

ENVIRONMENT

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St John's Campus
Manchester
Air Quality Assessment

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EXECUTIVE SUMMARY

BWB Consulting Limited was appointed by St John's Manchester Limited to undertake an air quality assessment for a proposed office development at New Quay Street, Manchester.

The Site is located within the administrative area of Manchester City Council and is located within the Greater Manchester Combined Authority Air Quality Management Area.

A qualitative construction phase dust assessment was undertaken in accordance with Institute of Air Quality Management guidance and measures were recommended to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions was considered to be 'not significant' in accordance with Institute of Air Quality Management guidance.

The proposed development trip generation was screened using the Institute of Air Quality Management and Environmental Protection UK two stage screening process, to determine whether a detailed road traffic emissions impact assessment was required. The proposed development trip generation did not exceed the relevant screening criteria and therefore detailed dispersion modelling of development-generated road traffic was not undertaken.

The proposals do not include for any sensitive use however concentrations of NO₂, PM₁₀ and PM_{2.5} were predicted across the Site to inform the ventilation strategy. Pollutant concentrations were predicted to be below the relevant current air quality objectives for England and therefore the proposed mixed-mode ventilation strategy was considered to be acceptable.

Based on the assessment results, the impact of the proposed development on local air quality was considered to be not significant.

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1. INTRODUCTION

- 1.1 This Air Quality Assessment has been prepared by BWB Consulting Ltd on behalf of St Johns Manchester Limited, a subsidiary of HBD, and is submitted in support of an application for full planning permission at land bound by New College Street, New Quay Street, NCP car park and Gartside Street, otherwise known as "St John's Campus". The description of development is as follows:

"Demolition of the existing buildings and structures and the erection of a 16-storey office building (Use Class E(g)), with flexible ground floor uses (Use Class E), rooftop amenity space and works to facilitate public realm improvements."

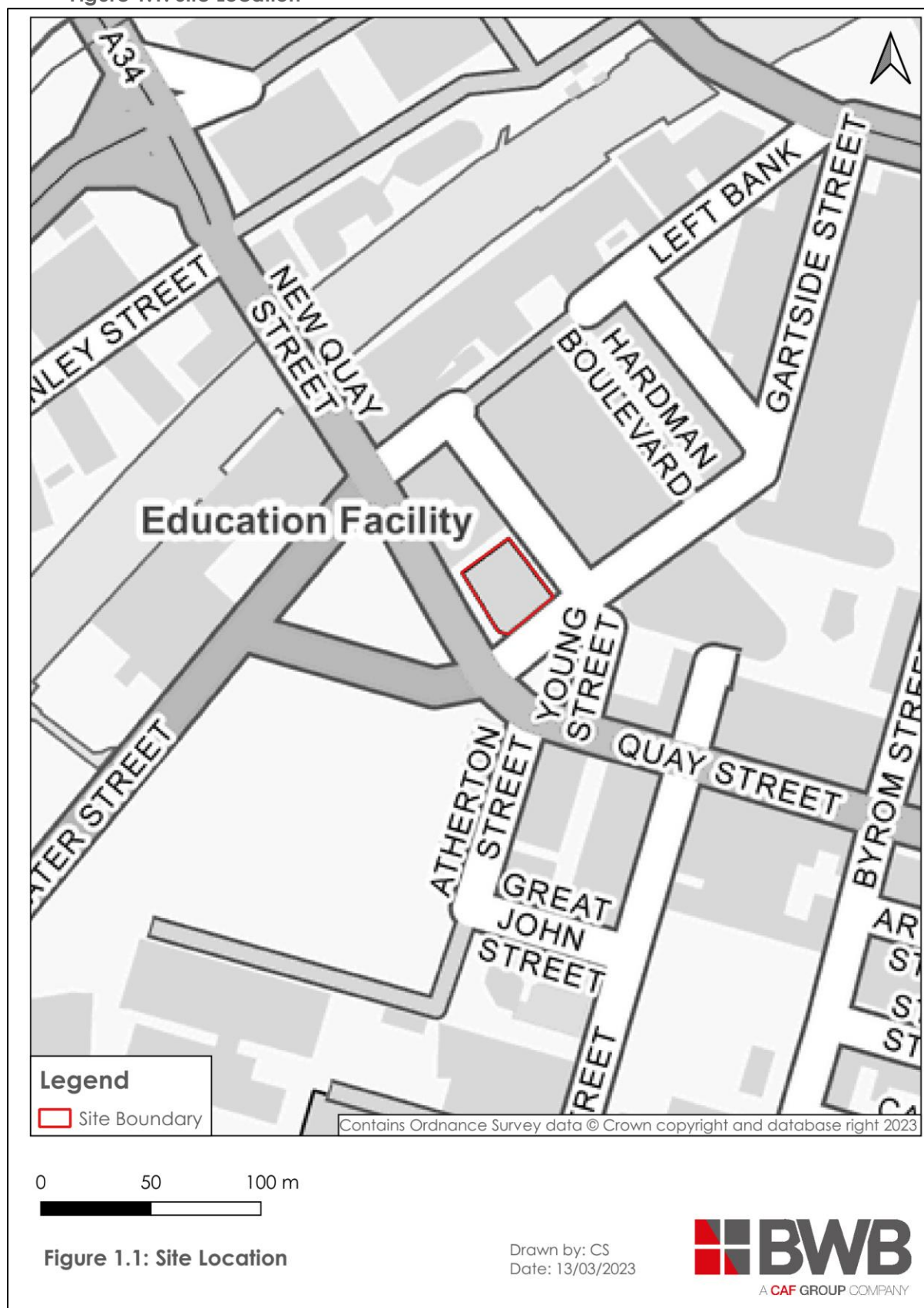
- 1.2 The proposals seek to demolish the existing on-site buildings and structures to deliver a 16-storey office building plus rooftop amenity space of sustainable construction and high quality design. The building will offer flexible office accommodation which will meet the needs of a range of tenants and also provide ground floor commercial uses which will activate the ground floor frontage creating a unique arrival experience.
- 1.3 The proposed development is described fully in the Design and Access Statement prepared by EPR Architects and presented on the application drawings. The application proposals have been developed in consultation with Manchester City Council (MCC) Officers and other key stakeholders.
- 1.4 The assessment considers construction phase dust impacts and operational phase road traffic emissions. A qualitative construction phase dust assessment was undertaken in accordance with relevant guidance. An operational phase road traffic emissions screening assessment was undertaken to consider the requirement for a detailed assessment of additional vehicles generated by the proposed development. In addition, pollutant concentrations were predicted across the Site to inform the ventilation strategy. The Site does not include any sensitive use and therefore a Site suitability assessment was not required.
- 1.5 This report is necessarily technical in nature so to assist the reader a glossary of air quality terminology can be found in **Appendix A**.

Site Setting

- 1.6 The Site is located within the administrative area of MCC. The Site currently comprises an existing four-storey building associated with The Manchester College. To the north is an existing multi-storey car park and New College Street with existing office and commercial uses beyond. To the east lies Gartside Street with existing office and commercial use beyond. To the south and west is New Quay Street with existing office and commercial use beyond. The River Irwell is located approximately 100m to the north west at the closest point which marks the natural boundary between MCC and Salford City Council.
- 1.7 **Figure 1.1** details the location of the proposed development.

- 1.8 Principal air pollution sources in the vicinity of the Site are likely to comprise road traffic emissions. The Site is located within the Greater Manchester Combined Authority (GMCA) Air Quality Management Area (AQMA) which was declared for potential exceedances of the current annual mean air quality objective for nitrogen dioxide (NO₂) for England.

Figure 1.1: Site Location



2. LEGISLATION, PLANNING POLICY & GUIDANCE

National Legislation and Planning Policy

2.1 The following national legislation and planning policy is relevant to air quality and was considered in the undertaking of the assessment. A summary of the relevant national legislation and planning policy is provided in **Appendix C**:

- European Parliament, EU 2008 ambient Air Quality Directive (2008)¹;
- HMSO, Air Quality (England) Regulations (2000)²;
- HMSO, Environment Act (1995)³;
- HMSO, Environment Act (2021)⁴;
- Department for Environment, Air Quality Strategy (1997)⁵;
- Department for the Environment, Food and Rural Affairs, Air Quality Strategy (2007)⁶;
- Department for the Environment, Food and Rural Affairs, The Environment (Miscellaneous Amendments) (EU Exit) Regulations (2020)⁷;
- HMSO, The Environmental Targets (Fine Particulate Matter) (England) Regulations (2023)⁸;
- Ministry of Housing, Communities and Local Government, National Planning Policy Framework (NPPF) (2021)⁹; and
- Ministry for Housing, Communities and Local Government, Planning Practice Guidance (PPG) for air quality (2019)¹⁰.

Local Planning Policy

2.2 The following local planning policy was considered in the undertaking of the assessment and a summary is provided in **Appendix C**:

- Manchester City Council, Manchester's Local Development Framework: Core Strategy Development Plan Document (2012)¹¹; and
- Greater Manchester Combined Authority, Places for Everyone Joint Development Plan (emerging) (2021)¹².

