

ACOUSTIC DESIGN TECHNOLOGY
Noise and Vibration Consultants

ADT 3139

30 November 2022

Dex Construction Group Ltd
Second Floor
Northern Assurance Building
9-21 Princess Street
MANCHESTER
M2 4DN

ADDINGTON STREET, MANCHESTER
POST COMPLETION TESTING (CONDITION 13)
ACOUSTIC CONSULTANCY REPORT ADT 3139/PCT

Revision	Date	Issued By	Revision Notes
-	18 August 2022	Chris Middleton	first issue
A	30 November 2022	Chris Middleton	revised following MCC comments and subsequent additional tests

1.0 SUMMARY

Post completion testing has been undertaken to demonstrate compliance with condition 13 of planning permission 124888/FO/2019, which reads as follows:

13) Notwithstanding the environmental noise assessment prepared by Cundall stamped as received by the City Council, as Local Planning Authority, on the 19 September 2019 and the email from Paul Nellist dated 8 November 2019, (a) prior to the first occupation of the development a scheme for acoustically insulating the proposed residential accommodation against noise from Addington Street and local traffic network shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved noise insulation scheme shall be completed before the first occupation of the development.

Noise survey data must include measurements taken during a rush-hour period and night time to determine the appropriate sound insulation measures necessary. The following noise criteria will be required to be achieved:

Bedrooms (night time - 23.00 - 07.00) 30 dB L Aeq (individual noise events shall not exceed 45 dB L Amax,F by more than 15 times)

Living Rooms (daytime - 07.00 - 23.00) 35 dB L Aeq

Gardens and terraces (daytime) 55 dB LAeq

(b) Prior to the first use of the development, 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.

Reason: To secure a reduction in noise from traffic or other sources in order to protect future residents from noise disturbance pursuant to policies SP1, H1 and DM1 of the Core Strategy (2007) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).

The scheme of sound insulation measures for this development as indicated in part a) of the condition is described in the previously issued report ADT 3139/ENIA dated 5 February 2021.

A post construction survey has now been undertaken as required by part b) of the condition. Measurements of external noise intrusion were undertaken over a typical 24 hour period in a sample room on each of the 4 sides of the building at low level.

Following the first issue of this report, Manchester City Council requested measurements in 10% of the dwellings, and measurements were therefore undertaken in 4 additional rooms, this time on the upper levels. Measurements of noise from the MVHR ventilation units were also requested, and it was agreed that these could be short term readings as they are a constant source. Readings in 10 sample rooms have been taken at various locations around the building, including rooms above the new and existing substations.

The results of the external noise intrusion and building services noise measurements demonstrate compliance with Planning Condition 13.

2.0 POST COMPLETION TESTING

2.1 Acoustic Design Criteria

The noise criteria relating to planning Condition 13 are as follows:

Location	Noise criterion
Bedrooms (night)	30 dB $L_{Aeq,8hour}$ 45 dB L_{Amax} *
Living rooms (day)	≤ 35 dB $L_{Aeq,16hour}$
Gardens and terraces (day)	55 dB $L_{Aeq,16hour}$

* Note:- not normally to be exceeded more than 15 times over the night

Please note that the criterion for gardens and terraces is provided for information only and has not been tested, as there is ongoing construction taking place on the site and neighbouring sites during the day. In any case, compliance or non-compliance with that requirement would be determined by the location and massing of the building, which were fixed when planning permission was granted.

2.2 Site Particulars

The development is located on Addington Street, Manchester.

At the time of testing the building envelope was complete and the test apartments were structurally completed but not furnished. Construction works were ongoing between 07:00 hours and 18:00 hours daily and will continue up until occupation, and the tests have therefore by necessity been undertaken around ongoing construction noise.

It should also be noted that the side streets (Cross Keys Street, Marshall Street and Chadderton Street) are currently closed due to ongoing construction work on this and neighbouring sites, although the most significant traffic noise source Addington Street is open as normal.

3.0 TEST PROCEDURE

3.1 Purpose of Tests

Noise measurements were undertaken in a sample of rooms to check compliance with the applicable Manchester City Council indoor ambient noise criteria, towards discharge of Planning Condition 13 b).

3.2 Instrumentation

The instrumentation used, and the field calibration values before and after the survey are detailed in Appendix B of this report.

3.3 Procedure

The test room locations, the survey periods and the instrumentation used are set out in the following table, in all cases a bedroom. The locations are also illustrated on the attached site plan 3139/SP1.

External noise intrusion test rooms				
Test room	Location	Elevation	Survey period	Instrument
R1	Flat 2.09	Addington St	12 to 13 August 2022	01dB Solo
R2	Flat 2.12	Cross Keys Street	11 to 12 August 2022	Norsonic 140
R3	Flat 2.02	Marshall Street	11 to 12 August 2022	Norsonic 140
R4	Flat 2.05	Chadderton Street	12 to 13 August 2022	Svantek 971
R5	Flat 8.02	Marshall Street	11 to 12 November 2022	Svantek 958
R6	Flat 06.05	Chadderton Street	11 to 12 November 2022	01dB Solo
R7	Flat 7.05	Addington Street	11 to 12 November 2022	01dB Solo
R8	Flat 5.01	Cross Keys Street	28 to 29 November 2022	01dB Solo

In each room, the microphone was mounted on a tripod approximately 1.2 metres above the floor in the centre of the room and set to log over a typical 24 hour period.

The meters were set to log the 100ms L_{Aeq} and $L_{Amax(F)}$ for the duration of the relevant survey period, for subsequent post processing.

For the MVHR measurements, readings were taken over 3 no. 30 second sample periods at random locations in a sample of 10 flats around the development. The test locations and results are set out in the attached table 3139/T2. Some of these rooms (Flat 01.01 and Flat 01.02) are above the substation.

