

London office

1B(c) Yukon Road
London
SW12 9PZ
Tel: 0203 475 2280

Manchester office

105 Manchester Road
Bury
BL9 0TD
Tel: 0161 850 2280

202- 204 DANTZIC STREET, MANCHESTER

NOISE IMPACT ASSESSMENT

Report 17576-NIA-01_Rev1

Prepared on 27 September 2022

Issued For:
Summer of Love Ltd
Reedham House
31 King Street West
Manchester
M3 2PJ



Executive Summary

This noise impact assessment has been undertaken in order to assess the proposed use of 202 - 204 Dantzic Street, Manchester. Proposals are for the use of two warehouses and associated land for arts, music and cultural venue/event space including theatre, dance performance-related activities (Sui Generis) with associated food and drink festivals (Flexible Use Class E / Sui Generis), for a temporary period of two years. The annual Summer of Love festival will be the largest capacity event that will be held at the site, with regular arts, culture and exhibition events

Proposed Activities include noise-generating activities inside and around existing warehouse buildings.

A background noise survey has been undertaken as detailed in the report, in order to determine an appropriate noise emission criterion and recommend maximum plant and music noise levels, in accordance with the requirements of Manchester City Council.

Calculations were undertaken for identified receivers around the site, with the closest identified as the Emmeline Apartments. It should be noted that if there are closer receivers that Clement Acoustics is not aware of, a reassessment will be necessary, and this should therefore be confirmed by the Client.

The following considerations have been used in this assessment:

- Festivals and events are each assessed to the relevant Local Authority criteria for activities of that type
- The event will typically take place during daytime hours only (11:00 to 23:00)
- The noise emissions data for the proposed venue are as obtained from comparable sites
- Noise source and receiver locations are as established in this report and marked on the attached site plan
- Events will be conducted in accordance with a noise management plan as specified in Clement Acoustics document 17576-NMP RevK

If there is any deviation from the above, Clement Acoustics must be informed, in order to establish whether a reassessment is necessary.

Clement Acoustics has used all reasonable skill and professional judgement when preparing this report. The report relies on the information as provided to us at the time of writing and the assumptions as made in our assessment.

Contents

1.0	INTRODUCTION	1
2.0	SITE DESCRIPTION	1
3.0	ENVIRONMENTAL NOISE SURVEY	2
3.1	Unattended Noise Survey Procedure	2
3.2	Attended Noise Survey Procedure	2
3.3	Weather Conditions	3
3.4	Equipment	3
4.0	RESULTS	4
4.1	Unattended Noise Survey Results	4
4.2	Attended Noise Survey Results	4
5.0	ASSESSMENT OF WAREHOUSE STRUCTURES.....	5
5.1	Noise Breakout Measurements.....	5
5.2	Additional Calculations.....	7
6.0	3D NOISE MODEL	10
6.1	Receivers	11
7.0	NOISE IMPACT ASSESSMENT - FESTIVAL.....	12
7.1	Local Authority Festival Noise Criteria	12
7.2	Proposed Noise Level Criteria	12
7.3	Festival Noise Impact Assessment.....	13
8.0	NOISE IMPACT ASSESSMENT - EVENTS	14
8.1	Local Authority Noise Criteria	14
8.2	Festival Noise Impact Assessment.....	14
9.0	PLANT NOISE EMISSIONS	16
10.0	CONCLUSION	17

List of Attachments

17576-SP1	Indicative Site Plan
17576-TH1	Environmental Noise Time History
17576-NMP RevK	Noise Management Plan
Appendix A	Glossary of Acoustic Terminology
Appendix B	Modelled Noise Breakout

Document Revision	Date of Revision	Reasons for Revision	Revision By
0	20/05/2022	First Issue	Jamie Newton AMIOA
A	30/05/2022	Revised Plant Location Details	Jamie Newton AMIOA
B	15/06/2022	Addressing Client Comments	Jamie Newton AMIOA
C	21/06/2022	Inclusion of Events Operation	Jamie Newton AMIOA
D	05/09/2022	Separated out assessments and added clarifications	Duncan Martin MIOA
E	07/09/2022	Updated description of proposals	Duncan Martin MIOA
F	08/09/2022	Updated description of proposals	Duncan Martin MIOA
G	15/09/2022	Updated following comments from Local Authority	Duncan Martin MIOA
H	16/09/2022	Updated description of proposals	Duncan Martin MIOA
I	29/09/2022	Appended Noise Management Plan RevK	Duncan Martin MIOA