Air Quality Assessment Guidance

2.3 The following guidance was utilised in the air quality assessment:

¹ European Parliament (2008) Council Directive 2008/50/EC on Ambient Air Quality and Cleaner Air for Europe

² HMSO (2000) Statutory Instrument 2000 No. 928, The Air Quality (England) Regulations 2000 (as amended), London: HMSO

³ HMSO (1995) The Environment Act 1995, London: TSO

⁴ HMSO (2021) The Environment Act 2021, London: TSO

⁵ Department of the Environment (DoE) (1997) The UK National Air Quality Strategy, London: HMSO

⁶ Department of the Environment, Food and Rural Affairs (Defra) (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, London: HMSO

⁷ Department of the Environment, Food and Rural Affairs (Defra) (2020) The Environment (Miscellaneous Amendments) (EU Exit) Regulations, London: HMSO

⁸ HMSO (2023) The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023

⁹ Ministry of Housing, Communities & Local Government (2021) National Planning Policy Framework, HMSO London

¹⁰ Ministry for Housing, Communities and Local Government (2019) Planning Practice Guidance Air Quality

¹¹ Manchester City Council (2012) Manchester's Local Development Framework: Core Strategy Development Plan Document

¹² Greater Manchester Combined Authority (2021) Places for Everyone Joint Development Plan (emerging)

- Defra, Local Air Quality Management Technical Guidance (LAQM.TG(22)) (2022)¹³;
- Institute of Air Quality Management, Guidance on the assessment of dust from demolition and construction (2014)¹⁴;
- Institute of Air Quality Management and Environmental Protection UK, Land-Use Planning and Development Control: Planning for Air Quality (2017)¹⁵; and
- Manchester City Council, Air Quality & Planning Technical Guidance (2022)¹⁶.

¹³ Defra (2022) Local Air Quality Management Technical Guidance LAQM.TG(22)

¹⁴ Institute of Air Quality Management (2014) Guidance on the assessment of dust from demolition and construction, Institute of Air Quality Management, London

¹⁵ Institute of Air Quality Management and Environmental Protection UK (2017) Land-Use Planning and Development Control: Planning for Air Quality

¹⁶ Manchester City Council (2022) Air Quality & Planning Technical Guidance

3. METHODOLOGY

Consultation with Manchester City Council

3.1 Consultation was undertaken with the Environmental Health and Protection Department at MCC in which the proposed assessment methodology was provided via email on the 8th March 2023. A response was received on the 13th March 2023 confirming acceptance of the proposed methodology.

3.2 The agreed methodology is detailed below:

- Construction Phase - A construction phase dust assessment was undertaken and relevant measures to mitigate construction phase dust emissions were recommended. The assessment was undertaken in accordance with guidance provided by the Institute of Air Quality Management (IAQM)¹⁴.
- Operational Phase Road Traffic Emissions Impact Screening Assessment – An operational phase road traffic emissions screening assessment was undertaken in accordance with IAQM and Environmental Protection UK (EPUK) guidance¹⁵.
- Operational Phase Road Traffic Emissions Exposure Assessment – Detailed dispersion modelling was undertaken to predict pollutant concentrations at the Site to inform the ventilation strategy for the proposed development. The dispersion model ADMS-Roads was used to model concentrations of oxides of nitrogen (NO_x) and particulate matter (PM₁₀ and PM_{2.5}) across the Site. The assessment was undertaken in accordance with Defra Local Air Quality Management Technical Guidance (LAQM.TG22)¹³.
- Consideration was also given to the MCC Air Quality & Planning Technical Guidance¹⁶. The proposed development was classified as 'major' in accordance with the Town & Country Planning Act¹⁷ as the proposals comprise more than 1,00m² of commercial floor space. However, the predicted trip generation does not exceed the screening criteria detailed within the IAQM and EPUK guidance¹⁵. Furthermore, the proposed development will not introduce relevant new exposure into an area of poor air quality. As such, there was no requirement to offset any emissions and a damage cost calculation was not undertaken for the proposed development.

3.3 Full details of the methodology used in the assessment, as agreed with MCC, are given below. A copy of the correspondence with MCC is provided in **Appendix D**.

Construction Phase Dust Assessment

3.4 An assessment of the potential impacts arising from the construction of the proposed development was undertaken in accordance with IAQM Guidance¹⁴. The full assessment methodology is not reproduced within this report but a summary of the assessment steps are provided below:

- Step 1 – screen the requirement for a more detailed assessment. No assessment is required if there are no receptors within a certain distance of the works.
- Step 2 – assess the risk of dust impacts separately for each of the four activities considered (demolition, earthworks, construction and trackout).

¹⁷ HMSO (2015) Town and Country Planning (Development Management Procedure) (England), London: TSO

- Step 2A – determine the potential dust emission magnitude for each of the four activities;
 - Step 2B – determine the sensitivity of the area;
 - Step 2C – determine the risk of dust impacts by combining the findings of steps 2A and 2B.
- Step 3 – determine the site-specific mitigation for each of the four activities; and
- Step 4 – examine the residual effects and determine significance.

Operational Phase Road Traffic Emissions – Screening Assessment

- 3.5 Guidance published by the IAQM and EPUK in 2017¹⁵ provides a two-stage approach to determine the level of assessment required in the consideration of the impact of development-generated road traffic emissions on local air quality.

Stage 1

- 3.6 The Stage 1 criteria requires that the assessment progress to Stage 2 if any of the following apply:
- The development comprises:
 - 10 or more residential units or a site area of more than 0.5ha; or
 - More than 1,000m² of floor space for all other uses or a site area greater than 1ha;
 - Coupled with any of the following:
 - The development has more than 10 parking spaces; or
 - The development will have a centralised energy facility or other centralised combustion process.

Note: Consideration should be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

Stage 2

- 3.7 The IAQM and EPUK guidance¹⁵ provides the following indicative criteria to determine whether a detailed road traffic emissions assessment is required for a proposed development.
- 3.8 The Stage 2 criteria relevant to the proposed development are:
- A change in Light Duty Vehicles (LDV) of more than 100 vehicles as a 24 hour Annual Average Daily Traffic (AADT) flow within an AQMA; and
 - A change in Heavy Duty Vehicles (HDV) flow of more than 25 vehicles as a 24 hour AADT flow within an AQMA.

Operational Phase Road Traffic Emissions – Exposure Assessment

Air Dispersion Modelling

- 3.9 The air dispersion model ADMS-Roads, version 5.0.1.3 was utilised in the assessment to predict concentrations of NO_x, PM₁₀ and PM_{2.5} across the Site to inform the ventilation strategy.
- 3.10 The assessment was undertaken in accordance with Defra Local Air Quality Management Technical Guidance¹³.

Assessment Scenarios and Traffic Data

- 3.11 The following scenarios were considered in the air dispersion modelling:
- Scenario 1: 2019 Verification Year; and
 - Scenario 2: 2026 Opening Year with development.
- 3.12 Traffic data were obtained from Mode Transport, the Transport Consultants for the project. 24-hour Annual Average Daily Traffic Data (AADT) and HDV proportions were provided for the following roads for use in the assessment:
- A6042 Trinity Way;
 - A6 Chapel Street;
 - Chapel Street; and
 - New Quay Street.
- 3.13 Consideration was given to the speeds at which vehicles are likely to travel within the study area. Free flowing traffic conditions were modelled at speed limits. Queuing sections were modelled in accordance with Defra guidance¹³.
- 3.14 Traffic data used in the air dispersion modelling are provided in **Appendix E**.

ADMS-Roads Model Inputs

- 3.15 The following model inputs were utilised in the assessment:
- Emission Factors – emission factors were utilised from the Defra Emission Factor Toolkit¹⁸ (EFT), version 11, for the years of assessment (2019 and 2026).
 - Conversion of oxides of nitrogen – concentrations of NO_x were predicted using the ADMS-Roads dispersion model. These concentrations were converted to nitrogen dioxide (NO₂) using the Defra NO_x to NO₂ calculator¹⁹, version 8.1.
 - Meteorological Data – hourly sequential meteorological data for the verification year of assessment (2019) were obtained for the Manchester Airport recording station. This

¹⁸ Defra (2019) Emission Factor Toolkit [<https://laqm.defra.gov.uk/review-and-assessment/tools/emissions-factors-toolkit.html>]

¹⁹ Defra (2019) NO_x to NO₂ Calculator [<https://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html#NOxNO2calc>]

is the closest meteorological station to the Site. The wind rose for 2019 is provided in **Appendix F**.

- Surface roughness and Monin-Obukhov length (MO) – Site – a surface roughness of 1.0m and a MO length of 100m were utilised in the air dispersion model to represent conditions at the Site and within the study area. These conditions are representative of the location of the Site within an urban area of Manchester.
- Surface roughness and Monin-Obukhov length (MO) – Meteorological Station – a surface roughness of 0.5m and a MO length of 30m were utilised in the air dispersion model to represent conditions at the meteorological station. These conditions were used to represent an average of the mixed urban/industrial conditions north of the Manchester Airport meteorological recording station and the rural conditions located to the south.
- Background pollutant concentrations – background concentrations of NO₂, PM₁₀ and PM_{2.5} for the study area were obtained from the pollutant concentration maps²⁰ provided by Defra as a 1km x 1km grid of the UK, for the years of assessment (2019 and 2026).
- Model verification – model verification was undertaken using passive diffusion tube monitoring data available for the study area. Full details of the verification procedure are provided in **Appendix G**.
- Calculation of short term PM₁₀ concentrations – the following calculation, as detailed in Defra guidance¹³, was utilised to calculate the number of exceedances of the 24-hour mean PM₁₀ air quality objective:

$$\text{Number of 24-Hour Mean Exceedance} = -18.5 + 0.00145 * \text{Annual Mean}^3 + (206 / \text{Annual Mean})$$

- The IAQM released a position statement²¹ in July 2018 regarding dealing with the uncertainty in vehicle NO_x emissions within air quality assessments. This recommends that sensitivity analyses be undertaken and professional judgement be applied to consider the scenario where NO_x emissions do not reduce as rapidly as shown by the EFT. The IAQM position statement was withdrawn in July 2021 following extensive research which identified that Emission Factor Toolkits v8.1 and onwards were considered to represent real world NO_x emissions more accurately. No sensitivity analysis was therefore undertaken as part of the air quality assessment.

