

SANDY BROWN

Consultants in Acoustics, Noise & Vibration

18487-R07-B

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Globe & Simpson

Plant noise egress assessment report

London, Manchester, Edinburgh, Birmingham, Belfast, Leeds, Bristol

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Version	Date	Comments	Author	Reviewer
A	18 Oct 24		JMG	VH
B	25 Oct 24	Updated comments to Summary, Section 7.1 and Conclusion	JMG	JA

Disclaimer

This report has been prepared for the sole benefit and use of our client based on their instructions and requirements. Sandy Brown Ltd extends no liability in respect of the information contained in the report to any third party.

Summary

Sandy Brown have been commissioned by Iceni on behalf of Aviva to carry out an assessment of noise egress via the proposed new louvres for atmospheric mechanical services terminations to the west and east at ground and mezzanine levels of Globe & Simpson in Manchester, M3 3 GS.

At this stage there are no ventilation layouts and plant selections available. As such, sound power level limits have been set at the proposed atmospheric terminations to ensure cumulative plant noise limits at the nearest noise sensitive premises are in line with Manchester City Council (MCC) requirements. On this basis, plant noise levels in public walkways are predicted to be $L_{Aeq} \leq 55$ dB, and no increase in the cumulative plant noise levels at the nearest residential and office buildings in the vicinity of the Globe & Simpson building is predicted. This results in no adverse impact to residential amenity in combination with the previously assessed rooftop plant.

This report is based on the limits associated with the building and set out in Sandy Brown 18487-R04-A *Planning condition 17 discharge report plant noise egress assessment* dated 9 July 2021.

The relevant plant noise limits at the worst affected existing noise sensitive premises must not exceed 5 dB below the representative background sound levels, as set out in this report. These limits are cumulative, and apply with all plant operating under normal conditions. If plant items contain tonal or attention catching features, a penalty is to be applied.

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1 Introduction

Sandy Brown have been commissioned by Iceni on behalf of Aviva to carry out an assessment of noise egress via the proposed new atmospheric mechanical services terminations to the west and east at ground and mezzanine levels of Globe & Simpson in Manchester, M3 3 GS.

At this stage there are no ventilation layouts and plant selections available. As such, sound power level limits have been set at the proposed atmospheric terminations to ensure cumulative plant noise limits at the nearest noise sensitive premises are in line with Manchester City Council (MCC) requirements.

This report presents the planning requirements, relevant details of the development, confirms the design limits (relating to previous environmental survey work), and confirms the noise limits to which new atmospheric terminations must be designed to meet to be compliant.

2 Planning requirements

The base build planning requirements for this development are:

‘Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with the scheme designed so as to achieve a noise level of 5 dB below the existing background (L_{A90}) in each octave band at the nearest noise sensitive location’.

It is understood that this also includes internally located plant equipment which terminates externally. This is discussed further in Section 5.

3 Basis of review

The review has been based on the following documents:

- Sandy Brown report 18487-R04-A *Planning condition 17 discharge report plant noise egress assessment* dated 9 July 2021
- Architectural elevation drawings from Steward Fersina Ltd:
 - SF-24013-06
 - SF-24013-07

4 Site description

Globe & Simpson is located within zone 2 of St John’s Place, Manchester M3 3 GS. This sits within the St John’s Masterplan, located on the former site of Granada Studios, along New Quay Street.

The development includes a 9-storey building with 8 floors of offices, a reception/retail space at ground floor, a co-working/breakout area at mezzanine level, a basement car park and

rooftop amenity terrace. A rooftop plant area is installed, however does not form part of this assessment, and has previously been assessed in Sandy Brown 18487-R04-B *Planning condition 17 discharge report plant noise egress assessment* dated 16 October 2024. High level plant is unlikely to significantly contribute with noise emissions at ground level.

The site location in relation to its surroundings is outlined in yellow in Figure 1.

