Government Property Agency

AtkinsRéalis



MANCHESTER DIGITAL CAMPUS

Environmental Statement
Volume 2 - Chapter 16: Noise and Vibration

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Executive Summary

The Noise and Vibration associated with a development can affect human health and well-being, disrupt wildlife and ecosystems. By evaluating noise and vibration, projects can implement effective measures to minimise negative effects on local receptors and the environment.

Noise and Vibration criteria and thresholds were identified for Construction Noise, Construction Vibration, Road Traffic Noise and Vibration, and Operational Noise. Baseline noise levels surrounding the Proposed Development were assessed within the study area to identify background and ambient noise levels before the introduction of the Proposed Development, utilizing four survey positions around the Proposed Development.

The assessment identified potentially significant issues related to noise and vibration during both the construction phase using worst case assumptions and also during the operational phase. During construction, there will be temporary but notable noise and vibration, which could affect nearby residents, school, and businesses. Once operational, noise from rooftop plant equipment and surrounding traffic are expected to be the primary sources of noise.

The effects on sensitive neighbours are varied. Residents may experience disturbances from both construction and operational noise. The Co-op Academy New Islington might face noise disruptions during school hours, impacting outdoor activities. Nearby businesses and hotels, including Residence Inn, could be affected, especially during night time. Environmental impacts include potential disruptions to local wildlife and ecosystems due to noise and vibration.

To mitigate the negative impacts, several measures will be implemented. During the construction phase, quieter machinery and noise barriers will be used. A Construction Environmental Management Plan (CEMP) will be in place to monitor and manage noise levels, and there will be ongoing community engagement to keep residents informed and address their concerns. For the operational phase it's recommended that noise barriers be installed around rooftop equipment, low-noise plant options be considered, and the operational times of noisy equipment be limited, especially at night. Enhancements to the project include incorporating noise-reducing features in the building design and creating green spaces and recreational areas as part of the development.

It is important to note that this assessment was very conservative, assuming worst-case scenario impacts due to the lack of detailed information about the plant activities and construction methods at this stage. Consequently, this assessment will need to be revisited and refined as more detailed design information becomes available. The impacts identified are typical for an urban area and reflect the expected challenges and benefits of such a development.

Despite the potential exceedances identified, the proposed mitigation measures are designed to ensure that the project remains within acceptable levels. The use of Best Practicable Means (BPM) and other mitigation strategies will help manage these impacts effectively.

In conclusion, while the MDC project will have some short-term negative effects due to noise and vibration. The proposed mitigation measures will help minimise the adverse effects on the community and environment.

16. Noise and Vibration

16.1. Introduction

16.1.1. This chapter of the Environmental Statement (ES) assesses the likely effects of the Proposed Development with respect to noise and vibration. It outlines the assessment methodology, describes the existing baseline conditions, identifies potential impacts and provides an assessment of effects. The chapter also details the mitigation measures necessary to prevent, reduce, or offset any significant adverse effects, and discusses the likely residual effects after these measures have been implemented.

16.1.2. This chapter reports on two different types of cumulative effects: intra-project cumulative effects, which are the combined effects of individual topic impacts on a particular sensitive receptor; and inter-project cumulative effects, which consider the way in which the Proposed Development may give rise to impacts in combination with other developments the study area, termed RFFPs. The outlined cumulative effects are then used to inform the overall assessment of cross-topic cumulative effects, which is reported in ES (Volume 2) Chapter 22: Cumulative Effects.

16.1.3. This chapter is supported by a technical appendix contained within ES (Volume 4) Appendix 16.1, which includes the following:

- ES (Volume 4) Appendix 16.1 – Noise Assessment

16.2. Competent expert evidence

16.2.1. This noise assessment has been undertaken by:

- An experienced Acoustician who holds full professional membership with the Institute of Acoustics. He has over 15 years of knowledge and experience in environmental noise assessment and has used his professional judgement to undertake this assessment.
- Checking and Reviews have been undertaken by Senior and Principal Acousticians with 10+ years of experience in environmental noise assessment.

16.3. Relevant legislation and guidance

16.3.1. Table 16-1 below summaries the legislation and regulations applicable to noise assessment.

Table 16-1 - Legislation and guidance for noise

Legislation / regulation	Summary of requirements
National	
National Planning Policy Framework[1] (NPPF) December 2023	NPPF includes statements relating to noise and the requirement to take it into account in the planning process. Paragraph 180 indicates that the planning system should contribute to and enhance the natural and local environment by:

[1] National Planning Policy Framework - Guidance - GOV.UK (www.gov.uk)

Legislation / regulation	Summary of requirements
	▪ "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." Paragraph 191 is specifically related to noise and requires planning policy decisions to: ▪ "Mitigate and reduce to a minimum, potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life"; and ▪ "Identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason". The terms 'adverse impacts' and 'significant adverse impacts' are defined within the explanatory note of the NPSE.
Regional	
Planning Practice Guidance (PPG - N) 2019	This document provides advice on how planning can manage potential noise impacts in new development. Noise should not be considered in isolation and should instead be viewed in relation to social, economic and environmental context. This guidance advises that local planning authorities' planning and decision-making should take account of the acoustic environment and in doing so consider: ▪ Whether or not a significant adverse effect is occurring or likely to occur; ▪ Whether or not an adverse effect is occurring or likely to occur; and ▪ Whether or not a good standard of amenity can be achieved. The guidance provides a noise exposure hierarchy showing what action can be taken for different levels of noise impact based on thresholds for adverse and significant adverse effects.
Noise Policy Statement for England (NPSE) 2010	The NPSE sets out the government guiding principles and noise policy: to promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development. NPSE outlines three aims for effective management and control of environmental, neighbour and neighbourhood noise: ▪ Avoid significant adverse impacts on health and quality of life; ▪ Mitigate and minimise adverse impacts on health and quality of life; and ▪ Where possible, contribute to the improvement of health and quality of life. The Explanatory Note to the NPSE assists in the definition of significant adverse and adverse with reference to No Observed Effect Level

Legislation / regulation	Summary of requirements
	(NOEL), Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL) values. The Government policy and guidance do not state values for the NOEL, LOAEL and SOAEL, rather, it considers that they are different for different noise sources, for different receptors and at different times and should be defined on a strategic or project basis taking into account the specific features of that area, source or project. For operational road noise these values are defined in DMRB LA 111. NPSE also states that sustainable development is a core principle underpinning all government policy. The goal is pursued in ways that protect and enhance the physical and natural environment, and that use resources and energy as efficiently as possible.
Environmental Noise (England) (Amendment) Regulations, 2018	The regulations implement the European Environmental Noise Directive (END) in England, requiring the government (Defra) to prepare strategic noise maps every 5 years for transportation sources and agglomerations to establish levels of exposure to environmental noise sources. It also requires the identification of quiet areas, and production of Noise Action Plans to manage environmental noise sources.
The Control of Pollution Act 1974/Environmental Protection Act 1990	Section 79 of the Environmental Protection Act 1990 places a duty on local authorities to inspect their areas periodically for statutory nuisances and to take such steps as are reasonably practicable to investigate complaints of statutory nuisance. Where a local authority is satisfied that a statutory nuisance exists, or is likely to occur or recur, the local authority is obliged to serve an abatement notice requiring the abatement of the nuisance or prohibiting or restricting its occurrence or recurrence. Section 79 (1(g)) includes "noise emitted from premises so as to be prejudicial to health or a nuisance". Local authorities can defer serving an abatement notice under section 80 of the Environmental Protection Act for statutory nuisance from noise for up to seven days in order to take other appropriate steps to abate the statutory nuisance. The optional seven-day deferral was introduced by the Clean Neighbourhoods and Environment Act 2005.
The Noise Insulation Regulations 1975	Regulation 3 imposes a duty on authorities to undertake or make a grant in respect of the cost of undertaking noise insulation work in or to eligible buildings. This is subject to meeting certain criteria given in the Regulation.
Local	
Manchester's Core Strategy 2012 – 2027[2];	The Core Strategy was adopted by Manchester City Council on 11th July 2012 with an Addendum in 2024. It is the key document in Manchester's Local Development Framework and covers a period of 15 years from 2012 to 2027. It describes Manchester today and outlines the Council's vision for Manchester in 2027 along with the planning policies which will be used to deliver that vision.

[2] Core Strategy 2012-2027 | Core Strategy 2012-2027 | Manchester City Council

Legislation / regulation	Summary of requirements
	Policy DM1 indicates that all developments should consider the impacts of noise from new developments and their impacts on the existing environment.
Greater Manchester: Places for Everyone	The Places for Everyone spatial strategy seeks to deliver sustainable, inclusive growth by focusing significant growth in jobs and housing at the core; boosting northern competitiveness through provision of significant new employment and housing opportunities and infrastructure and supporting key economic drivers in the south. The strong desire for the plan to make the most of the existing land supply in the urban area is reflected in the Plan. 90% of the land identified in the plan is in the urban area using brownfield sites.
Manchester UDP Citywide Development Control (1995)	The Unitary Development Plan for the City of Manchester (the UDP) was adopted by the Council on 21 July 1995 as the statutory document which set out guidelines for all development in Manchester and provided a framework from which to base decisions about planning applications. However, Manchester 's Core Strategy was adopted on 11 July 2012 which is the key Development Plan Document in the Local Development Framework (LDF). It replaces significant elements of the UDP as the document that sets out the long-term strategic policies for Manchester's future development and will form the framework that planning applications will be assessed against.

