AtkinsRéalis

FORMER CENTRAL RETAIL PARK – THE PARK

Volume 2, Chapter 7 – Air Quality

Manchester City Council

October 2024

AtkinsRéalis - Sensitive / Sensible

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This document has 17 pages including the cover.

Document history

Document title: Volume 2, Chapter 7 – Air Quality

Document reference: Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	For client comment	ZT	ML	LR	DP	05/07/2024
1.1	Updated draft	ZT	ML	LR	DP	26/07/2024
2.0	For Submission	ZT	ML	LR	DP	31/10/2024

Client signoff

Client	Manchester City Council	**Client signature/date**
Project	Former Central Retail Park – The Park	
Job number	5224911	

Contents

7. Air Quality 4

7.1 Executive summary 4
7.2 Introduction 4
7.3 Competent expert evidence 4
7.4 Relevant legislation and guidance 4
7.5 Assessment method 7
7.6 Baseline conditions 8
7.7 Potential impacts 10
7.8 Assessment of effects 12
7.9 Additional mitigation and enhancement measures 14
7.10 Cumulative effects 15
7.11 Summary and conclusions 15
7.12 Glossary and acronyms 15

Tables

Table 7-1 Statutory Air Quality Criteria for Relevant Air Pollutants 5
Table 7-2 - Risk of Dust Impacts - Demolition 8
Table 7-3 - Risk of Dust Impacts - Earthworks, Construction and Trackout 8
Table 7-4 - Annual mean PM10 concentrations at continuous monitoring sites (µg/m3), 2019–2023 10
Table 7-5 - Number of exceedances of the 24-hour mean PM10 objective, 2019–2023 10
Table 7-6 - Annual mean PM2.5 concentrations at continuous monitoring sites (µg/m3), 2018–2023 10
Table 7-7 - Defra Mapped Background Concentrations in 2024 (µg/m3) 10
Table 7-8 – Construction phase impact assessment 12

Figures

Figure 7-1 Air Quality Constraints and Construction Dust Assessment 9

7. Air Quality

7.1 Executive summary

The potential local air quality effects associated with the construction of the proposals (Hereon referred to as “Proposed Development”) have been assessed. The construction phase of the Proposed Development has the potential to generate dust and particulate emissions. However, with appropriate mitigation measures in place, these works will likely only generate temporary and negligible adverse effects at nearby receptors.

Operational phase impacts have been scoped out of EIA assessment, because the Proposed Development is not expected to generate additional traffic in exceedance of relevant scoping criteria and there will be no emissions sources resulting from the operation of the Proposed Development. The Proposed Development is therefore considered unlikely to have a significant effect on local air quality once operational.

7.2 Introduction

The construction of the Proposed Development gives rise to potential air quality impacts, the significance of which this Chapter aims to assess and evaluate. The Proposed Development, as described in detail in Chapter 2 of this ES, is the development of a current vacant plot of foundations from the Former Central Retail Park (FCRP) site into a green public realm which includes a combination of soft and hard landscaped areas. Whilst the construction will not include any demolition works, it does include earthworks, laying of hardstanding and landscaping.

The scoping assessment identified the potential for significant environmental effects to arise during construction only, as a result of the dust and particulate matter generated by dust-raising activities in the construction phase. The key air pollutants that are addressed in this assessment are dust and fine particulate matter (PM_{10} and $PM_{2.5}$). Park users represent sensitive receptors and will be exposed to air quality at the Site on a short-term basis. However, as concentrations at the Site are expected to be well below relevant short-term objectives and therefore the operational impact on park users is expected to be negligible and is hence scoped out of the EIA.

The requirement for appraisal of operational phase impacts has previously been scoped out of EIA assessment.

The potential impact of construction vehicle emissions on local air quality has been evaluated using traffic scoping criteria given in the Institute of Air Quality Management (IAQM) Planning Guidance which advises that an air quality assessment would be required where a development causes a change in Heavy Duty Vehicle (HDV) flows of more than 25 HDVs per day[1] on local roads within or adjacent to an AQMA and by more than 100 HDVs per day elsewhere; or changes of Light Duty Vehicle (LDV) flows of more than 100 LDV per day on local roads within or adjacent to an Air Quality Management Area (AQMA) and by more than 500 LDVs per day elsewhere. The information on the number of construction vehicles is not currently available, so no quantitative air quality assessment has been undertaken. It is unlikely that the threshold requiring an assessment would be exceeded.

Any effect on air quality from construction traffic will in any case be temporary and is not considered significant. Therefore, construction vehicle emissions have not been considered within this assessment any further.

7.3 Competent expert evidence

This chapter has been prepared by competent experts with relevant and appropriate experience as follows:

- The air quality lead and technical reviewer has over fifteen years’ experience in air quality assessment, is a full member of the Institution of Environmental Sciences (IES) and Institute of Air Quality Management (IAQM) and is a Chartered Scientist; and
- The assessment was undertaken by an air quality consultant who has over five years’ experience in air quality assessment and is a full member of the Institution of Environmental Sciences (IES) and Institute of Air Quality Management (IAQM).