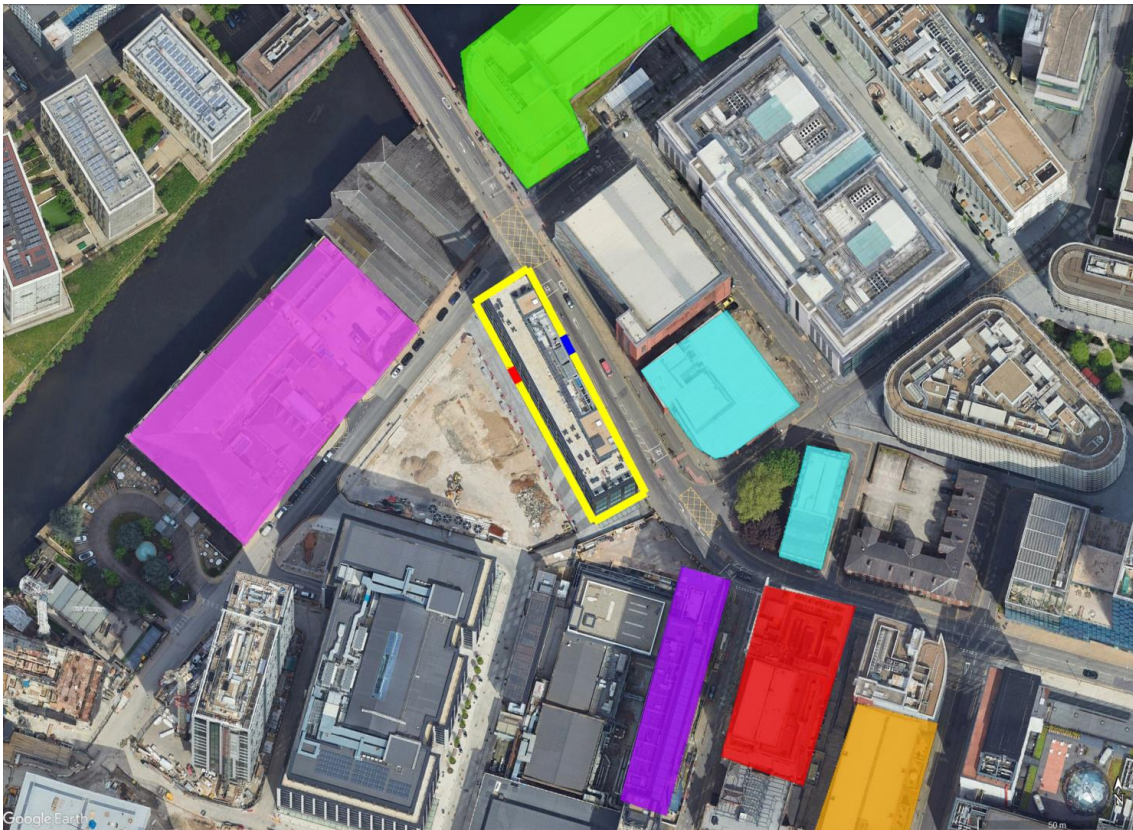


Figure 1 Site map (courtesy of Google Earth Pro)

The nearest noise sensitive receivers are the surrounding offices as part of St John's Place, and on New Quay Street these are highlighted in light blue in Figure 1.

The nearest residential receptors are:

- Marriott Hotel on Water Street, highlighted in pink in Figure 1.
- Old Granada Studios Hotel highlighted in purple in Figure 1.
- Bauhouse on Atherton Street highlighted in red in Figure 1
- Rossetti Place on Lower Byron Street highlighted in orange in Figure 1
- New Quay Street highlighted in light green in Figure 1

No operation is proposed during the night for the ground and mezzanine level fit out.

The location of the proposed plant atmosphere side terminations are marked in red (west) and blue (east) in in Figure 1 and approximately 3.5 m to 6 m above the ground level.