16.3.2. Table 16-2 below summaries the Technical Standards and Guidance applicable to noise assessments.

Table 16-2 - Technical standard and guidance for noise

Technical standards / guidance	Summary of requirements
BS 5228 - 1:2014+A1:2019 - Code of practice for noise and vibration control on construction and open sites - Part 1: Noise	This British Standard gives recommendations for basic methods of noise control relating to construction sites, including sites where demolitions, remediations, ground treatment or related civil engineering works are being carried out, and open sites, where work activities/operations generate significant noise levels. This British Standard provides guidance concerning methods of predicting construction noise and assessing impacts on those exposed to it.
BSI BS 4142:2014 +A12019 - Methods for Rating and Commercial Sound	This British Standard describes methods for rating and assessing sound of an industrial and/or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside, or outside dwelling or premises used for residential purposes upon which sound has incident.
Calculation of Road Traffic Noise 1988	This document describes the procedures for calculating noise from road traffic.
Design Manual for Roads and Bridges - LA111 – Noise and Vibration	This document sets out the requirements for assessing and reporting the effects of highways noise and vibration from construction, operation and maintenance projects.

Technical standards / guidance	Summary of requirements
Building Bulletin 93 (BB93), Acoustic design of schools: performance standards	BB93 provides guidance on acceptable noise levels on school premises, this includes external recreation and learning spaces.
Manchester Planning and Noise technical guidance (2022)	This guidance aims to provide help and advice in relation to noise in a planning context to encourage good acoustic design. It outlines what is expected in relation to current guidance and policy with the aspiration that new developments achieve the highest possible standards without compromising the health and wellbeing of people that live and work within the City of Manchester.

16.4. Assessment methodology

Study area

16.4.1. A study area of 1 km from the edge of the Site has been identified for the noise assessment. This is due to the decrease in accuracy of acoustic prediction methodologies over distances greater than this. For example, in the DMRB the study area for operational traffic is defined as being within 600m of the boundary of the Site, 300m for construction noise and 1km for the wider area assessments, whilst BS 5228 states that noise calculations decrease in accuracy due to possible metrological effect with distances greater than 300 metres. ISO 9613-2 entitled “Acoustics- Attenuation of sound during propagation outdoors – Part 2: General method of calculation” provides an estimated accuracy of +/- 3dB for predictions up to 1000m. There is no stated range of accuracy beyond this distance.

16.4.2. The EIA Boundary of the Site was selected as the basis for defining the study area as this would give a practical worst-case scenario of likely noise and vibration impacts.

16.4.3. A review of the local area surrounding the Site has been undertaken to understand the existing usages and where there are Noise and Vibration Sensitive Receptors (NSR) in proximity to the Site. ES (Volume 5) Figure 16.1 shows the existing building usages in the vicinity of the Site.

16.4.4. ES (Volume 5) Figure 16.1 shows the area is typically urban in its usage, with a mix of commercial and residential properties surrounding the Site. To the north of the Site lies Co-op Academy New Islington, and to the east is Ancoats Primary Care Centre.

16.4.5. It has been noted that there are currently construction works for a residential development at Port Street, due to the stage of construction it is considered appropriate to include this within the baseline situation.

16.4.6. Key NSR identified around the Site are identified in Table 16-3.

Table 16-3 - Key Noise Sensitive Receptors

ID	Location	Distance from Site (m)	Type of receptor
1	Co-op Academy New Islington, 10 Hugh Oldham Wy, Manchester M4 6EY	10 (playing fields) 40 (building)	School
2	Royal Mills, Redhill St, Ancoats, Manchester M4 6JG	25	Mixed/Residential

ID	Location	Distance from Site (m)	Type of receptor
3	MM2 Apartments, Pickford St, Ancoats, Manchester M4 5BS	30	Mixed/Residential
4	Brownsfield Mill, Binns Pl, Manchester M4 5AG Port Street Development, Manchester M4 5AG	30	Residential
5	Residence Inn, 40 Laystall St, Manchester M1 2JZ	25	Hotel
6	83 Ducie St, Manchester M1 2JQ	25	Mixed/Residential
7	Ancoats Primary Care Centre, Old Mill Street, Manchester M4 6EE	80	Health Care
8	1 Lockgate Mews, Manchester M4 6GE	150	Residential

16.4.7. It should be noted that New Islington Marina is also located to the northeast of the Site approximately 40m from the Site boundary. Although the marina has fixed moorings, these are classed as temporary residential properties and have been assessed as special residential receptors.

16.4.8. Although Residence Inn has been identified as being a hotel and not a residential dwelling, it is considered appropriate to assess this in the same way as other residential receptors due to the nature of its usage, i.e. for sleep/resting

16.4.9. Consideration will also be given to amenity spaces including the adjacent Rochdale Canal and Cotton Field Park.

Methodology

Construction Noise

16.4.10. Construction noise impacts are temporary in nature and hence a higher level of noise impact is of lesser significance than would be the case for permanent noise changes.

16.4.11. BS 5228: Part 1 contains a number of example methods for deriving appropriate limit values. One of these (Method 1) provides noise limits which are determined with reference to the ambient noise levels in the area. Under this method the allowable noise from construction activities becomes lower with decreasing ambient noise levels in the study area, as construction noise will be more noticeable the quieter the ambient noise levels.

16.4.12. A ‘significant’ effect is indicated if the noise level in dB LAeq,T (which is the equivalent continuous A-weighted sound level over a given period of time, T) exceeds the threshold level appropriate to the ambient noise level. Table 16-4 shows the threshold levels as described in BS 5228.

Table 16-4 – Example thresholds for potential significant effect at dwellings

Assessment category and threshold value period	Threshold value, in decibels (dB) ($L_{Aeq,T}$)		
	Category A[A)]	Category B [B)]	Category C [C)]
Night-time (23.00−07.00)	45	50	55
Evenings and weekends D)	55	60	65
Daytime (07.00−19.00) and Saturdays (07.00−13.00)	65	70	75
NOTE 1 A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the Proposed Development exceeds the threshold level for the category appropriate to the ambient noise level.			
NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.			
NOTE 3 Applied to residential receptors only.			
A) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.			
B) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.			
C) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.			
D) 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.			

16.4.13. If the Site noise level exceeds the appropriate category value, then a potential significant effect is indicated. However, BS 5228 does not provide specific guidance on significance criteria. It explains that the assessor needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect.

16.4.14. The construction of the Proposed Development, including enabling works and the main build, is expected to take approximately 48 months to complete. The potential impacts will be spread over an extended period of time, and the receptors in the study area will be close to the construction activities. Considering the prevailing noise climate of the study area, and in line with the methodology adopted in the rest of this report and professional judgement, the terms outlined in Table 16-5 will be used to describe the noise impacts from construction activities.

Table 16-5 - Construction noise impact significance criteria

Construction noise exceeding appropriate Category value, dB, by:	Impact
±0.1 – ±0.9	Negligible
±1.0 – ±2.9	Minor
±3.0 – ±4.9	Moderate
±5+	Major

16.4.15. The appropriate category (threshold value) will be determined with reference to measured ambient noise levels described later in this report. Impacts of moderate or above are considered to be significant.

Construction Vibration

16.4.16. BS 5228: Annex B of Part 2 gives guidance on the significance of vibration effects in terms of human response to vibration. Table B.1 of BS 5228 is reproduced below in Table 16-6 together with the significance criteria used in this report to describe the potential impacts from construction vibration.

Table 16-6 - Effects of vibration levels perceptible to humans

Vibration level	BS 5228 Effect Description	Impact
0.14 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration	Negligible
0.3 mm/s	Vibration might be just perceptible in residential environments	Minor
1.0 mm/s	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents	Moderate
10 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments	Major

Road traffic noise

16.4.17. The following significance criteria are used in Table 16-7 and Table 16-8 to assess the noise impacts of the operation of the Proposed Development at non-residential receptors and traffic noise changes at all receptors. The significance criteria are based on Section 3.5 of DMRB.

Table 16-7 - DMRB noise changes and magnitude of opening year impacts (short term)

Change in Noise Level, dB	Impact
±0.1 – ±0.9	Negligible
±1.0 – ±2.9	Minor
±3.0 – ±4.9	Moderate
±5+	Major

Table 16-8 - DMRB noise changes and magnitude of design year impacts (long term)

Change in Noise Level, dB	Impact
±0 – ±3.0	Negligible
±3.0 – ±4.9	Minor
±5.0 - ±9.9	Moderate
greater than or equal to 10.0	Major

16.4.18. Typically, impacts defined as ‘minor’ or ‘negligible’ are not considered significant, whilst impacts above this change threshold including ‘moderate or ‘major’ may need to be considered as significant.

Operational noise

16.4.19. Noise limits due to the fixed roof top plant operations of the Proposed Development, at residential receptors, have been derived considering the guidance provided in BS 4142 and the recommendations of Manchester City Council Environmental Health Department. The supporting calculations have been undertaken with the aid of a 3D acoustic model in SoundPlan 8.2, implementing ISO 9613-2 calculation method entitled “Acoustics- Attenuation of sound during propagation outdoors – Part 2: General method of calculation”.

16.4.20. The procedure contained in BS 4142 assesses the significance of sound which depends upon the margin by which the rating level of the specific sound sources exceeds the background sound level and the context in which the sound occurs/will occur.

