

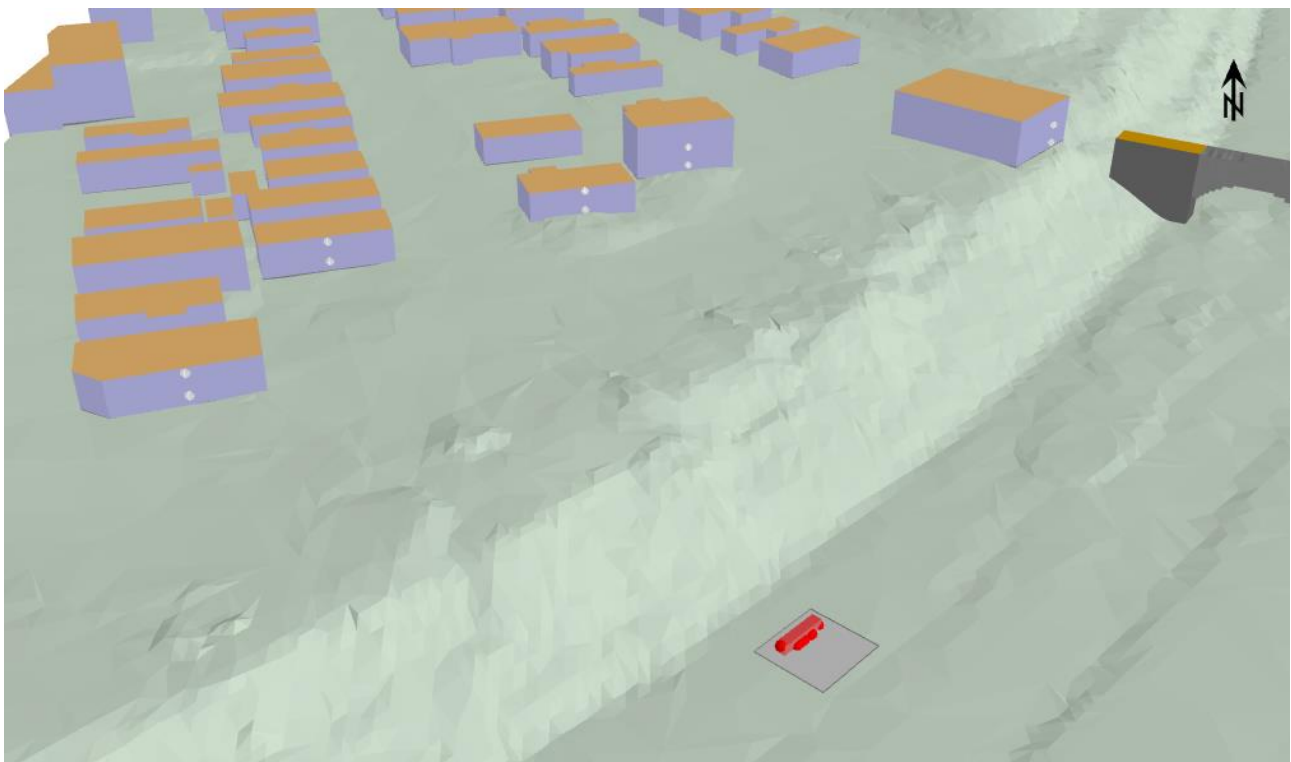
BAM Nuttall Ltd

Victoria North Water Treatment Plant

Acoustic assessment of temporary water treatment plant

Reference: VNIF-ARP-ZZ-YYY-RP-YA-0002

P01 | 6 March 2026



This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

© Arup, 2025

Job number 282022-79

Ove Arup & Partners Limited
6th Floor 3 Piccadilly Place
Manchester
M1 3BN
United Kingdom
arup.com

Document Verification

Project title Victoria North Water Treatment Plant
Document title Acoustic assessment of temporary water treatment plant
Job number 282022-79
Document ref VNIF-ARP-ZZ-YYY-RP-YA-0002
File reference R02