4.0 RESULTS

4.1 Recorded Data

The calculated $L_{Aeq, 1 \text{ hour}}$ for each test room corrected for site noise and room conditions are listed in the attached table 3139/T1, along with the calculated $L_{Aeq,T}$ for the portion of the day time period unaffected by site noise (i.e. 18:00 to 23:00 hours) and for the whole of the night time period (23:00 – 07:00).

The corresponding night time $L_{Amax,F}$ for each test room are shown on the attached graphs 3139/G1 – G8, at 1 minute resolution.

The average residual $L_{Aeq,T}$ for the MVHR / substation noise measurements are provided in the attached table 3139/T2.

4.2 Discussion of Results

As site work was continuing throughout each survey period, the data from 07:00 hours to 18:00 hours was affected by site noise to varying degrees and is therefore not representative.

In the absence of site noise, observations and analysis of audio samples indicates that the noise levels were controlled by traffic noise, with the highest night time L_{Amax} controlled by cars with modified loud exhausts, as is unfortunately typical of many urban areas.

Reference to the attached table 3139/T1 shows that the measured $L_{Aeq,T}$ over the surveyed portion of the day time period outside site opening hours, and over the whole night time period are within the required day time $L_{Aeq, 16 \text{ hour}} \leq 35 \text{ dB}$ and the night time $L_{Aeq, 8 \text{ hour}} \leq 30 \text{ dB}$.

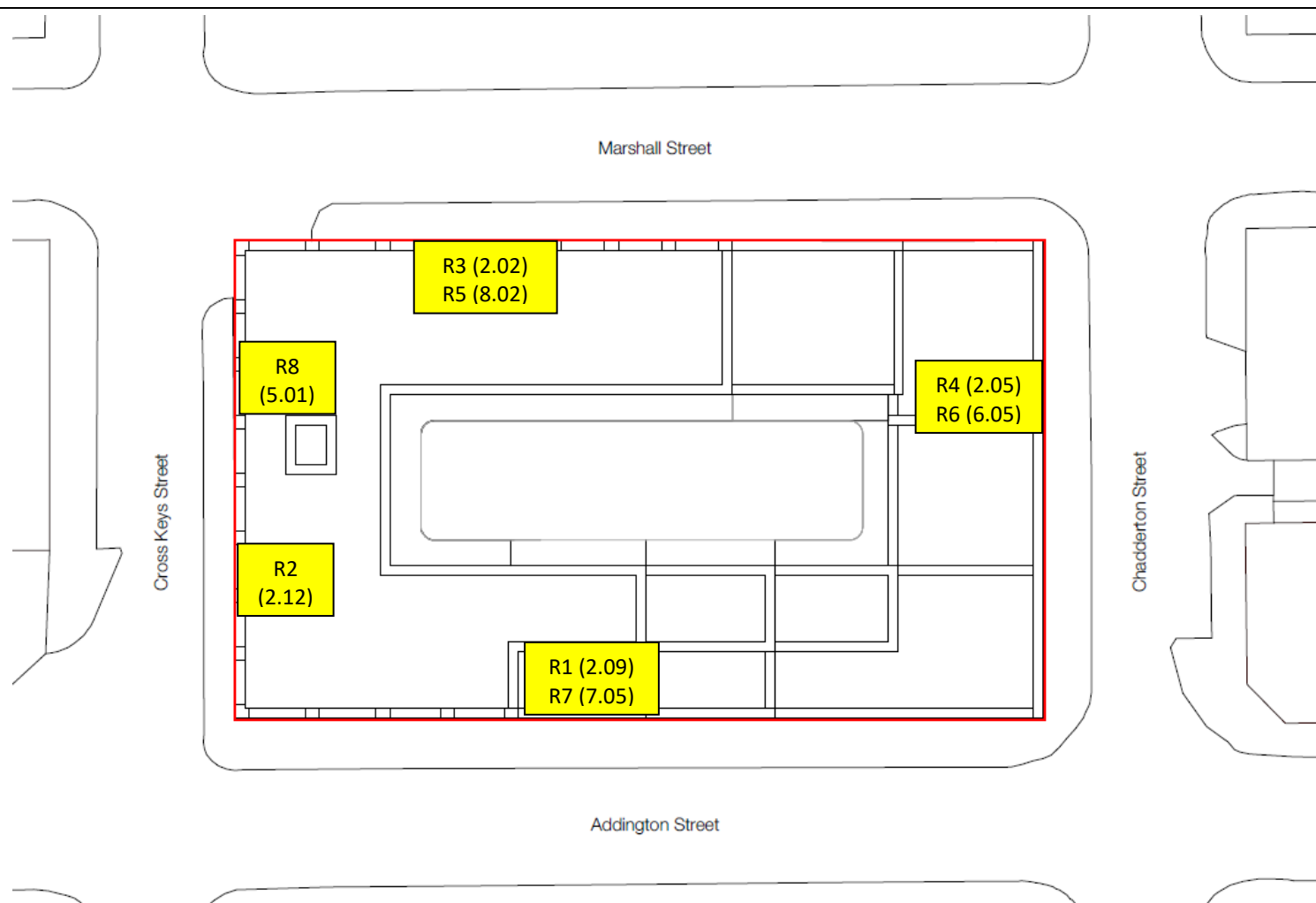
Reference to the attached L_{Amax} time history graphs reveals that the levels were generally less than the required limit of $L_{Amax,F} \leq 45$ dB, and do not exceed that limit more than 15 times per night, as required by planning condition 13.

Reference to the attached table 3139/T2 reveals building services noise levels within the night time requirement of 30 dB $L_{Aeq, 8 \text{ hour}}$.

4.3 Conclusion

The conclusion of this report is that the measured levels of external noise intrusion and the MVRH / substation noise are within the indoor ambient noise criteria in planning condition 13.

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Notes

Description

Site plan showing approximate locations of test rooms R1 to R8

Project

Addington Street, Manchester

Date

30 November 2022

Drawing No.