16.4.21. An initial estimate of the impact of the specific sound is obtained by subtracting the measured background sound level from the rating level and considering the following:

- Typically, the greater this difference, the greater the magnitude of the impact;
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context;
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

16.4.22. Table 16-9 provides the criteria and terms used to describe the potential noise impacts from the operation of fixed mechanical plant, when assessed in accordance with BS: 4142.

Table 16-9 - Impact significance criteria for operational noise

BS 4142 rating level compared with background noise level, dB;	BS 4142 assessment	Impact
At least 10dB lower	No designated BS 4142 category.	Neutral
9dB lower to 4dB higher	No designated BS 4142 category, but impacts would be considered lower than ‘adverse impact’.	Negligible
5dB higher	An indication of ‘adverse impact’, depending on the context.	Minor
6dB higher to 9dB higher	No designated BS 4142 category. Impacts likely to be greater than ‘adverse impact’ but lower than ‘significant adverse impact’.	Moderate
10dB higher	An indication of ‘significant adverse impact’, depending on the context.	Major

16.4.23. BS 4142 does not provide guidance on the classification of noise impact levels. Based on the description provided in BS 4142, the above categories are considered appropriate for assessing the likely impact.

16.4.24. As stated in BS 4142, ‘where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context’. In this case, where the rating level equals the background noise level, the specific noise level will not affect the

background noise levels by more than 1dB. Therefore, it is reasonable to ascribe an impact significance which is 'negligible' in this instance, in accordance with the significance criteria described above.

16.4.25. The Manchester City Council (MCC) Environmental Health Officer (EHO) has also advised that a rating level which does not exceed 5dB below the existing background noise level at the nearest residential receptors is likely to be acceptable.

16.4.26. For schools, BB93 recommends that "noise levels in unoccupied playgrounds, playing fields and other outdoor areas should not exceed 55dB $L_{Aeq,30min}$ and there should be at least one area suitable for outdoor teaching activities where noise levels are below 50dB $L_{Aeq,30\ min}$". Therefore, a worst-case assessment of impacts due to the Proposed Development at the boundary of the school will be undertaken with impacts above 50dB being classed as "significant". The closest playing area associated with the school was assessed, as the more distant second play area would be impacted to a lesser degree.

Assumptions and limitations

16.4.27. A number of limitations in available information were encountered during the process of accessing the Proposed Development; these are outlined in the appropriate sections, and are summarised below:

- The noise monitoring survey was conducted in June 2023, at the time of writing the data is considered robust and appropriate for undertaking the assessment.
- Detailed information on construction plant were not available, therefore a number of assumptions were made on the type and number of construction plant in use to assess a typical and worst-case scenario;
- Detailed ground contours were not available for the full 1km study area, therefore Ordnance Survey OpenSource data was used. From observations on Site, this was considered to contain adequate detail for the assessment;
- At this stage of the assessment, the details of the operational plant and equipment that will be installed within the Proposed Development are not finalised. Plant noise levels were based on the previous experience of similar projects and professional judgement, and are based on the performance specifications for maximum levels for fixed plant and equipment;
- A study area of 1 km from the edge of the Site has been identified for the noise assessment. ISO 9613-2 entitled "Acoustics - Attenuation of sound during propagation outdoors – Part 2: General method of calculation" does not estimate accuracies of predictions at distances greater than 1000 metres, which it gives as ±3dB, which is a doubling of acoustic energy.

Consultation

16.4.28. The Environmental Health team for MCC was consulted on the proposed methodology for assessing the potential noise impacts to provide the opportunity for statutory authorities / organisations to raise any concerns or specific requirements they have, so appropriate measures can be incorporated into the design of the Proposed Development. It was indicated that the operational noise level should not exceed 5dB below the existing background level and that the general methodology for the assessment of the effects of the Proposed Development were in line with the expectations of Environmental Health Services at MCC.

16.4.29. In addition, a Scoping Report (MSIP-ATK-XX-ZZ-RP-Z-000001) was issued to MCC in September 2024 to confirm a detailed approach to the assessment. No issues were raised as part of the Scoping Opinion.

16.5. Baseline conditions

16.5.1. A pre-construction noise survey was undertaken for the Proposed Development at the location of the Former Central Retail Park, Great Ancoats Street, Manchester, M4 6DJ. The details of noise monitoring survey are provided in ES (Volume 4) Appendix 16.1 - Noise Assessment

16.5.2. The purpose of the noise survey was to determine the baseline noise conditions at the Site location and surrounding NSRs for assessing potential future development noise impacts. The noise survey was undertaken between 07:30 hours on the 22nd of June and 03:40 hours on 23rd June 2023.

Survey Positions

16.5.3. Measurements were undertaken at four different positions at the former Central Retail Park which can be seen in ES (Volume 5) Figure 16.2 The noise measurements were conducted using field-calibrated Class 1 integrating sound level meters positioned at each location, no drift in calibration was observed; position details are present in ES (Volume 4) Appendix 16.1. The sound level meters were placed at a height of approximately 1.5 metres above the local ground level and positioned in free-field conditions away from any obstructions that could affect the accuracy of the readings.

16.5.4. During the measurement periods, various sources of noise were identified and recorded, including vehicular traffic, construction activities, and commercial operations. Additionally, specific events that could contribute to noise levels, such as deliveries or gatherings, were noted.

Summary of Results

16.5.5. The noise survey was undertaken between 07:30 hours on 22nd June and 03:40 hours on 23rd June 2023. During the noise monitoring, wind speeds were below 2m/s with no precipitation and dry road surfaces. Weather conditions were considered suitable for environmental noise monitoring.

16.5.6. Position 1 utilised a continuous data logger running on 15-minute recording cycles during the daytime periods of 07:30 until 18:45. This continuous data logging allowed for a more comprehensive measurement of noise level variations throughout the day. For Positions 2 to 4 during daytime and night-time period, and Position 1 during night-time periods, the measurements were recorded in 15-minute cycles approximately every hour. This sampling approach ensured that noise levels were captured at regular intervals.

16.5.7. The noise climate at each position was dominated by road traffic noise from Great Ancoats Street and construction noise from nearby worksites to the west during the daytime period. Occasional aircraft passings were audible approximately once per hour during daytime.

16.5.8. A summary of the measured noise levels is shown in Table 16-10:

Table 16-10 Noise Survey Results

Position	Period		L_{Aeq}, dB	L_{Amax}, dB	L_{A10}, dB	L_{A90}, dB
1	Day	07:00 – 23:00	61.4	88.9	64.0	53.3
	Night	23:00 – 07:00	59.5	76.0	62.8	46.0
2	Day	07:00 – 23:00	52.0	67.9	54.1	47.9
	Night	23:00 – 07:00	45.4	77.0	47.3	39.4
3	Day	07:00 – 23:00	54.8	76.9	56.4	49.4

Position	Period		L_{Aeq}, dB	L_{Amax}, dB	L_{A10}, dB	L_{A90}, dB
	Night	23:00 – 07:00	44.6	66.7	46.8	39.4
4	Day	07:00 – 23:00	58.3	80.7	60.0	53.4
	Night	23:00 – 07:00	51.6	76.0	53.6	42.6

16.5.9. The full monitoring data can be seen in ES (Volume 4) Appendix 16.1.

16.5.10. The results of the noise survey indicated that the noise climate at each position was mainly influenced by road traffic noise from Great Ancoats Street as well as construction noise from nearby worksites.

16.6. Potential impacts

16.6.1. The Proposed Development has the potential to affect existing conditions during construction and when operational in a number of ways, as discussed below.

Construction Phase

16.6.2. Construction activities on the Site have the potential to affect nearby receptors, either due to noise and vibration from demolition and construction activities themselves, or from additional Heavy Duty Vehicles (HDVs) associated with construction activities on the local road network.

16.6.3. In addition, the local road network may experience changes in traffic flows and speeds during construction, as a result of temporary traffic management measures or diversions. It should be noted, however, that any effects on the noise climate from construction activities, including construction traffic and traffic diversions, would be temporary i.e. during the period of construction works only.

Operational Phase

16.6.4. Once the Site is operational there is potential for the local noise climate to be affected due to the introduction of new mechanical plant and potential increase in traffic flow, speed and composition.

16.6.5. Operation of roof top plant is understood to be up to 24hrs a day. Night-time operations have the potential for sleep disturbance at nearby residential properties due to lower background noise levels and increased sensitivity of receptors.

16.7. Assessment of effects

Construction phase

Embedded mitigation

16.7.1. The Outline Construction Environmental Management Plan (OCEMP), ES (Volume 4) Appendix 6.1, includes embedded mitigation relevant to noise and vibration which will be in place as part of the Proposed Development.

16.7.2. The developer intends to require the Contractor to apply for a Section 61 Prior Consent under the Control of Pollution Act 1974 for some or all of construction works. This will be discussed when

engaging with the Local Authorities prior to works commencing and would ideally enable a noise threshold to be agreed, offering certainty to the developer and MCC.

16.7.3. The appointed Contractor would implement a Construction Environmental Management Plan (CEMP), which would be approved by MCC in its role as planning authority prior to the commencement of construction works. The CEMP would be broadly in accordance with the OCEMP and will establish the following:

- Environmental management and responsibilities.
- Monitoring and auditing processes.
- Procedures that will be used to complete different construction activities.
- Complaint response procedures.
- Community and stakeholder liaison processes.

16.7.4. The CEMP shall include a Noise Monitoring and Management Plan to control noise and vibration emissions from the construction works, ideally in line with limits established through a Section 61 Consent, subject to MCC's agreement. In addition, construction traffic and arrangement for temporary traffic diversions during the construction phase will be the responsibility of the Principal Contractor with specific measures to also be included as part of Construction Traffic Management Plan, see ES (Volume 4) Appendix 18.3.