1.0 INTRODUCTION

Clement Acoustics has been commissioned by Summer of Love Ltd to measure existing background noise levels at 202 - 204 Dantzic Street, Manchester. Proposals are for the use of two warehouses and associated land for arts, music and cultural venue/event space including theatre, dance performance-related activities (Sui Generis) with associated food and drink festivals (Flexible Use Class E / Sui Generis), for a temporary period of two years. The annual Summer of Love festival will be the largest capacity event that will be held at the site, with regular arts, culture and exhibition events.

This report presents the results of the environmental survey and breakout measurements followed by noise impact calculations.

An acoustic terminology glossary is provided in Appendix A.

2.0 SITE DESCRIPTION

The site consists of two large warehouses on an industrial site. The surrounding area is predominantly industrial in nature.

Current proposals are for two event types, as follows:

- An annual three-day dance music festival
 - Up to 5,000 attendees per day
 - 2 indoor and 4 outdoor music stages
- Weekly events comprising arts, culture and exhibition events.
 - Up to 1,500 attendees
 - Largely within the two warehouses, but with some outdoor activities, depending on time of year

All events will adhere to the site's licensing hours of 11:00 to 23:00 as a worst case.

Emmeline Apartments has been confirmed by Connecting Dots Group Limited as the nearest affected receiver, with a number of additional receivers in the surrounding area. 3-D noise mapping has been used in order to ensure all surrounding receptors are considered, accounting for varying distances

and screening. If there are any receivers closer than those identified within this report then a further assessment will need to be carried out.

Locations are shown in attached site plan 17576-SP1.

3.0 ENVIRONMENTAL NOISE SURVEY

3.1 Unattended Noise Survey Procedure

Measurements were undertaken at one position as shown on indicative site drawing 17576-SP1. The choice of this position was based both on accessibility and on collecting representative noise data in relation to the nearest affected receiver.

The surroundings and position used for the monitoring location are described in Table 3.1.

Position No.	Description
1	The microphone was mounted on a ground level fence at the east of the site. The microphone was positioned 2 m above ground level and >3.5 m in front of any reflecting surface. ^[1]

Table 3.1: Description of unattended monitoring locations

Note [1]: The position was considered to be free-field according to guidance found in BS 4142: 2014, and a correction for reflections has therefore not been applied.

Continuous automated monitoring was undertaken for the duration of the survey between 10:00 on 6 May 2022 and 14:30 on 9 May 2022

The measurement procedure generally complied with BS 7445: 1991: '*Description and measurement of environmental noise, Part 2- Acquisition of data pertinent to land use*'.

3.2 Attended Noise Survey Procedure

Attended noise measurements were undertaken on 9 May 2022 to provide further understanding of the prevailing noise environment.

The sound level meter was mounted on a tripod approximately 1.5 m above ground level under free-field conditions at the locations described in Table 3.2.

Position No.	Description
1	The sound level meter was located at the on Dalton Street, approximately 15 m from the façade of Emmeline Apartments.

Table 3.2: Description of attended monitoring locations

The locations of the measurement positions are shown on attached site plan 17576-SP1.

3.3 Weather Conditions

At the time of set-up and collection of the monitoring equipment and during the attended measurements, the weather conditions were dry with light winds. It is understood that the weather conditions during the unattended survey remained generally dry with light showers on the evening of 6 May, and average wind speeds below 5 m/s.

It is considered that the weather conditions did not significantly adversely affect the measurements and are therefore considered suitable for the measurement of environmental noise.

3.4 Equipment

The equipment calibration was verified, by means of a field verification check, before and after use and no abnormalities were observed.

The equipment used was as follows.

- 1 No. Svantek Type 957 Class 1 Sound Level Meter
- 1 No. Norsonic Nor140 Class 1 Sound Level Meter
- Norsonic Type 1251 Class 1 Calibrator

4.0 RESULTS

4.1 Unattended Noise Survey Results

The $L_{Aeq:5min}$, $L_{Amax:5min}$, $L_{A10:5min}$ and $L_{A90:5min}$ acoustic parameters were measured at the location shown in site drawing 17576-SP1.