3139/SP1



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Summary of $L_{Aeq, 1 \text{ hour}}$ dB

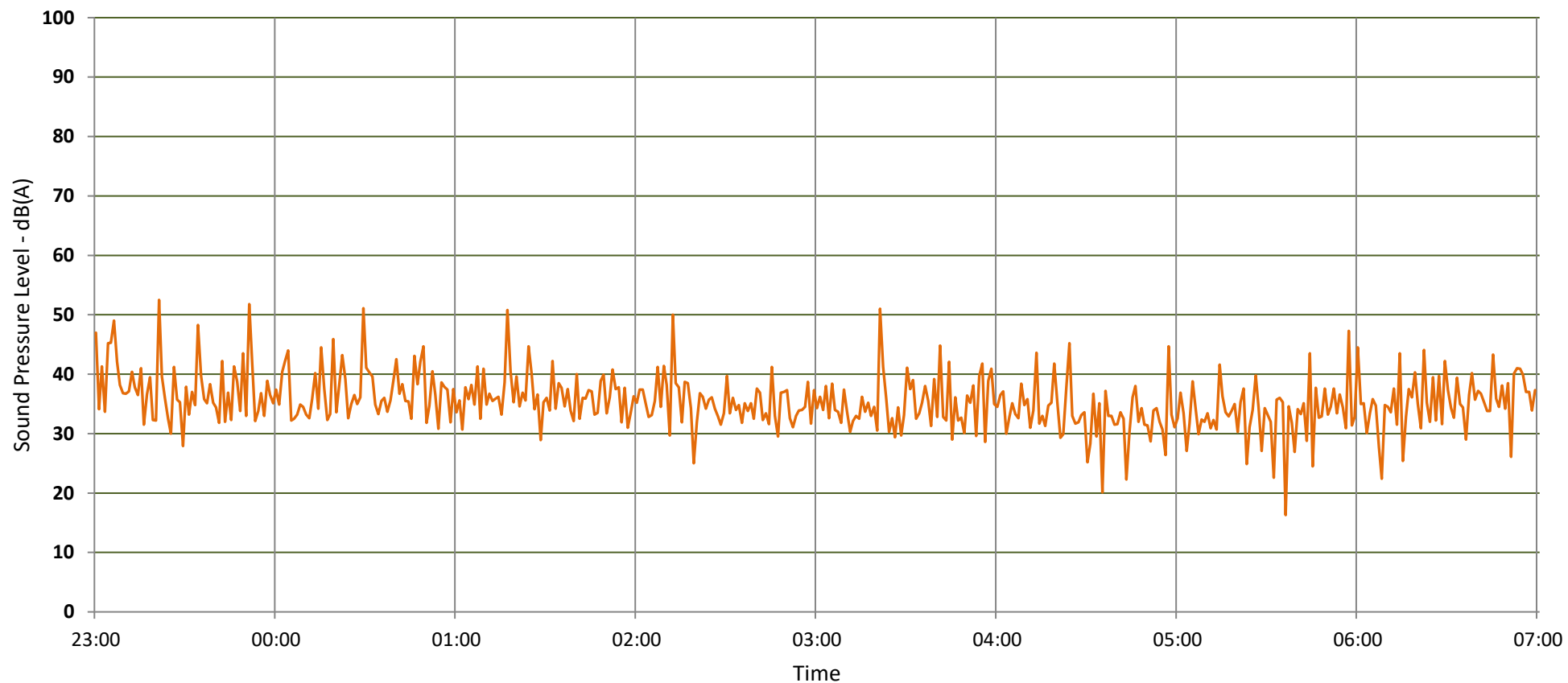
Start	Stop	$L_{Aeq, 1 \text{ hour}}$ dB								Comments
		2.09 Addington Street	2.12 Cross Keys Street	2.02 Marshall Street	2.05 Chadderton Street	8.02 Marshall Street	6.05 Chadderton Street	7.05 Addington Street	5.01 Cross Keys Street	
15:00	16:00	32	46	41	29	30	36	31	45	Site noise during this period
16:00	17:00	31	40	34	22	29	28	30	35	Site noise during this period
17:00	18:00	31	31	22	22	29	28	30	31	Site noise during this period
18:00	19:00	31	32	21	22	28	28	30	31	
19:00	20:00	30	32	20	22	25	28	31	30	
20:00	21:00	31	32	20	23	26	26	30	30	
21:00	22:00	30	31	20	23	23	26	30	29	
22:00	23:00	30	30	20	20	25	27	31	29	
23:00	00:00	29	31	19	19	27	28	31	28	
00:00	01:00	28	29	19	19	28	28	30	27	
01:00	02:00	28	29	19	18	27	27	28	26	
02:00	03:00	26	27	18	17	25	26	28	25	
03:00	04:00	26	26	21	19	24	25	27	25	
04:00	05:00	25	26	21	20	25	24	27	25	
05:00	06:00	24	29	21	20	24	24	26	27	
06:00	07:00	26	31	23	21	27	26	27	30	
07:00	08:00	27	34	31	25	28	29	29	34	Site noise during this period
08:00	09:00	30	41	38	33	33	36	35	40	Site noise during this period
09:00	10:00	30	43	36	32	31	38	35	42	Site noise during this period
10:00	11:00	31	42	38	34	31	38	42	40	Site noise during this period
11:00	12:00	38*	42	39	33	32	37	34	40	Site noise during this period
12:00	13:00	32	37	36	30	30	37	34	47	Site noise during this period
13:00	14:00	30	36	32	22	28	29	30	43	Site noise during this period
14:00	15:00	32	32	24	22	28	28	29	46	Site noise during this period
Day $L_{Aeq,T}$ dB*		30	31	20	22	26	27	30	31	
Night $L_{Aeq,T}$ dB		27	29	20	19	26	26	28	27	

*Note:- averaged over the period unaffected by site noise (18:00 – 23:00).