Proposed Receptor Locations

- 3.16 Pollutant concentrations were predicted across the Site to consider exposure of future occupants of the proposed development to air quality. A Cartesian grid from minimum X 383160, Y 398060 to maximum X 383260, Y 398173 was modelled at a height of 1.5m to represent the average breathing height at ground floor level. Pollutant concentrations are anticipated to decrease with height as the atmospheric pollutants disperse from the pollution source, i.e. roads. As such, modelling at the average ground floor breathing height is considered to provide a robust assessment.

²⁰ Defra (2019) background pollutant concentration maps [<https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2019>]

²¹ Institute of Air Quality Management (2018) Position Statement: Dealing with Uncertainty in Vehicle NO_x Emissions within Air Quality Assessments, Version 1.1

Limitations and Assumptions

- 3.17 There are uncertainties associated with both measured and predicted pollutant concentrations. The model (ADMS-Roads) used in this assessment relies on input data, which are also subject to uncertainty. The model itself simplifies complex physical systems into a range of algorithms. In addition, local micro-climatic conditions may affect the concentrations of pollutants that the ADMS-Roads model will not take into account.
- 3.18 The assessment is based on traffic data provided by Mode Transport, the transport consultants for the project. As such any assumptions made by the transport consultants will also influence the air quality assessment.
- 3.19 In future years scenarios, uncertainty relates to the projection of vehicle emissions and, in particular the rate at which emissions per vehicle will improve over time. This assessment utilised the most recent version of the Defra EFT¹⁸ to provide the most up to date estimate of current and future emission projections.
- 3.20 To reduce the uncertainty associated with predicted concentrations, model verification was carried out following guidance set out in Defra guidance¹³. As the models were verified using local monitoring data and adjusted accordingly, there can be reasonable confidence in the predicted concentrations.

Assessment Criteria

- 3.21 Predicted pollutant concentrations were compared to the relevant current air quality objectives⁵ for England. The current relevant air quality standards and objectives are detailed in **Table 3.1**.

Table 3.1: Air Quality Standards and Objectives (England)

Pollutant	Averaging Period	Air Quality Objective ($\mu\text{g.m}^{-3}$)	Date to Achieve by
NO ₂	Annual Mean	40	31 December 2005
	1-hour mean not to be exceeded more than 18 times per year	200	31 December 2005
PM ₁₀	Annual Mean	40	31 December 2004
	24-hour mean not to be exceeded more than 35 times per year	50	31 December 2004
PM _{2.5}	Annual Mean	20	1 January 2020
	Annual mean	10	31 December 2040

Pollutant	Averaging Period	Air Quality Objective ($\mu\text{g.m}^{-3}$)	Date to Achieve by
	<i>Annual mean interim target as detailed within the Environmental Improvement Plan²²</i>	12	31 January 2028

Italics denotes future air quality objectives that will come into force in the future.

²² Defra (2023) Environmental Improvement Plan 2023, First revision of the 25 Year Environment Plan

4. BASELINE CONDITIONS

Local Air Quality Management

- 4.1 The Site is located within the GMCA AQMA which was declared for the potential exceedances of the current annual mean air quality objective for NO₂.

Local Air Quality Monitoring

Nitrogen Dioxide

- 4.2 GMCA undertakes NO₂ monitoring within its administrative boundary using a network of automatic monitoring stations and diffusion tubes. The closest monitoring location to the Site is a roadside passive diffusion tube, located approximately 450m north of the Site.
- 4.3 Bias adjusted NO₂ monitoring results, for the locations in the vicinity of the Site, are detailed in **Table 4.1**. At the time of assessment 2020 and 2021 monitoring data were available and therefore were included in the review. However, due to the influence of the COVID-19 pandemic lockdown restrictions, 2020 and 2021 monitoring data are not considered representative of normal conditions. The IAQM released a position statement²³ in August 2021 with regard to 2020 and 2021 monitoring datasets, which recommends that until the influence of the COVID-19 pandemic is fully understood, 2019 monitoring data should be treated as the last year of typical monitoring data. Exceedances of the current annual mean air quality objective for England are highlighted in **bold**.

Table 4.1: GMCA NO₂ Monitoring Data in 2015 – 2021

Location and Reference	Grid Reference		Site Monitoring Type	Distance from and direction to Site boundary	Monitored Annual Average Concentration (µg.m ⁻³)						
					2015	2016	2017	2018	2019	2020	2021
SA39NO	383040	398563	Roadside	450m north	38.5	46.8	41.6	39.1	41.7	30.4	33.0
SA27NO	383078	398741	Roadside	600m north	35.4	39.8	36.8	34.1	37.2	26.7	28.8
SA79NO	382602	398519	Roadside	700m north west	-	-	-	-	41.1	27.3	30.0
MA24NO	383968	398070	Kerbside	735m east	55.2	45.3	44.7	40.3	40.8	26.8	31.8
SA81NO	382561	397722	Roadside	750m south west	-	-	-	-	46.4	34.8	42.3
MA26ANO	383973	398874	Urban Background	1km north east	33.1	37.1	35.5	33.4	33.0	22.9	25.9

N.B. - data not available

²³ Institute of Air Quality Management (2021) Position Statement: Use of 2020 and 2021 Monitoring Datasets

- 4.4 Between 2015 and 2019 annual mean NO₂ concentrations were above the current air quality objective of 40 µg.m⁻³ at the majority of monitoring locations within the vicinity of the Site. Monitoring locations SA39NO, SA27NO and SA79NO are the closest roadside diffusion tubes to the Site however upon review of the monitoring location, SA27NO is set back from the closest major road and is therefore not considered to be representative of the Site which is immediately adjacent to New Quay Street. Annual mean NO₂ concentrations were above the air quality objective in 2019 at both SA39NO and SA79NO, the most recent year of available and representative monitoring data. Although annual mean NO₂ concentrations have fluctuated in recent years at all monitoring locations, an overall downward trend was evident.
- 4.5 Monitoring locations SA39NO and SA79NO are considered to be most representative of the Site due to their location adjacent to Chapel Street/Trinity Way and the A6 Chapel Street, respectively and were therefore utilised within the verification process. Furthermore, the MA26ANO urban background diffusion tube, located approximately 1km north east of the Site, was considered to be representative of background concentrations at the Site and was therefore also utilised within the verification process.

Particulate Matter (PM₁₀ and PM_{2.5})

- 4.6 No representative monitoring of PM₁₀ and PM_{2.5} is undertaken within the vicinity of the Site or within the wider study area.

Background Pollutant Concentrations

- 4.7 MCC undertakes monitoring of NO₂ background concentration at monitoring location MA26ANO, located approximately 1km north of the Site. The 2019 monitored annual mean NO₂ concentration at MA26ANO was utilised as the background NO₂ concentration for all model verification locations and across the proposed development Site. The 2019 monitored concentration at MA26ANO was adjusted in accordance with Defra guidance¹³ to derive a 2026 background NO₂ concentration for the future assessment year.
- 4.8 No representative background air quality monitoring of PM₁₀ and PM_{2.5} is undertaken by MCC within the study area. Pollutant concentrations were therefore obtained from the latest Defra background concentration maps²⁰, which are provided for the UK as a 1km x 1km grid network. The latest maps are based on 2018 monitoring and meteorological data. Background concentrations of PM₁₀ and PM_{2.5} were obtained for the grid squares covering the study area for the years of assessment (2019 and 2026). The background concentrations used in the assessment are detailed in **Table 4.2**.

Table 4.2: Background Pollutant Concentrations used in the Assessment

Pollutant	Grid Square	Concentration (µg.m ⁻³)	
		2019	2026
NO ₂	383500, 398500	33.0*	26.6†

Pollutant	Grid Square	Concentration ($\mu\text{g.m}^{-3}$)	
		2019	2026
PM ₁₀		Data not required for this scenario	12.2
PM _{2.5}			7.8

N.B. * 2019 monitored background NO₂ concentration at MA26ANO, † NO₂ background concentration adjusted using Defra methodology¹³

- 4.9 As shown in **Table 4.2**, background pollutant concentrations are below the current relevant air quality objectives for England. Furthermore, background PM_{2.5} concentrations are below the interim and future annual mean air quality objective.

5. CONSTRUCTION PHASE DUST ASSESSMENT

- 5.1 The construction phase of the proposed development will involve a number of activities which have the potential to impact on local air quality. These include emissions of dust generated through demolition, excavation, construction, earthworks and trackout activities, exhaust pollutant emissions from construction traffic on the local highways network, and exhaust emissions from non-road mobile machinery (NRMM) within the construction site itself.
- 5.2 The location of sensitive receptors in relation to construction activities will affect the potential for such construction activities to cause dust soiling, nuisance and local air quality impacts. Meteorological conditions and the use of control measures will also contribute to the effects experienced.

Step 1: Screen the Need for a Detailed Assessment

- 5.3 Step 1 of the IAQM guidance¹⁴ involves a screening assessment to consider whether a more detailed construction phase dust assessment is required.
- 5.4 In accordance with the guidance, a detailed assessment is required if:
- Human receptors are located within 350m of the boundary of the site or 50m of routes used by construction vehicles on the public highways, up to 500m from the site entrances; or
 - Ecological receptors are located within 50m of the boundary of the site or 50m of routes used by construction vehicles on the public highways, up to 500m from the site entrances.
- 5.5 From a review of the Multi Agency Geographic Information for the Countryside (MAGIC) website²⁴, no ecological designations were identified within the above screening distance and therefore the impact on ecological designations was not considered further. However human receptors are located within the above screening distances, with the closest of these receptors located off New Quay Street. A construction phase assessment was therefore undertaken.