Revision	Date	Filename												
		Description Noise assessment of permanent water treatment plant.												
		<table><thead><tr><th></th><th>Prepared by</th><th>Checked by</th><th>Approved by</th></tr></thead><tbody><tr><td>Name</td><td>Ivy Richards MEng</td><td>Ben Cox BEng L4 Data Science MIOA,</td><td>David Hiller BSc MSc PhD CEng MIOA MIMMM FGS</td></tr><tr><td>Signature</td><td></td><td></td><td></td></tr></tbody></table>		Prepared by	Checked by	Approved by	Name	Ivy Richards MEng	Ben Cox BEng L4 Data Science MIOA,	David Hiller BSc MSc PhD CEng MIOA MIMMM FGS	Signature			
	Prepared by	Checked by	Approved by											
Name	Ivy Richards MEng	Ben Cox BEng L4 Data Science MIOA,	David Hiller BSc MSc PhD CEng MIOA MIMMM FGS											
Signature														
		Filename												
		Description												
		<table><thead><tr><th></th><th>Prepared by</th><th>Checked by</th><th>Approved by</th></tr></thead><tbody><tr><td>Name</td><td></td><td></td><td></td></tr><tr><td>Signature</td><td></td><td></td><td></td></tr></tbody></table>		Prepared by	Checked by	Approved by	Name				Signature			
	Prepared by	Checked by	Approved by											
Name														
Signature														
		Filename												
		Description												
		<table><thead><tr><th></th><th>Prepared by</th><th>Checked by</th><th>Approved by</th></tr></thead><tbody><tr><td>Name</td><td></td><td></td><td></td></tr><tr><td>Signature</td><td></td><td></td><td></td></tr></tbody></table>		Prepared by	Checked by	Approved by	Name				Signature			
	Prepared by	Checked by	Approved by											
Name														
Signature														

Issue Document Verification with Document



Contents

1.	Introduction	1
2.	Noise sensitive receptors	1
3.	Baseline sound survey	2
4.	Manchester City Council noise policy	3
5.	Plant noise levels	3
6.	Noise predictions	3
7.	Conclusion	5

Tables

Table 1: Representative day and night background sound levels (dBL _{A90}).	2
Table 2: MCC required plant noise limits for normal operation.	3
Table 3: Predicted plant noise levels under normal, including +3dB acoustic feature correction as per BS 4142:2014 + A1:2019.	4
Table 4: Comparison of the worst-case (night time) rating level limits with normal operational levels of the plant at the assessment location NSR5.	5
Table 5: Comparison of the worst-case (night time) MCC criteria with normal operational levels of the plant at the assessment location NSR3.	5

Figures

Figure 1: Location of water treatment plant and nearest sensitive receptors (NSRs).	1
Figure 2: 3D noise model source and receiver positions showing natural embankment which provides screening from plant equipment at NSRs	4

Drawings

No table of figures entries found.

Pictures

No table of figures entries found.

Photographs

No table of figures entries found.

Attachments

No table of figures entries found.

Appendices

Appendix A	A-1
SRL baseline noise survey	A-1

1. Introduction

Arup has undertaken a noise impact assessment of proposed temporary water treatment plant associated with the Victoria North HIF Infrastructure and Enabling Works in the Red Bank area of Manchester, on behalf of BAM Nuttall Ltd. The temporary plant is to be located centrally within the site boundary, as shown below in Figure 1.