7.4 Relevant legislation and guidance

Air Quality Legislation

The air quality regulations that apply in England include:

- The Air Quality Standards Regulations (SI 2010 No.1001)[2] which implemented the air quality limit values included in the EU Directive on ambient air quality and cleaner air for Europe (2008/50/EC)[3], as amended by SI 2019 No.74[4] and SI 2020 No.1313 to account for EU withdrawal.;
- Regulations implementing national air quality objectives: Air Quality (England) Regulations 2000 (SI 2000 No. 928) and Air Quality (England) (Amendment) Regulations 2002 (SI 2002 No. 3043)[5],[6] and
- The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023 (SI 2023 No.96)[7].

Air Quality Limit Values

The relevant air quality limit values in the context of this assessment for the protection of human health for fine particulate matter are presented in Table 7-1.

Air Quality Objectives

Air quality objectives were originally included in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland[8] published in 2007, and which has been replaced by the AQS for England 2023. The new AQS sets out the national air quality objectives and targets for a number of local air pollutants and provides a strategic framework for local authorities and other partners in England.

[2] The Air Quality Standards Regulations 2010: https://www.legislation.gov.uk/uksi/2010/1001/contents/made
[3] European Union. (April 2008) Directive on ambient air quality and cleaner Air for Europe, Directive 2008/50/EC Official Journal, vol. 152, pp. 0001-0044: https://eur-lex.europa.eu/eli/dir/2008/50/oj
[4] The Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019: https://www.legislation.gov.uk/uksi/2019/74/made
[5] The Air Quality (England) Regulations 2000: http://www.legislation.gov.uk/uksi/2000/928/contents/made
[6] The Air Quality (England) (Amendment) Regulations 2002: http://www.legislation.gov.uk/uksi/2002/3043/contents/made
[7] Environmental Targets (Fine Particulate Matter) (England) Regulations 2023. Available at: https://www.legislation.gov.uk/uksi/2023/96/made?view=plain
[8] Defra, 2023, The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. https://www.gov.uk/government/publications/the-air-quality-strategy-for-england

The air quality objectives were set by expert organisations with regard to scientific and medical evidence on the effects of the particular pollutant on health and define the level of pollution below which health effects are expected to be minimum or low risk even for the most sensitive members of the population.

Local authorities have a responsibility (under Part IV of the Environment Act 1995, as amended by Schedule 11 of the Environment Act 2021, see below) to review and assess local pollution levels against these objectives. These criteria are defined in Regulations SI 2000 No. 928 and SI 2002 No. 3043.

It should be noted that the air quality objectives only apply in locations likely to have 'relevant exposure' i.e. where members of the public are exposed for periods equal to or exceeding the averaging periods set for the standards.

Air Quality Targets

Targets for $PM_{2.5}$ were set in legislation (SI 2023 No.96)[9], as required by The Environment Act 2021[10]. Interim targets for $PM_{2.5}$ were introduced in the latest Defra Environmental Improvement Plan 2023[11], which are to be achieved by the end of January 2028. Further details of the air quality criteria for relevant pollutants are provided below in Table 7-1.

Table 7-1 Statutory Air Quality Criteria for Relevant Air Pollutants

Pollutant	Criteria	
PM_{10}	Limit value and objective	24-hour mean concentration should not exceed 50 µg/m^3 more than 35 times a year. Annual mean concentration should not exceed 40 µg/m^3.
$PM_{2.5}$	Limit value	Annual mean concentration should not exceed 20 µg/m^3 by 2020 (Stage 2 Limit). Exposure reduction: target of 20% reduction in concentrations at urban background between 2010 and 2020.
	Objective	UK (Except Scotland) annual mean concentration should not exceed 20 µg/m^3 µg/m^3 by 2020. Exposure reduction (UK urban areas): target of 15% reduction in concentrations at urban background between 2010 and 2020.
	Target	Annual mean concentration target – a maximum of 10 µg/m^3 to be met across England by 2040, with an interim target of 12 µg/m^3 by the end of January 2028. Population exposure reduction target – a 35% reduction in population exposure by 2040 (compared to a base year of 2018), with an interim target to reduce by 22% by the end of January 2028.

Local Air Quality Management

Under Part IV of the Environment Act 1995, as amended by Schedule 11 of the Environment Act 2021[12], all local authorities are responsible for Local Air Quality Management (LAQM), the mechanism by which the Government's air quality objectives are to be achieved. As part of this LAQM role, local authorities are required to periodically review air quality in their area and to assess present and likely future air quality against the objectives defined in Regulations. Where a local authority anticipates an objective is expected to be breached within their area, they must designate an Air Quality Management Area (AQMA) and develop an action plan to improve pollution levels and work towards achieving the air quality objectives. Under the current LAQM regime, a local authority is responsible for regular review and assessment of local air quality, reports on which are published following public consultation and review by the Department for Environment, Food and Rural Affairs (Defra).

Dust

There are no national standards or guidelines for dust deposition currently set in the UK, or by any international organisation. This is mainly due to the difficulty that any standard set would need to relate to dust being a perceptual problem, rather than being specifically related to health effects. A threshold of 200 mg/m^2/day is recommended as a level for action by best practice guidance[13].