Step 2: Assess the Risk of Dust Impacts

Step 2A: Define the Potential Dust Emission Magnitude

- 5.6 The dust emission magnitudes for the construction activities were defined using the criteria detailed in the IAQM guidance¹⁴ as detailed in **Table 5.1**.

²⁴ Defra, Multi Agency Geographic Information for the Countryside (MAGIC) [<http://magic.defra.gov.uk/>]

Table 5.1: Dust Emission Magnitude Criteria and Definition

Activity	IAQM Dust Emission Magnitude	IAQM Dust Emission Magnitude Criteria
Demolition	Large	Total building volume >50,000m ³ , potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >20m above ground level.
	Medium	Total building volume 20,000m ³ – 50,000m ³ , potentially dusty construction material, demolition activities 10 - 20m above ground level.
	Small	Total building volume <20,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <10m above ground, demolition during wetter months.
Earthworks	Large	Total site area >10,000m ² , potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >8 m in height, total material moved >100,000 tonnes.
	Medium	Total site area 2,500m ² – 10,000m ² , moderately dusty soil type (e.g. silt), 5 - 10 heavy earth moving vehicles active at any one time, formation of bunds 4m - 8m in height, total material moved 20,000 tonnes – 100,000 tonnes.
	Small	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	Large	Total building volume >100,000m ³ , on site concrete batching, sandblasting.
	Medium	Total building volume 25,000m ³ – 100,000m ³ , potentially dusty construction material (e.g. concrete), on site concrete batching.
	Small	Total building volume <25,000m ³ , construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout	Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100m.
	Medium	10 - 50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50m – 100m.
	Small	<10 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50m.

5.7 The following dust emissions magnitudes were defined for the proposed development:

- Demolition – the proposed development will require the demolition of all existing buildings within the Site. The total building volume to be demolished is anticipated to be less than 20,000m³ and the maximum height of the building to be demolished is expected to be between 10m and 20m above ground level. The dust emissions magnitude for demolition was therefore defined as **Medium**.
- Earthworks – the proposed development Site area is less than 2,500m². The dust emissions magnitude was therefore defined as **Small**.
- Construction – the total building volume is expected to be between 25,000m³ – 100,000m³. It is anticipated that the main construction materials will be glass and steel frame. The dust emissions magnitude for construction was therefore defined as **Medium**.
- Trackout – it is anticipated that there will be less than 10 HDV outward movements in any one day, given the size of the development area. The dust emissions magnitude for trackout was therefore defined as **Small**.

5.8 A summary of the defined dust emissions magnitudes for the development are provided in **Table 5.2**.

Table 5.2: Summary of Project Defined Dust Emissions Magnitudes

Activity	Dust Emissions Magnitude
Demolition	Medium
Earthworks	Small
Construction	Medium
Trackout	Small

Step 2B: Define the Sensitivity of the Area

5.9 The assessment requires the determination of the sensitivity of the area for the purposes of dust soiling and human health. The sensitivity of the study area takes into account the specific receptors in the vicinity of the Site, the proximity and number of those receptors, the local background concentration of PM₁₀ and site-specific factors. **Figure 5.1** was utilised to determine the number of receptors located within the distance bands provided in the IAQM guidance¹⁴ for determining receptor sensitivity.

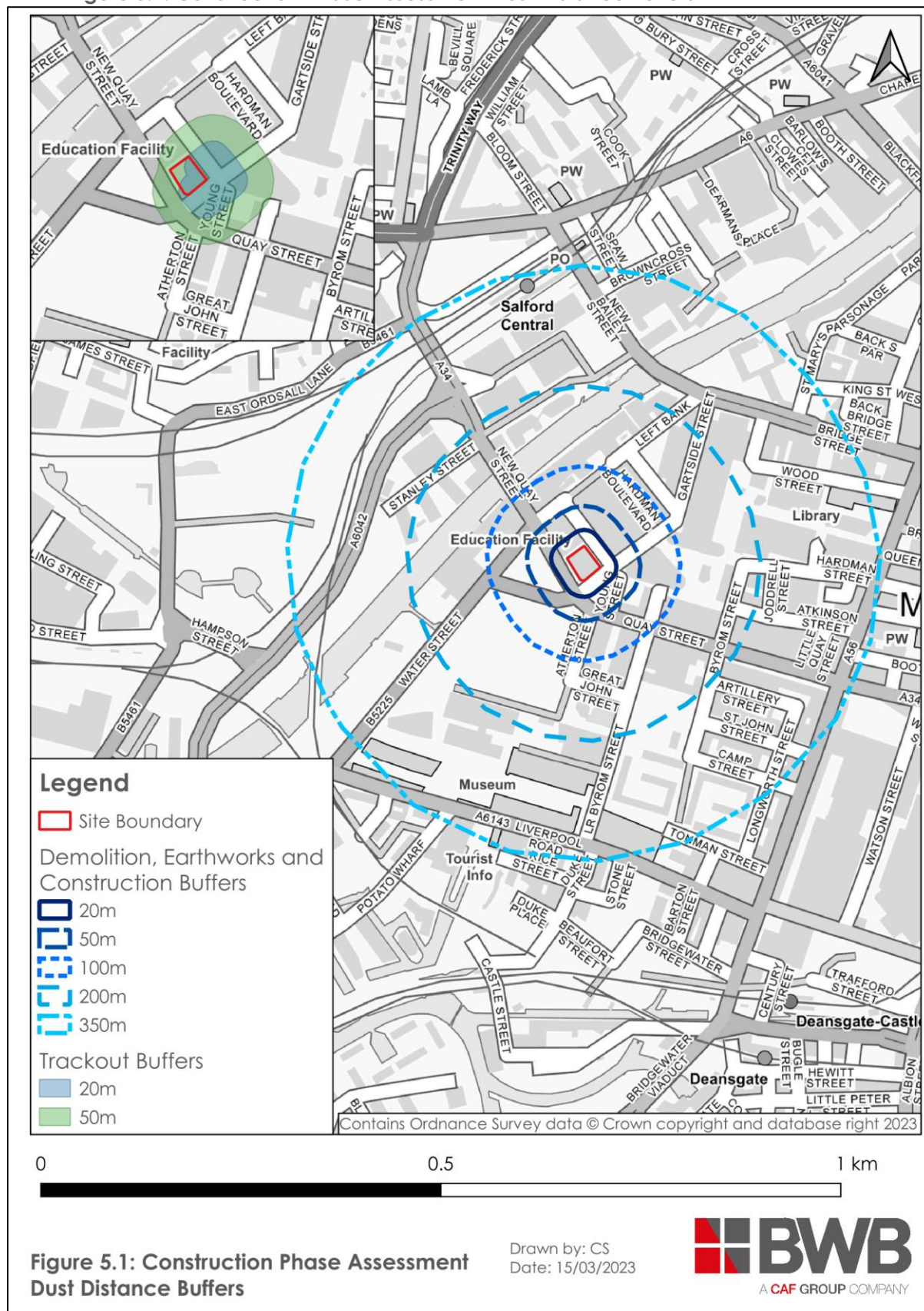
5.10 The sensitivity of the area is defined below, in accordance with IAQM criteria¹⁴ and summarised in **Table 5.3**.

- Dust Soiling – There is a short to medium stay car park located within 20m of the Site boundary, which is considered a highly sensitive receptor. There are also between 10 and 100 places of work within 50m of the Site boundary which are considered to be of medium sensitivity. The sensitivity of the area to dust soiling is defined as '**High**'. For trackout, it was assumed that construction vehicles will access the Site via New College Street. There are between 10 and 100 places of work within 20m of New College Street. The sensitivity of the area to dust soiling associated with trackout was therefore defined as '**Low**'.
- Human Health – there are between 10 and 100 places of work within 50m of the Site boundary, which are considered to be medium sensitivity receptors. The annual mean PM₁₀ background concentration is below 24µg.m⁻³. The sensitivity of the area to human health effects was therefore defined as '**Low**'.

Table 5.3: Determination of the Sensitivity of the Area

Potential Impact	Sensitivity			
	Demolition	Earthworks	Construction	Trackout
Dust Soiling	High	High	High	Low
Human Health	Low	Low	Low	Low

Figure 5.1: Construction Phase Assessment Dust Distance Buffers



Step 2C: Define the Risk of Impacts

- 5.11 The dust emission magnitude determined in Step 2A is then combined with the sensitivity of the area determined in Step 2B to define the risk of dust impacts with no mitigation applied. The results of this assessment are detailed in **Table 5.4**.

Table 5.4: Summary Dust Risk Table to Define Site Specific Risk

Activity	Step 2A: Dust Emission Magnitude	Step 2B: Sensitivity of the Area	Step 2C: Risk of Dust Impacts
<i>Dust Soiling Effects on People and Property</i>			
Demolition	Medium	High	Medium Risk
Earthworks	Small	High	Low Risk
Construction	Medium	High	Medium Risk
Trackout	Small	Low	Negligible
<i>Human Health Impacts</i>			
Demolition	Medium	Low	Low Risk
Earthworks	Small	Low	Negligible
Construction	Medium	Low	Low Risk
Trackout	Small	Low	Negligible

Step 3: Site-Specific Mitigation

- 5.12 The risk of dust impacts, defined in Step 2C of the assessment, is used to determine the mitigation measures required to minimise the emission of dust during construction phase activities. The IAQM guidance¹⁴ provides details of highly recommended and desirable mitigation measures which are commensurate with the risk of dust impacts defined in Step 2C for demolition, construction, earthworks and trackout activities. Where the mitigation measures are general in nature, the highest risk category was applied in accordance with the guidance¹⁴. The highest risk category identified was 'Medium Risk' and the recommended mitigation taken from the IAQM guidance¹⁴ is detailed in **Table 5.5** and **Table 5.6**.