MVHR NOISE MEASUREMENTS

Test room	L _{Aeq,T} dB
Flat 08.03 bedroom	26
Flat 07.03 bedroom	28
Flat 06.01 bedroom	27
Flat 06.04 bedroom	29
Flat 05.04 bedroom	29
Flat 05.03 bedroom	28
Flat 04.01 bedroom	27
Flat 04.03 bedroom	28
Flat 01.02 bedroom	25
Flat 01.01 living room	25
Average of all rooms	27

Table 3139/T2



Notes

$L_{Amax(F)}$ exceeded 45 dB 11 times

Description

1 minute $L_{Amax(F)}$ in Plot 2.09 (Addington Street)

Project

Addington Street, Manchester

Survey Date

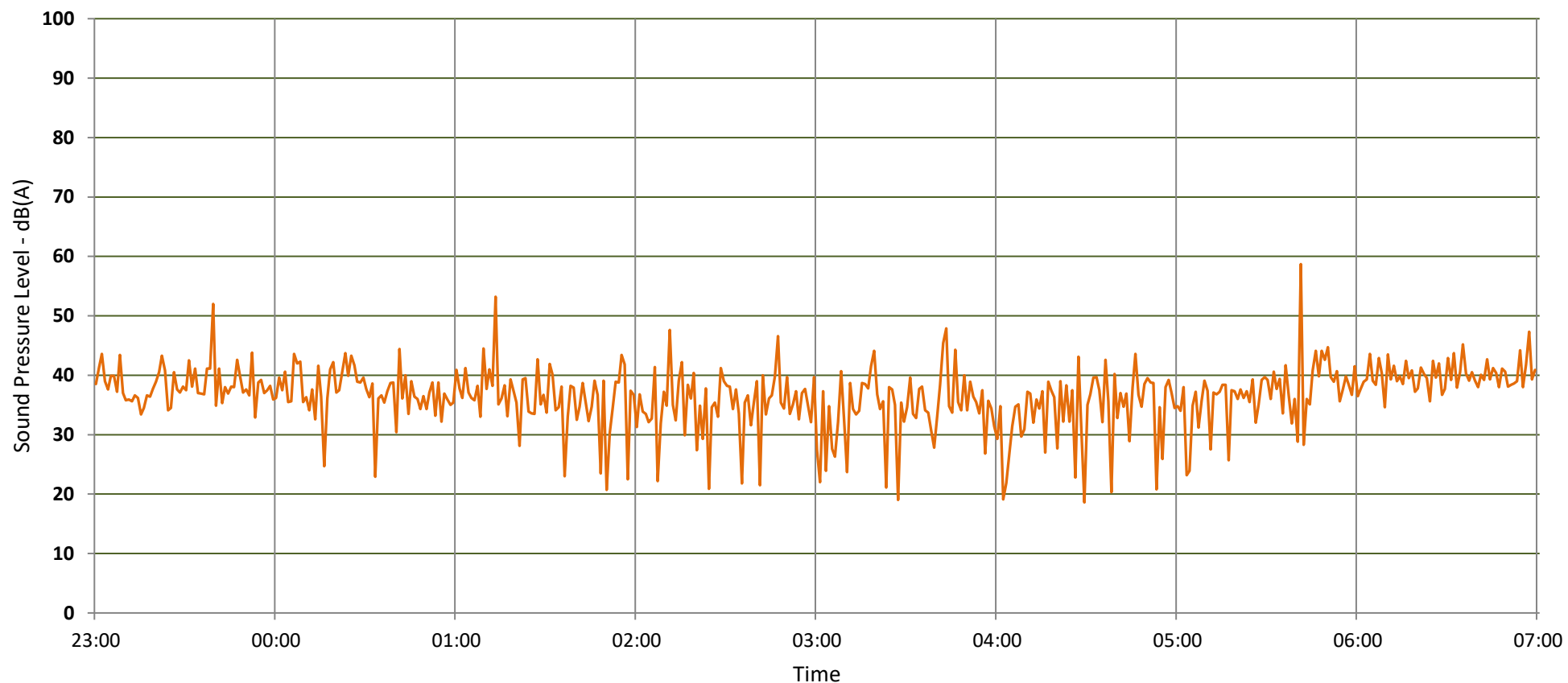
12 to 13 August 2022

Drawing No.

3139/G1



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Notes

$L_{Amax(F)}$ exceeded 45 dB 7 times

Description

1 minute $L_{Amax(F)}$ in Plot 2.12 (Cross Keys Street)