5 External noise limits

In line with the current Manchester City Council (MCC) guidelines, and plant noise egress planning conditions for other schemes within St Johns, it is proposed that limits be applied as broadband values.

5.1 Manchester City Council – typical requirements

Manchester City Council (MCC) provides guidance in relation to plant noise emissions in *Planning and Noise Technical Guidance* document dated December 2015 states the following in relation to plant noise egress:

‘Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.’

Appropriate corrections will need to be made to specific sound pressure levels from plant equipment for any attention catching features in line with BS 4142: 2014 to obtain a rating level

5.2 Cumulative limits for St John’s Masterplan

The cumulative noise level resulting from the operation of all new plant at 1 m from the windows of the nearby noise sensitive premises outside the development should not exceed the limits are set out in Table 1.

These limits are set to be 5 dB below the background noise levels measured during the environmental noise survey set out in Sandy Brown Acoustic Planning report 15210-R03-K, dated 23 October 2018.

The limits are set out in terms of sound rating levels which include corrections for attention catching features. These corrections are discussed further in Section 7.3.

Table 1 Plant noise limits at 1 m from the nearest noise sensitive premises (outside the development)

Location of NSP	Time of day	Maximum sound rating level at 1 m from noise sensitive premises, $L_{A,Tf}$ (dB)
Marriott Hotel	07:00-23:00	42
	23:00-07:00	41
Liverpool Road	07:00-23:00	44
	23:00-07:00	38

Location of NSP	Time of day	Maximum sound rating level at 1 m from noise sensitive premises, $L_{Ar,Tr}$ (dB)
Lower Byrom St	07:00-23:00	41
	23:00-07:00	37
Quay St	07:00-23:00	49
	23:00-07:00	41

In addition to the above, the cumulative noise level resulting from the operation all plant in external amenity areas (such public walkways) would be designed to meet L_{Aeq} 55 dB.

5.3 Outside noise sensitive facades within St John's

The cumulative noise level resulting from the operation of all new plant at 1 m from the windows of noise sensitive facades within the St John's shall not exceed the limits are set out in Table 2.

Table 2 Plant noise limits at 1 m from the noise sensitive facades within the development

Time of day	Maximum sound pressure level at 1 m from noise sensitive facades within the development, L_{Aeq} (dB)
07:00-23:00	49
23:00-07:00	41

It is anticipated that if these local limits are met, the cumulative masterplan limits given in Section 5.2 will also be met due to increased distance attenuation and screening.

5.4 Split between St Johns Place zones

The limits for cumulative plant noise emissions are associated with all plant serving the St John's Place development. There are understood to be two zones proposed as part of the St John's Place development, reduced from the previous four zones proposed.

To ensure that the cumulative limits are met and to accommodate other items of external plant (including future tenant plant), it is necessary to design individual items of plant such that the atmospheric noise emissions associated with their combined operation are in line with these criteria.

An even split of tenant and base-build noise egress is presented in Table 3. Thus, the same limits apply for the combined tenant plant/base-build plant for each of the two zones.

Table 3 Proposed plant limits outside noise sensitive facades within St Johns (base-build/tenant split)

	Time of day	Maximum sound pressure level at 1 m from noise sensitive premises within St Johns, L_{Aeq} (dB)
Base building	07:00-23:00	46
	23:00-07:00	38
Tenant plant	07:00-23:00	46
	23:00-07:00	38

6 Plant information

6.1 Location of atmosphere side terminations

The proposed locations of the atmospheric terminations are marked and labelled in red and blue in Figure 2 and Figure 3 respectively.