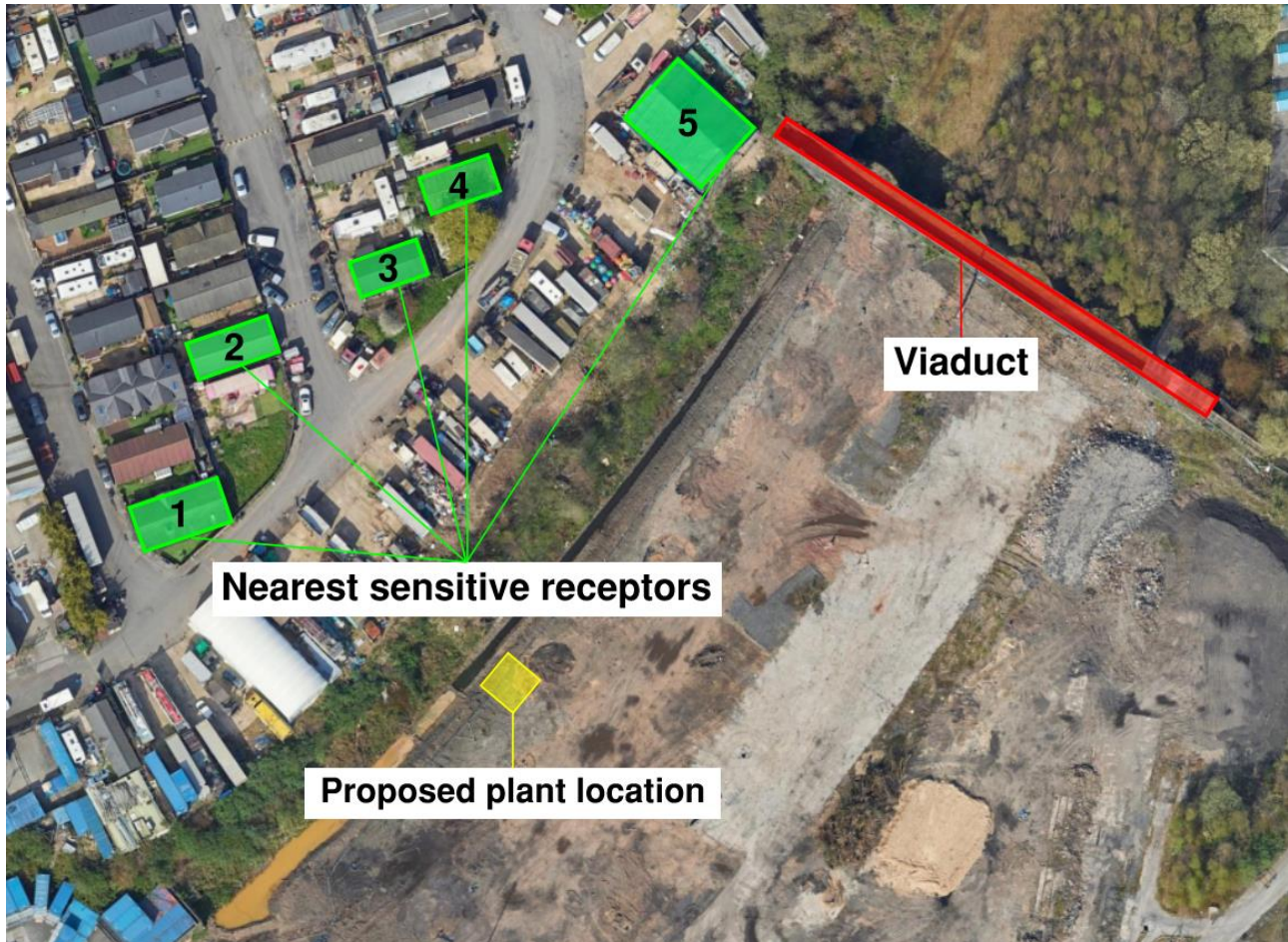


Figure 1: Location of water treatment plant and nearest sensitive receptors (NSRs).

The proposed plant comprises one water treatment plant container and a below ground reception tank with submersible pump. As the plant is temporary, it will not be in use when the proposed residential apartments are built on the site in the future. Therefore, only existing residential receptors are considered for the purposes of this assessment.

2. Noise sensitive receptors

The nearest noise sensitive receptors have been identified as existing properties on Collingham Street.

Online mapping and aerial photography identify the closest residential property on Collingham Street to be to the west of the temporary plant, close to the entrance gates. This is a single storey residence labelled noise sensitive receptor 1 (NSR1) in Figure 1 above. NSR2 to NSR4 are also single storey residential buildings. NSR5 to north appears to be a covered, lay-down area for equipment storage, but has been cautiously assessed as residential.

The natural embankment on the north-western side of the site provides some natural screening from the plant noise at the residential addresses on Collingham Street. NSR5 is on the edge of the embankment and is therefore the NSR most exposed to the plant noise.

3. Baseline sound survey

A baseline sound survey was undertaken by Sound Research Laboratories between 14:00 on the 16th and 15:00 on the 21st January 2025 at the two locations shown in Figure . The full SRL report is reproduced in Appendix A, upon which the summary in Table 1 is based.



Figure 2: Noise survey locations

Receptor and the representative survey measurement location		Representative daytime (07:00 - 23:00) level, dBL _{A90,1hr}	Representative night time (23:00 - 07:00) level, dBL _{A90,15min}
Collingham Street Residences	1	43	38
Proposed future development	2	43	40

Table 1: Representative day and night background sound levels (dBL_{A90}).

4. Manchester City Council noise policy

Through consultation with Manchester City Council (MCC) environmental health department, noise emission limits for the water treatment plant have been established in accordance with the MCC Planning and Noise Technical Guidance document. The relevant section states that:

‘The development should be designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.’

MCC has agreed that a more relaxed limit can apply to periods of emergency operation, for example in the event of a site power failure. In this instance, the combined noise rating level from any emergency plant should be no more than 10dB (L_{Aeq}) above the representative background level.

In this case, there is no provision for emergency operation of the water treatment plant, so the emergency scenario has not been assessed. Noise limits for the normal operation scenario have been derived from the survey measurements and are shown in Table 2.

Receptor	Normal plant operation plant rating noise limit, $dBL_{A_r,Tr}$	
	Day	Night
Collingham Street Residences	38	33

Table 2: MCC required plant noise limits for normal operation.

5. Plant noise levels

Noise levels were provided for the water treatment plant, including the pump, by Leachate Solutions. The level was recorded by Merseyside Recycling and Waste Authority (MRWA) for a similar water treatment plant on a site in Liverpool. The plant noise was measured to be a sound pressure level of 68 dBL_{Aeq} at one metre.

The noise levels for the plant are presented in Appendix B.

6. Noise predictions

Noise levels have been calculated with the SoundPlan 3D noise modelling software. A typical operational scenario for the water treatment plant has been considered in the calculations.