National Planning Policy

National Planning Policy Framework (NPFF)

The Government's planning guidance of general relevance to air quality is found within the NPPF[14]. It provides guidance for local authorities on incorporating air quality considerations into planning decisions and aims to protect the environment and to promote sustainable growth.

Paragraph 109 states that development should be focused on locations which are or can be made sustainable, as this can help to reduce congestion and emissions, and improve air quality and public health.

Paragraph 192 concerns the need to take into account the presence of AQMAs and Clean Air Zones (CAZs) and the cumulative impacts from individual sites in local areas. The paragraph goes on to state that any new development in AQMAs and CAZs should be consistent with the local air quality action plan.

Planning Practice Guidance (PPG)[15]

Planning Practice Guidance (PPG) is intended to support the NPPF and provide further detail on its policies. Paragraph 005 of this guidance provides information relating to air quality that could be important to decision makers, and when there are concerns about air quality, the local planning authority may want to know about:

- "the 'baseline' local air quality;
- whether the Proposed Development could significantly change air quality during the construction and operational phases (and the consequences of this for public health and biodiversity); and
- whether occupiers or users of the development could experience poor living conditions or health due to poor

[9] Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland. http://archive.Defra.gov.uk/environment/quality/air/airquality/strategy/documents/air-qualitystrategy-vol1.pdf
[10] The Environment Act 2021: https://www.legislation.gov.uk/ukpga/2021/30/contents
[11] DEFRA (2023) 'Environmental Improvement Plan 2023': https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1133967/environmental-improvementplan-2023.pdf
[12] Environment Act 2021: www.legislation.gov.uk/ukpga/2021/30/contects/enacted
[13] IAQM Guidance on Air Quality Monitoring in the Vicinity of Demolition and Construction Sites: http://www.iaqm.co.uk/wp-content/uploads/guidance/monitoring_construction_sites_2012.pdf
[14] Department for Levelling Up, Housing and Communities (2023) 'National Planning Policy Framework (NPPF)', December 2023: https://assets.publishing.service.gov.uk/media/65a11af7e8f5ec000f1f8c46/NPPF_December_2023.pdf
[15] Planning Practice Guidance, National Planning Portal: http://planningguidance.planningportal.gov.uk/blog/guidance/air-quality/

air quality."

Paragraph 005 of this guidance also provides information on early engagement with the local planning and environmental health departments to establish the scope of any assessment. Guidance is also given on the level of detail required in an air quality assessment and measures which could be employed to mitigate adverse effects.

Regional Planning Policy

5-year Environment Plan for Greater Manchester 2019-2024 (2019)[16]

The 5-year Environment Plan for Greater Manchester sets out the GMCA long term environment vision and includes air quality as one of five key challenges with an aim to "improve air quality, meeting World Health Organisation guidelines on air quality by 2030 and supporting the UK Government in meeting and maintaining all thresholds for key air pollutants at the earliest date.

Greater Manchester Low-Emission Strategy[17]

This 'Low-Emission Strategy' was adopted in 2016. It establishes a framework for developing detailed action plans to reduce carbon emissions and improve air quality up to 2040.

The aims of this strategy are to:

- Support the UK Government in meeting all EU thresholds for key pollutants at the earliest date;
- Contribute to reducing Greater Manchester's carbon footprint, in line with the Greater Manchester Climate Change Strategy and Implementation Plan; and
- Reduce air pollution as a contributor to ill-health in Greater Manchester.

Places for Everyone Joint Development Plan[18]

The Places for Everyone (PfE) plan provides objectives and guidance policies to help create inclusive and sustainable economic growth across nine boroughs. It reinforces the ambition to bring forward development on brownfield land and provide greater protection of environmental assets whilst also supporting wider strategies around clean air, walking and cycling and underpins the ambition to be a carbon neutral city region by 2038. Specifically, the plan contains a clean air policy (JP-S5) amongst others that relate to the management of air quality.

Local Planning Policy

MCC Core Strategy 2012-2027[19]

MCC's Core Strategy was adopted on 11 July 2012 and is the key document in the Manchester Local Plan. It sets out strategic policies for Manchester's future development and will form the framework against which planning applications will be assessed. The document sets out current policy in terms of air quality and is reproduced below:

- 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 EN 16 Air Quality: The Council will seek to improve the air quality within Manchester, and particularly within AQMAs, 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. 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 AQMAs.
- Policy DM 1 Development Management: All development should have regard to the following specific issues for which more detailed guidance may be given within a 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.

Guide to Development in Manchester Supplementary Planning Document and Planning Guidance Adopted April 2007[20].

The guidance was adopted in 2007 and is divided into three parts. The first part deals with development principles and has Supplementary Planning Document (SPD) status.

The second part provides additional guidance on the character of various areas within the city. This section does not have SPD status but sets the context within which developers and architects will have to work, identifying key characteristics and highlighting important development issues and priorities within those different areas.

Part three of the Guide to Development explains how it should be used and how it relates to the wider planning policy framework, development control, Local Transport Plan, Community Strategy, and Housing Market Renewal Pathfinder.