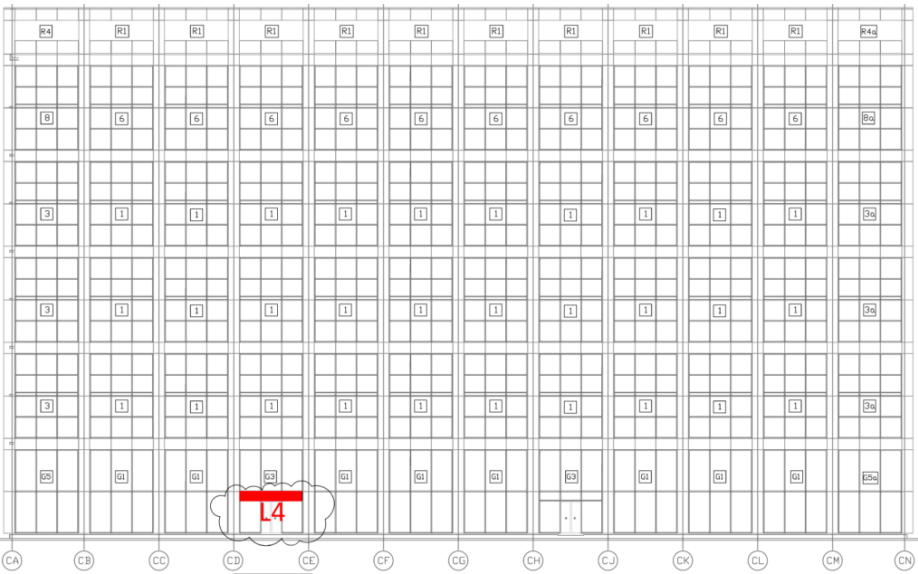


Figure 2 Excerpt of drawing SF-24013-06 showing the proposed grille terminations to the east elevation (in red)

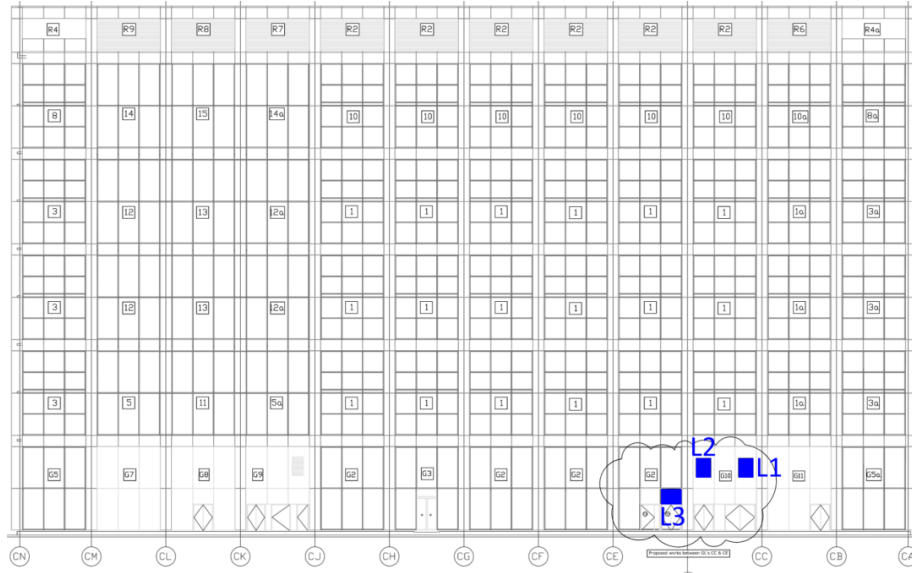


Figure 3 Excerpt of drawing SF-24013-07 showing the proposed grille terminations to the east elevation (in blue)

6.2 Plant noise levels

At this stage, plant selections connected to the proposed atmosphere side termination are not available.

Instead, sound power limits have been set to ensure the cumulate noise egress limit requirements are in line with Manchester City Council (MCC). These are based on the position and area of each termination point.

7 Noise egress limits

7.1 Calculation methodology

Noise levels at receptors have been calculated in a 3D acoustic model using the acoustic modelling package CadnaA (version 2024) taking into account area of the grille termination, location, distance attenuation, reflections from buildings, and screening where applicable.

