Victoria Riverside
Manchester

Condition 21(b) Discharge Report
Tower A & Midrise A

28499/CDR4

2 July 2026

For:
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Plant Noise Impact Assessment Report
28499/CDR4

Document Control

Rev	Date	Comment	Prepared by	Reviewed by	Authorised by
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Report 28499/CDR4

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1.0 Introduction

Hann Tucker Associates Limited (Hann Tucker) has been commissioned by DEX Construction Group Limited to undertake validation measurements and prepare a verification report for the development referred to as Victoria Riverside, Manchester.

The development was granted Planning Permission in January 2021 (*Planning Reference: 126944/FO/2020*).

The tests were carried out across the development for validation of landlord plant, in association with Tower A & Midrise A.

2.0 Planning Conditions

Planning Conditions 21, part (b), requires evidence that the noise mitigation measures installed are capable of achieving the required acoustic verification and satisfy agreed limits be submitted to the local planning authority. The conditions are below with relevant text highlighted in bold.

> *21. Notwithstanding the Chapter 12 Noise and Vibration, prepared by ARUP of the ES stamped as received by the City Council, as Local Planning Authority, on the 17 May 2020.*
>
> ***(b). Prior to the first occupation of each phase of the development (save for the enabling works phase), a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ.***

This technical report outlines the as-installed building services plant, their locations, and any potential adverse impacts, along with any necessary design mitigation measures. The purpose is to demonstrate that noise emissions will remain within acceptable levels in accordance with relevant standards, guidance, and the condition set by Manchester City Council (MCC).

3.0 Acoustic Terminology

For an explanation of the acoustic terminology used in this report please refer to Appendix A enclosed.

4.0 Condition 21(b) Commissioning Details

4.1 Overview

Condition 21(b) relates to noise from fixed building services plant, and this section of the report sets out the measured landlord plant egress from the ground floor systems.

The plant which has been measured relate to the following:

- Mechanical extract ventilation for bin store areas, fan located internally and ducted to the rear facing façade;
- Heat Recovery units which serve the plant room and ancillary rooms, fan located internally and ducted to the rear and front façade, respectively.
- Rooftop Emergency smoke extract.

5.0 Condition 21(b) Assessment

5.1 Introduction

Condition 21(b) relates to the verification of noise from externally mounted ancillary building services plant, and this section of the report sets out the measurements undertaken at site, along with the assessment regarding the noise egress from the installed plant to the nearest or worst-affected noise sensitive receptors.

Communications with the Client and review of the Architect drawings detail a variety of fixed plant items in differing locations, including roof mounted emergency plant, and internally mounted heat recovery units and extract systems which are ducted to the façade.

5.2 Project Criteria

5.2.1 Normally Operating Plant

The project criteria have been set out in report referenced *'28499-NIA-RP1-Rev1-NJM Condition Discharge Noise Report'* which related to the Employers Requirements Report produced by ARUP (document reference: *VRS-ARP-ZZ-ZZ-SP-D-00006_P01*).

The document sets limits at 5dB below the measured background sound level for nearby residential developments including North View (adjacent to the northwest boundary), and Angel Meadows (south).

The following plant noise emission limits for the development and surrounding developments are to be achieved at 1 metre from noise sensitive windows, resultant from proposed plant operating cumulatively.

Location	BS 4142 Plant Noise Rating Limit, $L_{Ar,Tr}$ (dB)	
	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Victoria Riverside Development (on-site receptors)	44	41
North View Development (off-site receptors)	44	41
Angel Meadows Development (off-site receptors)	48	38

NB: In most areas the nearest noise sensitive receptors are likely to be apartment windows within the development site.

5.2.2 Emergency Plant

The noise level from any emergency plant is relaxed when compared to normal operating plant, to be no more than 10dB(A) greater than the existing background noise level at any proposed or existing residential receptor. The emergency criteria are therefore 10 dB above the measured background sound level and 15 dB above the normal operating plant limits, detailed below.

