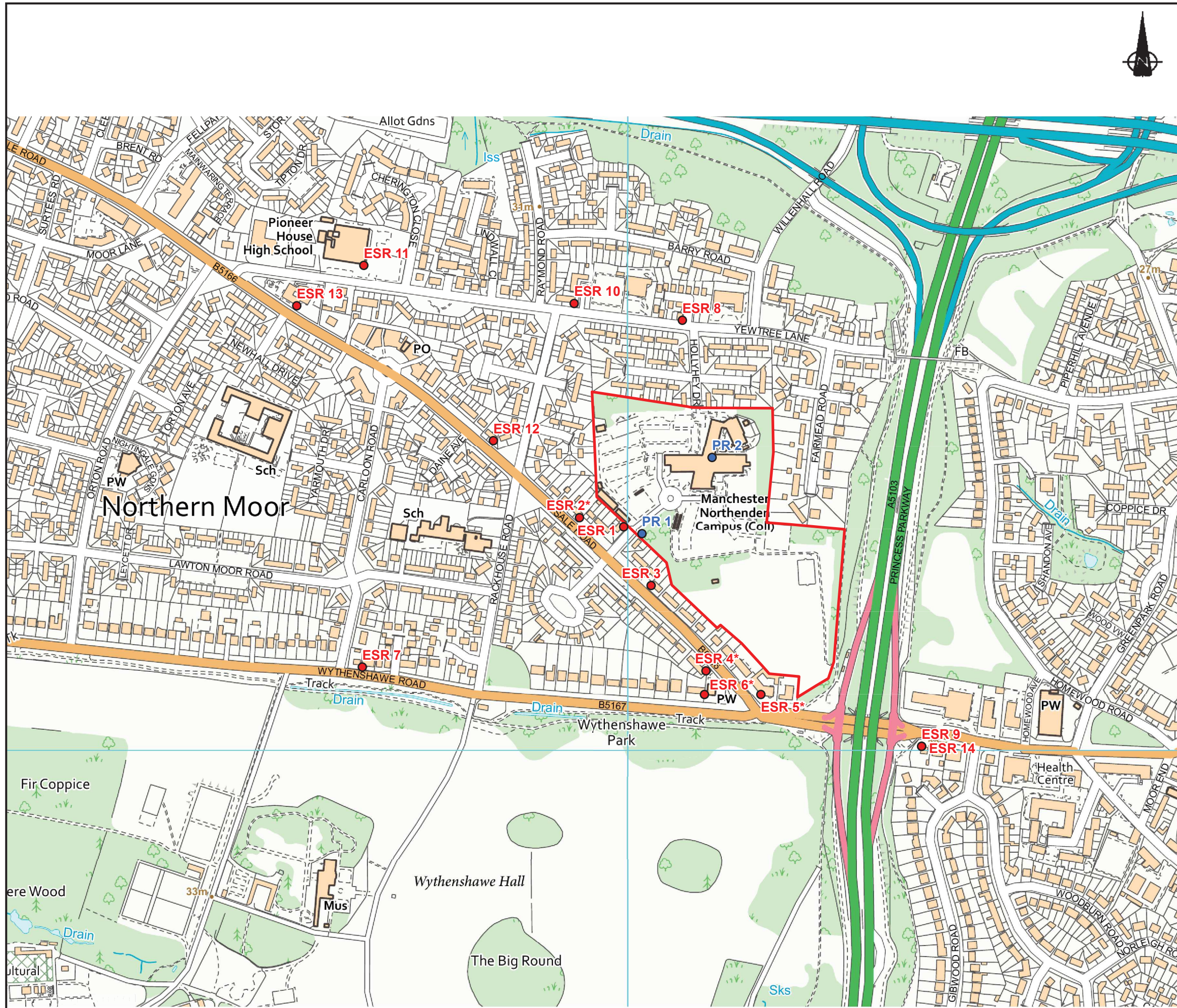
Mark Dawson

**BSc (Hons) MA (Env Law) Dip (Air Pollution Control),
Dip (Acoustics & Noise Control) CEnv MIEEnvSc MIOA
MIAQM FRMetS**

**Technical Director –
Service Lead Acoustics
and Air Quality**

Mark holds a Bachelor of Science degree in Geography, the Diploma in Air Pollution Control, the Diploma in Acoustics and Noise Control and Master's degree in Environmental Law and Policy. Mark is a Chartered Environmentalist and Member of the Institute of Environmental Sciences, Institute of Acoustics, Institute of Air Quality Management and Fellow of the Royal Meteorological Society. Mark has over 30 years' experience in regulation and consultancy. Having given evidence to over forty planning inquiries, Mark is experienced in putting forward persuasive technical arguments in plain English. Mark is the service lead for acoustics and air quality at Wardell Armstrong. He has extensive experience of managing commissions involving environmental impact assessment. He is involved in noise and air quality impact studies for mineral and waste operations and for residential, commercial, industrial and retail development. The majority of the work is carried out in support of planning applications and Mark has long experience of dealing with environmental health officers and planning officers.

DRAWINGS



KEY

- Red Line Boundary
- Existing Sensitive Receptors
- Proposed Receptors

Notes:

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REVISION	DETAILS	DATE	DRAWN	CHKD	APPD
CLIENT	MILLER HOMES LTD				
PROJECT	HOLLYHEY DRIVE, NORTHCENDEN				
DRAWING TITLE	EXISTING AND PROPOSED SENSITIVE RECEPTOR LOCATIONS				
DRG No.	GM11670-001		REV	A	
DRG SIZE	A3	SCALE	1:5,000	DATE	09/06/2021
DRAWN BY	CT	CHECKED BY	PT	APPROVED BY	MD

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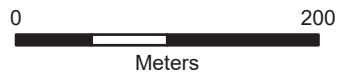
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