Paragraph 4.14 under Construction Management makes reference to air quality:

> *In addition, activities carried out during the construction of new developments have the potential to cause significant environmental impact. In order to avoid such impacts, it is important that appropriate measures are put in place to manage and control the waste generated, the amount of water and energy used, and any potential releases to water, land and air. Use of the Considerate Constructor scheme is recommended[21].*

Manchester City Council: Air Quality & Planning Guidance[22]

This document provides air quality advice and guidance for developers in order that new development may achieve high standards and not compromise the health of the population living and working in Manchester. This includes refence to published methodologies of IAQM / EPUK Land Use Planning Guidance and IAQM Dust Guidance.

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[16] Greater Manchester Combined Authority (2019) 5-year Environment Plan for Greater Manchester 2019-2024: https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded_3.pdf

[17] https://www.greatermanchester-ca.gov.uk/media/1276/low-emission-strategy-dec-2016.pdf

[18] https://www.greatermanchester-ca.gov.uk/media/9578/places-for-everyone-joint-development-plan-document.pdf

[19] MCC Core Strategy 2012-2027: https://secure.manchester.gov.uk/info/200074/planning/6573/core_strategy_2012-2027

[20] Guide to Development in Manchester - Supplementary Planning Document and guidance: https://www.manchester.gov.uk/downloads/download/644/guide_to_development_in_manchester_-_supplementary_planning_document_and_planningis there not a 2022 report available?_guidance_spd

[21] Considerate Constructors Scheme (ccscheme.org.uk)

[22] Manchester City Council, Air Quality & Planning Technical Guidance: https://www.manchester.gov.uk/download/downloads/id/28690/air_quality_and_planning_guidance.pdf

Non-Statutory Guidance

Construction Dust

The IAQM's "Guidance on the assessment of dust from demolition and construction" (IAQM Construction Dust Guidance)23provides a framework for a risk-based approach to the assessment of dust emissions from demolition and construction in land development schemes and outlines options for mitigation depending on the level of 'dust risk' identified for a site through the assessment process.

7.5 Assessment method

Study area

The study area used within the Air Quality assessment includes the following parameters in relation to specific receptors:

- A 'human receptor' within:
  - 250 m of the boundary of the site; and/or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).
- An 'ecological receptor' within:
  - 50 m of the boundary of the site; and/or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

Baseline

Information on existing baseline air quality conditions within the study area was obtained from the following sources:

- Information on Local Air Quality Management including air quality management areas (AQMA) and air quality monitoring data from the latest MCC Air Quality Annual Status Report (ASR)[24]
- Monitoring data available from the Air Quality in England website[25]
- AQMA mapping; and[26]
- Background pollutant concentrations and Pollution Climate Mapping (PCM) modelling data from DEFRA's UK Air Quality Information Resource (UK-AIR)[27].

The following sources have been used to identify receptors and potential constraints:

- OpenStreetMap for mapping[28]
- Defra Multi–Agency Geographic Information for the Countryside (MAGIC) website[29] to identify boundaries of designated ecological sites.
- Sites of Biological Importance (SBIs) in Greater Manchester[30] to identify boundaries of locally designated ecological sites.

Construction Phase

Construction Dust Risk Assessment

The IAQM Construction Dust Guidance[Error! Bookmark not defined.] provides a framework for a risk-based approach to the assessment of dust emissions from demolition and construction. The assessment of dust emissions during construction of the Proposed Development is considered in the context of the overall scale and nature of the proposals under consideration and the potential sensitivity of neighbouring land uses. The quantity and distribution of dust emissions varies according to type, duration and location of activity, weather conditions and the effectiveness of suppression (mitigation) measures. Good practice control measures that are "highly recommended" or "desirable" for dust control for the various dust risk categories are recommended.

Assessment of the potential impact of the construction phase of the Proposed Development on air quality with regards dust and PM_{10} emissions has been carried out with reference to the four-step process described in the IAQM Construction Dust Guidance. These steps are summarised below:

Step 1 - is to screen the requirement for a more detailed assessment.

An assessment will normally be required where there is:

- A human and/or ecological receptor within:
  - 250 m of the boundary of the site; or
  - 50 m of the route(s) used by construction vehicles on the public highway, up to 250 m from the site entrance(s).

'Human' receptors include residential dwellings and other premises that may have a particular sensitivity to dust deposition or to the health effects of PM_{10} e.g., vehicle showrooms, museums, long-term car parks, hospitals, schools and residential care homes. 'Ecological' receptors include sites with statutory designations e.g., Ramsar sites, Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Sites of Special Scientific Interest (SSSIs), as well as non-statutory sites such as local wildlife sites and/or locations with very specific ecological sensitivities e.g. horticultural operations.

No further assessment is required if there are no receptors within the screening distances of the works.