Location	BS 4142 Emergency Plant Noise Rating Limit, $L_{Ar,Tr}$ (dB)
	Daytime (07:00 to 23:00)
Victoria Riverside Development (on-site receptors)	59
North View Development (off-site receptors)	59
Angel Meadows Development (off-site receptors)	63

5.2.3 Noise Sensitive Receptors

Externally, the nearest noise sensitive receptors to the installed plant are the building itself (i.e. Tower A). Other on-site receptors (Midrise A, Tower B, Midrise B and Tower C) that could be affected are located further away thus the noise impact would be less.

In addition, the other off-site receptors that could be affected are the North View consented development (Receptor D) and Angel Meadows (Receptor E), though given their increased distance from the Riverside development are not considered to be the “worst affected” given that on-site receptor of Tower A is being considered in this case.

The following image, presented below, highlights the location of each of the noise sensitive receptors.



Satellite image highlighting the location of Receptor A to E (Map Data, Google Maxar Technologies © 2026)

5.3 Installed Plant Items and Locations

The following assessment details the plant item, its location, which area of the building it serves, and the nearest/worst-affected residential window of Tower A.

The exact layouts are provided in ventilation plans for the scheme.

The plant items are as follows:

Unit Ref	Plant Description	Location	Plant Make/Model	Serving	Nearest Noise Sensitive Receptor
MEV-A-01	Extract Ventilation	Ground Floor (Level 00)	Elta Fans SH150-1LC	Podium A Refuse Bin Store	Tower A Maisonette 3
MEV-A-02	Extract Ventilation	Ground Floor (Level 00)	Elta Fans SLC450-1EC	Tower A Refuse Bin Store	Tower A Maisonette 3
HRU-A-01	Heat Recovery Unit	Tower A Ground Floor	Elta Fans HRH 40	Water Tank Room	Tower A Maisonette 02
HRU-A-02	Heat Recovery Unit	Tower A Ground Floor	Elta Fans HRH 15	Office, Staff room, CCTV, Acc W/C	Tower A Apartment TA-03-002
Roof Fans	Smoke Extraction	Tower A Roof	AXT90DG4HA7 -2EM	Tower A Residents	Tower B
Roof Fans	Smoke Extraction	Midrise A Roof	AXT90DG4HA7 -2EM	Midrise A Residents	Tower B

5.4 Survey

5.4.1 Methodology

Hann Tucker Associates attended site on 10 June 2026 to take measurements of the installed building services plant. Measurements were generally taken at 1 m from the unit or grille. All distances have been accounted for in our calculations to nearby receptors.

It should be noted that noise measurements for the following units were not possible:

- Each bedroom MVHR due to the location of the inlet and outlet terminals on the upper floors. MCC previously accepted that the Condition 21(a) assessment was sufficient to demonstrate compliance.
- HRU-A-01 was inaudible at the measurement location, with noise levels constrained by the prevailing background sound level. It has therefore been excluded from the assessment.
- HRU-A-02 is located on the front façade at a height of at least 6 m above ground level, making direct measurements impracticable. Given that the cumulative assessment undertaken for Condition 21(a) identified an incident noise level of only 6 dB, HRU-A-02 has been excluded from the assessment.

5.4.2 Results

The following table outlines the results of the measurements taken on site.

Unit	Measurement Type	Measurement Distance	Measured L_{Aeq} (dB)	Measured L_{A90} (dB)
Tower A Smoke Extraction	Source ON	1m	89	89
Tower A Smoke Extraction	Source OFF	1m	44	44
Midrise A Smoke Extraction	Source ON	1m	90	89
Midrise A Smoke Extraction	Source OFF	1m	51	49
MEV-A-02	Source ON	1m	61	59
MEV-A-02	Source OFF	1m	47	45
MEV-A-01	Source ON	1m	54	53
MEV-A-01	Source OFF	1m	50	49

5.4.3 Establishing Specific Plant Noise Levels

Based on the measured noise levels, the specific noise levels have been established for each plant item. These have been established through logarithmic subtraction of the octave band noise levels measured with and without each plant item operating.