16.7.5. The Noise Monitoring and Management Plan shall incorporate good working practices, as well as Best Practicable Means (BPM), including but not limited to the following measures.

- Use of vehicles, plant, and equipment that generate lower levels of noise or vibration will be selected over alternatives that produce higher levels of noise or vibration.
- All vehicles and plant will be fitted with effective exhaust silencers which should be maintained in good and efficient working order.
- All compressors and generators will be 'sound reduced' models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use.
- All ancillary pneumatic percussive tools will be fitted with mufflers or suppressors as recommended by the manufacturers which should be kept in a good state of repair.
- Machines in intermittent use will be shut down when not in use or where this is impracticable, throttled down to a minimum.
- The site compound and static machines will be sited as far as is practicable from noise sensitive buildings.
- Where practicable, plant with directional noise characteristics will be orientated to minimise noise at nearby properties.
- Plant should be certified to meet the current EU legislation and will not be louder than the noise levels provided in Annex C and D of BS 5228 Part 1.
- Temporary noise barriers or other noise containment measures installed to minimise construction noise levels.
- The loading or unloading of vehicles and the movement of equipment or materials will be undertaken in a manner that minimises noise generation.
- Concrete mixers will not be cleaned by hammering the drums.
- When handling materials, care will be shown not to drop materials from excessive heights.

16.7.6. The Noise Monitoring and Management Plan would also require the appointed Contractor to consult with the Environmental Health Department prior to the commencement of construction works. From this, guidance would be obtained on their requirements for managing and controlling noise and vibration from

construction works, ideally in line with thresholds agreed through a Section 61 consent. This would also include communication preferences for updates during the construction phase.

16.7.7. Good stakeholder relations are often the most effective way to manage potential construction noise and vibration impacts on Site. Implementation of a Community Engagement Plan (CEP) (as set out in the OCEMP as the responsibility of the appointed Community Liaison Officer (CLO)) will ensure that local residents and other affected parties are kept informed of the progress of the works, including when and where the noisiest activities would be taking place and how long they are expected to last. The OCEMP indicates that the most sensitive receptors, which includes the Co-op Academy, New Islington, should be subject to specific provisions within the CEP to support enhanced communications and enable them to adapt their activities in response to information about the construction works. A dedicated website would include a webpage for the Proposed Development that is regularly updated to reflect the status of construction works, construction working hours, information about traffic diversions or road closures, and mitigation measures that are implemented to reduce noise and vibration levels.

16.7.8. The Contractor will provide all local residents with a point of contact to discuss any queries relating to the construction works or to raise complaints. All noise complaints shall be effectively recorded, investigated, and addressed. Additionally, members of the public will be able to use MCC website to raise queries or complaints, which will be investigated and responded to as appropriate. The CLO will be responsible for tracking complaints and generating suitable responses in conjunction with the Contractor, which might include targeted noise monitoring, depending on the nature of the complaint.

16.7.9. Even with appropriate mitigation in place, it may not be possible to eliminate all noise and vibration impacts. However, best practice, considerate working hours as well as frequent and open communications with stakeholders will help to reduce the magnitude of residual impact of construction noise and vibration.

Construction Noise effects

16.7.10. The construction of the Proposed Development is expected to take approximately 48 months to complete. Construction will be undertaken in phases as follows:

1. Enabling works
2. Sub-structure/ground works
3. Superstructure
4. Façade and Roof
5. Cat A & B Fit out
6. Soft & Hard landscaping

16.7.11. Exact methods of construction and required equipment is currently unknown. Based on discussions with the Applicant about the likely activities, and experience on similar projects, the construction equipment in Table 16-11 has been assumed during the assessment.

Table 16-11 - Construction plant

Phase	Equipment	BS 5228 Ref	Sound Pressure Level at 10m	Quantity	% on-time
Enabling works	Excavators	C.1-12	82	4	20
	HDVs (Exported fill / material delivery)	C.2-34	80	1	5
	HDVs (rebar deliveries)	C.2-34	80	1	5
	Dumpers	C.4-3	81	4	10
	Compressors	C.5-5	82	2	100
	Power / Hand Tools	D2-15	84	2	5
	Vibratory roller	C.2-39	73	2	10
	Primary Diesel generator	C.4-84	74	1	100
	Movable Diesel generator	C.4-85	66	2	20
Sub-structure/ground works	Excavators	C.1-12	82	4	20
	HDVs (Exported fill / material delivery)	C.2-34	80	2	10
	HDVs (rebar deliveries)	C.2-34	80	2	10
	Dumpers	C.4-3	81	4	20
	Compressors	C.5-5	82	2	100
	Piling Rigs	C.3-2	62	2	5
	Mobile Cranes	C.3-28	75	2	20
	Power / Hand Tools	D2-15	84	3	5
	Vibratory roller	C.2-39	73	2	10
	Primary Diesel generator	C.4-84	74	1	100
	Movable Diesel generator	C.4-85	66	2	20
Superstructure	HDVs (Exported fill / material delivery)	C.2-34	80	2	5
	HDVs (rebar deliveries)	C.2-34	80	2	5
	Compressors	C.5-5	82	2	100
	Mobile Cranes	C.3-28	75	2	10
	Mobile Access Platforms /MEWPS	C.4-59	67	1	5
	Power / Hand Tools	D2-15	84	3	5
	Material Hoists	C.4-61	78	4	5
	Static Cranes	C.4-48	67	4	5
	Primary Diesel generator	C.4-84	74	1	100

Phase	Equipment	BS 5228 Ref	Sound Pressure Level at 10m	Quantity	% on-time
	Movable Diesel generator	C.4-85	66	2	20
Façade and Roof	HDVs (Exported fill / material delivery)	C.2-34	80	2	10
	HDVs (rebar deliveries)	C.2-34	80	2	10
	Compressors	C.5-5	82	2	100
	Mobile Cranes	C.3-28	75	2	10
	Mobile Access Platforms /MEWPS	C.4-59	67	4	10
	Power / Hand Tools	D2-15	84	3	5
	Material Hoists	C.4-61	78	4	10
	Static Cranes	C.4-48	67	4	10
	Vibratory roller	C.2-39	73	2	10
	Primary Diesel generator	C.4-84	74	1	100
	Movable Diesel generator	C.4-85	66	2	20
Cat A & B Fit out	HDVs (Exported fill / material delivery)	C.2-34	80	2	10
	Compressors	C.5-5	82	2	100
	Mobile Cranes	C.3-28	75	2	10
	Mobile Access Platforms /MEWPS	C.4-59	67	43	5
	Power / Hand Tools	D2-15	84	3	10
	Material Hoists	C.4-61	78	4	5
	Static Cranes	C.4-48	67	4	5
	Primary Diesel generator	C.4-84	74	1	100
	Movable Diesel generator	C.4-85	66	2	20
Soft & Hard landscaping	Excavators	C.1-12	82	2	10
	HDVs (Exported fill / material delivery)	C.2-34	80	2	10
	HDVs (rebar deliveries)	C.2-34	80	2	10
	Dumpers	C.4-3	81	2	5
	Compressors	C.5-5	82	2	100
	Power / Hand Tools	D2-15	84	3	10
	Vibratory roller	C.2-39	73	2	10
	Primary Diesel generator	C.4-84	74	1	100

Phase	Equipment	BS 5228 Ref	Sound Pressure Level at 10m	Quantity	% on-time
	Movable Diesel generator	C.4-85	66	2	20

16.7.12. Noise predictions have been undertaken in accordance with the methodology of BS 5228, which takes no account of meteorological effects. It should be noted that noise predictions at distances of over 300m should be treated with caution due to the increasing importance of meteorological effects as stated in BS 5228-1 Section F.2.2.2.2.

16.7.13. Table 16-12 presents an assessment of the potential for changes in ambient noise levels at the NSRs based on the likely highest activity noise levels.

16.7.14. It has been assumed that all construction activities will be undertaken during weekday daytime hours (07.30-18.00) and Saturdays (08.30-14.00), no works are to be undertaken on Sundays or Bank Holidays. Appropriate threshold values, in dB, have been identified with reference to guidance contained in BS 5228 and the measured ambient noise levels in the study area.