For this operational scenario, noise levels from the plant have been predicted at residential locations and at NSR5 on Collingham Street.

Individual receptor points were located at the nearest facades of the NSRs, representing typical ground floor and worst-case ground floor heights. Worst-case ground floor is considered to be height of the top of the windows.

A screenshot of the 3D noise model, illustrating the relative positions of the plant equipment and NSRs as well as the natural embankment and viaduct, is presented in Figure 2.

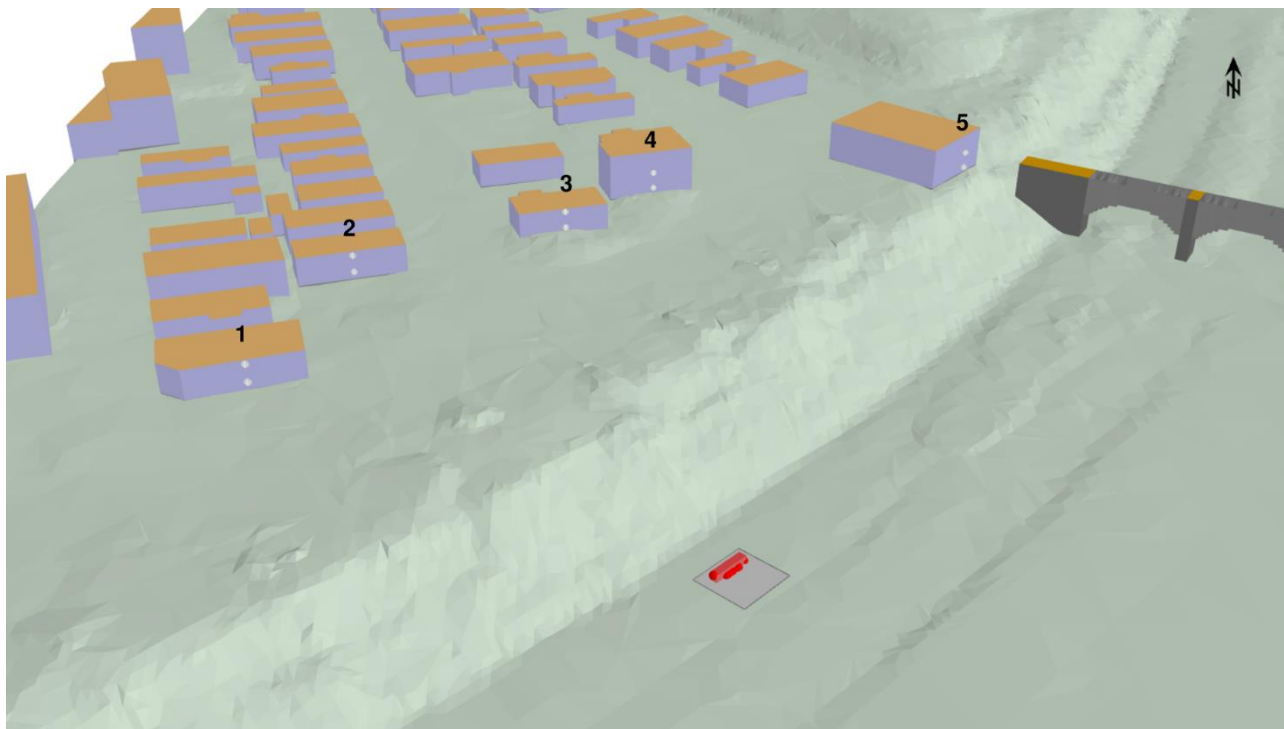


Figure 2: 3D noise model source and receiver positions showing natural embankment which provides screening from plant equipment at NSRs

Worst-case heights have higher exposure to plant noise at all NSRs. A +3dB acoustic feature correction has been applied to the predicted plant specific sound level, where the sound could be clearly distinguishable in character from the background sound, as is recommended in BS 4142:2014 + A1:2019.

The predicted plant rating level (the level including the acoustic feature correction) at the worse-case height of each residential NSR is presented in Table 3 below.

Receptor	Normal plant operation	
	Predicted plant specific level, dBL _{Aeq,T}	Predicted plant rating level, dBL _{Ar,Tr}
NSR1	28	31
NSR2	26	29
NSR3	29	32
NSR4	24	27

Table 3: Predicted plant noise levels under normal, including +3dB acoustic feature correction as per BS 4142:2014 + A1:2019.

NSR5 is exposed to the highest levels of noise from the site. However, as this location is not understood to be residential, the predicted noise levels at NSR5 have been presented in Table 4 for the two operational scenarios for reference only.