Step 2A – Assessment of the risk of dust effects by considering the area around the site in the context of potential dust impacts and distances to nearby receptors in relation to proposed activities in terms of demolition, earthworks,

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[23] Institute of Air Quality Management (IAQM) (2024). Guidance on the assessment of dust from demolition and construction. Version 2.2 https://iaqm.co.uk/wp-content/uploads/2013/02/Construction-Dust-Guidance-Jan-2024.pdf

[24] GMCA (2023) '2022 Air Quality Annual Status Report (ASR)': https://assets.ctfassets.net/tlpgbvy1k6h2/3eJDZpHcCKNK0ZO7TcUkI/3363e762b28868a832ab2200286a4841/Greater_Manchester_Air_Quality_Annual_Status_Report_2022.pdf

[25] https://www.airqualityengland.co.uk/about

[26] Defra AQMA interactive map: http://uk-air.DEFRA.gov.uk/aqma/maps

[27] Defra background maps: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018 https://uk-air.defra.gov.uk/

[28] OpenStreetMap: https://www.openstreetmap.org

[29] Magic.Defra.gov.uk. Magic Map Application: https://magic.defra.gov.uk/MagicMap.aspx

[30] Data.gov.uk, April 2023, 'Sites of Biological Importance (SBI / LWS) in Greater Manchester': https://www.data.gov.uk/dataset/81cbf1a0-6304-470c-ade8-60272be0d219/sites-of-biological-importance-sbi-lws-in-greater-manchester

construction, and trackout[31].

Dust emission magnitude classes of ‘large’, ‘medium’ and ‘small’ are used to define the level of risk arising from each activity depending on the nature and scale of operation.

Step 2B - The sensitivity of the area is defined as ‘high’, ‘medium’ or ‘low’ for dust soiling effects, human health impacts, and ecological impacts separately, taking into account the sensitivity of receptors, distance and number of receptors from dust generating activities, and other site-specific factors (defined in the IAQM Construction Dust Guidance). In addition, for the effect on human health, background PM_{10} concentrations are taken into account. The definitions are provided in Tables 2, 3 and 4 of the IAQM Construction Dust Guidance.

Step 2C - The potential dust emission magnitude (Step 2A) for each activity, and the sensitivity of the area (Step 2B) are combined to give the risk of dust impacts (see Table 7-2 and Table 7-3). Where there are low, medium or high risks of an impact, then site-specific mitigation will be required, proportionate to the level of risk.

Step 3 – Determination of the site-specific mitigation in terms of the identified risks.

Step 4 – Assessment of the significance of the residual dust effects, after the application of the site-specific mitigation.

Tables 6 to 9 of the IAQM Construction Dust Guidance[Error! Bookmark not defined.] are used to define the risk of impact based on the dust emission magnitude and sensitivity of area. These are reproduced in Table 7-2 and Table 7-3 below:

Table 7-2 - Risk of Dust Impacts - 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

Table 7-3 - Risk of Dust Impacts - Earthworks, Construction and Trackout

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

The assessment of construction dust impacts is based on the outline construction information available at the time of writing.

[31] Trackout is be defined as the deposition of dust and dirt from a construction site onto a public road network where it may then be re-suspended in the air by vehicles using the road network.

7.6 Baseline conditions

Local Air Quality Management

The Site is located within the Greater Manchester AQMA, due to exceedances of the annual mean air quality objective for NO_2. However, this is not relevant to the Proposed Development which is only considered likely to emit PM_{10} and $PM_{2.5}$ during construction. No significant NO_s emissions will be generated by the Proposed Development.

Air quality monitoring is undertaken by national and local authorities and is a key component of Local Air Quality Management (LAQM). Measurements of pollutant concentrations include analytical instruments that measure continuously, and passive sampling devices such as diffusion tubes which give longer period results (typically monthly, to calculate an annual mean concentration).

An overview of the air quality constraints is shown in Figure 7-1 below, along with their geographical context in relation to the Site.

384800 385000 385200 385400 385600

398600 398400 398200 398000

N

Cornell St Sherratt St George Leigh St Naval St Bengal St Jersey St St Vincent St Woodward St Play Space
Loom St Blossom St Hood St Cotton St Murray St New Union St Chippenham Rd
A62 Gun St Henry St Redhill St Lockyard La Weybridge Rd Manchester Christian College Piercy St
Lever Street A62 Pickford St New Islington Free School
Dean St Port St A665
A62 Port St
Tariff St Lizard St China La Brewer St Ancoats Great Ancoats Street Old Mill St A665 Pollard Street New Islington A662 Harrison St
B6181 Ducie St Millbank St Great Ancoats Street Pollard Street Snell St
Juliand St Store St
B6181 Chapeltown St Longacre St Great Ancoats Street Advent Way
Sparkle St

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- Site Boundary
- 20m Site Buffer
- 50m Site Buffer
- 100m Site Buffer
- 250m Site Buffer
- Trackout
- 20m Trackout Buffer
- 50m Trackout Buffer
- Air Quality Management Areas
- Local Wildlife Site

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Client
Manchester City Council

Project
Former Central Retail Park: The Park

Title
Air Quality Constraints and Construction Dust Assessment

Sheet Size	Original Scale	Designed / Drawn	Checked	Authorised
A3	1:3,000	BT Date 30/07/24	RS Date 30/07/24	LR Date 30/07/24

Drawing Number
Figure 7-1

Rev
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Continuous Monitoring Data

Greater Manchester conducts automatic (continuous) monitoring of PM_{10} at 20 locations and $PM_{2.5}$ at 10 locations, two of which are within 2 km of the Site. The location of the 'urban centre' monitoring site at Manchester Piccadilly is approximately 770 m from the Site and the location of the 'kerbside' monitoring site at Manchester Oxford Road is approximately 1.35 km from the Site. Both automatic monitoring sites within the study area could be considered representative of the Site.

