

Back Turner Street Manchester

Condition Discharge Report

25779/PNIR2

6 March 2023

For:
Artal Limited
29 John Dalton Street
Manchester



Hann Tucker Associates
Consultants in Acoustics Noise & Vibration

Head Office: Duke House, 1-2 Duke Street, Woking, Surrey, GU21 5BA (t) +44 (0) 1483 770 595
Manchester Office: First Floor, 346 Deansgate, Manchester, M3 4LY (t) +44 (0) 161 832 7041
(w) hanntucker.co.uk (e) enquiries@hanntucker.co.uk



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Document Control

Issue	Date	Comment	Prepared by	Authorised by
0	17/03/2023	-		
			Alex Jang Assistant Consultant BEng(Hons)	Joe Sinker Associate BEng(Hons), MSc(Res), MIOA

This report has been prepared by Hann Tucker Associates Limited (HTA) with all reasonable skill, care and diligence in accordance with generally accepted acoustic consultancy principles and the purposes and terms agreed between HTA and our Client. Any information provided by third parties and referred to herein may not have been checked or verified by HTA unless expressly stated otherwise. This document contains confidential and commercially sensitive information and shall not be disclosed to third parties. Any third party relies upon this document at their own risk.



Condition Discharge Report 25779/PNIR2

Contents	Page
1.0 Introduction	1
2.0 Objectives	1
3.0 Acoustic Terminology	1
4.0 Site Description	2
5.0 Planning Condition 15	3
6.0 Plant Noise Emission Limits	3
7.0 Plant Description	3
8.0 Measurement Procedure	4
9.0 Assessment	5
10.0 Conclusion	7

Attachments

Appendix A – Acoustic Terminology

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1.0 Introduction

Hann Tucker Associates has been commissioned to discharge a planning condition relating to the Back Turner Street development in Manchester.

The condition (Condition 15) relates to external plant noise and states that a verification report is required to validate the work undertaken as part of Condition 15.

Hann Tucker Associates have been appointed undertake a post completion noise impact assessment with the aim of discharging Condition 15 set by Manchester City Council.

2.0 Objectives

To visit site to carry out noise measurements of the operational plant installation in close proximity to the items.

To calculate the cumulative noise levels of the operational plant items at the worst affected receptor based on the on-site measurements of plant noise.

Based on the calculated cumulative noise levels of the operational plant items, determine whether the installation is in-line with the approved scheme and the requirements of Planning Condition 15.

3.0 Acoustic Terminology

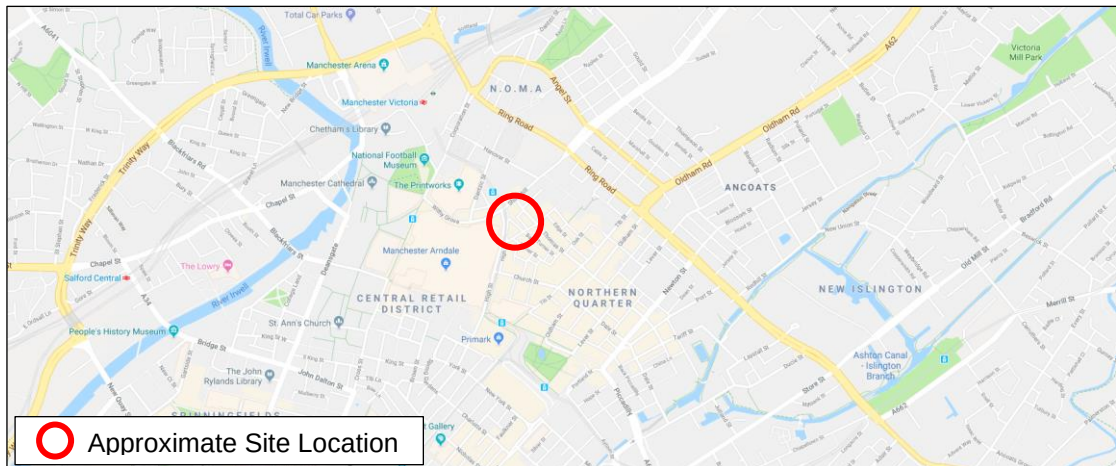
Please refer to Appendix A for an explanation of acoustic terminology used herein.



4.0 Site Description

4.1 Location

The proposed development is located on Back Turner Street in Manchester and falls under the jurisdiction of Manchester City Council. See site location below.