Table 5.5: Mitigation Measures for a Medium Risk Site

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
Communication	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	None
	Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager.	
	Display the head or regional office contact information.	
	Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority.	
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner and record the measures taken.	None
	Make the complaints log available to the local authority when asked.	
	Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.	
Monitoring	Carry out regular site inspections to monitor compliance with the DMP, record inspections results, and make an inspection log available to the local authority when asked.	Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided as necessary.
	Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	
Preparing and maintaining the site	Plan the site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	None
	Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	
	Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extended period.	
	Avoid site runoff of water or mud.	

Category	Mitigation Measures for a Medium Risk Site	
	Highly Recommended	Desirable
	Keep site fencing, barriers and scaffolding clean using wet methods.	
	Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	
	Cover, seed or fence stockpiles to prevent wind whipping.	
Operating vehicle/ machinery and sustainable travel	Ensure all vehicles switch off engines when stationary – no idling vehicles.	Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
	Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.	Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing). A Travel Plan was prepared as part of the scheme by Mode Transport and submitted as part of the planning application.
	Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	
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.	None
	Ensure an adequate water supply on site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	
	Use enclosed chutes and conveyors and covered skips.	
	Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	
	Ensure equipment is readily available on site to clean and dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.	
Waste Management	Avoid bonfires and burning of waste materials.	None

Table 5.6: Mitigation Measures Specific to Demolition, Earthworks, Construction and Trackout

Category	Mitigation Measures	
	Highly Recommended	Desirable
Demolition (Medium Risk Site)	Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
	Avoid explosive blasting, using appropriate manual or mechanical alternatives.	
	Bag and remove any biological debris or damp down such material before demolition.	
Earthworks (Low Risk Site)	None	None
Construction (Medium Risk Site)	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.	Avoid scabbling (roughening of concrete surfaces) if possible.
		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.
		For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout (Negligible)	None	None

Step 4: Determine Significant Effects

- 5.13 In accordance with IAQM guidance¹⁴, with the implementation of the mitigation measures detailed in Step 3, the residual impacts from the construction phase are considered to be 'not significant'.

6. OPERATIONAL PHASE ROAD TRAFFIC EMISSIONS ASSESSMENT

Screening Assessment

- 6.1 The trip generation for the proposed development was screened using IAQM and EPUK Stage 1 and Stage 2 criteria¹⁵ to determine whether a detailed air quality assessment was required.

Stage 1

- 6.2 The proposed development comprises more than 1,000m² of commercial floor space and therefore it was necessary to proceed to Stage 2.

Stage 2

- 6.3 The trip generation for the proposed development was provided by Mode Transport, the Transport Consultants for the project. The Site is currently in use for educational use and includes on site parking. The proposed development does not include for any provision of parking and therefore there will be a net decrease in predicted trips associated with the Site. The Transport Consultant confirmed that there will be a decrease of 30 LDV AADT and 2 HDV AADT with the proposed development in place. This is below the screening thresholds detailed in the IAQM and EPUK guidance for development within an AQMA. Therefore, in accordance with IAQM and EPUK guidance¹⁵ the impact on local air quality was considered to be insignificant and a detailed air quality impact assessment was not undertaken.

Exposure Assessment

- 6.4 It was confirmed by Hoare Lea, the appointed Mechanical Engineers for the project that the proposed ventilation strategy comprises a mixed-mode system with openable windows and/or vents at each floor level. A dispersion modelling assessment was therefore undertaken to predict concentrations of NO₂, PM₁₀ and PM_{2.5} across the Site, to confirm the feasibility of the proposed ventilation strategy with regard to the current relevant air quality objectives.
- 6.5 A Cartesian grid from minimum X 383160, Y 398060 to maximum X 383260, Y 398173 was modelled at a height of 1.5m to represent average breathing height at ground floor across the Site. Pollutant concentrations are anticipated to decrease with height and therefore modelling NO₂, PM₁₀ and PM_{2.5} concentrations at ground floor was considered to provide a robust assessment. Pollutant concentrations were predicted for Scenario 2: 2026 Opening Year with the proposed development in place. **Figures 6.1 – 6.3** illustrate annual mean pollutant concentration contours for NO₂, PM₁₀ and PM_{2.5}, respectively, across the Site.

Figure 6.1: Predicted Annual Mean NO₂ Concentrations Across the Site

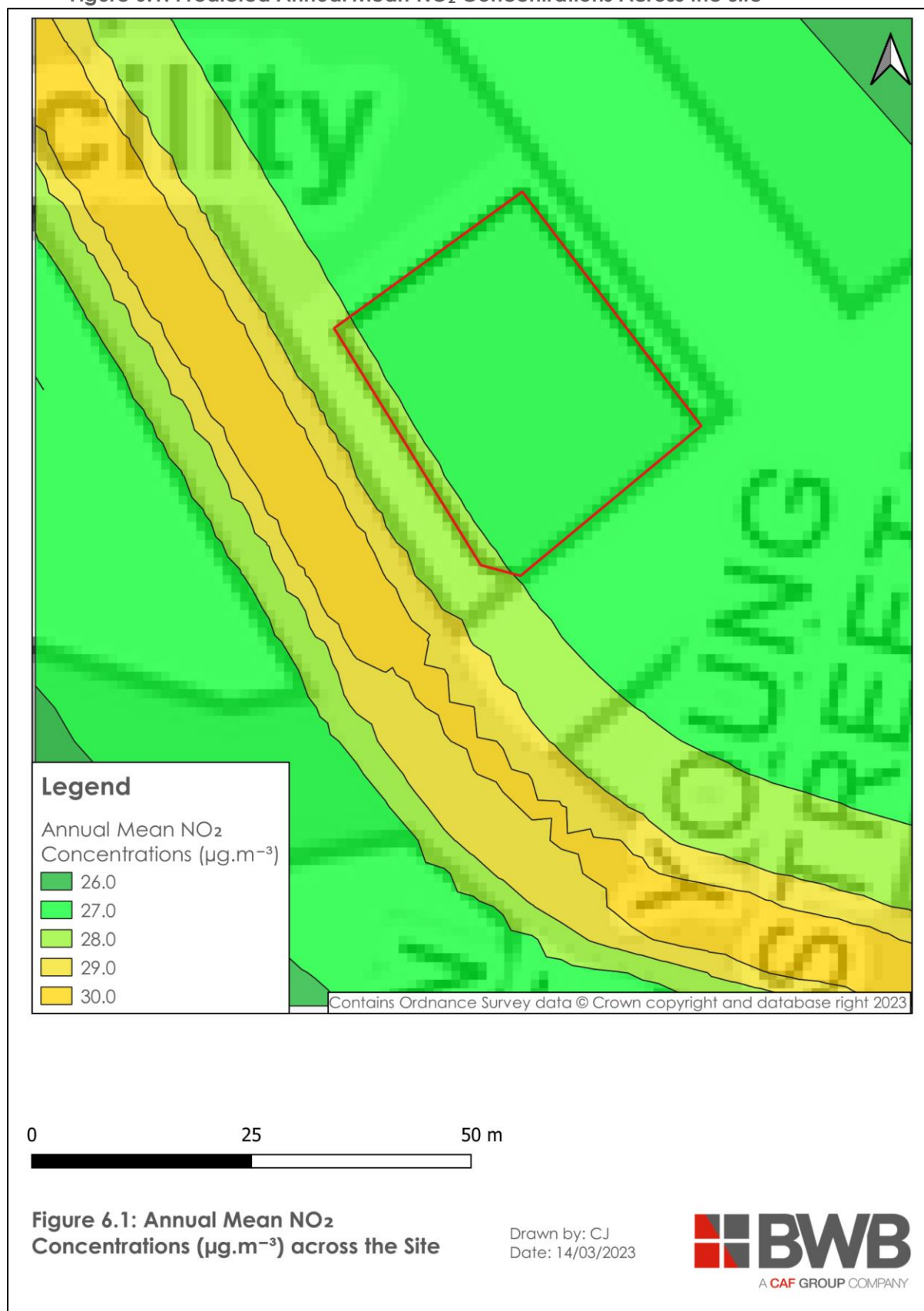


Figure 6.2: Predicted Annual Mean PM₁₀ Concentrations Across the Site



Figure 6.3: Predicted Annual Mean PM_{2.5} Concentrations Across the Site



- 6.6 The predicted NO₂, PM₁₀ and PM_{2.5} concentrations for Scenario 2: 2026 Opening Year with development, indicate that pollutant concentrations across the Site will be below the respective current air quality objectives with the development in place. Furthermore, predicted annual mean PM_{2.5} concentrations are below the interim and future PM_{2.5} air quality objectives.
- 6.7 With regard to short term air quality objectives for NO₂ and PM₁₀ at the proposed development, the predicted annual mean NO₂ concentrations are less than 60µg.m⁻³ and therefore in accordance with Defra guidance¹³ it may be assumed that exceedance of the 1-hour mean NO₂ objective are unlikely. The calculation detailed in paragraph 3.15 was used to determine potential exceedance of the 24-hour PM₁₀ short term objective; no exceedances were predicted.
- 6.8 Based on the assessment results, the proposed mixed-mode ventilation strategy is considered to be acceptable with regards to air quality and mitigation measures, such as NO_x filtration, is not required.