Measured noise levels are shown as a time history in Figure 17576-TH1, with average ambient and minimum background noise levels summarised in Table 4.1.

Time Period	Average ambient noise level	Typical background noise level
	$L_{eq:T}$	$L_{90:5min}$
Daytime (07:00 - 23:00)	53 dB(A)	45 dB(A)
Night-time (23:00 - 07:00)	47 dB(A)	42 dB(A)

Table 4.1: Unattended average ambient and minimum background noise levels

4.2 Attended Noise Survey Results

Table 4.2 presents the results of the measurements carried out at the attended positions shown in attached site plan 17576-SP1. The $L_{Aeq,15min}$ noise levels were obtained.

Position	Duration	$L_{eq,T}$	Noise Source Description
1	15 min	59 dB(A)	Consistent road traffic noise from Rochdale Road with occasional contribution from car passes on Dalton Street and train passes on the adjacent rail line

Table 4.2: Attended Average ambient and minimum background noise levels

5.0 ASSESSMENT OF WAREHOUSE STRUCTURES

For internal activities and music, the breakout of noise to identified receptors will be heavily influenced by the sound reduction offered by the external building fabric of the warehouses.

The two warehouses have been named 'The Love Factory' and 'RA Motors' and are located as indicated in Figure 5.1.



Figure 5.1: Plan view of warehouse locations on site

Due to the arrangement of the connected warehouses, the south façade of The Love Factory and the north façade of RA Motors are not exposed and will therefore not emit noise.

A combination of measurement and calculation has been used to determine the expected level of sound reduction offered by the exposed facades of each warehouse, as described below.

5.1 Noise Breakout Measurements

For warehouse facades that could be accessed for measurement, noise breakout measurements were undertaken in order to accurately determine the sound reduction of existing elements. Onsite measurements were undertaken for the following facades:

- The Love Factory:

- North Façade
- East Façade [Door Element and Wall Element]
- RA Motors:
 - East Facade

Warehouse doors were closed during measurements. The effects of opening shutter doors during certain events have been assessed using composite sound reduction index calculations as described in Section 5.2.

Measurements were undertaken on site by Jamie Newton AMIOA on 9 May 2022.

High volume “white” noise was generated from two loudspeakers in the source rooms, positioned to obtain a diffuse sound field. A spatial average of the resulting one-third octave band noise levels between 50 Hz and 10 kHz was obtained by using a moving microphone technique over a minimum period of 15 seconds at each of two positions.

The same measurement procedure was used outside the building and in order to depict the best possible impression of noise breakout at identified potential breakout points.

The background noise levels at the external measurement positions were measured during the tests and the receiver levels corrected accordingly.

The dominant source of background noise observed during the tests was road traffic noise from surrounding roads.

The measured sound reduction performances of each façade are shown in Table 5.1.

Element	Octave band centre frequency SRI, dB					
	125	250	500	1k	2k	4k
The Love Factory [North Façade] ^[1]	16	21	22	22	23	27
The Love Factory [East Façade Door]	18	20	22	23	25	23
The Love Factory [East Façade Wall] ^[1]	20	22	25	25	27	26
RM Motors [East Façade Wall] ^[1]	21	23	24	26	25	29

Table 5.1: Measured sound reduction performance of different elements

[1] Levels limited by the presence of a nearby roller shutter door. Actual performance of this element in isolation would be expected to be higher.

5.2 Additional Calculations

For facades that could not be accessed during the measurements (facades overlooking site boundaries to inaccessible sites, or roofs which could not be accessed due to height), or for facades that could have varied sound reduction (due to the opening of shutter doors), library data and standard acoustic formulae have been used to further inform the assessment.

Observed elements that could not be measured have been assumed to have the sound reduction indexes shown in Table 5.2, based on onsite visual observations and available library data.

Element	Octave band centre frequency SRI, dB					
	125	250	500	1k	2k	4k
Steel Cladding [Walls & Roof]	30	20	22	30	28	31
Masonry [Walls]	37	42	52	60	63	69
Open Area [Shutter Doors]	0	0	0	0	0	0
Fibreglass Roof	25	30	33	33	38	39
Plastic Rooflights	17	24	30	28	24	28

Table 5.2: Assumed sound reduction performance from different building elements

During annual festival events, the shutter doors into each warehouse will typically be left open, to allow free movement between indoor and outdoor spaces.