Table 16-12 - Construction Noise Assessment

ID	NSR	Baseline Ambient Level, dB $L_{Aeq,T}$	Baseline BS5228 Category	Threshold value, dB	Assumed Activity Noise Level at 10m dB $L_{Aeq,T}$	Distance to EIA Boundary, m	Distance attenuation, dB	Screening attenuation, dB	SPL at receptor, dB $L_{Aeq,T}$	Effect significance
Construction Phase 1										
1	Co-op Academy New Islington (play round)	52	A	65	87	10	0	-10	77	Potentially significant
	Co-op Academy New Islington (building)					40	-12	-10	65	Not Significant
2	Royal Mills, Redhill St	52	A	65		25	-8	-10	69	Potentially significant
3	MM2 Apartments, Pickford St	61	A	65		30	-10	-10	67	Potentially significant
4	Brownsfield Mill, Binns Pl, Port Street Development	61	A	65		30	-10	-10	67	Potentially significant
5	Residence Inn, 40 Laystall St	61	A	65		25	-8	-10	69	Potentially significant
6	83 Ducie St	61	A	65		25	-8	-10	69	Potentially significant
7	1 Lockgate Mews	58	A	65		150	-24	-10	53	Not Significant
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	55	A	65		80	-18	-10	59	Not Significant
Construction Phase 2										
1	Co-op Academy New Islington (play round)	52	A	65	88	10	0	-10	78	Potentially significant
	Co-op Academy New Islington (building)					40	-12	-10	66	Potentially significant

ID	NSR	Baseline Ambient Level, dB $L_{Aeq,T}$	Baseline BS5228 Category	Threshold value, dB	Assumed Activity Noise Level at 10m dB $L_{Aeq,T}$	Distance to EIA Boundary, m	Distance attenuation, dB	Screening attenuation, dB	SPL at receptor, dB $L_{Aeq,T}$	Effect significance
2	Royal Mills, Redhill St	52	A	65		25	-8	-10	70	Potentially significant
3	MM2 Apartments, Pickford St	61	A	65		30	-10	-10	68	Potentially significant
4	Brownsfield Mill, Binns Pl Port Street Development	61	A	65		30	-10	-10	68	Potentially significant
5	Residence Inn, 40 Laystall St	61	A	65		25	-8	-10	70	Potentially significant
6	83 Ducie St	61	A	65		25	-8	-10	70	Potentially significant
7	1 Lockgate Mews	58	A	65		150	-24	-10	54	Not Significant
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	55	A	65		80	-18	-10	60	Not Significant
Construction Phase 3										
1	Co-op Academy New Islington (play round)	52	A	65		10	0	-10	73	Potentially significant
	Co-op Academy New Islington (building)					40	-12	-10	61	Not Significant
2	Royal Mills, Redhill St	52	A	65	83	25	-8	-10	65	Potentially significant
3	MM2 Apartments, Pickford St	61	A	65		30	-10	-10	64	Not Significant
4	Brownsfield Mill, Binns Pl Port Street Development	61	A	65		30	-10	-10	64	Not Significant

ID	NSR	Baseline Ambient Level, dB $L_{Aeq,T}$	Baseline BS5228 Category	Threshold value, dB	Assumed Activity Noise Level at 10m dB $L_{Aeq,T}$	Distance to EIA Boundary, m	Distance attenuation, dB	Screening attenuation, dB	SPL at receptor, dB $L_{Aeq,T}$	Effect significance
5	Residence Inn, 40 Laystall St	61	A	65		25	-8	-10	65	Potentially significant
6	83 Ducie St	61	A	65		25	-8	-10	65	Potentially significant
7	1 Lockgate Mews	58	A	65		150	-24	-10	50	Not Significant
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	55	A	65		80	-18	-10	55	Not Significant
	Construction Phase 4									
1	Co-op Academy New Islington (play round)	52	A	65		10	0	-10	75	Potentially significant
	Co-op Academy New Islington (building)					40	-12	-10	63	Not Significant
2	Royal Mills, Redhill St	52	A	65		25	-8	-10	67	Potentially significant
3	MM2 Apartments, Pickford St	61	A	65		30	-10	-10	66	Potentially significant
4	Brownsfield Mill, Binns Pl Port Street Development	61	A	65	85	30	-10	-10	66	Potentially significant
5	Residence Inn, 40 Laystall St	61	A	65		25	-8	-10	67	Potentially significant
6	83 Ducie St	61	A	65		25	-8	-10	67	Potentially significant
7	1 Lockgate Mews	58	A	65		150	-24	-10	52	Not Significant

ID	NSR	Baseline Ambient Level, dB $L_{Aeq,T}$	Baseline BS5228 Category	Threshold value, dB	Assumed Activity Noise Level at 10m dB $L_{Aeq,T}$	Distance to EIA Boundary, m	Distance attenuation, dB	Screening attenuation, dB	SPL at receptor, dB $L_{Aeq,T}$	Effect significance
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	55	A	65		80	-18	-10	57	Not Significant
Construction Phase 5										
1	Co-op Academy New Islington (play round)	52	A	65		10	0	-10	75	Potentially significant
	Co-op Academy New Islington (building)					40	-12	-10	63	Not Significant
2	Royal Mills, Redhill St	52	A	65		25	-8	-10	67	Potentially significant
3	MM2 Apartments, Pickford St	61	A	65		30	-10	-10	65	Potentially significant
4	Brownsfield Mill, Binns Pl Port Street Development	61	A	65	85	30	-10	-10	65	Potentially significant
5	Residence Inn, 40 Laystall St	61	A	65		25	-8	-10	67	Potentially significant
6	83 Ducie St	61	A	65		25	-8	-10	67	Potentially significant
7	1 Lockgate Mews	58	A	65		150	-24	-10	51	Not Significant
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	55	A	65		80	-18	-10	57	Not Significant
Construction Phase 6										
1	Co-op Academy New Islington (play round)	52	A	65	86	10	0	-10	76	Potentially significant
	Co-op Academy New Islington (building)					40	-12	-10	64	Not Significant

ID	NSR	Baseline Ambient Level, dB $L_{Aeq,T}$	Baseline BS5228 Category	Threshold value, dB	Assumed Activity Noise Level at 10m dB $L_{Aeq,T}$	Distance to EIA Boundary, m	Distance attenuation, dB	Screening attenuation, dB	SPL at receptor, dB $L_{Aeq,T}$	Effect significance
2	Royal Mills, Redhill St	52	A	65		25	-8	-10	68	Potentially significant
3	MM2 Apartments, Pickford St	61	A	65		30	-10	-10	66	Potentially significant
4	Brownsfield Mill, Binns Pl Port Street Development	61	A	65		30	-10	-10	66	Potentially significant
5	Residence Inn, 40 Laystall St	61	A	65		25	-8	-10	68	Potentially significant
6	83 Ducie St	61	A	65		25	-8	-10	68	Potentially significant
7	1 Lockgate Mews	58	A	65		150	-24	-10	52	Not Significant
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	55	A	65		80	-18	-10	58	Not Significant

16.7.15. Table 16-12 shows that noise impacts could be expected during all construction phases where noise levels from construction activities could exceed the threshold levels defined in Section 16.4 by 10dB or more. Although noise levels from the construction activities could be high during certain periods, it is considered unlikely that the temporal threshold would be exceeded, therefore “Negligible” impacts are anticipated. For reference the temporal thresholds are defined in BS 5228-1:2009+A1:2014 as either 10 or more days or nights in any 15 consecutive days or nights or a total number of days exceeding 40 in any 6 consecutive months due to the mobile and temporary nature of the works.

16.7.16. It should be noted that during construction period, it has been identified that there shall also be works undertaken on the corner of Great Ancoats Street and Laystall Street to construct a 20-storey hotel (Planning application 135662/FO/2022). These works are directly adjacent to Residence Inn and will be a primary noise source for that receptor during this time. Further information on this is presented in respect of the cumulative effects assessment.

16.7.17. Further assessment should be undertaken by the Contractor when detailed construction phasing is available and should form part of the CEMP, informing the production of the Noise Monitoring and Management Plan.

Construction Vibration effects

16.7.18. An assessment of the likely vibration effects due to piling has been undertaken for the nearest sensitive receivers and illustrated on Table 16-13. BS 5228-2, Table E.1 provides empirical formulae for estimating vibration peak particle velocity (ppv) in mm/s from various construction activities. A reasonable worst-case scenario has been assumed with a vibratory piling being used, in steady state operation. Due to the uncertainty in calculations, the calculation method provides values for three different levels of confidence, or the probability of the predicted value being exceeded, at 50%, 33.3% and 5%.

Table 16-13 - Potential construction vibration impacts

ID	NSR	Distance to EIA Boundary, m	There is a 50% probability that the resultant ppv will exceed, mm/s	There is a 33% probability that the resultant ppv will exceed, mm/s	There is a 5% probability that the resultant ppv will exceed, mm/s
1	Co-op Academy New Islington	40	0.34	0.72	1.52
2	Royal Mills, Redhill St	25	0.66	1.39	2.94
3	MM2 Apartments, Pickford St	30	0.51	1.08	2.27
4	Brownsfield Mill, Binns Pl Port Street Development	30	0.51	1.08	2.27
5	Residence Inn, 40 Laystall St	25	0.66	1.39	2.94
6	83 Ducie St	25	0.66	1.39	2.94
7	1 Lockgate Mews	150	0.05	0.11	0.24

ID	NSR	Distance to EIA Boundary, m	There is a 50% probability that the resultant ppv will exceed, mm/s	There is a 33% probability that the resultant ppv will exceed, mm/s	There is a 5% probability that the resultant ppv will exceed, mm/s
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	80	0.13	0.27	0.58

16.7.19. Based on the on Table 16-13, there is a 33% chance of just perceptible vibration (> 0.3 mm/s) at Co-op Academy, Royal Mills, MM2 Apartments, Brownsfield, Residence Inn, and 83 Ducie Street, this is considered a “Minor” impact. At all locations it is anticipated that vibration levels will be below the 10mm/s significant impact threshold, defined in Table 16-6 of this report, where vibration is likely to be intolerable for any more than a very brief exposure to this level in most building environments.

Operation phase

Embedded mitigation

16.7.20. A number of mitigation measures have been identified which are embedded in design. These include the location and position of the proposed plant on the roof of the proposed buildings, this helps with maximising the distance between the source and receptors. It has also been identified that the orientation of the buildings on Site will provide an element of shielding to nearby sensitive receptors from road noise along Great Ancoats Street, in particular for Co-op Academy New Islington.

