

Appendix 14.1

Title	Noise Ingress Assessment		
Project	Stockton's, Manchester		
Date	5 December 2024	Author(s)	TF

1.0 Introduction

1.1 A detailed planning application is to be submitted for the Proposed Scheme set out in **Chapter 4 Development Specification** of the accompanying Environmental Statement (ES).

1.2 **Chapter 14** of the ES covers noise and vibration. This appendix deals with noise from the environment upon the Proposed Scheme, to allow for an acceptable level of amenity to be maintained.

1.3 The main source of noise in the vicinity is Great Ancoats Street to the east of the Site, with lesser contributions from Store Street to the south and Ducie Street to the north. Contributions from the plant on the rooves of the Oxygen development to the south is also considered.

2.0 Design Criteria

2.1 The following limits have been adopted for the noise assessment for the Proposed Scheme, based on national policy and local planning authority (LPA) guidance. The basis for the criteria is detailed in **Appendix 14.2 Noise Policy**.

2.2 LPA guidance has been taken from the Manchester City Council (MCC) document titled '*Planning and Noise Technical Guide*', dated October 2022.

- Daytime noise levels within all habitable rooms: 35 dB $L_{Aeq,16hour}$;
- Night-time noise levels within bedrooms: 30 dB $L_{Aeq,8hour}$ and 45 dB $L_{Amax,F}$.

2.3 For the avoidance of doubt, daytime relates to 0700-2300 and night-time to 2300-0700. Where L_{Amax} criteria are noted in this report, these are expected not to be exceeded more than 10 times per night¹.

2.4 In locations where external free field noise levels exceed 44 dB $L_{Aeq,8hour}$ and / or 59 dB $L_{Amax,F}$ during the night time period, it will be necessary to provide a building overheating control strategy that does not rely on partially open windows. This approach is based upon acoustics industry guidance² on how to demonstrate compliance with the Building Regulations Approved Document O and may be subject to change should the guidance be revised.

2.5 There is no expectation to consider the entertainment venue immediately to the west of the Site, called *Diecast*. Condition 1 of Diecast's permission (application reference 133523/FO/2022)

¹ As set out within the ProPG: Planning & Noise - Professional Practice Guidance on Planning & Noise, New Residential Development, May 2017

² Guide to Demonstrating Compliance with the Noise Requirements of Approved Document O, July 2022 V1.0 (Consultation Draft)

clearly limits their operations to a maximum of three years only and there is not expected to be any overlap where Diecast is operating and this Site has been constructed.