During regular events, shutter doors will be closed, and access into warehouses with amplified music playback will be provided through lobbied entrance doors, controlled by door staff to ensure one door is closed at all times.

The calculated composite sound reduction of each radiating façade during festival conditions, with open shutter doors, is shown in Table 5.3.

Element	Surface Area of Element m ²	Sound Reduction Index, dB					
		125	250	500	1k	2k	4k
The Love Factory Facades							
North Façade – Total Surface Area 393 m ²							
Composite [Measured]	393 m ²	16	21	22	22	23	27
East Façade – Door Element 94 m ²							
Wall Element {Measured]	53 m ²	20	22	25	25	27	26
Open Door	41 m ²	0	0	0	0	0	0
Composite	94 m ²	4	4	4	4	4	4
East Façade – Wall Element 85 m ²							
Steel Cladding	85 m ²	30	20	22	30	28	31
Composite	85 m ²	30	20	22	30	28	31
West Façade – Total Surface Area 237 m ²							
Masonry	237 m ²	37	42	52	60	63	69
Composite	237 m ²	37	42	52	60	63	69
Roof – Total Surface Area 979 m ²							
Fibreglass Roof	886 m ²	25	30	33	33	38	39
Rooflight	93 m ²	17	24	30	28	24	28
Composite	979 m ²	23	29	33	32	32	36
RM Motors Facades							
South Façade – Total Surface Area 293 m ²							
Masonry	53 m ²	37	42	52	60	63	69
Steel Cladding	41 m ²	30	20	22	30	28	31
Composite	293 m ²	36	31	34	42	40	43
East Façade – Total Surface Area 200 m ²							
Wall Element {Measured]	188 m ²	21	23	24	26	25	29
Open Door	11 m ²	0	0	0	0	0	0
Composite	200 m ²	11	11	11	11	11	11
West Façade – Total Surface Area 194 m ²							
Masonry	13 m ²	37	42	52	60	63	69
Steel Cladding	180 m ²	30	20	22	30	28	31
Composite	194 m ²	37	42	52	60	63	69
Roof – Total Surface Area 849 m ²							
Steel Cladding	886 m ²	30	20	22	30	28	31
Rooflight	93 m ²	17	24	30	28	24	28
Composite	849 m ²	26	20	22	30	27	31

Table 5.3: Sound Reduction Indices - Festivals

The calculated composite sound reduction of each radiating façade during event conditions, with closed shutter doors, is shown in Table 5.4.

In order to ensure noise breakout through the lobbied entrance is suitably controlled, we would recommend ensuring each door to the lobby of any warehouse where amplified music will be played has a minimum stated sound reduction of R_w 35 dB. Alternatively, it should be demonstrated that existing doors meet this performance. Doors should be designed such that an airtight seal is achieved when closed.

Element	Surface Area of Element m²	Sound Reduction Index, dB					
		125	250	500	1k	2k	4k
The Love Factory Facades							
North Façade – Total Surface Area 393 m²							
Composite [Measured]	393 m²	16	21	22	22	23	27
East Façade – Door Element 94 m²							
Composite [Measured]	94 m²	18	20	22	23	25	23
East Façade – Wall Element 85 m²							
Steel Cladding	85 m²	30	20	22	30	28	31
Composite	85 m²	30	20	22	30	28	31
West Façade – Total Surface Area 237 m²							
Masonry	237 m²	37	42	52	60	63	69
Composite	237 m²	37	42	52	60	63	69
Roof – Total Surface Area 979 m²							
Fibreglass Roof	886 m²	25	30	33	33	38	39
Rooflight	93 m²	17	24	30	28	24	28
Composite	979 m²	23	29	33	32	32	36
RM Motors Facades							
South Façade – Total Surface Area 293 m²							
Masonry	53 m²	37	42	52	60	63	69
Steel Cladding	41 m²	30	20	22	30	28	31
Composite	293 m²	36	31	34	42	40	43
East Façade – Total Surface Area 200 m²							
Composite [Measured]	200 m²	21	23	24	26	25	29
West Façade – Total Surface Area 194 m²							
Masonry	13 m²	37	42	52	60	63	69
Steel Cladding	180 m²	30	20	22	30	28	31
Composite	194 m²	37	42	52	60	63	69
Roof – Total Surface Area 849 m²							
Steel Cladding	886 m²	30	20	22	30	28	31
Rooflight	93 m²	17	24	30	28	24	28
Composite	849 m²	26	20	22	30	27	31

Table 5.4: Sound Reduction Indices - events

6.1 Receivers

The methodology of using a 3D noise model allows all receivers in all directions to be assessed.