Operation effects

16.7.21. At this stage of the assessment the exact equipment that will be installed at the Site is unknown as are their exact locations, and therefore conservative assumptions have been made on the likely noise emissions of the equipment that could be used, based on discussions with the design team and experience from similar facilities. The most prominent noise emitters and the number of units are shown in Table 16-14.

Table 16-14 - Operational Plant Noise Levels

Building	Typical equipment	Sound Power Level (SWL), dB	Number of units
North Building	Generator (West)	96.7	3
	Generator (Central)	97.7	3
	Generator (East)	98.7	3
	Chillers	93.0	2
	Air Source Heat Pump (4 fan)	97.1	4
	Air Source Heat Pump (2 fan)	73.2	2
South Building	Generator	96.7	1
	Chillers	93.0	2

Building	Typical equipment	Sound Power Level (SWL), dB	Number of units
	Air Source Heat Pump (4 fan)	97.1	4
	Air Source Heat Pump (2 fan)	73.2	2

16.7.22. For non-technical reference a table of common Sound Power Levels (SWLs) and Sound Pressure Levels (SPLs) can be seen in ES (Volume 4) Appendix 16.1.

16.7.23. The information in Table 16-14 has been used in combination with the proposed Site plans to construct a 3D acoustic model of the Proposed Development in SoundPlan 8.2. Point receivers have been located at the most exposed facade of the nearest sensitive residential receivers. To achieve a worst-case situation, all equipment will be assigned 100% on-time for the assessment.

16.7.24. Through consultation with the design team, it has been identified that a visual barrier will be used around the proposed roof-top plant. At present, the acoustic characteristics of the visual barrier are unknown and thus has not been included within the noise model, as a noise barrier. With appropriate specification and detailing, it would be possible to design the barrier to provide the required acoustic shielding. The need for a noise barrier would be considered at the detailed design stage once sufficient details are known about the power rating of the roof-top plant, noise emission characteristics from the manufacturer and their location relative to noise sensitive receivers.

16.7.25. To assess the likely impacts from the operation, the methodology described in BS 4142:2014 has been used. This method involves a comparison of the noise levels due to the operation of Proposed Development, incorporating an appropriate level of acoustic feature correction, with the existing background noise levels.

16.7.26. It is assumed that the Proposed Development will be operational up to 24 hours a day and, therefore, night-time will be a sensitive period for residential receptors due to potential sleep disturbance effects. At Co-op Academy New Islington school, the daytime will be the most sensitive period due to operation times.

16.7.27. Due to night-time operation being particularly sensitive, the rating level predicted as part of the BS 4142:2014 assessment will then inform the BS 8233 assessment, to ascertain the likely impacts within bedrooms of each residential property.

16.7.28. A 3D acoustic model has been created to understand the potential noise effects at nearby noise sensitive receptors. The model takes into account the distance between source and receptor, intervening ground types and the 3D topography of the area. The predicted results are shown in Table 16-15. In addition, a noise contour map was generated to show the sound propagation from the Proposed Development and the likely sound level; this is shown in ES (Volume 4) Appendix 16.1.

Table 16-15 - Predicted specific noise levels - Daytime

ID	Receiver	Specific noise level, $L_{Aeq,16hr}$
1	Co-op Academy New Islington	45
2	Royal Mills, Redhill St	46
3	MM2 Apartments, Pickford St	47
4	Brownsfield Mill, Binns Pl	47

ID	Receiver	Specific noise level, $L_{Aeq,16hr}$
	Port Street Development	
5	Residence Inn, 40 Laystall St	61
6	83 Ducie St	49
7	1 Lockgate Mews	48
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	47

16.7.29. Table 16-16 shows the likely daytime-time noise impacts on the noise sensitive receivers due to the operational phase of the Proposed Development. The highest façade noise levels have been used to represent a worst-case scenario.

16.7.30. It should be noted that no tonal or intermittent characteristic corrections have been applied, as in general the identified plant does not possess such characteristics when adequately maintained. Furthermore, such equipment normally operates in a fashion where a gradual ramping up or down is the norm, hence characteristic features are deemed very unlikely.

Table 16-16 - BS4142 Assessment - Daytime

ID	Receiver	Background noise level, L_{A90} ,dB	Specific Noise Level, dB	Subjective Correction	Rating Level, dB	Difference between 'rating' and 'background' noise levels, dB	Significance
1	Co-op Academy New Islington	48	45	0	45	-3	Negligible
2	Royal Mills, Redhill St	48	46	0	46	-2	Negligible
3	MM2 Apartments, Pickford St	53	47	0	47	-6	Negligible
4	Brownsfield Mill, Binns Pl Port Street Development	53	47	0	47	-6	Negligible
5	Residence Inn, 40 Laystall St	53	61	0	61	7	Moderate
6	83 Ducie St	53	49	0	49	-5	Negligible
7	1 Lockgate Mews	53	48	0	48	-6	Negligible
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	49	47	0	47	-2	Negligible

16.7.31. The BS4142 assessment shows that the noise impact due to the operation of Proposed Development during the daytime will be 'negligible' at all NSRs except for Residence Inn, 40 Laystall St, which will be Moderate.

16.7.32. It should be noted that an application has been made for the intervening land between Residence Inn and MDC (application 135662/FO/2022). The proposal is for a 20-storey hotel and would likely be operational once the Proposed Development enters its operational phase. The proposed hotel would form a new noise sensitive receptor and is anticipated to experience similar noise levels as predicted for Residence Inn, but also provide a measure of shielding to the existing properties. At the time of writing, further details of the property were not available, therefore consideration should be given to this property during ongoing design phases of the Proposed Development – further information is included within the overall cumulative effects assessment.

16.7.33. BB93 advises that external noise levels in unoccupied playgrounds, playing fields and other outdoor areas should not exceed 55dB $L_{Aeq,30min}$ and there should be at least one area suitable for outdoor teaching activities where noise levels are below 50dB $L_{Aeq,30min}$. As a worst-case scenario a 50dB $L_{Aeq,30min}$ requirement will be used for this assessment.

Table 16-17 - BB93 external noise levels

ID	Receiver	BB93 advised external noise level, dB $L_{Aeq,30min}$	Predicted Level, dB $L_{Aeq,T}$	BB93 design target met?
8	Co-op Academy New Islington	50	45	Yes

16.7.34. Table 16-17 shows that effects on external areas of the school would meet the design target. The closest playing area associated with the school was assessed. The second, more distant playing area has not been assessed directly, as there are no significant effects identified for the closest area.

16.7.35. During the night-time period, it is understood that the South Building would be unoccupied, but the North Building, will require limited 24hr working. To ensure a robust night-time assessment has been undertaken, it has been assumed that all plant on both buildings shall be operational throughout the night. This represents the worst-case scenario for this aspect of the assessment.

Table 16-18 - BS4142 Assessment – Night-time

ID	Receiver	Background noise level, L_{A90} ,dB	Specific Noise Level, dB	Subjective Correction	Rating Level, dB	Difference between 'rating' and 'background' noise levels, dB	Significance
1	Co-op Academy New Islington	39	45	0	45	6	Moderate
2	Royal Mills, Redhill St	39	46	0	46	7	Minor
3	MM2 Apartments, Pickford St	46	47	0	47	1	Negligible
4	Brownsfield Mill, Binns Pl Port Street Development	46	47	0	47	1	Negligible
5	Residence Inn, 40 Laystall St	46	61	0	61	15	Major

6	83 Ducie St	46	49	0	49	3	Negligible
7	1 Lockgate Mews	43	48	0	48	5	Minor
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	39	47	0	47	8	Minor

16.7.36. The BS4142 assessment shows that the noise impact due to the operation of the Proposed Development during the night time will be 'negligible' or less at MM2 Apartments, Brownsfield Mills, and 83 Ducie Street. Minor impacts could be expected at Co-op Academy New Islington, 1 Lockgate Mews, and Ancoats Primary Care Centre/ New Islington Marina. Major impacts may be expected at Residence Inn.

16.7.37. It should be noted that although Moderate impacts have been identified at the Co-op Academy it is considered unlikely that it shall be occupied during the night-time period.

16.7.38. The rating levels during the day exceed the requirements provided by Manchester City Council of not exceeding existing background noise levels, without further mitigation.

16.7.39. There will be no processes within the buildings which would generate significant levels of vibration. Therefore, there will be no significant vibration impacts at the noise sensitive receivers (NSRs) due to the operation of the Proposed Development.

16.7.40. A review of the operational traffic has been undertaken based on data provided by Highways Forecasting and Analytical Services, part of Transport for Greater Manchester. It is understood that 50 accessible parking spaces shall be included within the basement carpark, including 15 EV charging spaces (plus 5 spaces associated with facilities management and operations). Based on the available data it is considered likely that the Proposed Development will result in an increase in traffic flows of less than 7% on the local road network. This equates a 0dB change in noise level and therefore is not significant.

16.8. Additional mitigation and enhancement measures

Construction

16.8.1. In addition to and as an expansion of the embedded mitigation set out earlier in this chapter, the following control measures will be implemented in carrying out the construction works. These should be reflected in the Noise Monitoring and Management Plan (which is intended to supplement the CEMP), as appropriate:

- All plant and equipment will comply with the noise limit and noise marking requirements prescribed by the "Noise Emission in the Environment by Equipment for Use Outdoors Regulations 2001" and the "Noise Emission in the Environment by Equipment for Use Outdoors (Amendment) Regulations 2005" implementing the EU Directives 2000/14/EC.
- All plant, equipment and noise control measures applied to plant and equipment shall be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable. As far as reasonably practicable, any plant, equipment or items fitted with noise control equipment found to be defective will not be operated until repaired.