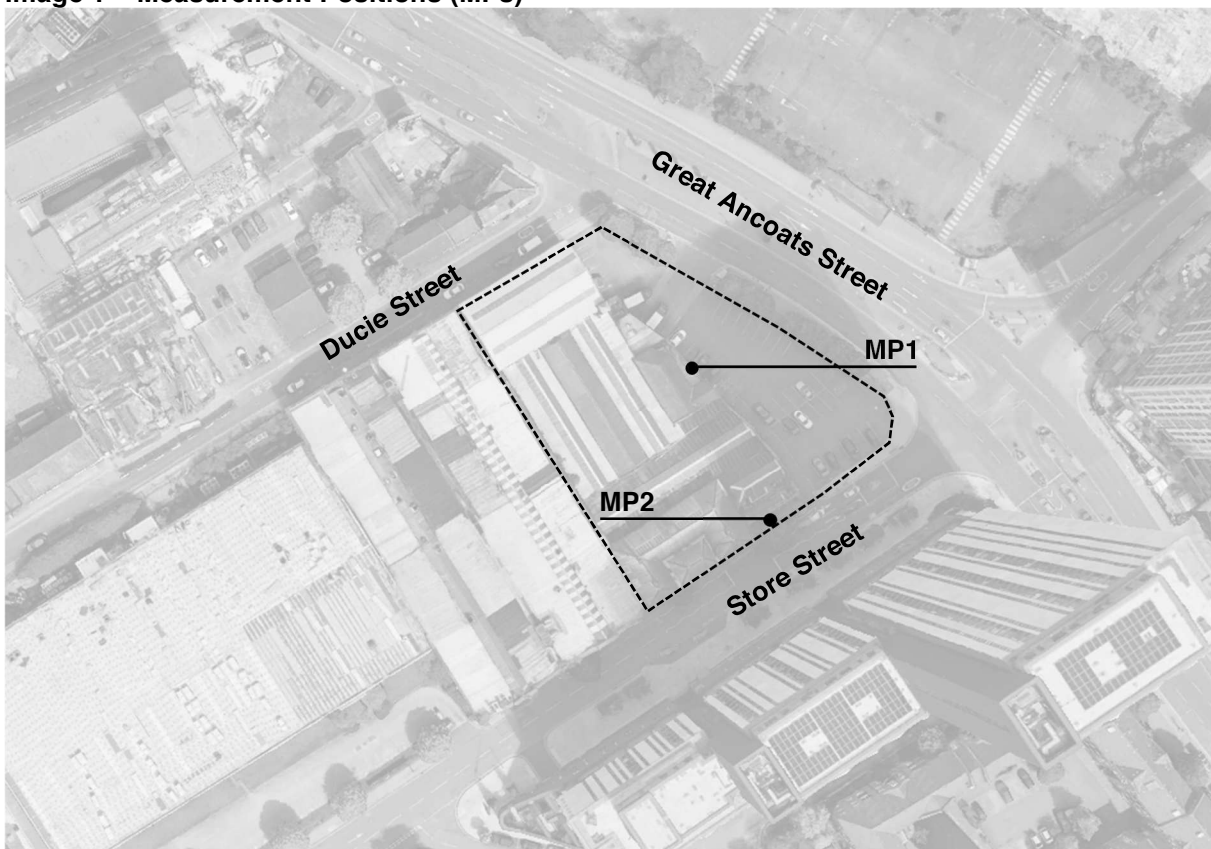
3.0 Noise Survey

Methodology and Equipment

3.1 A noise survey was conducted at the Site between 1030 on Thursday 31st October and 1100 on Wednesday 6th November 2024.

3.2 Noise levels were measured at two locations, identified as MP1 and MP2, which can be seen on **Image 1** below.

Image 1 – Measurement Positions (MPs)



Courtesy Google Maps

3.3 Both microphones were positioned at approximately 7 m above local ground level, being extended on poles to 1 m from the façade at roof level.

3.4 Measurements were predominately unattended. The noise climate is controlled by road traffic from Great Ancoats Street, with some limited contributions from the side roads bounding the Site.

3.5 The monitors were both capable of audio recording when a trigger noise threshold was reached. Analysis of these recordings confirmed the dominant noise sources and that weather is expected to have remained suitable throughout the survey duration.

3.6 The sound level meters were fitted within weatherproof enclosures, and all meters were calibrated both before and after the survey to confirm an acceptable level of accuracy. No significant drift was noted to have occurred.

3.7 Attended observations were made of Ducie Street to the north of the Site, due to the limitations on noise measurements arising from construction works relating to a neighbouring site.

3.8 Noise measurements were made using the equipment set out within the following table.

Table 1 Measurement equipment

Location	Item	Detail
MP1 and MP2	Sound level analyser	Svantek 971A
	Outdoor microphone kit	Svantek 271D
	Acoustic calibrator	Svantek SV33B

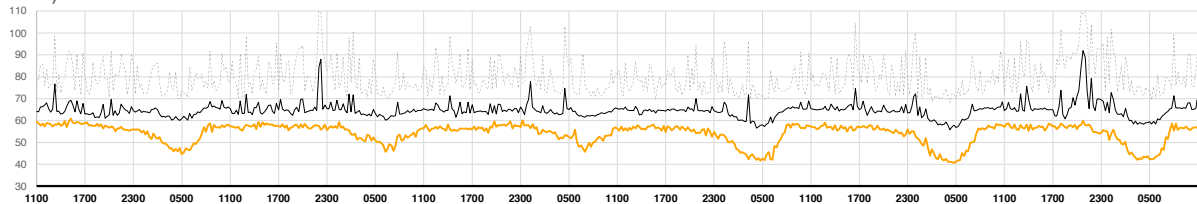
3.9 Measurements of the L_{Aeq} , L_{Amax} and L_{A90} indices were recorded over consecutive 15-minute periods for the duration of the unattended and attended survey elements. 1 minute noise profile information was also recorded.