In order to provide an assessment of the worst affected identified receivers, detailed analysis of the following receptors has been undertaken:

- Emmeline Apartments
- Tobacco Factory Apartments:
- Melia House
- Collingham Street

Receptors have been placed at maximum window heights at each location, in order to ensure any effects of screening are minimised.

The assessed receiver locations are indicated in Figure 6.2.



Figure 6.2: Plan view indicating assessed residential receivers

7.0 NOISE IMPACT ASSESSMENT - FESTIVAL

7.1 Local Authority Festival Noise Criteria

The Manchester City Council document “Guidance on Noise Control for Open Air Concerts and Events” (2018) refers to guidelines set out in the Noise Council’s Code of Practice.

These guidelines provide maximum Music Noise Levels (MNL) at 1 metre from the façade of any noise sensitive premises for events held between the hours of 09:00 and 23:00. Table 7.1 presents these guideline maximum MNLs.

Concert days per calendar year, per venue	Venue Category	Guideline
1 to 3	Urban Stadia or Arenas	The MNL should not exceed 75 dB $L_{Aeq, 15min}$
1 to 3	Other Urban and Rural Venues	The MNL should not exceed 65 dB $L_{Aeq, 15min}$
4 to 12	All Venues	The MNL should not exceed the background noise level by more than 15dB(A) over a 15 minute period

Table 7.1: Maximum Music Noise Levels

Guidelines are also given specifically for low frequency noise, setting a limit 1 metre from the façade of any noise sensitive premises of 75 dB at 63 Hz and 125 Hz for Dance Music, electronic, Drum & Bass, Dubstep, Reggae and RnB.

It is understood the festival will adhere to the site’s licensed hours of 11:00 to 23:00 as a worst case. The site is in an area such that it would be considered ‘Other Urban’.

7.2 Proposed Noise Level Criteria

On the basis of Section 7.1, Table 7.2 presents the proposed noise limits to be achieved at the windows of the worst affected dwellings.

Noise Type	Period	Leq @ 63 Hz	Noise Limit Leq @ 125 Hz	$L_{Aeq,t}$
Festival Noise	(11:00-23:00 hours)	75 dB	75 dB	65 dB(A)

Table 7.2: Proposed maximum noise level criteria for festival

7.3 Festival Noise Impact Assessment

The noise limits shown below in Table 7.3 are recommended for all indoor and outdoor stages during the annual festival, in order to ensure compliance with the music noise criteria set out in Section 7.2 of this report.

These limits should be met at 1 m from the stage structures for outdoor stages, and 1 m from the capacity areas for indoor stages (measured within the building).

Note: The limits shown in Table 7.3 are predictions, based on the stated assumptions and calculations.

Period	Low Frequency Limits		Overall Limit
	63Hz	125Hz	
11:00 – 23:00	90 dB	90 dB	91 dB(A)

Table 7.3: Festival music noise emission limits

A visual representation of music noise propagation as well as overall noise levels at the nearby residential receivers are shown in the attached noise map in attached Appendix B1.

The modelled daytime noise levels at the nearest noise sensitive receivers are summarised in Table 7.4.

Receiver	Low Frequency Levels		Overall Level
	63Hz	125Hz	
Criteria	75 dB	75 dB	65 dB(A)
Emmeline Apartments	66 dB	65 dB	64 dB(A)
Tobacco Factory	60 dB	59 dB	55 dB(A)
Melia House	63 dB	60 dB	59 dB(A)
Collingham Street	58 dB	59 dB	56 dB(A)

Table 7.4: Noise levels and project criterion at noise sensitive receivers

As shown in Table 7.4 and Appendix B1, transmission of noise to the nearest sensitive windows due to the effects of the events and activities would meet the set criteria, based on predictions.

Further details of noise limits and additional noise control measures are stated in the attached Noise Management Plan.