- All generators shall be super-silenced units. Where reasonably practicable, other fixed items of construction plant should be electrically powered in preference to diesel or petrol driven.
- Vehicles and mechanical plant employed for any activity associated with the construction works will, where reasonably practicable, be fitted with effective exhaust silencers and shall be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable.
- Machines in intermittent use will be shut down or throttled down to a minimum during periods between works.
- Whenever used, all percussion tools shall be fitted with appropriate mufflers or dampers of the type recommended by the manufacturers.
- Static noise emitting equipment operating continuously (generators, compressors etc.) will be screened or housed within suitable acoustic enclosure, where appropriate.
- Noisy plant or equipment shall be sited as far away as possible from noise sensitive buildings. Wherever practicable, the use of barriers in the form of acoustic enclosures or temporary noise barriers shall be employed.
- All personnel on site will undergo site specific inductions and briefings, to include section 61 consent requirements and noise control measures. Where relevant, specific noise control measures will be incorporated into Works Package Plans.
- A programme of community liaison will be carried out, including notification of works and details of the complaints process.
- A programme of site inspections and noise monitoring will be carried out to assess whether BPM is being employed in the control noise, to investigate any noise complaints or incidents and compare actual construction noise levels against those predicted in the Section 61 consent application.
- Noise from reversing alarms from delivery and construction vehicles will be controlled and limited as far as possible through the following means:
    - Designing the site layout to limit the need for reversing vehicles;
    - The use of banksmen for traffic management at site entrance gates and within site footprint;
    - Reversing alarms incorporating directional sounders, broadband signals self-adjusting output sounders or flashing warning lights; and
    - Setting reversing alarms to the minimum output noise level required for health and safety compliance.

Operation

16.8.2. At present it is proposed that the roof top plant has a visual enclosure surround, this can be upgraded to a noise barrier/enclosure to minimise noise impact from rooftop plant, especially for night-time operations. In general, it would be anticipated that a noise barrier that blocks line of sight would achieve a 10dB reduction in noise levels experienced at a receptor, where line of sight is partially blocked a 5 to 10dB reduction can be expected. It is recommended that the noise barrier should achieve 10dB reduction at the worst affected noise sensitive receptor identified in Section 16.7. It is recommended that the noise barrier should achieve 10dB reduction at the noise sensitive receptors.

16.8.3. During the design process, consideration will be given to plant selection ensuring that, where possible, low noise options are installed. Consideration will be given to the installation of manufacturer specified silencer/mufflers to ensure that noise levels are minimised as far as practical.

16.8.4. During the night-time period it would be expected that plant operations would be minimised as far as practicable.

16.8.5. The mitigation options above (potential noise barrier, plant selections and operational timings) would be optimised at the detailed design phase.

16.9. Residual effects

Construction

16.9.1. With the application of appropriate BPM and all additional mitigation measures outlined in Section 16.8, the Proposed Development would still have the potential to cause noise impacts during all construction phases. Although noise levels from the construction activities could be high during certain periods, it is considered unlikely that the temporal threshold would be exceeded. For reference the temporal thresholds are defined as either 10 or more days or nights in any 15 consecutive days or nights or a total number of days exceeding 40 in any 6 consecutive months due to the mobile and temporary nature of the works.

16.9.2. Further assessment should be undertaken by the Contractor when detailed phasing is available and should form part of the CEMP, with suitable measures incorporated within the Noise Monitoring and Management Plan and through the work of the CLO.

Operation

16.9.3. With the application of appropriate mitigation described in Section 16.8, the residual impacts of the operational stage of the Proposed Development are shown in Table 16-19. The calculations include a 10dB reduction of noise levels for a noise barrier mitigation, as set out in the additional mitigation proposals.

Table 16-19 - Residual Operational Impacts

ID	Receiver	Period	Background noise level, L_{A90} ,dB	Rating Level, dB	Mitigated Rating Level, dB	Difference between 'rating' and 'background' noise levels, dB	Impact
1	Co-op Academy New Islington	Day (07:00 - 23:00)	48	45	35	-13	Negligible
		Night (23:00 - 07:00)	39	45	35	-5	Negligible
2	Royal Mills, Redhill St	Day (07:00 - 23:00)	48	46	36	-12	Negligible
		Night (23:00 - 07:00)	39	46	36	-4	Negligible
3	MM2 Apartments, Pickford St	Day (07:00 - 23:00)	53	47	37	-16	Negligible
		Night (23:00 - 07:00)	46	47	37	-9	Negligible
4	Brownsfield Mill, Binns Pl Port Street Developme nt	Day (07:00 - 23:00)	53	47	37	-16	Negligible
		Night (23:00 - 07:00)	46	47	37	-9	Negligible
5		Day (07:00 - 23:00)	53	61	51	-3	Negligible

ID	Receiver	Period	Background noise level, L_{A90} ,dB	Rating Level, dB	Mitigated Rating Level, dB	Difference between 'rating' and 'background' noise levels, dB	Impact
	Residence Inn, 40 Laystall St	Night (23:00 - 07:00)	46	61	51	5	Minor
6	83 Ducie St	Day (07:00 - 23:00)	53	49	39	-15	Negligible
		Night (23:00 - 07:00)	46	49	39	-8	Negligible
7	1 Lockgate Mews	Day (07:00 - 23:00)	53	48	38	-16	Negligible
		Night (23:00 - 07:00)	43	48	38	-5	Negligible
8	Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	Day (07:00 - 23:00)	49	47	37	-12	Negligible
		Night (23:00 - 07:00)	39	47	37	-2	Negligible

16.9.4. Assuming a suitably designed noise barrier is in place around the rooftop plant compound, residual effects are considered to be negligible at all receptors during both the day and night-time periods. The exception to this is during the night-time period at Residence Inn, 40 Laystall Street, where impacts are considered to be "minor" or less.

16.10. Cumulative effects

16.10.1. This section considers the cumulative effects of the Proposed Development (intra-project cumulative effects) and the Proposed Development interacting with other RFFPs (inter-project cumulative effects) from the perspective of impacts within the scope of the Noise and Vibration topic.

Cumulative effects assessment

16.10.2. The further consideration of cross-topic intra-project and inter-project cumulative effects is reported in ES (Volume 2) Chapter 22: Cumulative Effects.

Intra-project in-combination cumulative effects assessment (single project impacts) within topic

16.10.3. The focus of intra-project CEA is understanding how receptors may experience a number of different types of impacts from the Proposed Development at the same time. Within this topic assessment, the noise and vibration assessment methodology is inherently cumulative. The baseline for the construction and operational noise assessments is inclusive of all existing significant noise sources in the study area, both from industry and transportation, and therefore the predicted impacts represent the cumulative impact of the Proposed Development combined with existing noise sources.

16.10.4. On the basis of the above, there are no additional intra-project cumulative effects from the assessment of noise and vibration to report in this section.

Inter-project cumulative effects assessment (different project impacts) within topic

16.10.5. The inter-project cumulative effects assessment 'within topic' element for the noise and vibration assessment has been completed with reference to the shortlist list of RFFPs that has been developed for the Proposed Development. The list is based on a review of all developments known to the planning system using the methodology described in Chapter 22: Cumulative Effects

16.10.6. The RFFP short list has been screened to identify projects that are considered to have a realistic prospect of interacting with the Proposed Development from the perspective of the noise and vibration. The sift from the short-list to identify RFFPs that should be scoped into the inter-project CEA for noise and vibration took into consideration;

- Construction Timeframes
- Distance from the Proposed Development
- Scale of the RFFP

16.10.7. This process identified potential for inter-project impacts as a result of the Proposed Development in combination with two RFFPs due to the scale of the Proposed Developments, their proximity to sensitive receptors and the potential for impacts on the RFFPs as receptors, once completed. These RFFPs are;

- 128191/FO/2020 - Development comprising of five office buildings with flexible ground floor use at land between Ashton Canal and Pollard Street.
- 135662/FO/2022 - Development comprising erection of a 20 storey building to create a 154 bedroom hotel (Class C1) above 2 basement levels with ancillary café / bar / restaurant and gym and other associated works including highway improvements, cycle parking and creation of accessible parking bay following removal of on site structures. This is located at Laystall Street / Great Ancoats Street Manchester M4 6DE.

16.10.8. In undertaking this assessment, consideration has been given to what would be the likely "worst case" scenario during each MEC phase, construction and operation.

Construction

16.10.9. A review of the RFFP planning applications show that limited noise information is available at the time of writing, especially in terms of environmental noise.

16.10.10. In terms of construction noise the development comprising of five office buildings with flexible ground floor use at land between Ashton Canal and Pollard Street contains a statement that "Maximum noise limit shall not be exceeded is 75db over a 10-hour (08:00 hrs to 18:00 hrs) period at outside nearby residential receptors without an appropriate section 61 agreement."

16.10.11. The development comprising a hotel at Laystall Street/Great Ancoats Street has no available information on likely construction noise impacts at the time of writing.

16.10.12. Based on the information available, it is considered likely that there is the potential for significant impacts but it is considered unlikely to exceed the temporal threshold of either 10 or more days or nights in any 15 consecutive days or nights or a total number of days exceeding 40 in any 6 consecutive months due to the mobile and temporary nature of the works. Further assessment should be undertaken by the Contractor when detailed phasing is available and should form part of the Construction Environmental Management Plan.

Operation

16.10.13. Data of the operational noise impacts due to the Proposed Developments at the key representative noise sensitive receptors has been reviewed. Data for each is shown where it is available.