Receptor	Normal plant operation	
	Night plant rating noise limit, $dBL_{Ar,Tr}$	Total plant rating level, $dBL_{Ar,Tr}$
NSR5	33	40

Table 4: Comparison of the worst-case (night time) rating level limits with normal operational levels of the plant at the assessment location NSR5.

The highest rating level predicted at a residential receptor is at NSR3. Results for the normal operational scenario are presented against the night time (more stringent) MCC criteria in Table 5.

Receptor	Normal plant operation	
	Night plant rating noise limit, $dBL_{Ar,Tr}$	Predicted plant rating level, $dBL_{Ar,Tr}$
NSR3	33	32

Table 5: Comparison of the worst-case (night time) MCC criteria with normal operational levels of the plant at the assessment location NSR3.

The predicted plant noise level is within the limits set by MCC under normal operation at all residential noise sensitive locations. As such, no further mitigation measures are necessary to control noise emission from the operation of the temporary plant.

7. Conclusion

Arup has undertaken a noise impact assessment of the proposed temporary water treatment plant associated with the Victoria North HIF Infrastructure and Enabling Works in the Red Bank area of Manchester on behalf of BAM Nuttall Ltd. The assessment has been completed for normal operation of the water treatment plant.

Predictions of the operational noise levels have been made at residential locations according to BS 4142:2014 + A1:2019 and compared with Manchester City Council noise limits. The assessment demonstrates that predicted noise levels are below the limits at all nearest residential noise sensitive receptors. Consequently additional acoustic mitigation measures for the plant are not required.

Appendix A

SRL baseline noise survey



Project

Victoria North
Baseline Noise Survey Results

Prepared for

BAM Nuttall Ltd.
BAM Nuttall Site Compound,
Hargreaves Street,
Manchester,
M4 4EJ

Published

28 January 2025

SRL Technical Services Limited Registered office: Holbrook House, Little Waldingfield, Sudbury, Suffolk, CO10 0TF Registered in England No 907694

Quality Assurance	
Project Title:	Victoria North
Report Title:	Baseline Noise Survey Results
Report Number:	82511-SRL-RP-YA-01-PI
Client:	BAM Nuttall Ltd.
Client Address:	BAM Nuttall Site Compound, Hargreaves Street, Manchester, M4 4EJ
Author:	Jack Miller BEng (Hons) AMIOA
Checker:	Robbie Pattison BSc (Hons) MIOA

Version History

Version	Date	Comments	Approved by
PI	28/01/2025	-	Robbie Pattison

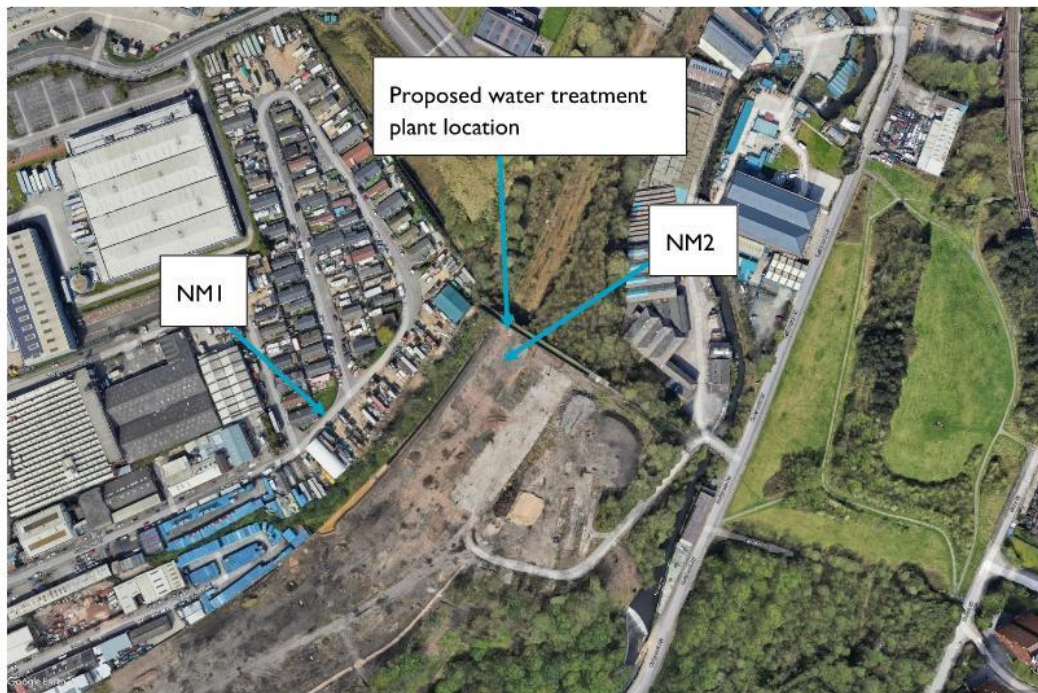
Contents

Contents.....	3
1.0 Introduction and Survey Methodology.....	4
2.0 Results.....	5
3.0 Survey Notes.....	6
Appendix A - Survey Details	7
Appendix B – Noise Monitoring Graphs.....	10

1.0 Introduction and Survey Methodology

A permanent water treatment plant is proposed which will serve the Victoria North development, off Collingham Street, M8 8RQ. SRL visited the site of the proposed plant and measured baseline noise levels with two unattended noise monitors between 14:00 16th January and 15:00 21st January 2025.