In some instances, the measured noise levels with the plant both operating and not operating did not change notably. These have been listed in 5.4.1.

Based on the above, the following table sets out the specific noise levels from each plant item.

Unit	Established Specific Noise Level at 1m at each Octave Band								dBA
	63	125	250	500	1000	2000	4000	8000	
Tower A Smoke Extraction	79	87	88	89	84	77	73	63	89
Midrise A Smoke Extraction	95	98	88	88	84	79	74	67	90
MEV-A-01	57	71	66	56	47	40	38	34	60
MEV-A-02	56	61	54	52	43	38	34	30	53

5.5 Non-Emergency Plant Noise Incident at Maisonette 3

The cumulative noise level incident at the nearest and worst-affected residential receptor has been calculated for the operational plant items listed and is presented in the table below.

The plant operates at a typical constant extraction rate serving the associated spaces.

Furthermore, subjective observations made during the site visit indicated that the prevailing environmental noise climate dominates the acoustic environment (i.e. frequent railway noise and nearby offsite substation buzzing) which effectively masks noise egress from the extraction plant. As such, the plant noise was not considered to exhibit any distinctive acoustic characteristics likely to attract attention at the receptor. Accordingly, no acoustic character correction has been applied to the assessment in accordance with BS 4142:2014+A1:2019.

Plant Item	Calculated Incident Noise Levels (dB) at Receptor NSR 1								dBA
	63	125	250	500	1000	2000	4000	8000	
MEV-A-01	36	49	41	28	15	-4	-15	-19	36
MEV-A-02	22	25	16	12	0	-8	-13	-17	14
Noise Rating Level	-	-	-	-	-	-	-	-	**36**

When cumulatively summing all plant items at Maisonette 3, predicted noise levels are 36 dB L_{ArTr} which is 5 dB below the night-time noise limit and 8 dB below the daytime noise limit. Therefore, the plant egress to NSR B complies with the requirements of Condition 21.

5.6 Emergency Plant Noise Incident

5.6.1 Assessment Overview

The assessment of emergency plant on the roof of Tower A and the roof of Midrise A has been assessed to the nearest residential windows of Tower B to provide a robust assessment.

BS 4142 rating correction has not been applied to the emergency plant. BS 4142:2014+A1:2019 advises that acoustic character corrections should be applied where specific sound characteristics (e.g. tonality, impulsivity, intermittency or other distinctive features) are expected to increase the significance of the sound impact under normal operating conditions. In this case, the emergency plant is not intended for routine operation and would only operate during genuine emergency events or periodic maintenance and testing.

Emergency operation is, by its nature, infrequent, temporary and outside the control of the site operator. Consequently, the occurrence of such events would not be representative of the site's typical acoustic environment and would not reasonably contribute to the long-term adverse impact that BS 4142 seeks to assess.

Similarly, routine maintenance and testing are undertaken for limited durations and at low frequencies solely to ensure the operational integrity of life-safety and resilience systems.

Given the infrequent and temporary nature of these activities, any distinctive acoustic characteristics would not be expected to materially influence community response in the same manner as a continuously or regularly operating plant item.

On this basis, the application of BS 4142 acoustic character penalties is considered unnecessarily precautionary and not representative of the actual acoustic impact associated with the emergency plant.

The following assessment has therefore been undertaken without the application of rating level corrections.

5.6.2 Tower A – Assessment to NSR B (Tower B)

The smoke extraction system serving Tower A is located at roof level and benefits from substantial screening provided by the building structure itself. Owing to the significant height and mass of Tower A, there is no direct line of sight between the smoke extract plant and the surrounding residential receptors. As a result, the propagation of noise from the plant is attenuated by the intervening building fabric, reducing the potential for noise breakout to affect nearby dwellings.

For the purposes of the assessment, the nearest potentially affected receptor has been identified as the upper-floor residential windows of Tower B. The noise calculations have been undertaken using a robust approach that accounts for both the separation distance between the source and receptor and the screening afforded by the Tower A building structure. These factors have been incorporated into the propagation calculations through the application of appropriate distance attenuation and barrier screening corrections.