7. CONCLUSION

- 7.1 An air quality assessment was undertaken for the proposed office development at New Quay Street in Manchester, known as St John's Campus.
- 7.2 A qualitative construction phase assessment was undertaken and measures were recommended to minimise emissions during construction activities. With the implementation of these mitigation measures the impact of construction phase dust emissions is considered to be 'not significant' in accordance with IAQM guidance¹⁴.
- 7.3 The proposed development was screened using the IAQM and EPUK two stage screening process¹⁵. The proposed development did not exceed the relevant screening criteria for development within an AQMA and therefore a detailed assessment was not required. The impact of the proposed development on local air quality was therefore considered to be 'not significant'.
- 7.4 Pollutant concentrations were also predicted across the Site to consider the feasibility of the proposed ventilation strategy with regard to the relevant current air quality objectives. Concentrations of NO₂, PM₁₀ and PM_{2.5} were all predicted to be below the relevant air quality objectives. Therefore, the proposed mixed-mode ventilation strategy is considered to be acceptable with regard to the relevant air quality objectives and no mitigation measures are required to reduce pollutant concentrations at the Site.
- 7.5 Based on the assessment results, the impact of the proposed development on air quality was determined to be 'not significant' and mitigation measures are not required.

APPENDICES

APPENDIX A: GLOSSARY OF TERMS

	Definition
AADT	Annual Average Daily Traffic flow.
Air quality objective	Policy target generally expressed as a maximum ambient concentration to be achieved, either without exception or with a permitted number of exceedances within a specific timescale (see also air quality standard).
Air quality standard	The concentrations of pollutants in the atmosphere which can broadly be taken to achieve a certain level of environmental quality. The standards are based on the assessment of the effects of each pollutant on human health including the effects on sensitive sub groups (see also air quality objective).
Annual mean	The average (mean) of the concentrations measured for each pollutant for one year. Usually this is for a calendar year, but some species are reported for the period April to March, known as a pollution year. This period avoids splitting winter season between two years, which is useful for pollutants that have higher concentrations during the winter months.
AQAP	Air Quality Action Plan.
AQMA	Air Quality Management Area.
AQS	Air Quality Strategy.
Defra	Department for Environment, Food and Rural Affairs.
EPUK	Environmental Protection UK.
Exceedance	A period of time where the concentrations of a pollutant is greater than, or equal to, the appropriate air quality standard.
HDV	Heavy Duty Vehicles (HGVs + buses and coaches)
HGV	Heavy Goods Vehicles.
IAQM	Institute of Air Quality Management.
LAQM	Local Air Quality Management.
LDV	Light Duty Vehicles (motorbikes, cars, vans and small trucks)
NO	Nitrogen monoxide, a.k.a. nitric oxide.
NO ₂	Nitrogen dioxide.
NO _x	Nitrogen oxides.
Percentile	The percentage of results below a given value.
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres.
micrograms per cubic metre (µg.m ⁻³)	A measure of concentration in terms of mass per unit volume. A concentration of 1 µg.m ⁻³ means that one cubic metre of air contains one microgram (millionth of a gram) of pollutant.

APPENDIX B: PROPOSED DEVELOPMENT MASTERPLAN

APPENDIX C: PLANNING POLICY AND LEGISLATION

National Legislation and Planning Policy

The UK Air Quality Strategy

- C.1 European Union (EU) legislation forms the basis of air quality policy and legislation in the UK. The EU 2008 ambient Air Quality Directive¹ sets limits for ambient concentrations of air pollutants including nitrogen dioxide (NO₂) and particulate matter (PM₁₀ and PM_{2.5}). The air quality standards and objectives are prescribed through the Air Quality (England) Regulations 2000², as amended, for the purpose of the Local Air Quality Management Framework.
- C.2 The UK Government are required under the Environment Act 1995³ to produce a national Air Quality Strategy (AQS). The AQS was first published in 1997⁵ and was most recently reviewed and updated in 2007⁶ with miscellaneous amendments added in 2020⁷ and an updated PM_{2.5} objective being published in 2023⁸. The AQS provides an overview of the Government's ambient air quality policy and sets out the air quality standards and objectives to be achieved and measures to improve air quality.
- C.3 The Environment Act 2021⁴ was granted Royal Assent in November 2021 and contains amendments to Part IV of the Environment Act 1995³ with regard to the Local Air Quality Management regime. Under the Environment Act 2021⁴, the Secretary of State must lay a statement before Parliament setting out progress made in meeting air quality objectives and standard in England and steps taken towards achieving the standards. The Environment Act 2021⁴ also places responsibility on local authorities to co-operate with air quality partners in the preparation of Air Quality Action Plans and identification of measures which should be monitored within the Plan and dates by which they should be implemented.
- C.4 Part IV of the Environment Act³ requires local authorities in the UK to review local air quality within their administrative area and, if relevant air quality standards and objectives are likely to be exceeded, designate Air Quality Management Areas (AQMA). Following the designation of an AQMA, local authorities are required to publish an Air Quality Action Plan (AQAP) detailing measures to be taken to improve local air quality and work towards meeting the relevant air quality standards and objectives.

National Planning Policy Framework

- C.5 The National Planning Policy Framework (NPPF)⁹ was amended in July 2021 and sets out the Government's planning policies for England and how these are expected to be applied.
- C.6 The NPPF⁹ recognises air quality within Section 15: Conserving and enhancing the natural environment, and states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

[...]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans;

[...]

Ground conditions and pollution

[...]

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.

[...]

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

C.7 With regard to assessing cumulative effects the NPPF⁹ states:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development.

[...]"

Planning Practice Guidance

C.8 The Planning Practice Guidance (PPG) for air quality¹⁰ was updated in November 2019 and provides guiding principles on how the planning process can take account of the impacts of new development on air quality.

C.9 The PPG¹⁰ sets out the following with regard to air quality and planning:

- *“What air quality considerations does planning need to address;*
- *What is the role of plan-making with regard to air quality;*
- *Air quality concerns relevant to neighbourhood planning;*
- *What information is available about air quality;*
- *When could air quality considerations be relevant to the development management process;*
- *What specific issues may need to be considered when assessing air quality impacts;*
- *How detailed does an air quality assessment need to be; and*
- *How can an impact on air quality be mitigated”.*

C.10 The PPG¹⁰ sets out the pollutants for which there are legally binding limits for concentrations and those which the UK also has national emissions reduction commitments.

C.11 The PPG¹⁰ states that development plans may need to consider:

- *“what are the observed trends shown by recent air quality monitoring data and what would happen to these trends in light of proposed development and / or allocations;*
- *the impact of point sources of air pollution (pollution that originates from one place);*
- *the potential cumulative impact of a number of smaller developments on air quality as well as the effect of more substantial developments, including their implications for vehicle emissions;*
- *ways in which new development could be made appropriate in locations where air quality is or is likely to be a concern, and not give rise to unacceptable risks from pollution. This could, for example, entail identifying measures for offsetting the impact on air quality arising from new development including supporting measures in an air quality action plan or low emissions strategy where applicable; and*
- *opportunities to improve air quality or mitigate impacts, such as through traffic and travel management and green infrastructure provision and enhancement”.*

C.12 The PPG¹⁰ also states what may be considered relevant to determining a planning application and these include whether a development would:

- *“Lead to changes (including any potential reductions) in vehicle-related emissions in the immediate vicinity of the proposed development or further afield. This could be through the provision of electric vehicle charging infrastructure; altering the level of traffic congestion; significantly changing traffic volumes, vehicle speeds or both; or significantly altering the traffic composition on local roads. Other matters to consider include whether the proposal involves the development of a bus station, coach or lorry park; could add to turnover in a large car park; or involve construction sites that would*

generate large Heavy Goods Vehicle flows over a period of a year or more;

- Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; biomass boilers or biomass-fuelled Combined Heat and Power plant; centralised boilers or plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area; or extraction systems (including chimneys) which require approval or permits under pollution control legislation;*
- Expose people to harmful concentrations of air pollutants, including dust. This could be by building new homes, schools, workplaces or other development in places with poor air quality;*
- Give rise to potentially unacceptable impacts (such as dust) during construction for nearby sensitive locations;*
- Have a potential adverse effect on biodiversity, especially where it would affect sites designated for their biodiversity value".*

C.13 The PPG¹⁰ provides guidance regarding what should be included within an air quality assessment. Examples of potential air quality mitigation measures are also provided.

Local Planning Policy

Manchester's Local Development Framework: Core Strategy Development Plan Document

C.14 The Manchester Local Development Framework: Core Strategy Development Plan Document¹¹ was adopted by Manchester City Council in 2012 and sets out the long term strategic policies for development within the city. The following policies relate to air quality:

"Policy CC 5

Transport

[...]

Proposals will be supported that improve pedestrian safety, improve air quality and increase the scope for accessible public realm improvements.

[...]

Policy T 1

Sustainable Transport

To deliver a sustainable, high quality, integrated transport system to encourage modal shift away from car travel to public transport, cycling and walking, to

support the needs of residents and businesses and to prepare for carbon free modes of transport, the Council will support proposals that:-

[...]

Would reduce the negative impacts of road traffic for example, congestion, air pollution and road traffic accident casualties.

[...]

Policy EN 16

Air Quality

The Council will seek to improve the air quality within Manchester and particularly within Air Quality Management Areas, located along Manchester's principal traffic routes and at Manchester Airport. Developers will be expected to take measures to minimise and mitigate the local impact of emissions from traffic generated by the development, as well as emissions created by the use of the development itself, including from Combined Heat and Power and biomass plant.

When assessing the appropriateness of locations for new development the Council will consider the impacts on air quality, alongside other plan objectives. This includes cumulative impacts, particularly in Air Quality Management Areas

[...]

Policy DM 1

Development Management

All development should have regard to the following specific issues for which more detailed guidance may be given within the supplementary planning document:-

Effects on amenity, including privacy, light, noise vibration, air quality, odours, litter, vermin, birds, road safety and traffic generation. This could also include proposals which would be sensitive to existing environmental conditions, such as noise."