Figure 1 - Measurement locations



Noise monitor NMI was in a position representative of the nearest sensitive receptors which are residential dwellings in Fairholme Park, Collingham Street. The location chosen was the most suitable compared to other alternative locations, as it was safe and secure and in a position that would not pose as a tripping hazard for the residents of Fairholme park. Noise from a resident's radio/loudspeaker system was observed towards the eastern receptors, therefore a location further away from this was also ideal as the temporary noise would affect the average noise levels measured by the monitor. The location chosen was comparable in terms of noise from external sources, to the east side of Fairholme park which has the nearest receptors to the proposed plant location.

Noise monitor NM2 was positioned on the development site, in a location representative of new residential receptors planned as part of the wider Victoria North development.

2.0 Results

2.1 Daytime (07:00 to 23:00) Noise Levels

Measurement Position	Average Noise levels dB $L_{Aeq,16hr}$	Typical Background Noise levels dB $L_{A90,1hr}$	Typical Maximum Noise levels dB $L_{AFmax,1hr}$
NM1	58	43	83
NM2	51* (47)	46* (43)	72* (62)

*Daytime noise levels measured at position NM2 included noise from nearby construction activities during the day, which increased the overall average. This was evident from observations on site and can be seen in the graph in Appendix B of this report, as the peaks in noise levels are confined to the hours of 07:00 to 16:00 on weekdays. The average daytime noise level at NM2, excluding noise from construction, is 47dB $L_{Aeq,16hr}$. The typical background noise levels for NM2 excluding periods where noise has been affected by construction noise is 43 dB $L_{A90,1hr}$ and the typical maximum noise level is 62dB $L_{AFmax,1hr}$.

2.2 Night-time (23:00 to 07:00) Noise Levels

Measurement Position	Average Noise levels dB $L_{Aeq,8hr}$	Typical Background Noise levels dB $L_{A90,15min}$	Typical Maximum Noise levels dB $L_{AFmax,15min}$
NM1	45	38	74
NM2	44	40	54

The representative typical background noise levels have been determined by a statistical analysis using a histogram of the measured data. In the case of NM2 these were the modal values which were deemed as the representative levels.

3.0 Survey Notes

Noise sources observed whilst on site in the daytime near NM1 were mainly activities within Fairholme park. Activities included noise from workshops, trailers and lorries associated with Fairholme park. Contributions were also noted from road traffic noise, principally from the A664 Rochdale Road to the south and the A665 Cheetham Hill Road to the west.

Noise sources observed whilst on site in the daytime near NM2 were from construction activities to the southeast. Contributions were also noted from road traffic noise, principally from the A664 Rochdale Road to the south and the A665 Cheetham Hill Road to the west. The nearest road (Collyhurst Road) was observed to have little traffic during the day and was not audible to the surveyor on site.

Overall the noise levels on the development site and at nearby residential receptors were not significantly affected by road noise. Excluding the noise from temporary construction activities, the development site was observed to be 'quiet'.

Appendix A - Survey Details

A1. Location of Survey

Cheetham Hill, Manchester M8 8RQ

A2. Date & Time of Survey

- NMI
 - 14:30 16th January to 14:30 21st January 2025
- NM2
 - 14:00 16th January to 15:00 21st January 2025

A3. Personnel Present During Survey

Jack Miller BEng (Hons) AMIOA

A4. Weather Conditions during Survey

Time Period	Temperature (°C)	Wind speed (mph)	Wind direction	Precipitation (mm)
16/01/2025 12:00	6 – 10	4	S	0
16/01/2025 18:00	4 – 6	6	S	0
17/01/2025 00:00	5 – 6	6	S	0
17/01/2025 06:00	5 – 8	4	S	0
17/01/2025 12:00	7 – 8	4	S	0
17/01/2025 18:00	6 – 8	2	N	0
18/01/2025 00:00	3 – 6	4	S	0
18/01/2025 06:00	2 – 3	5	S	0
18/01/2025 12:00	1 – 2	3	N	0
18/01/2025 18:00	0 – 1	2	N	0
19/01/2025 00:00	-1 – 0	4	SE	0
19/01/2025 06:00	0 – 1	5	S	0
19/01/2025 12:00	1 – 2	4	S	0
19/01/2025 18:00	2	2	N	0