Given the elevated location of the plant, the absence of direct line of sight to surrounding receptors, and the significant screening effects provided by the host building, the resulting noise levels at neighbouring residential properties are substantially reduced. The assessment therefore represents a realistic and suitably comprehensive prediction of the noise impact associated with operation of the smoke extraction system.

The noise levels incident is presented in the table below.

Plant Item	Calculated Incident Noise Levels (dB) at Receptor B								dBA
	63	125	250	500	1000	2000	4000	8000	
Noise Rating Level	17	23	21	19	13	6	2	-8	**19**

The predicted noise level is 19 dB L_{ArTr} which is 37 dB below the night-time noise limit and 40 dB below the daytime noise limit. Therefore, the plant egress to NSR B complies with the requirements of Condition 21.

5.6.3 Midrise A – Assessment to NSR B (Tower B)

The smoke extraction system serving Midrise A is located at roof level and does not benefit from any screening from the building edge/height.

For the purposes of the assessment, the nearest potentially affected receptor has been identified as the Level 07 residential windows of Tower B. The noise calculations have been undertaken using a robust approach that accounts for both the separation distance between the source and receptor and the screening afforded by the Tower A building structure. These factors have been incorporated into the propagation calculations through the application of appropriate distance attenuation.

The assessment therefore represents a realistic and suitably comprehensive prediction of the noise impact associated with operation of the smoke extraction system.

The noise levels incident is presented in the table below.

Plant Item	Calculated Incident Noise Levels (dB) at Receptor B								dBA
	63	125	250	500	1000	2000	4000	8000	
Noise Rating Level	60	63	53	53	49	44	39	32	**55**

The predicted noise level is 19 dB L_{ArTr} which is 1 dB below the night-time noise limit and 4 dB below the daytime noise limit. Therefore, the plant egress to NSR B complies with the requirements of Condition 21.

6.0 Conclusion

The assessment has considered noise emissions from the as-installed externally mounted and ducted building services plant associated with the development at Victoria Riverside, Manchester in support of the discharge of Planning Condition 21(b).

Verification measurements were undertaken by Hann Tucker Associates on 10 June 2026, with the measured plant noise levels used to establish specific source levels and calculate the cumulative rating level at the nearest noise sensitive receptors. The assessment has been undertaken against the Condition 21(a) requirement for plant noise rating levels to be at least 5 dB below the typical background sound level at the nearest noise sensitive location.

The calculated cumulative plant noise rating level for the non-emergency and emergency plant complies with the rating level limits and therefore compliance with the MCC planning criterion.

On the basis of the installed plant, verification measurements, stated operating assumptions and calculated receptor levels, noise emissions from the development therefore are compliant with the MCC planning criterion as set out in condition 21(b). The approved plant noise control strategy should therefore be retained and maintained in situ for the lifetime of the development.

Appendix A

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted.

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

Sound Pressure Level (L_p) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

Sound Power Level (SWL or L_w) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).

Appendix B

Planning Policies, Standards & Guidance

B.1 BS 4142:2014 + A1:2019

When setting plant noise emission criteria reference is commonly made to BS 4142:2014 "*Methods for rating and assessing industrial and commercial sound".*

The procedure contained in BS 4142:2014 provides an assessment of the likely effects of sound on people when comparing the specific noise levels from the source with representative background noise levels. Where the noise contains "a tone, impulse or other characteristic" then various corrections can be added to the specific (source) noise level to obtain the "rating level".

BS 4142 states that: *"The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs". An estimation of the impact of the specific noise can be obtained by the difference of the rating noise level and the background noise level and considering the following:*

• *"Typically, the greater this difference, the greater the magnitude of the impact."*

• *"A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context."*

• *"A difference of around +5dB 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."*

The determination of the "rating level" and the "background level" are both open to interpretation, depending on the context.