Project

Addington Street, Manchester

Survey Date

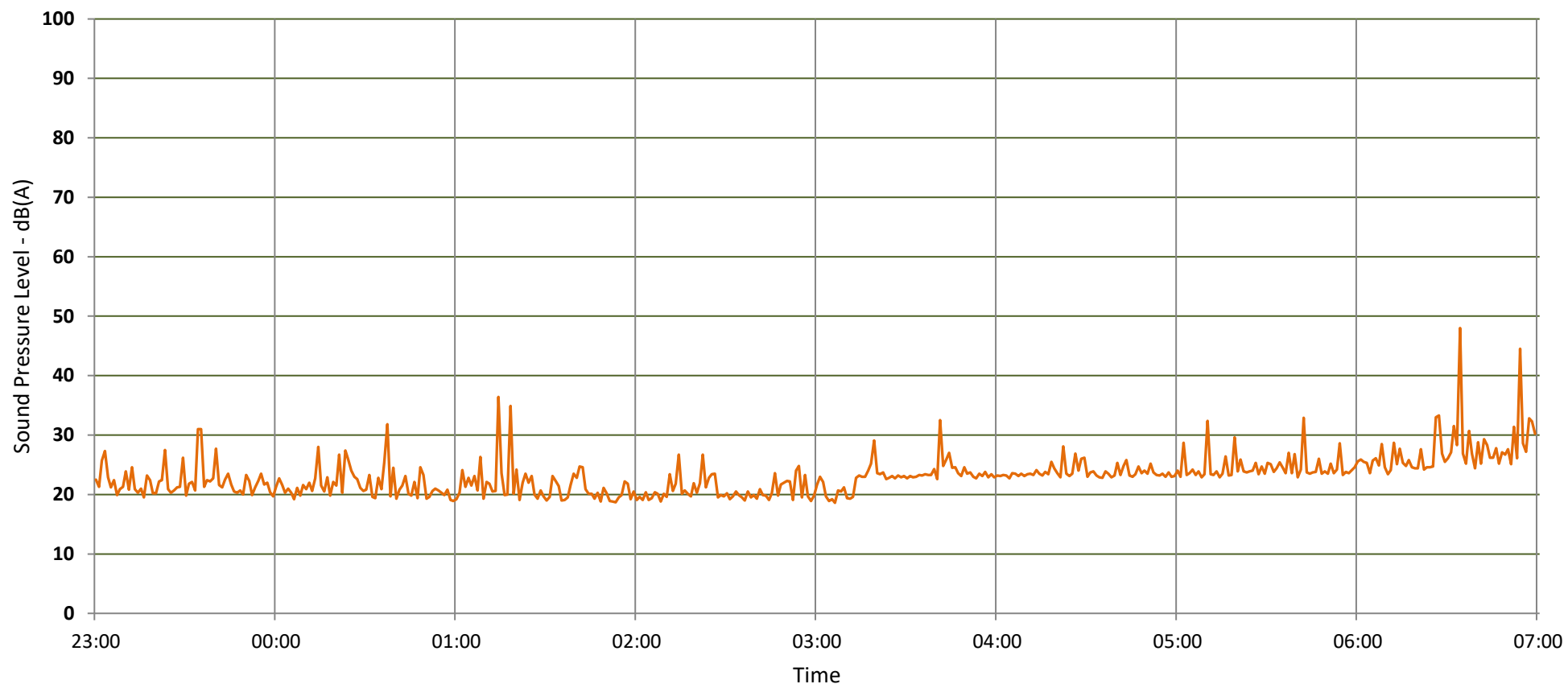
11 to 12 August 2022

Drawing No.

3139/G2



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Notes

$L_{Amax(F)}$ exceeded 45 dB once

Description

1 minute $L_{Amax(F)}$ in Plot 2.02 (Marshall Street)

Project

Addington Street, Manchester

Survey Date

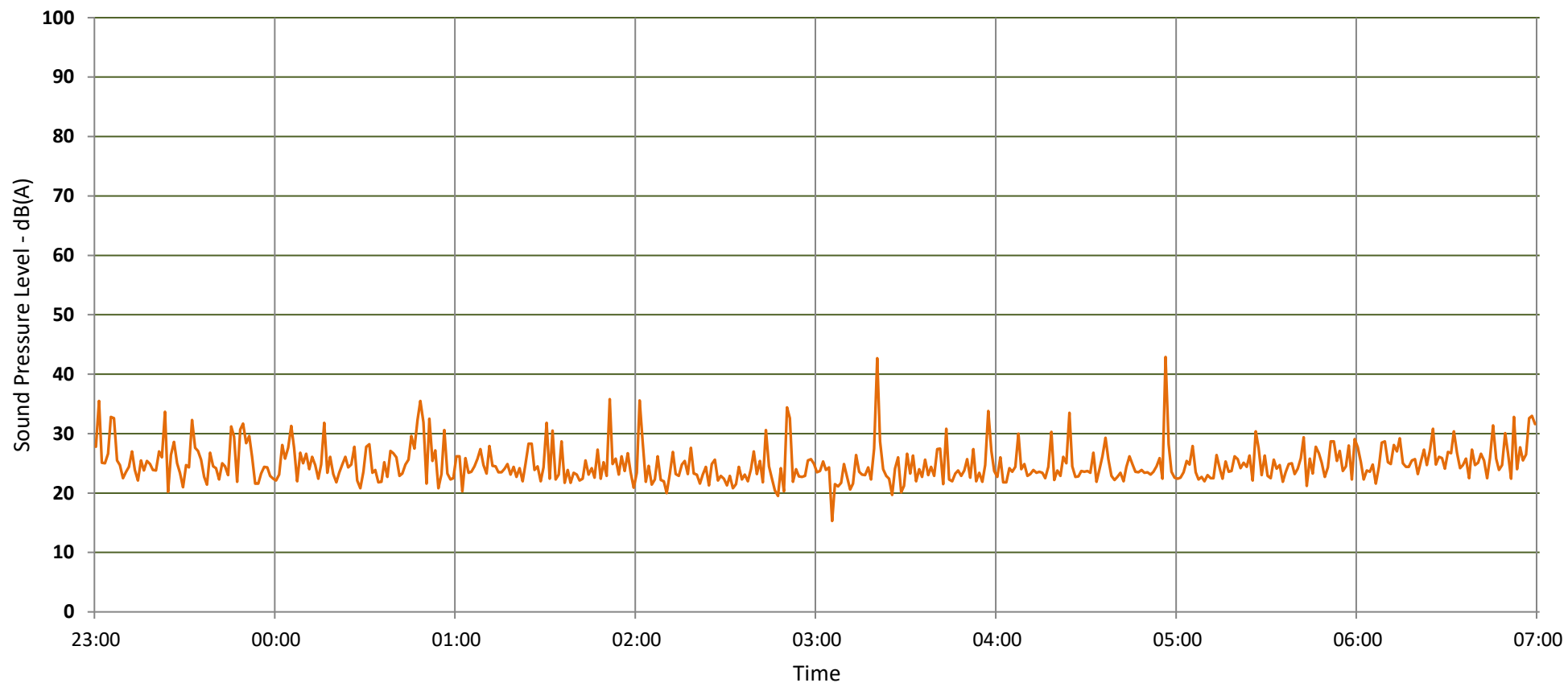
11 to 12 August 2022

Drawing No.