Site Location (© maps.google.co.uk)

4.2 Description

The site is bounded by Back Turner Street, High Street, Soap Street and Shudehill. The surrounding area comprises a mix of residential and commercial uses. Shudehill is a major bus route into the city centre and there is a tram line to the east of the site. There are several entertainment venues (i.e. bars) nearby along High Street. See site plan below.



Site Plan (© maps.google.co.uk)



5.0 Planning Condition 15

The local authority have included a condition relating to external plant noise in Condition 15, as detailed below:

“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 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location.

The approved scheme shall be completed before the premises is occupied and a verification report submitted for approval by the City Council as local planning authority and any noncompliance suitably mitigated in accordance with an agreed scheme prior to occupation. The approved scheme shall remain operational thereafter.”

6.0 Plant Noise Emission Limits

Hann Tucker Associates undertook a baseline noise survey and established plant noise limits for the development previously in 2018. The full details of the methodology and results of the baseline survey are presented in the Noise Impact Assessment Report 25779/NIA2.

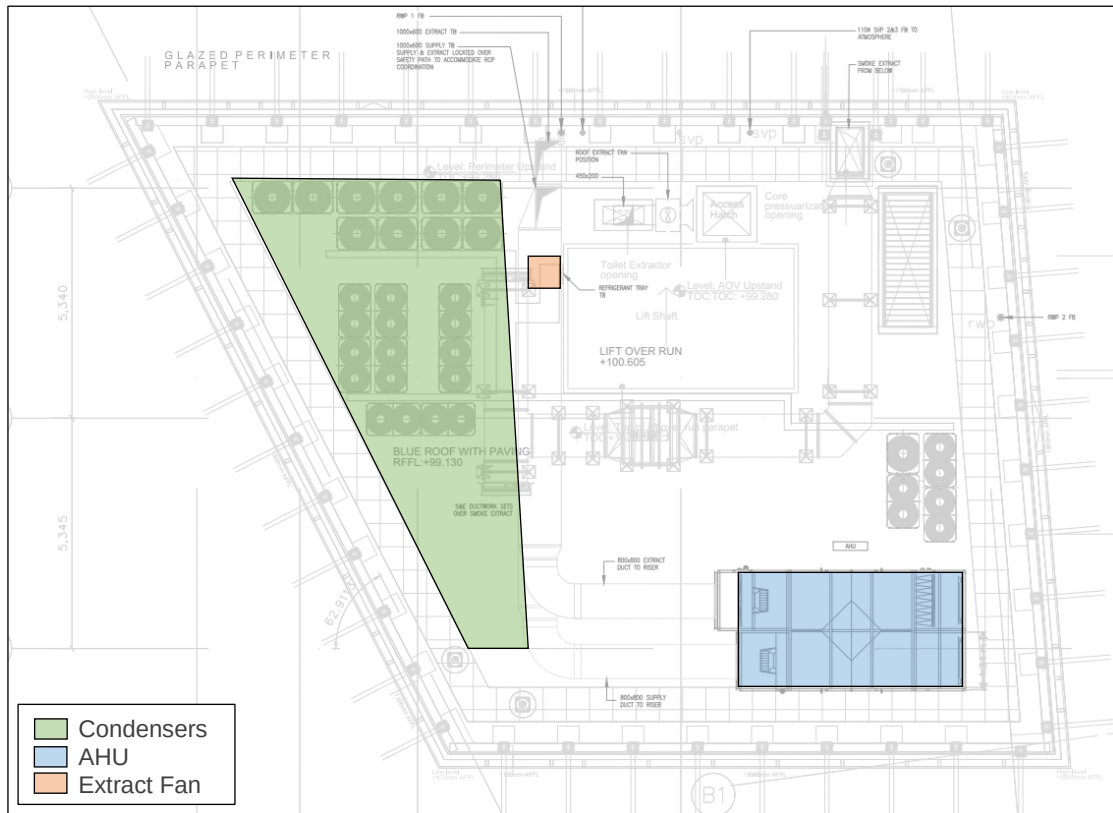
The following table presents the proposed plant noise emission limits established based on the results of the baseline survey and the requirements of the Local Planning Authority, presented as free-field limits on basis that initial survey was undertaken under such conditions.