Greater Manchester Combined Authority Places for Everyone Joint Development Plan

- C.15 The GMCA Places for Everyone Joint Development Plan¹² is currently under examination but aims to focus on delivering housing and employment and transitioning into a low-carbon economy. The following policy relates to air quality:

"Policy JP-S 6 Clean Air

A comprehensive range of measures will be taken to support improvements on air quality, focusing particularly on locations where people live, where children learn and play, where there are impacts on the green infrastructure network and where air quality targets are not being met, including:

- 1. Locating and designing development, and focusing transport investment, so as to reduce reliance on forms of transport that generate air pollution;*
- 2. Determining planning applications in accordance with the most recent development and planning control guidance published jointly by the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK), and the most recent IAQM Guidance on the Assessment of Dust from Demolition and Construction, or relevant successor guidance, including the requirement for developers to submit construction management plans as appropriate;*
- 3. Requiring applications for developments that could have an adverse impact on air quality to submit relevant air pollution data and, if approved, to make appropriate provision for future monitoring of air pollution;*
- 4. Restricting and carefully regulating developments that would generate significant point source pollution such as some types of industrial activity and energy generation;*
- 5. Significantly expanding the network of electric vehicle charging points, both for public and private use, including as part of new developments;*
- 6. Implementing the charging Clean Air Zone within the Plan area, as directed by Government and associated measures;*
- 7. Facilitating the more sustainable distribution of goods within the urban area, including through accommodating urban consolidation centres and urban distribution centres that use ultra-low-emission vehicles, and local delivery facilities to reduce repeat delivery attempts;*
- 8. Designing streets to avoid trapping air pollution at ground level, including through the appropriate location and scale of buildings and trees;*
- 9. Controlling traffic and parking within and around schools and early years sites;*
- 10. Promoting actions that help remove pollutants from the air, such as enhancing the green infrastructure network and using innovative building materials that capture air pollutants; and*
- 11. Development should be located in areas that maximise the use of sustainable travel modes and be designed to minimise exposure to high levels of air pollution, particularly for vulnerable users."*

C.16 The above policies were taken into consideration throughout the undertaking of the assessment.

APPENDIX D: CORRESPONDENCE WITH MCC

Charlotte Smith

From: Graeme Souter <graeme.souter@manchester.gov.uk>
Sent: 13 March 2023 09:52
To: Charlotte Smith
Subject: AQ assessment proposals St Johns campus

This email originated from outside of our organisation. Please exercise caution with content, links and attachments.

Good morning Charlotte

I have reviewed your proposals for the AQ assessment for the office block development at the above site on Quay Street and I can accept your proposals based on the development. We may have additional comment once the full report has been submitted with the planning application

Kind regards

Graeme

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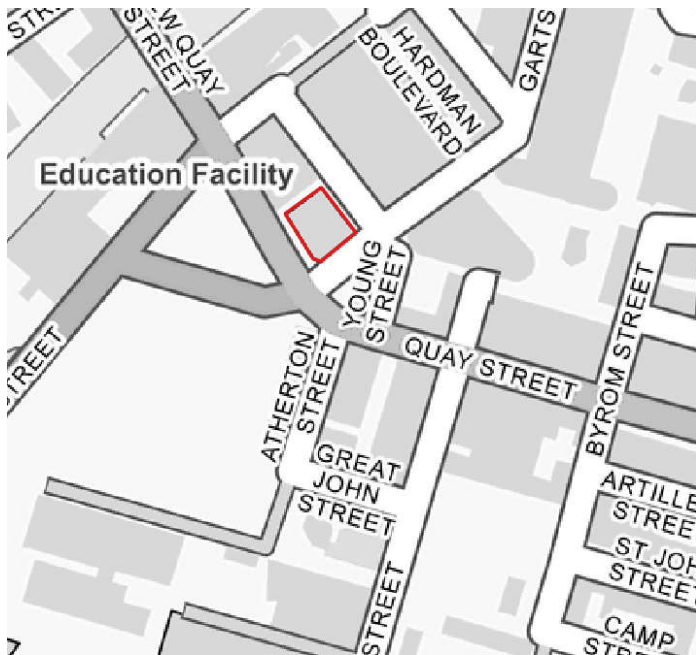
This footnote also confirms that this email message has been swept for the presence of computer viruses.

Charlotte Smith

From: Charlotte Smith
Sent: 08 March 2023 17:27
To: envh.licensing@manchester.gov.uk
Subject: Air Quality Methodology - St Johns Campus, Manchester

Hello,

BWB have recently been instructed to undertake an air quality assessment for a proposed office development at Quay Street, Manchester at the existing Manchester college site known as St Johns Campus. Please see below the Site boundary for reference.



The proposals comprise the demolition of the existing buildings and structures and the erection of a 16-storey office building (Use Class E(g)), with flexible ground floor uses (Use Class E) and rooftop amenity space.

BWB propose to undertake the assessment works using the following methodology:

Construction Phase Dust Assessment

A construction dust assessment will be undertaken in accordance with the Institute of Air Quality Management (IAQM) guidance. Mitigation measures will be specified to mitigate dust and particulate matter emissions during the construction phase.

Operational Phase Assessment

The Site is located within the Greater Manchester Combined Authority AQMA and therefore the lower screening criteria, detailed within the IAQM/EPUK guidance, of increase of more than 100 Light Duty Vehicles (LDV) as a 24-hour Annual Average Daily Traffic (AADT) flow and/or an increase of more than 25 Heavy Duty Vehicles (HDV) as a 24-hour AADT flow applies. The proposed development does not include any parking however taxi/drop off trips and service and delivery vehicles will travel to and from the Site. Due to the existing use of the Site as a college campus, the project transport consultant has confirmed that the proposed development will result in net decrease in LDV trip generation associated with the Site of -30 as an AADT. The proposals will however lead to an increase in predicted HDV trip generation of 2 as an AADT flow. The predicted trip generation is therefore below the screening criteria and a detailed assessment of road traffic impacts is not required in accordance with the IAQM/EPUK guidance.

As the proposed development will comprise non-sensitive office use, a site suitability assessment is not required. However, as part of the air quality works, a detailed dispersion model to predict nitrogen dioxide and particulate matter concentrations across the Site will be undertaken to inform the ventilation strategy. The assessment will be undertaken using ADMS-Roads (v 5.0.1.3) and we will utilise the latest tools available from Defra within the assessment including version 11 of the Emission Factor Toolkit.

The following model inputs will be utilised within the assessment:

- Meteorological data – 2019 data will be utilised from the Manchester Airport meteorological recording station. This is the closest meteorological station and is considered to be the most representative of the Site due to the urban fringe location.
- A surface roughness of 1m and a Monin-Obukhov (MO) length of 100m will be used for the Site representative of its relative urban area.
- A surface roughness of 0.5m and an MO length of 30m will be used to represent an average of the mixed urban/industrial conditions to the north of the Manchester Airport meteorological recording station and the rural conditions located to the south.
- Verification - We will utilise 2019 monitoring data in model verification in accordance with the IAQM position statement regarding the influence of the COVID-19 pandemic lockdown restrictions on 2020 and 2021 datasets. We propose to verify the model using diffusion tube monitoring locations: SA39NO and SA79NO as these are the closest monitoring locations to the Site and are located within the AQMA.
- Backgrounds – The MA26NO urban background diffusion tube is located approximately 1km north east of the Site however monitored annual mean NO₂ concentrations from this diffusion tube are higher than the SA79NO passive diffusion tube which will be utilised within the model verification. There are no PM₁₀ or PM_{2.5} monitoring locations within the vicinity of the Site. As such, Defra mapped background concentrations will be used to establish NO₂, PM₁₀ and PM_{2.5} background concentrations within the study area.

The following scenarios will be modelled:

- 2019 Verification Year; and
- 2026 Opening Year with Development.

Following the withdrawal of the IAQM position statement regarding sensitivity analyses, no sensitivity analysis will be undertaken as part of the air quality assessment.

Manchester City Council Air Quality and Planning Technical Guidance

The Manchester City Council Air Quality and Planning Technical Guidance will be considered throughout the undertaking of the assessment. The proposed development is more than 1000m² of floor space and is therefore considered to be 'major' in accordance with the Town and Country Planning Act. However, the predicted trip generation does not exceed the screening criteria detailed within the IAQM/EPUK guidance. Furthermore, the proposed development will not introduce relevant new exposure into an area of poor air quality. Based on the above, we do not believe that there will be a requirement to offset any emissions and therefore we will not be undertaking a damage cost calculation for the proposed development.

If you could please confirm your acceptance of the air quality assessment, that would be most appreciated. However, if you have any queries or would like to discuss in more detail, please do not hesitate to get in touch.

Kind Regards,

Charlotte

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APPENDIX E: TRAFFIC DATA UTILISED IN THE AIR QUALITY ASSESSMENT

Table E1: Traffic Data Utilised in the Air Dispersion Modelling Assessment

Road Link	Speed	Scenario 1: 2019 Verification Year		Scenario 2: 2026 Opening Year With Development	
	Km.hr ⁻¹	24 hour AADT Total Flow	HDV Flow	24 hour AADT Total Flow	HDV Flow
New Quay Street	48	12,751	244	13,728	265
A6 Chapel Street	48	9,537	1,325	10,290	1,430
Chapel Street	48	17,425	1,630	18,795	1,759
A6042 Trinity Way (south of Chapel Street)	48	12,751	244	13,729	264
A6042 Trinity Way (north of Chapel Street)	48	30,341	811	32,715	876

E.1 An illustration of the road links included in the ADMS-Roads model is provided in **Figure D1**.