3139/G3



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Notes

No excesses over the L_{Amax} requirement

Description

1 minute $L_{Amax(F)}$ in Plot 2.05 (Chadderton Street)

Project

Addington Street, Manchester

Survey Date

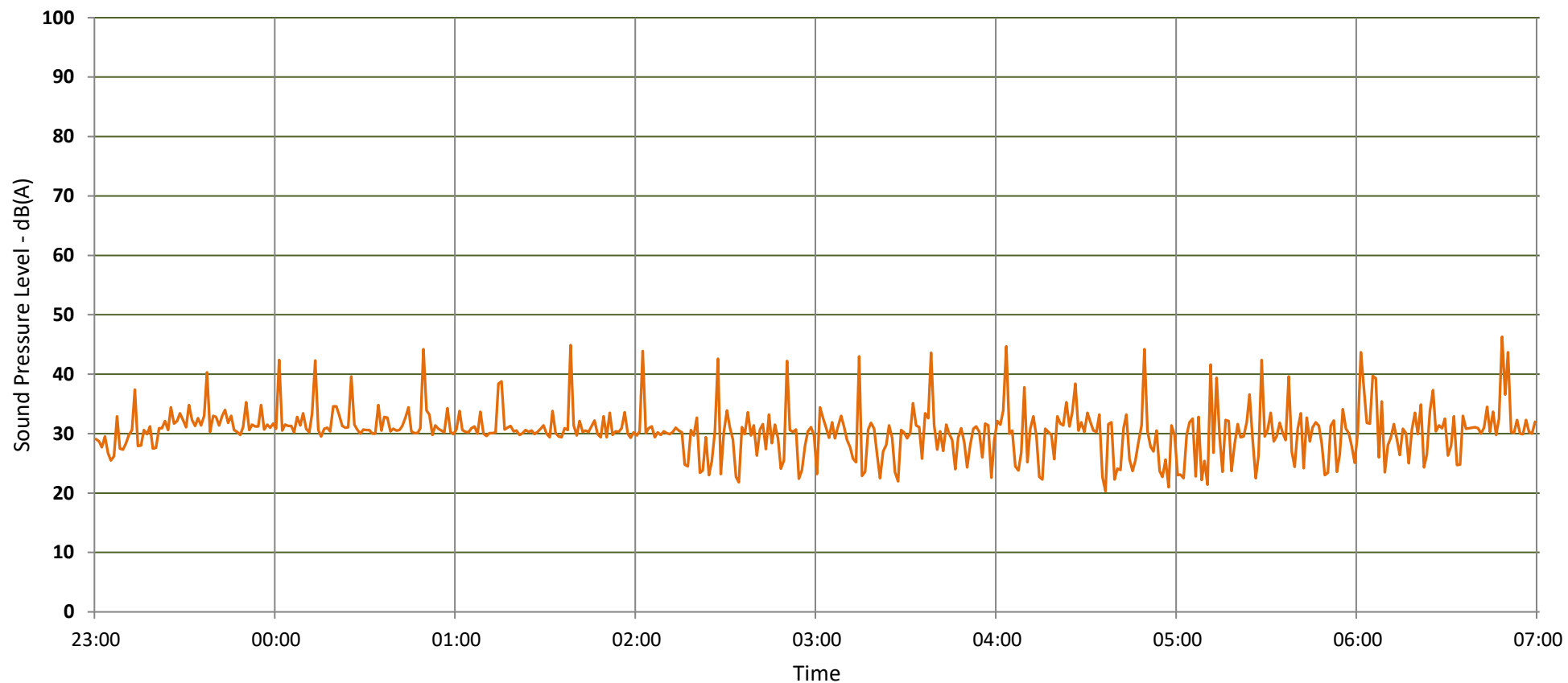
12 to 13 August 2022

Drawing No.

3139/G4



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Notes

$L_{Amax(F)}$ exceeded 45 dB once

Description

1 minute $L_{Amax(F)}$ in Plot 8.02 (Marshall Street)