3.10 Weather at the beginning of the survey period was overcast and cool and conditions are taken as suitable for the duration of the survey works from the audio recordings not capturing any high wind noise or rain. This concurs with publicly available weather data. Upon collection, the weather was noted again to be overcast and cool.

3.11 Results of the measurements are shown in the time history plots below and summarised in **Table 2**.

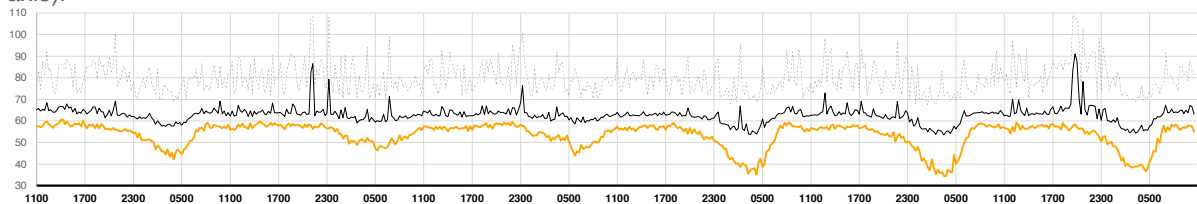
Measurement Results at Location MP1

■ $L_{Aeq,15minutes}$, ■ $L_{Amax,f}$, and ■ $L_{A90,15minutes}$ in terms of sound pressure (dB, x-axis) against time (hhmm, y-axis).



Measurement Results at Location MP2

■ $L_{Aeq,15minutes}$, ■ $L_{Amax,f}$, and ■ $L_{A90,15minutes}$ in terms of sound pressure (dB, x-axis) against time (hhmm, y-axis).



3.12 The monitoring period covered 5th November, Bonfire night, and the preceding weekend. The peaks in noise that can be seen on Friday 1st, Saturday 2nd and Tuesday 5th November all relate to noise from fireworks, as confirmed by the audio recording. The remaining

Table 2 Summary day and night noise levels at positions MP1

Period	Noise Level, dB	
	MP1	MP2
0700-2300 Day, $L_{Aeq,16hour}$	66	64
2300-0700 Night, $L_{Aeq,8hour}$	63	61
2300-0700 Night, $L_{Amax,t}^3$	88	84

4.0 Noise Break-in Assessment

Overview

4.1 This assessment is based off the **Detailed Plans** provided by the design team, including building location relative to the noise sources, internal room dimensions and external façade dimensions. Calculations are undertaken using octave band frequency noise data.

4.2 The façade is to be a curtain wall system, with glazed elements and blanking panels.

4.3 All residences are to be provided background ventilation by mechanical means with MVHR. We understand this is sufficient to meet the requirements of the Building Regulations Approved Document F (ADF).

4.4 Purge panels are included within the façade to allow for rapid ventilation, such as to remove paint fumes or to deal with matters such as burnt toast. We understand this is sufficient to meet the requirements of the Building Regulations Approved Document O (ADO).

Noise Modelling Software

4.5 A computer-based noise prediction program (*Wölfel IMMI* version 24) has been used to determine the road noise levels generated across the Site by this noise source, using CRTN⁴ and ISO 9613⁵ as a basis to determine noise propagation paths throughout the model.

4.6 This software allows for the calculation of noise levels at specific points around a model, from a series of noise sources simultaneously, or produce noise contour plots. The noise model used has taken account of the following effects:

- Distance;
- Screening;
- Surface reflections;
- Topography;
- The surrounding built up area.

³ Based on 10th highest magnitude $L_{Amax,F}$ figure, considering 1-minute data during each of the night times of the survey.

⁴ CRTN – Calculation of Road Traffic Noise, Department of Transport, 1988

⁵ ISO 9613-1:1993 – Acoustics – Attenuation of sound during propagation outdoors – Part 1: Calculation of the absorption of sound by the atmosphere

Model Input and Calibration

- 4.7 The Site has been based upon the **Detailed Plans** provided by the design team.
- 4.8 Both $L_{Aeq,T}$ and L_{Amax} noise levels have been calculated from Great Ancoats Street, Store Street and Ducie Street.
- 4.9 The $L_{Aeq,T}$ noise source has been input as at a height of 0.5 m taking account of the road centre lines, widths, number of lanes and number of directions of traffic, as per the guidance within CRTN.
- 4.10 The L_{Amax} noise source has been input at a height of 0.5m above the nearest kerb edge.
- 4.11 The noise source within the noise model has been calibrated as best as is reasonably practicable to the levels measured during the unattended noise survey. The noise survey position has been replicated within the model, with day and night-time noise level predictions being calibrated to within ± 0.4 dB at MP1 and MP2.