Figure E1: Road Links Included in the ADMS-Roads Model

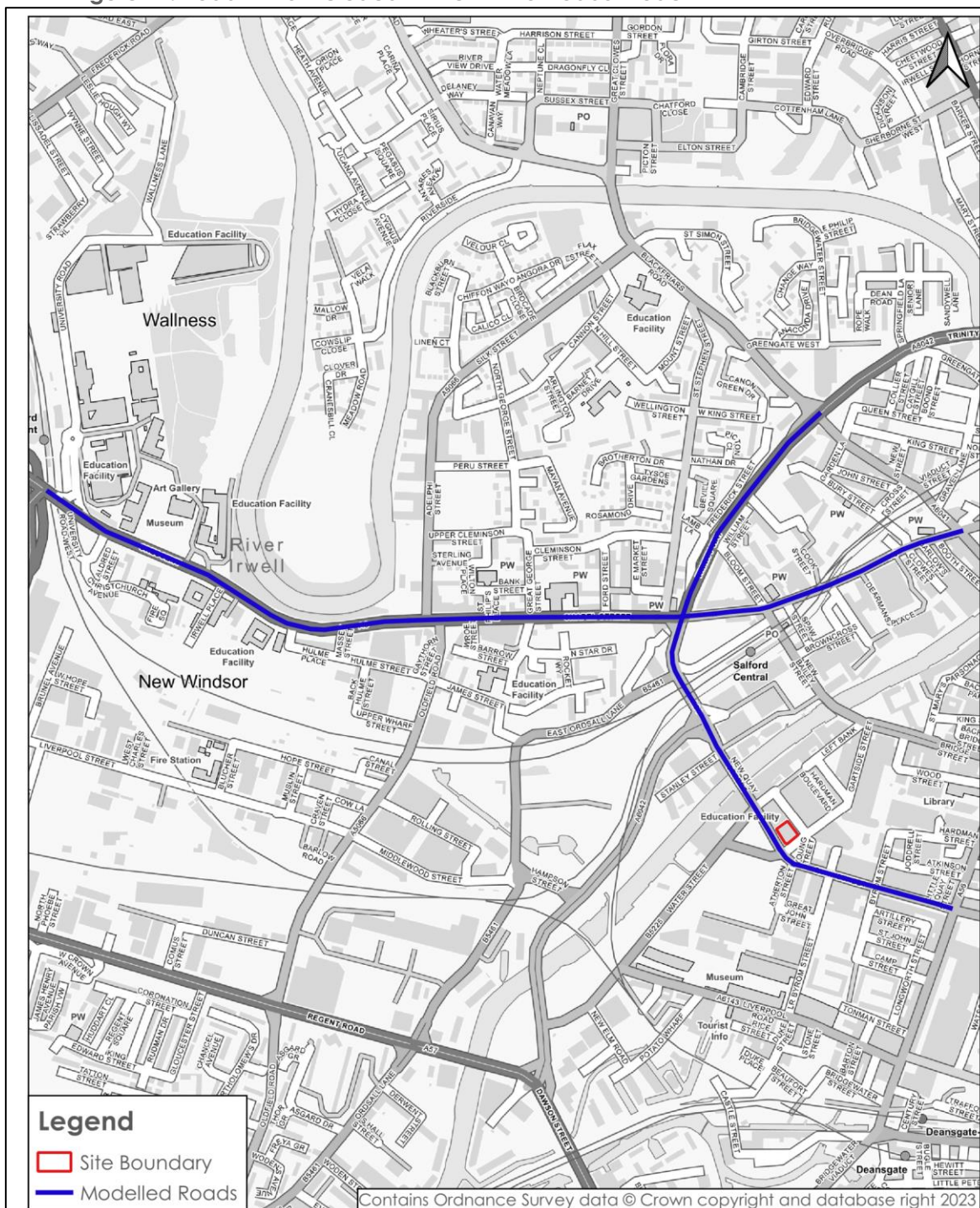
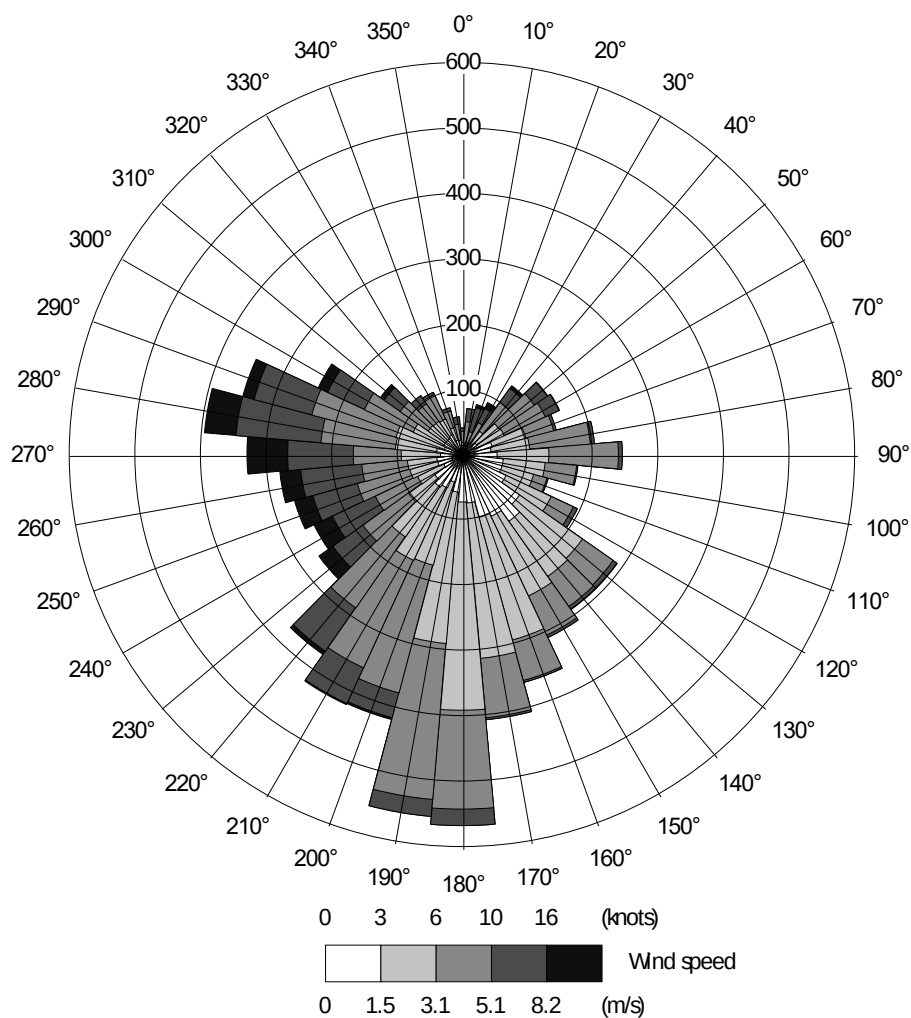


Figure E1: Road Links Included in the ADMS-Roads Model

Drawn by: CS
Date: 13/03/2023

**APPENDIX F: WIND ROSE FOR 2019 FOR MANCHESTER AIRPORT METEOROLOGICAL
RECORDING STATION**

- F.1 Meteorological data for 2019 Verification Year scenario for the Manchester Airport recording station was obtained for use in the air dispersion modelling assessment. The wind rose for 2019 is detailed below and illustrates a predominant wind direction from the south and west.



APPENDIX G: MODEL VERIFICATION

- G.1 Whilst ADMS-Roads is widely validated for use in this type of assessment, model verification for the area around the Site will not have been included. To determine model performance at a local level, a comparison of modelled results with monitored results in the study area was done in accordance with the methodology provided by Defra. This process of verification aims to minimise modelling uncertainty by correcting modelled results by an adjustment factor to give greater confidence to the results.
- G.2 The model was run for Scenario 1: 2019 Verification Year to predict the 2019 annual mean road contributions of NO₂ at the monitoring locations in the study area. The model outputs at these locations were compared to the 2019 monitored concentrations to provide adjustment factors. **Table F1** presents the verification process for NOx. **Figure F1** details the monitoring locations utilised in the model verification.
- G.3 No monitoring of PM₁₀ and PM_{2.5} is undertaken within the study area. Therefore the adjustment factor calculated during the NOx verification process was utilised to adjust predicted concentrations of PM₁₀ and PM_{2.5}.

Table F1: NOx Verification Process

Model Verification Steps	SA39NO	SA79NO
2019 monitored total NO ₂ (µg.m ⁻³)	41.7	41.1
2019 background NO ₂ concentration (µg.m ⁻³)	33.0	33.0
Monitored road contribution NOx (µg.m ⁻³)*	18.0	16.7
Modelled road contribution NOx (µg.m ⁻³)	21.7	8.5
Ratio of monitored road NOx to modelled road NOx	0.8	2.0
Adjustment factor for modelled road contribution NOx	0.979	
Adjusted modelled road contribution NOx (µg.m ⁻³)	21.3	8.3
Modelled total NO ₂ concentration (µg.m ⁻³)	43.2	37.1
Monitored total NO ₂ concentration (µg.m ⁻³)	41.7	41.1
% difference between modelled and monitored total NO ₂ concentration	3.6	-9.7
RMSE % (should be less than 25% and ideally less than 10%)	3.0	

*Road-NOx component, determined from NOx to NO₂ calculator

- G.4 A road-NOx factor of **0.979** was determined as the slope of the best fit line between the 'measured' road contribution and the model derived road contribution, forced through zero. To provide a conservative assessment a factor of 1.0 was applied to the modelled road-NOx concentration at each receptor, before conversion to NO₂ concentrations using the NOx to NO₂ calculator provided by Defra and the adjusted NO₂ background concentration.

Figure G1: Monitoring Locations Utilised in the ADMS-Roads Model Verification Process