Project

Addington Street, Manchester

Survey Date

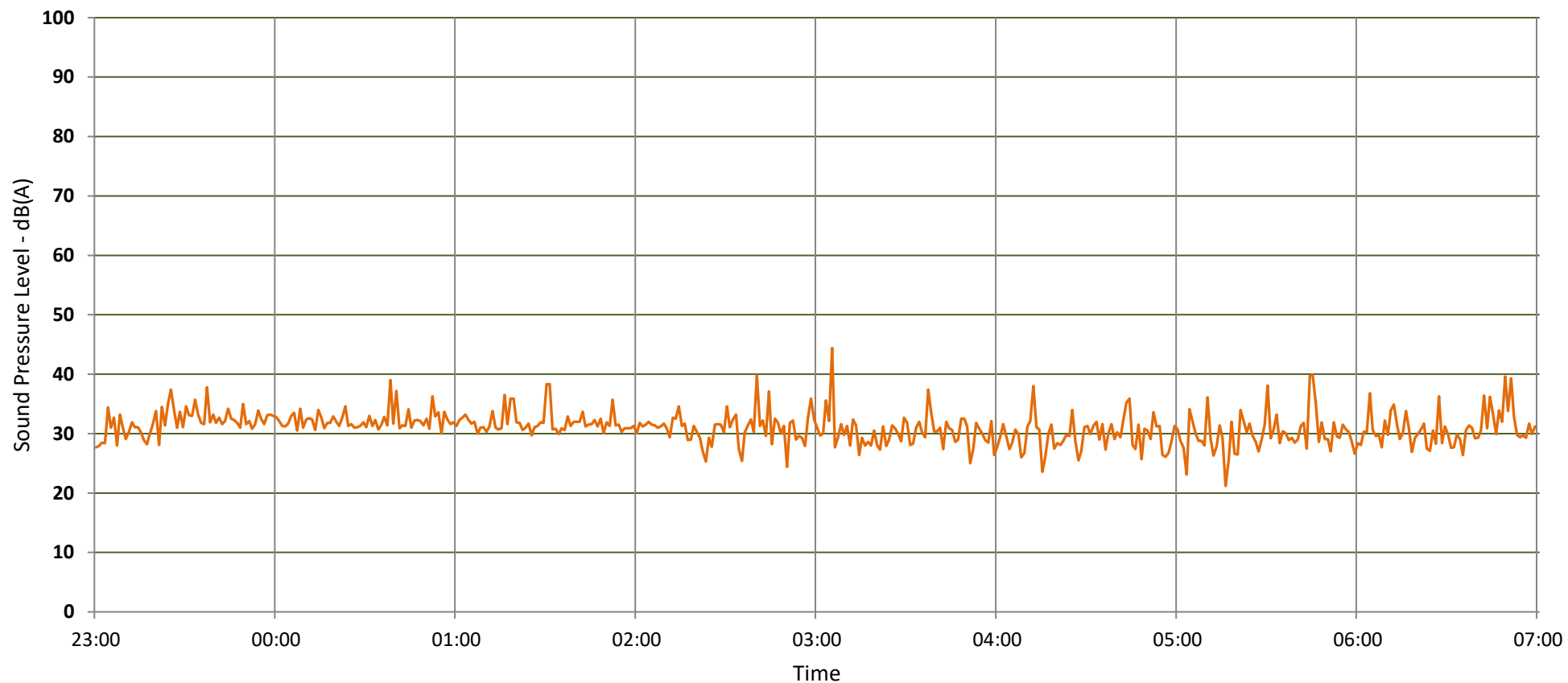
11 to 12 November 2022

Drawing No.

3139/G5



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Notes

No excesses over 45 dB $L_{Amax(F)}$

Description

1 minute $L_{Amax(F)}$ in Plot 6.05 (Chadderton Street)

Project

Addington Street, Manchester

Survey Date

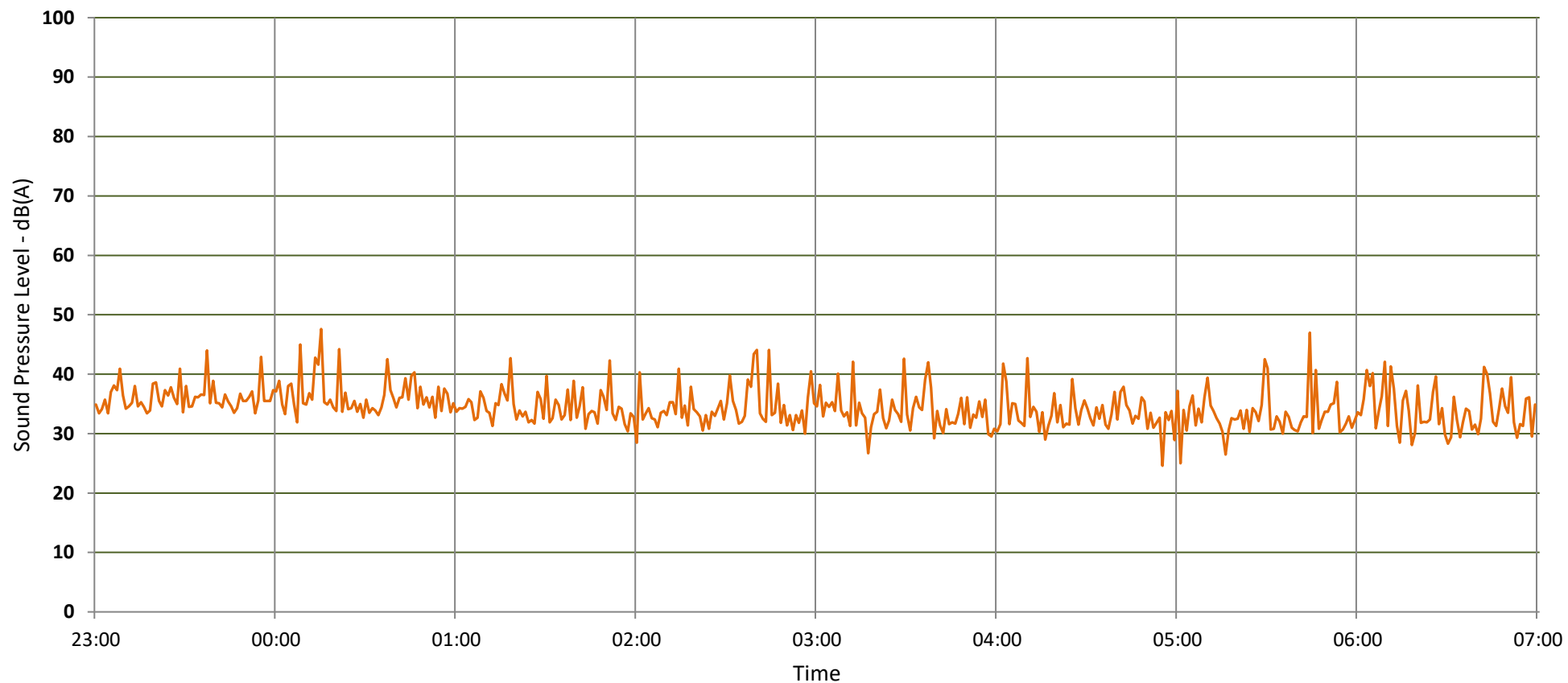
11 to 12 November 2022

Drawing No.