Time Period	Temperature (°C)	Wind speed (mph)	Wind direction	Precipitation (mm)
20/01/2025 00:00	2 – 3	3	N	0
20/01/2025 06:00	2 – 4	2	N	0
20/01/2025 12:00	4 – 5	2	N	0* (negligible, light rain)
20/01/2025 18:00	4 – 5	4	S	0
21/01/2025 00:00	5	3	S	0
21/01/2025 06:00	5	5	S	0
21/01/2025 12:00	5 – 6	4	S	0

Data obtained from Manchester weather station on www.timeanddate.com/weather

A5. Instrumentation

Norsonic - Noise Logger HL1

Description	Make	Type	S/N
Sound Level Meter	Norsonic	Nor 140	1404560
Calibrator	Brüel & Kjær	Type 4231	2545771
Pre-amp	Norsonic	Type 1209	13927
Microphone	Norsonic	Type 1225	157421
De-humidifier	Norsonic	Type 1284	255

Norsonic - Noise Logger HL2

Description	Make	Type	S/N
Sound Level Meter	Norsonic	Nor 140	1404737
Calibrator	Brüel & Kjær	Type 4230	1541905
Pre-amp	Norsonic	Type 1209	23081
Microphone	Norsonic	Type 1225	128712

82511-SRL-RP-YA-01-PI
28/01/2025

[Click HERE to return to CONTENTS](#)

Page 8 of 12

Description	Make	Type	S/N
De-humidifier	Norsonic	Type 1284	330

A6. Calibration Procedure

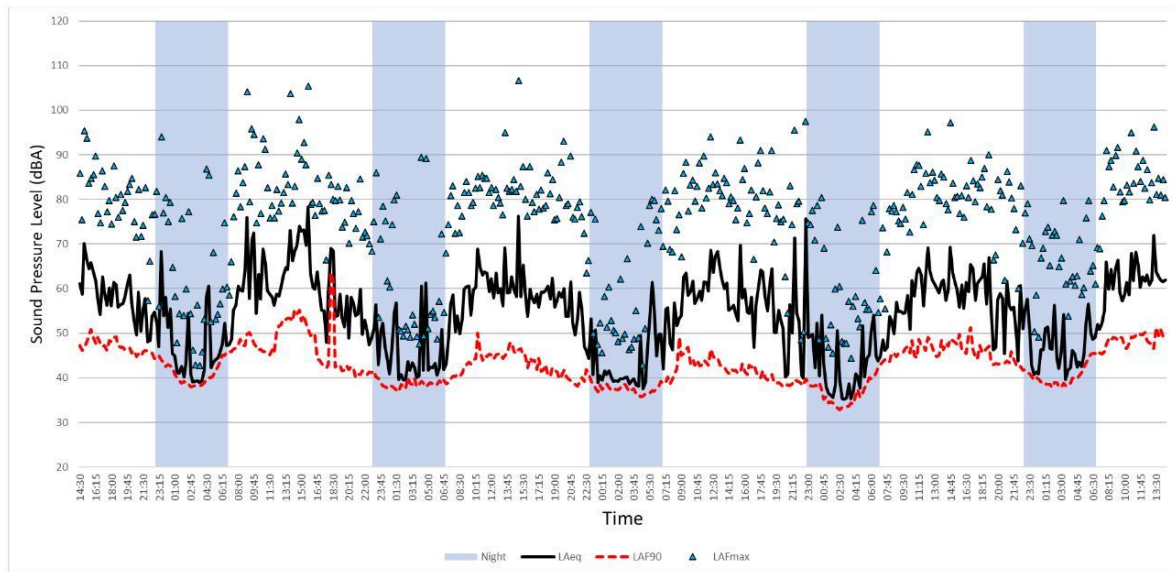
Before and after the survey the measurement apparatus was check calibrated to an accuracy of ± 0.3 dB using the type 4231 Sound Level Calibrator. The Calibrator produces a sound pressure level of 94.1 dB re 2×10^{-5} Pa at a frequency of 1 kHz.

Before and after the survey the measurement apparatus was check calibrated to an accuracy of ± 0.3 dB using the type 4230 Sound Level Calibrator. The Calibrator produces a sound pressure level of 114 dB re 2×10^{-5} Pa at a frequency of 1 kHz.

Sound Level Meter HL1 was calibrated in a laboratory on 3/11/2023.

Sound Level Meter HL2 was calibrated in a laboratory on 26/10/2023.