Mitigation Strategy

Façade

- 4.12 The blanking elements of the façade are proposed to be of lightweight construction. It is recommended that these elements meet the performances in **Table 3**. Alternative constructions can be employed to the indicative configuration, so long as they perform to an equal or better performance than the octave band specification stated.

Table 3 Acoustic performance of blanking elements, dB

Typical Construction	Index	Minimum Apparent Sound Reduction Index, dB					
		at Octave Band Centred Frequency, Hz					
		125	250	500	1k	2k	4k
18 mm cement bonded particle board 100 mm cavity filled with mineral wool 2 x 15 mm SoundBloc	R'	28	38	45	50	50	50

- 4.13 For the purposes of the assessment, six glazing types have been used in the calculations, as stated in **Table 4** below, and are referred to in the following sections. Where an indicative configuration or product is suggested, alternatives can be employed, so long as they perform to an equal or better performance than the octave band specification stated.

Table 4 Acoustic performance of glazing elements, dB

Code	Typical Construction	Index	Minimum Apparent Sound Reduction Index, dB at Octave Band Centred Frequency, Hz					
			125	250	500	1k	2k	4k
G1	14.8 mm acoustic laminate glass, 16 mm air space, 12.8 mm acoustic laminate glass	R'	38	41	46	51	53	57
G2	8.8 mm acoustic laminate glass, 16 mm air space, 10.8 mm acoustic laminate glass	R'	27	36	43	52	55	60
G3	6.4 mm acoustic laminate glass, 16 mm air space 10.4 mm acoustic laminate glass	R'	27	28	35	45	50	56
G4	10 mm glass 16 mm air space 6 mm glass	R'	26	27	34	40	39	46
G5	6 mm glass 16 mm air space 4 mm glass	R'	22	22	28	39	39	42
G6	4 mm glass, 16 mm air space, 4 mm glass	R_w	Good quality standard thermal double glazing achieving an acoustic performance of R_w 30 dB					

4.14 The typical glazing configuration is quoted for guidance only and an alternative may be utilised, in any case acoustic performance of the system proposed must be demonstrated to the satisfaction of Suono. The sound reduction performances quoted above must be achieved by the glazing systems taken as a whole, in their installed condition.

4.15 The performance specifications therefore apply to the glazing, frames and all seals on any openable parts of the systems and any required ventilation or condensation control mechanisms. This list is not exhaustive: no part of the glazing system shall cause the above figures not to be achieved. The glazing supplier should be expected to prove that the above sound reduction figures can be achieved by the system being proposed.

4.16 The locations for each glazing type are detailed as follows:

Table 5 Glazing type locations

Code	Location
G1	1F to 3F
G2	4F to 6F
G3	7F to 15F
G4	16F to 24F
G5	25F to 41F
G6	42F to 44F

Ventilation

4.17 Background ventilation is to be provided through MVHR. Any noise from such means will be limited internally within dwellings, as per the following table:

Table 6 Internal noise limits for mechanical services

Room / area	Upper Limit, dB
Bedrooms	NR20
Living rooms	NR25
Bathrooms	NR30-35
Corridors	NR30-35

Overheating

4.18 It is also necessary to consider ventilation in the context of overheating. Based on the guidance within **Appendix 13.2 Noise Policy**, it has been determined that it is not possible to have an overheating strategy that relies on openable windows.

4.19 The current strategy is for openable elements to only be required during daytime hours. For the night-time period all windows and purge panels shall be closed.

4.20 We are not aware of any passive ventilation measures that can achieve this performance and mechanically assisted additional ventilation may be required. We note that updates to acoustic requirements in relation to overheating are expected at the end of November 2024. These requirements are necessary to achieve the Building Regulations.