Period	Cumulative Plant Noise Emission Limit (BS 4142:2014 Rating Level)
Daytime (07:00-23:00)	45 dBA
Night-time (23:00-07:00)	42 dBA

7.0 Plant Description

The rooftop plant installation comprises 22No. condensers, 1No. AHU, 1No. extract fan, 1No. emergency standby generator, and 1No. emergency smoke extract fan system. Only the condensers, AHU, and extract fan operate during typical conditions; the emergency standby generator and smoke extract fans are not considered in this assessment.

The following markup illustrates the approximate layout of the plant installation as it was observed during the commissioning measurement survey.



We understand that the plant will run at design duty during typical office hours only and therefore will not generate significant noise output during the night-time (23:00-07:00). As such, we have assessed the building services plant against the proposed daytime limit only.

The nearest noise sensitive windows are understood to be those of the 5th floor residences approximately 11m east of the closest edge of the rooftop in plan (~30m distance).

8.0 Measurement Procedure

Hann Tucker Associates attended site on 17 March 2023 to undertake measurements in close proximity to the plant items operating at design duty. All measurements were undertaken by Joe Sinker, BEng(Hons), MSc(Res), MIOA.

8.1 Equipment

The following equipment was used for the measurements:

Equipment	Model	Type	Serial Number	Calibration
Sound Level Meter	Brüel and Kjær	2250	3025397	03/10/2022
Calibrator	Brüel and Kjær	4231	2271905	30/09/2022

The equipment was calibrated prior to and on completion of the survey. No significant deviations occurred.

8.2 Measurements Results

Noise level measurements were taken in close proximity to the newly installed external plant items. For the condensers, which individually ramp up and down as required to maintain the internal temperature, the presented level is the worst case of several measurements undertaken at various positions within the area with which the condensers are installed. The results of these measurements are presented below.

Item.	Measured L ₉₀ Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Condensers	62	66	67	55	54	49	47	43
AHU Exhaust	79	76	92	86	87	80	75	75
AHU Intake	71	71	87	81	80	74	69	69
AHU Casing	66	63	78	72	72	66	61	59
Extract Fan	68	69	71	61	61	55	54	47

9.0 Assessment

The following tables present our calculation of plant noise emissions to the nearest receptor.

[illegible]



Description	Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								
	63	125	250	500	1k	2k	4k	8k	A
Contribution at Receiver	41	35	48	39	37	29	24	24	43
AHU Intake at 1m	71	71	87	81	80	74	69	69	84
Barrier Loss	-12	-15	-18	-21	-24	-25	-25	-25	-
Distance Loss	-26	-26	-26	-26	-26	-26	-26	-26	-
Contribution at Receiver	33	30	43	34	30	23	18	18	37
AHU Casing at 1m	66	63	78	72	72	66	61	59	76
Barrier Loss	-12	-15	-18	-21	-24	-25	-25	-25	-
Distance Loss	-22	-22	-22	-22	-22	-22	-22	-22	-
Contribution at Receiver	32	26	38	29	26	19	14	12	33
Extract Fan at 1m	68	69	71	61	61	55	54	47	67
Barrier Loss	-15	-18	-20	-23	-25	-25	-25	-25	-
Distance Loss	-29	-29	-29	-29	-29	-29	-29	-29	-
Contribution at Receiver	24	22	22	9	7	1	0	0	16
Cumulative level at Receiver	42	37	50	41	38	30	25	25	45
Criteria	-	-	-	-	-	-	-	-	45
Exceedance	-	-	-	-	-	-	-	-	0

9.1 Discussion of Results

The assessment of the external rooftop plant above indicates that the levels of plant noise egress at the nearest noise sensitive receptor should be below the requirements set out in Condition 15.



10.0 Conclusion

External plant noise measurements were undertaken of the completed building services plant installation at the development on Back Turner Street.

A subsequent assessment has been carried out to determine the plant noise emissions at the nearest noise sensitive receptor.

The assessment indicates that the installed plant should not exceed the proposed limit at the worst affected noise sensitive receptor set in line with MCC's requirements.

The installed plant should therefore be considered in-line with the requirement of Planning Condition 15.

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. $30\text{dB} + 30\text{dB} = 33\text{dB}$, 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.

L₁₀ L₁₀ is the noise level exceeded for 10% of the period (i.e., the quietest 90% of the measurement).

L₉₀ L₉₀ is the noise level exceeded for 90% of the period (i.e., the quietest 10% of the measurement) and is often used to describe the background noise level.

L_{Aeq} L_{Aeq} is the equivalent continuous A-weighted sound pressure level. It is an average of the total sound energy measured over a specified time period.

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).