The software carries out calculations using a ray tracing technique, and considers the effects of topography, reflections, screening and distance attenuation for noise sources to predict noise levels in three dimensions. Calculations are carried out in accordance with ISO 9613

Attenuation of sound during propagation outdoors.

The model has been developed based on drawings for the St Johns' Masterplan, and therefore includes future buildings.

7.2 Limits

The limits for each of the termination have been set out in Table 4 to meet the allowances for tenant plant and to meet L_{Aeq} 55 dB at public walkways. This also allows the predicted cumulative plant noise egress levels at the nearest noise sensitive premises to be below the day limits set out in Table 2. This approach is expected to result in no adverse impact to residential amenity in combination with the previously assessed rooftop plant.

Table 4 Maximum sound power level limits for the proposed grille terminations

Grille termination ref	Maximum sound power level limits, L_{wA} (dB)
L1 (East)	60
L2 (East)	58
L3 (East)	53
L4 (West)	58

7.3 Attention catching characteristics

The following applies where plant noise is assessed in accordance with BS 4142:2014+A1:2019.

If the proposed plant noise contains attention catching features (such as tonal elements, whines, whistles, bangs etc), penalty corrections to the sound power limits should be applied based on the type and impact of the features.

If appropriate, a subjective assessment of the plant features can be adopted. Where the plant noise contains tonal elements, the following corrections can be made depending on how perceptible the tone is at the noise receptor:

- 0 dB where the tone is not perceptible
- 2 dB where the tone is just perceptible
- 4 dB where the tone is clearly perceptible
- 6 dB where the tone is highly perceptible.

Where the plant noise is impulsive, the following corrections can be made depending on how perceptible the impulsivity is at the noise receptor:

- 0 dB where the impulse is not perceptible
- 3 dB where the impulse is just perceptible
- 6 dB where the impulse is clearly perceptible
- 9 dB where the impulse is highly perceptible.

For noise which is equally both impulsive and tonal, then both features can be accounted for by linearly summing the corrections for both characteristics.

If the plant has other distinctive characteristics, such as intermittency, then a 3 dB correction can be made.

If a subjective assessment of tonality is not appropriate, an objective assessment can be made by analysis of time-averaged, third-octave band sound pressure levels. A noise source is deemed to be tonal if the level in a third-octave band exceeds the level in adjacent third-octave bands by the level differences given below:

- 15 dB in the low frequency third-octave bands (25 Hz to 125 Hz)
- 8 dB in the mid frequency third-octave bands (160 Hz to 400 Hz)
- 5 dB in the high frequency third-octave bands (500 Hz to 10000 Hz).

If an objective assessment identifies the plant noise to be tonal then a 6 dB correction must be made.

8 Conclusion

There are proposed additional atmospheric terminations to the west and east at ground level of Globe & Simpson in Manchester, M3 3GS.

At this stage there are no ventilation layouts and plant selections available. As such, sound power level limits have been set at the proposed atmospheric terminations to ensure cumulative plant noise limits at the nearest noise sensitive premises are in line with Manchester City Council (MCC) requirements. On this basis, plant noise levels in public walkways are predicted to be $L_{Aeq} \leq 55$ dB, and no increase in the cumulative plant noise levels at the nearest residential and office buildings in the vicinity of the Globe & Simpson building is predicted. This results in no adverse impact to residential amenity in combination with the previously assessed rooftop plant.

The limits associated with the building and set out in Sandy Brown 18487-R04-A *Planning condition 17 discharge report plant noise egress assessment* dated 9 July 2021 and forms the basis of the noise egress assessment.

Plant noise limits at the worst affected existing noise sensitive premises must not exceed 5 dB below the representative background sound levels. These limits are cumulative, and apply with all plant operating under normal conditions. If plant items contain tonal or attention catching features, a penalty is to be applied.