Measured annual mean PM_{10} concentrations for the years 2019–2023 at the Manchester Oxford Road and Manchester Piccadilly sites are presented in Table 7-4 7-4 and the number of exceedances of the 24-hour mean PM_{10} standard are shown in Table 7-5 7-5. Concentrations at both monitoring sites were below both the annual mean objective for PM_{10} (40 µg/m^3) and the 24-hour mean objective (50 µg/m^3 not to be exceeded more than 35 times per year) in all years.

Table 7-4 - Annual mean PM_{10} concentrations at continuous monitoring sites (µg/m^3), 2019–2023

Site ID	Site Type	X, Y	2019	2020	2021	2022	2023
Manchester Oxford Road	Kerbside	384233, 397287	26	18	18	18	18
Manchester Piccadilly	Urban Centre	384310, 398337	20	15	15	17	16

Table 7-5 - Number of exceedances of the 24-hour mean PM_{10} objective, 2019–2023

Site ID	Site Type	X, Y	2019	2020	2021	2022	2023
Manchester Oxford Road	Kerbside	384233, 397287	18	5	2	8	4
Manchester Piccadilly	Urban Centre	384310, 398337	7	1	2	4	1

Table 7-66 presents the annual mean $PM_{2.5}$ concentrations for the years 2019–2023 at Manchester Piccadilly. In all years, the annual mean $PM_{2.5}$ concentrations were below the current objective of 20 µg/m^3, and at or below the new interim target of 12 µg/m^3 to be met by January 2028. In years 2020 - 2023 annual mean concentrations also met or were below the target of 10 µg/m^3 to be met by 2040.

Table 7-6 - Annual mean $PM_{2.5}$ concentrations at continuous monitoring sites (µg/m^3), 2018–2023

Site ID	Site Type	X, Y	2019	2020	2021	2022	2023
Manchester Piccadilly	Urban Centre	384310, 398337	12	8	9	10	9

Passive Monitoring Data

Defra Mapped Concentrations

Estimates of current and future year background pollutant concentrations in the UK are available on the Defra UK-AIR website[32]. The background estimates, which are a combination of measured and modelled data, are available for each 1×1 km grid square throughout the UK for a reference year of 2018 which is the basis for the future year estimates up to 2030. These background estimates include contributions from all source sectors, e.g. road transport, industry, and domestic and commercial heating systems.

Estimated annual mean background concentrations for the grid square containing the Proposed Development for 2024 are presented below in Table 7-7 7-7 for the pollutants PM_{10} and $PM_{2.5}$.

The mapped concentrations of key pollutants indicate that background concentrations at the Proposed Development Site in 2024 are below the current objectives for PM_{10} and $PM_{2.5}$. Background concentrations of $PM_{2.5}$ are also expected to be below the 2040 target of 10 µg/m^3.

Table 7-7 - Defra Mapped Background Concentrations in 2024 (µg/m^3)

Grid Square	PM_{10}	$PM_{2.5}$
385500, 398500	11.8	7.8

Human Receptors

The closest residential receptors to the Proposed Development are apartment buildings located on Great Ancoats Street and Millbank Street, approximately 45 m south; along Old Mill Street, approximately 30 m east; along Lockyard Lane, approximately 110 m north and on Redhill Street, approximately 165 m west of the Site. The Co-op Academy New Islington School and Urban Village Medical Practice (a health care facility) are located adjacent to the north of the Site. There are also cafes, shops, commercial buildings, offices, footpaths (along the canals) and public amenity areas nearby.

Ecological Receptors

No internationally or nationally designated ecological sites have been identified within 2 km of the Site. However, two non-statutory designated sites have been identified within the study area; Rochdale Canal Stott's Lane Local Wildlife Site (LWS) located adjacent towards the north and Ashton Canal LWS approximately 70 m north east at the closest point.

No designated ecological sites lie within 200m of the routes likely to be used by construction vehicles.

7.7 Potential impacts

Construction

There is the potential for elevated dust deposition and soiling at nearby receptors if dust raising activities are not effectively controlled and mitigated. The level and distribution of dust emissions varies according to the duration and location of activity, weather conditions, and the effectiveness of suppression measures.