3139/G6



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Notes

$L_{Amax(F)}$ exceeded 45 dB 2 times

Description

1 minute $L_{Amax(F)}$ in Plot 7.05 (Addington Street)

Project

Addington Street, Manchester

Survey Date

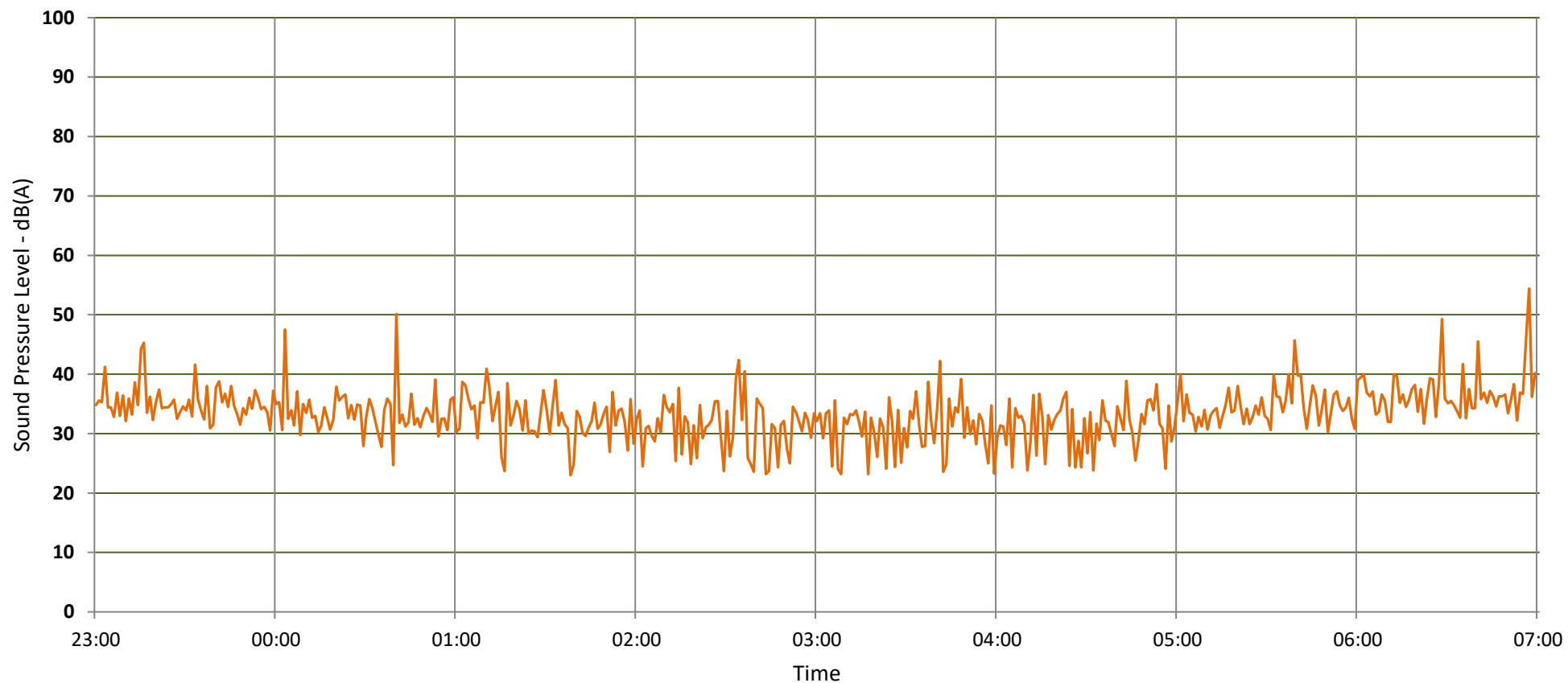
11 to 12 November 2022

Drawing No.

3139/G7



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Notes

$L_{Amax(F)}$ exceeded 45 dB 7 times

Description

1 minute $L_{Amax(F)}$ in Plot 5.01 (Cross Keys Street)

Project

Addington Street, Manchester

Survey Date

28 to 29 November 2022

Drawing No.

3139/G8



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APPENDIX A**Instrumentation**

Manufacturer	Type and / or Model	Serial Number	Last Laboratory Calibration	Calibrator Output (dB)	Free Field Correction (dB)	Initial reading (dB)	Final reading (dB)
01dB	(Blue) Solo Class 1 Sound Level Meter	60320	July 2021		-0.10	113.9	113.9
01dB	PRE 21 S Pre-Amplifier	16866					
01dB	MCE 212 ½ inch Microphone	90549					
Norsonic	Nor140 Class 1 Sound Level Meter	1404515	March 2021		-0.20	113.8	113.9
Norsonic	Nor1225 ½" Microphone	142527					
Norsonic	Nor1209 Preamplifier	13885					
Norsonic	Nor140 Class 1 Sound Level Meter	1407647	January 2021		-0.20	113.8	113.8
Norsonic	Nor1225 ½" Microphone	413060					
Norsonic	Nor1209 Preamplifier	22847					
SvanteK	Svan 971 Class 1 Sound Level Meter	34392	October 2021		-0.13	113.87	113.92
ACO	7052E ½ inch Microphone	54655					
SvanteK	SV18 Preamplifier	32179					
SvanteK	Svan 958 4 Channel Sound and Vibration Analyser	23430	February 2021				
Microtech Gefell	MK 255 Microphone (Mic 4)	12328			0.0		

Manufacturer	Type and / or Model	Serial Number	Last Laboratory Calibration	Calibrator Output (dB)	Free Field Correction (dB)	Initial reading (dB)	Final reading (dB)
Svantek	SV12L Preamplifier	47684					
Norsonic	Nor1251 Calibrator (Cal 5)	34220	February 2022	114.00			
Norsonic	Nor1251 Calibrator (Cal 6)	35228	April 2022	114.09			