Table 16-20 - Cumulative - Operational noise

Location	Period	Manchester Digital Campus	MXM Pollard	Laystall Street/ Great Ancoats Street	Combined	Difference	Impact
Residence Inn	Day (07:00 – 23:00)	61	-	50	61	0	Negligible
	Night (23:00 – 07:00)	61	-	45	61	0	Negligible
1 Lockgate Mews	Day (07:00 – 23:00)	48	50	-	52	4	Minor
	Night (23:00 – 07:00)	48	43	-	49	1	Minor

16.10.14. Table 16-20 shows that cumulative impacts are likely to be “Minor” at Lockgate Mews and surrounding properties. At all others cumulative impacts are likely to be “Negligible” during operation of the Proposed Development.

16.10.15. The experience of future users of the hotel that forms RFFP 135662/FO/2022 from the operation of the Proposed Development is considered broadly comparable to that predicted for Residence Inn. It should be noted that this is on a qualitative basis only and it is possible that the greater proximity of the planned hotel to the Site may increase the impact to minor; however, this would not be significant and, from the perspective of noise assessment in isolation, no requirement for additional mitigation has been identified for this potential cumulative effect.

Mitigation measures

16.10.16. Due to the limited information available, to ensure that any potential significant impacts during the construction phase do no exceed temporal thresholds, further assessment should be undertaken by the Contractor when detailed phasing is available. This assessment should form part of the Construction Environmental Management Plan, with relevant measures included within the Noise Monitoring and Management Plan.

Summary of Cumulative Effects

16.10.17. There are no additional intra-project cumulative effects. However, there are Inter-project cumulative effects.

16.10.18. It is anticipated that during operation there will be a minor adverse effect on 1 Lockgate Mews but this is not significant. For the construction phase, a detailed assessment has not been possible due to a lack of information within the planning applications of the RFFPs. However, based on the information available,

it is considered likely that there is the potential for significant impacts, but it is considered unlikely that these impacts will be of a duration that exceeds temporal thresholds. As such, they are not likely to be significant. However, further assessment should be undertaken by the Contractor when detailed phasing is available to ensure temporal thresholds aren't exceeded.

16.11. Summary and conclusions

16.11.1. A baseline noise survey conducted by AtkinsRéalis Acoustics Noise and Vibration at the Former Central Retail Park, Great Ancoats Street, Manchester, aimed to determine the baseline ambient noise levels at the proposed Site location for the Proposed Development. The survey was carried out on the 22nd and 23rd June 2023, and measurements were taken at four different positions. The results of the noise survey indicated that the noise climate at each position was mainly influenced by road traffic noise from Great Ancoats Street as well as construction noise from nearby worksites.

16.11.2. Consultation was undertaken with Manchester City Council to confirm the approach to assessing the potential for noise and vibration during both the construction and operation of the Proposed Development.

16.11.3. Calculations of the potential noise impacts during construction have been undertaken, these indicate that there is the potential for exceedances of noise level threshold at nearby noise sensitive receptors. Due to the transient and temporary nature of the works it is considered unlikely to exceed the temporal threshold to be a significant effect. Further consideration would be given by the contractor during the production of the Construction Environmental Management Plan.

16.11.4. The operational assessment shows that the noise impact due to the operation of the Proposed Development during the daytime will be 'negligible' or less at all Noise Sensitive Receptors except for Residents Inn, 40 Laystall St, which while be Moderate. During the night time these will be 'negligible' or less at MM2 Apartments, Brownsfield Mills, and 83 Ducie Street. Minor impacts could be expected at Co-op Academy New Islington, 1 Lockgate Mews, and Ancoats Primary Care Centre/ New Islington Marina. Major impacts may be expected at 5 Residence Inn.

16.11.5. Further mitigation shall be considered for fixed plant during the operational phase, this could be in the form of an acoustic compound and/or selection of low noise plant options. Minimising operational times and loads should be implemented, especially during night-time period.

Table 16-21 – Summary of residual effects

Resource / Receptor / affected group	Sensitivity of receptor	Activity or impact	Embedded design mitigation	Effect Magnitude Type Spatial extent Duration Likelihood	Significance of effect	Additional mitigation	Residual effect
Construction							
Co-op Academy New Islington	High	Construction Noise and Vibration	CEMP	Adverse Minor Direct Local/National Temporary Unlikely	Not significant	BPM, localised noise barriers/site hording	Not significant
Royal Mills, Redhill St	High	Construction Noise and Vibration	CEMP	Adverse Moderate Direct Local/National Temporary Unlikely	Not significant	BPM, localised noise barriers/site hording	Not significant
MM2 Apartments, Pickford St	High	Construction Noise and Vibration	CEMP	Adverse Minor Direct Local/National Temporary Unlikely	Not significant	BPM, localised noise barriers/site hording	Not significant
Brownsfield Mill, Binns Pl & Port Street Development	High	Construction Noise and Vibration	CEMP	Adverse Minor Direct Local/National Temporary Unlikely	Not significant	BPM, localised noise barriers/site hording	Not significant

Resource / Receptor / affected group	Sensitivity of receptor	Activity or impact	Embedded design mitigation	Effect Magnitude Type Spatial extent Duration Likelihood	Significance of effect	Additional mitigation	Residual effect
Residence Inn, 40 Laystall St	High	Construction Noise and Vibration	CEMP	Adverse Minor Direct Local/National Temporary Unlikely	Not significant	BPM, localised noise barriers/site hording	Not significant
83 Ducie St	High	Construction Noise and Vibration	CEMP	Adverse Minor Direct Local/National Temporary Unlikely	Not significant	BPM, localised noise barriers/site hording	Not significant
1 Lockgate Mews	High	Construction Noise and Vibration	CEMP	Adverse Negligible Direct Local/National/Global Temporary Likely	Not significant	BPM, localised noise barriers/site hording	Not significant
Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	High	Construction Noise and Vibration	CEMP	Adverse Negligible Direct Local/National/Global Temporary Likely	Not significant	BPM, localised noise barriers/site hording	Not significant

Resource / Receptor / affected group	Sensitivity of receptor	Activity or impact	Embedded design mitigation	Effect Magnitude Type Spatial extent Duration Likelihood	Significance of effect	Additional mitigation	Residual effect
Operation							
Co-op Academy New Islington	High	Operational Noise and Vibration	Plant Locations and building orientation	Adverse Negligible Direct Local/National Permanent Unlikely	Not significant	N/A	Not significant
Royal Mills, Redhill St	High	Operational Noise and Vibration	Plant Locations and building orientation	Adverse Negligible Direct Local/National Permanent Unlikely	Not significant	N/A	Not significant
MM2 Apartments, Pickford St	High	Operational Noise and Vibration	Plant Locations and building orientation	Adverse Negligible Direct Local/National Permanent Unlikely	Not significant	N/A	Not significant
Brownsfield Mill, Binns Pl & Port Street Development	High	Operational Noise and Vibration	Plant Locations and building orientation	Adverse Negligible Direct Local/National Permanent Unlikely	Not significant	N/A	Not significant

Resource / Receptor / affected group	Sensitivity of receptor	Activity or impact	Embedded design mitigation	Effect Magnitude Type Spatial extent Duration Likelihood	Significance of effect	Additional mitigation	Residual effect
Residence Inn, 40 Laystall St	High	Operational Noise and Vibration	Plant Locations and building orientation	Adverse Minor Direct Local/National Permanent Unlikely	Significant	Acoustic enclosure around rooftop plant, limit plant operations when possible	Not significant
83 Ducie St83 Ducie St	High	Operational Noise and Vibration	Plant Locations and building orientation	Adverse Negligible Direct Local/National Permanent Unlikely	Not significant	N/A	Not significant
1 Lockgate Mews	High	Operational Noise and Vibration	Plant Locations and building orientation	Adverse Negligible Direct Local/National Permanent Unlikely	Not significant	N/A	Not significant
Ancoats Primary Care Centre, Old Mill Street/ New Islington Marina	High	Operational Noise and Vibration	Plant Locations and building orientation	Adverse Negligible Direct Local/National Permanent Unlikely	Not significant	N/A	Not significant

16.12. Glossary and Acronyms

Table 16-22 – Glossary and acronyms

Term	Definition
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
BPM	Best Practicable Means
CEMP	Construction Environmental Management Plan
CEP	Community Engagement Plan
CLO	Community Liaison Officer
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s1 and s2 is given by 20 log10 (s1 / s2). The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is 20mPa.
ES	Environmental Statement
HDV	Heavy-Duty Vehicles
LAeq,T	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
LAmax,T	A noise level index defined as the maximum noise level during the period T. Lmax is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
LA90,T	A noise level index. The noise level exceeded for 90% of the time over the period T. L90 can be considered to be the "average minimum" noise level and is often used to describe the background noise.
LA10,T	A noise level index. The noise level exceeded for 10% of the time over the period T. L10 can be considered to be the "average maximum" noise level. Generally used to describe road traffic noise.
MCC	Manchester City Council
MDC	Manchester Digital Campus
NSRs	Noise and Vibration Sensitive Receptors
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
OCEMP	Outline Construction Environmental Management Plan
ppv	Peak Particle Velocity
Sound Pressure	Sound, or sound pressure, is a fluctuation in air pressure over the static ambient pressure

Term	Definition
Sound Pressure Level (Sound Level)	The sound level is the sound pressure relative to a standard reference pressure of 20mPa (20x10-6 Pascals) on a decibel scale

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