The potential impact of construction vehicle emissions on local air quality has been evaluated using traffic scoping criteria given in the Institute of Air Quality Management (IAQM) Planning Guidance which advises that an air quality assessment would be required where a development causes a change in Heavy Duty Vehicle (HDV) flows

[32] Defra Background Maps https://laqm.defra.gov.uk/air-quality/air-quality-assessment/background-maps/

of more than 25 HDVs per day[33] on local roads within or adjacent to an AQMA and by more than 100 HDVs per day elsewhere; or changes of Light Duty Vehicle (LDV) flows of more than 100 LDV per day on local roads within or adjacent to an Air Quality Management Area (AQMA) and by more than 500 LDVs per day elsewhere. The information on the number of construction vehicles is not currently available, so no quantitative air quality assessment has been undertaken. It is unlikely that the threshold requiring an assessment would be exceeded. Any effect on air quality from construction traffic will in any case be temporary and is not considered significant. Therefore, construction vehicle emissions have not been considered within this assessment any further.

It should be noted that any effects during the construction phase would be of a temporary nature only. At this stage it is estimated that the length of the construction phase for the Scheme will be approximately 12 months.

7.8 Assessment of effects

Table 7-8 below shows the predicted effects during the construction phase in relation to Air Quality.

Table 7-8 – Construction phase impact assessment

Baseline		Impact assessment						
Receptor	**Area sensitivity**	**Impact**	**Dust emission magnitude**	**Dust emission risk**	**Mitigation**	**Residual dust emission magnitude**	**Residual effect**	**Significance**
Dust soiling receptors within 250m of the Site	Low	Earthworks resulting in ground disturbance	Large	Low risk	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.	Negligible	Earthworks will likely generate dust that may impact receptors sensitive to dust soiling within 250m of the site boundary. These include between 1 and 10 high sensitivity dust soiling receptors, including the Co-op Academy New Islington School and Urban Village Medical Practice within 50m of the Site boundary. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant
Dust soiling receptors within 250m of the Site	Low	Fugitive dust emissions generated by construction activities.	Small	Negligible	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.	Negligible	Construction works will likely generate dust that may impact receptors sensitive to dust soiling within 250m of the site boundary. These include between 1 and 10 high sensitivity dust soiling receptors, including the Co-op Academy New Islington School and Urban Village Medical Practice within 50m of the Site boundary. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant
Dust soiling receptors within 250m of the Site	High	Movement of construction plant, machinery and vehicles creating trackout.	Small	Low risk	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities. Implementation of the mitigation measures specified in the IAQM guidance for low risk trackout activities.	Negligible	Trackout will likely generate dust that may impact receptors sensitive to dust soiling within 50m of the trackout route which include greater than 10 high sensitivity receptors being located within 20m of the trackout route. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant
Human Health receptors within 250m of the Site	Low	Earthworks resulting in ground disturbance	Large	Low risk	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.	Negligible	Earthworks will likely generate dust that may impact human health receptors within 250m of the site boundary. These include less than 100 high sensitivity receptors, including the Co-op Academy New Islington School and Urban Village Medical Practice being located within 20m of the Site boundary. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant
Human Health receptors within 250m of the Site	Low	Fugitive dust emissions generated by construction activities.	Small	Negligible	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.	Negligible	Construction works will likely generate dust that may impact human health receptors within 250m of the site boundary. These include less than 100 high sensitivity receptors, including the Co-op Academy New Islington School and Urban Village Medical Practice being located within 20m of the Site boundary. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant

Baseline		Impact assessment						
Receptor	**Area sensitivity**	**Impact**	**Dust emission magnitude**	**Dust emission risk**	**Mitigation**	**Residual dust emission magnitude**	**Residual effect**	**Significance**
Human Health receptors within 250m of the Site	Low	Movement of construction plant, machinery and vehicles creating trackout.	Small	Negligible	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.	Negligible	Trackout will likely generate dust that may impact human health receptors within 50m of the route which include less than 100 high sensitivity receptors being located within 20m of the Site boundary or trackout route. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant
Rochdale Canal Stotts Lane LWS	Low	Earthworks resulting in ground disturbance	Large	Low risk	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.	Negligible	Earthworks will likely generate dust that may impact Rochdale Canal Stotts Lane LWS which is located within 20m of the Site boundary. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant
Rochdale Canal Stotts Lane LWS	Low	Fugitive dust emissions generated by construction activities.	Small	Negligible	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.	Negligible	Construction works will likely generate dust that may impact Rochdale Canal Stotts Lane LWS which is located within 20m of the Site boundary. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant
Rochdale Canal Stotts Lane LWS	Low	Movement of construction plant, machinery and vehicles creating trackout.	Small	Negligible	Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.	Negligible	Trackout will likely generate dust that may impact Rochdale Canal Stotts Lane LWS which is located within 20m of the Site trackout route. However, implementation of recommended mitigation will ensure that the residual dust emissions will be negligible and potential significant adverse effect will not occur, so the residual effect will be 'not significant'.	Not significant

Operational phase impacts have been scoped out of EIA assessment, because the Proposed Development is not expected to generate additional traffic in exceedance of relevant scoping criteria and there will be no emissions sources resulting from the operation of the Proposed Development. The Proposed Development is therefore considered unlikely to have a significant effect on local air quality once operational.

7.9 Additional mitigation and enhancement measures

The following sections provide details of the proposed mitigation referenced in the above impact assessment.

Implementation of the mitigation measures specified in the IAQM guidance for all construction activities.