B1. NM1 – Noise Time Graph

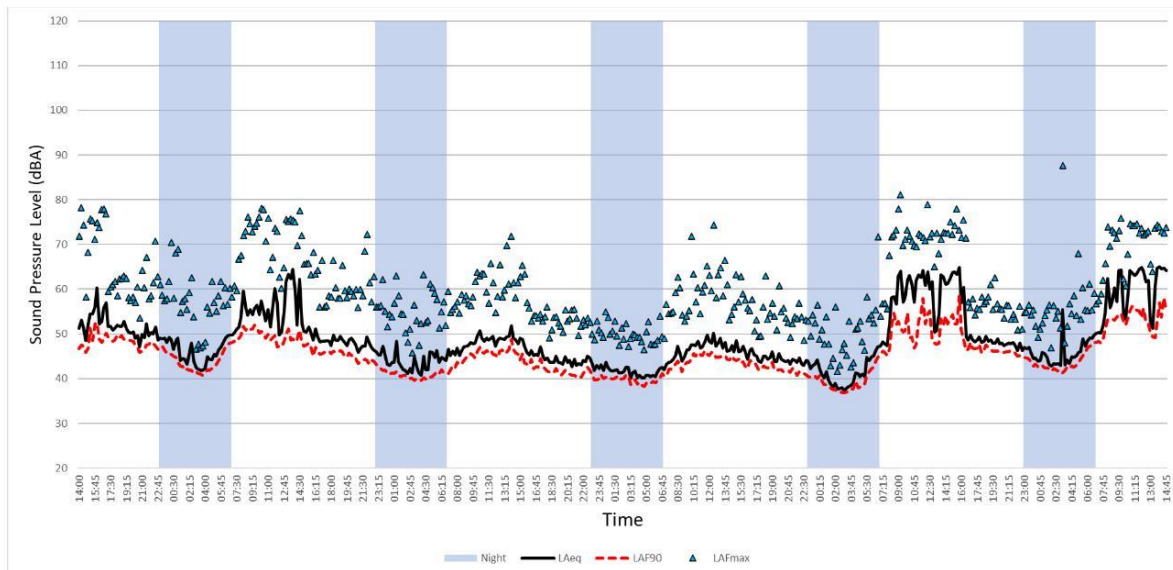


82511-SRL-RP-YA-01-PI
28/01/2025

[Click HERE to return to CONTENTS](#)

Page 10 of 12

B2. NM2 – Noise Time Graph



82511-SRL-RP-YA-01-PI
28/01/2025

[Click HERE to return to CONTENTS](#)

Page 11 of 12

Acoustics

Since 1967, our team of acoustic consultants has played a key role in major projects where noise or vibration is an issue, in the UK and across the globe – whether it's planning, performance prediction, design, inspection, troubleshooting, measurement or commissioning.

Air Quality

We offer a comprehensive service to model, monitor and analyse air quality, delivering assessments for a broad range of projects and purposes, for both private and public sector clients.

Carbon & Net Zero

Top of the agenda is tackling energy and carbon reduction to limit the impact of climate change. Our team of consultants will help you to achieve your sustainability objectives.

Lab & Site Testing

Design based on test data will always achieve the best results – and that's why we offer a wide range of acoustic testing at our independently accredited laboratories, as well as on-site testing to support live projects.

Monitoring

Our specialist services to monitor and assess noise, vibration, dust, air quality and odour employ the latest technology to provide remote access to data, helping to address issues quickly and to protect our clients.

Noise & Vibration

Ensuring noise and vibration does not exceed agreed levels is an important part of our environmental management services, using state-of-the-art technology to access real-time data remotely, to enable swift remedial action if required.

Odour & Dust

As part of our portfolio of environmental monitoring services, we offer specialist advice on the adverse impact of dust and odour across a range of projects including construction, waste handling and mineral extraction.

Sustainability

Minimising the impact on the environment is at the centre of today's business objectives. Our specialist services help our clients to fulfil their obligations, whether it's a BREEAM assessment, Energy Carbon Reduction or Net Zero.

Appendix B

Plant noise levels

B.1.1 Water treatment plant noise levels

Instrument Model: Sch8E, Serial 72504, Firmware 1.49
Channel B

Channel A

LLeq
Lmin
Lmax
Lpeak
Lavg
TWa
TWd
Lnc

LEP, d(ET)
LEP, d(MT)
Dose 1(ET)
Dose 2(MT)
(L90) 68.0
(L95) 67.0

Dose Hb %
Ltn 3
Ltn 5
LE

Exp Time
PaCh
Freq Wgt
Time Wgt

Channel B

LLeq
Lmin
Lmax
Lpeak

LEP, d(ET)
LEP, d(MT)
Dose 1(ET)
Dose 2(MT)

Dose Hb %
LE

PaCh
Freq Wgt
Time Wgt

Advanced

Criterion
Exch Rate
Log Interval

Start Time/Date
End Time/Date
Log Length

Overload?
Last User Cal
Fact Cal Due

Threshold
Range
Mode