The following general mitigation measures for all construction sites, specified in the IAQM guidance will be implemented across the construction works areas (Note that number refer to the mitigation number in the IAQM guidance):

1. Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
2. Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
3. Display the head or regional office contact information.
4. Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the site.
5. Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
6. Make the complaints log available to the local authority when asked.
7. Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book.
8. Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport / deliveries which might be using the same strategic road network routes.
9. Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of site boundary, with cleaning to be provided if necessary.
10. Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.
11. Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
12. Agree dust deposition, dust flux, or real-time PM10 continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.
13. Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
14. Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
15. Fully enclose site or specific operations where there is a high potential for dust production and the site is activities for an extensive period.
16. Avoid site runoff of water or mud.
17. Keep site fencing, barriers and scaffolding clean using wet methods.
18. Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
19. Cover, seed or fence stockpiles to prevent wind whipping.
20. Ensure all vehicles switch off engines when stationary - no idling vehicles.
21. Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.
22. Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).
23. Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.
24. Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing).
25. 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.
26. Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
27. Use enclosed chutes and conveyors and covered skips.
28. Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
29. Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
30. Avoid bonfires and burning of waste materials.

Implementation of the mitigation measures specified in the IAQM guidance for low-risk demolition activities.

In addition to the general measures set out in the IAQM guidance, the following mitigation measures specified for low-risk demolition activities must be applied (Note that numbers refer to the mitigation number in the IAQM guidance):

33. Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
34. Avoid explosive blasting, using appropriate manual or mechanical alternatives.
35. Bag and remove any biological debris or damp down such material before demolition.

Implementation of the mitigation measures specified in the IAQM guidance for low risk trackout activities.

In addition to the general measures set out in the IAQM guidance, the following mitigation measures specified for low risk trackout activities must be applied (Note that numbers refer to the mitigation number in the IAQM guidance):

43. Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.
44. Avoid dry sweeping of large areas.
45. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
47. Record all inspections of haul routes and any subsequent action in a site log book.
49. Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).

7.10 Cumulative effects

Cumulative effects during the construction phase may occur where dust generating activities from separate projects are in close proximity and likely to occur at the same time. IAQM Dust Guidance advises cumulative impacts may occur where multiple construction sites contribute to the risk of trackout on the same section of public highway or where receptors are located within 250 m of multiple development sites.

This planning application has sight of the prospective Phase 2 development adjacent to the east of the Proposed Development as disclosed within the SRF 2023. It is understood that this will comprise a commercial development with opportunities for ancillary ground floors to provide active frontages. The buildings will be of heights between 6-16 storeys and vehicular access will be available via Old Mill Street. It is assumed the Proposed Development will have been constructed prior to the construction of the Phase 2 development and therefore no cumulative effects are anticipated during the construction phases as these will not overlap. In relation to the operational phase of the Proposed Development, this was scoped out of the air quality assessment as these were anticipated to be negligible. Therefore, the Proposed Development is not expected to result in adverse cumulative effects in combination with those of the Phase 2 development during its construction nor its operation.

There are no other anticipated future developments to consider within this assessment of inter-cumulative effects as all applications within the planning portal as the time of assessment are expected to already be constructed prior to the Proposed Development. However, it is advised that should concurrent construction projects occur that regular liaison is carried out between the environment manager/engineer or the site manager to coordinate dust management and ensure mitigation measures remain appropriate.

Intra-cumulative effects of the Proposed Development are considered in Volume 2, Chapter 20 of this ES.

7.11 Summary and conclusions

The construction phase of the Proposed Development has the potential to temporarily generate dust and particulate emissions. With appropriate mitigation measures in place, the construction works are considered unlikely to result in a significant residual effect at the sensitive receptors identified within this assessment.

7.12 Glossary and acronyms

Acronym	Definition
APIS	Air Pollution Information System
AQAP	Air Quality Action Plan
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
ASR	Annual Status Report
AW	Ancient Woodland
CAZ	Clean Air Zones
CEMP	Construction Environmental Management Plan
CFD	Computational Fluid Dynamics
CIRIA	Construction Industry Research and Information Association
DEFRA	Department for Environment, Food and Rural Affairs
DMP	Dust Management Plan
DT	Diffusion tube
EC	European Commission
EIA	Environmental Impact Assessment
EPUK	Environmental Protection UK
EU	European Union
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
IES	Institution of Environmental Sciences
LAQM.TG	Local Air Quality Management Technical Guidance
LDV	Light Duty Vehicle
LNR	Local Nature Reserve
LWS	Local Wildlife Site
MAGIC	Multi–Agency Geographic Information for the Countryside
MCC	Manchester City Council
NNR	National Nature Reserve
NO	Nitric Oxide
NOx	Oxides of nitrogen
NO2	Nitrogen dioxide
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance

Acronym	Definition
NRMM	Non-Road Mobile Machinery
O3	Ozone
PCM	Pollution Climate Mapping
PHE	Public Health England
PM	Particulate Matter
PM2.5	Particulate Matter 2.5
PM10	Particulate Matter 10
PPG	Planning Practice Guidance
PPS10	Planning Policy Statement 10
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest

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