8.0 NOISE IMPACT ASSESSMENT - EVENTS

8.1 Local Authority Noise Criteria

For regular events, the Manchester City Council planning requirements would apply.

The Local Authority general criteria for noise emissions are as follows:

“Where entertainment noise is proposed the LAeq (entertainment noise) shall be controlled to 10dB below the LA90 (without entertainment noise) in each octave band at the façade of the nearest noise sensitive location”

Based on the results of the environmental noise survey and these requirements, Table 8.1 presents the proposed plant noise emission criteria to be achieved at 1 m from the nearest noise sensitive receiver.

Period	Entertainment Noise Emission Limit Leq: T
Event Times (11:00 - 23:00)	35 dB(A)

Table 8.1: Event noise emission limits

Noise emissions should also be 10 dB below the spectral background noise level in each frequency band.

8.2 Events Noise Impact Assessment

The noise limits shown below in Table 8.2 are recommended for all indoor and outdoor activities during regular events, in order to ensure compliance with the music noise criteria set out in Section 8.1 of this report.

These limits should be met at 1 m from any loudspeaker and 1 m from any activities for outdoor operations, and 1 m from the capacity areas for indoor stages (measured within the building).

Note: The limits shown in Table 8.2 are predictions, based on the stated assumptions and calculations.

Period	Low Frequency Limits		Overall Limit
	63Hz	125Hz	
11:00 – 23:00 [Limit for Indoor Activities]	82 dB	90 dB	91 dB(A)
11:00 – 23:00 [Limit for Outdoor Activities]	53 dB	59 dB	59 dB(A) ^[1]

Table 8.2: Event music noise emission limits

[1] This limit is particularly low and may mean that outdoor amplified music is not practicable. Other outdoor activities such as food tasting, and general conversations may be acceptable.

A visual representation of music noise propagation as well as overall noise levels at the nearby residential receivers are shown in the attached noise map in attached Appendix B2.

The modelled daytime noise levels at the nearest noise sensitive receivers are summarised in Table 8.3.

Receiver	Low Frequency Levels		Overall Level
	63Hz	125Hz	
Criteria	42 dB	36 dB	35 dB(A)
Emmeline Apartments	42 dB	34 dB	34 dB(A)
Tobacco Factory	36 dB	35 dB	33 dB(A)
Melia House	30 dB	29 dB	29 dB(A)
Collingham Street	31 dB	28 dB	25 dB(A)

Table 8.3: Noise levels and project criterion at noise sensitive receivers

As shown in Table 8.3 and Appendix B2, transmission of noise to the nearest sensitive windows due to the effects of the events and activities would meet the set criteria, based on predictions.

Further details of noise limits and additional noise control measures are stated in the attached Noise Management Plan.

9.0 PLANT NOISE EMISSIONS

Latest proposals are to use the onsite mains electricity supply to power events, which has been found to be sufficient. It is understood that no fixed plant is therefore proposed.

If there are proposals to introduce plant in future, we would recommend ensuring suitable noise limits are met.

The Manchester City Council general criteria for noise emissions refers to BS 4142:2014 as follows:

“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.”

Based on the results of the environmental noise survey and requirements of Manchester City Council, Table 9.1 presents the proposed plant noise emission criteria to be achieved at the nearest noise sensitive receiver:

Period	Plant Noise Emission Limit $L_{eq,T}$
Event Times (11:00 - 23:00)	40 dB(A)

Table 9.1: Plant noise emission limits

10.0 CONCLUSION

An environmental noise survey and breakout measurements have been undertaken at 202 - 204 Dantzic Street, Manchester to support a planning application for the use of two warehouses and associated land for arts, music and cultural venue/event space including theatre, dance performance-related activities (Sui Generis) with associated food and drink festivals (Flexible Use Class E / Sui Generis), for a temporary period of two years.

The results of the survey, combined with measurements of worst-case amplified music and façade sound insulation performance have enabled the assessment of the noise impact of music noise during a proposed music festival, as well as the operation of smaller events on the nearest noise sensitive receivers.

Calculations show that noise emissions from the proposed festival will meet the requirements of the Manchester City Council with the recommended noise limits as stated herein.

Further calculations have demonstrated that more regular events would meet more stringent requirements.

All calculations rely on the attached noise management plans being followed.

Author
Jamie Newton
Consultant
BEng (Hons) AMIOA

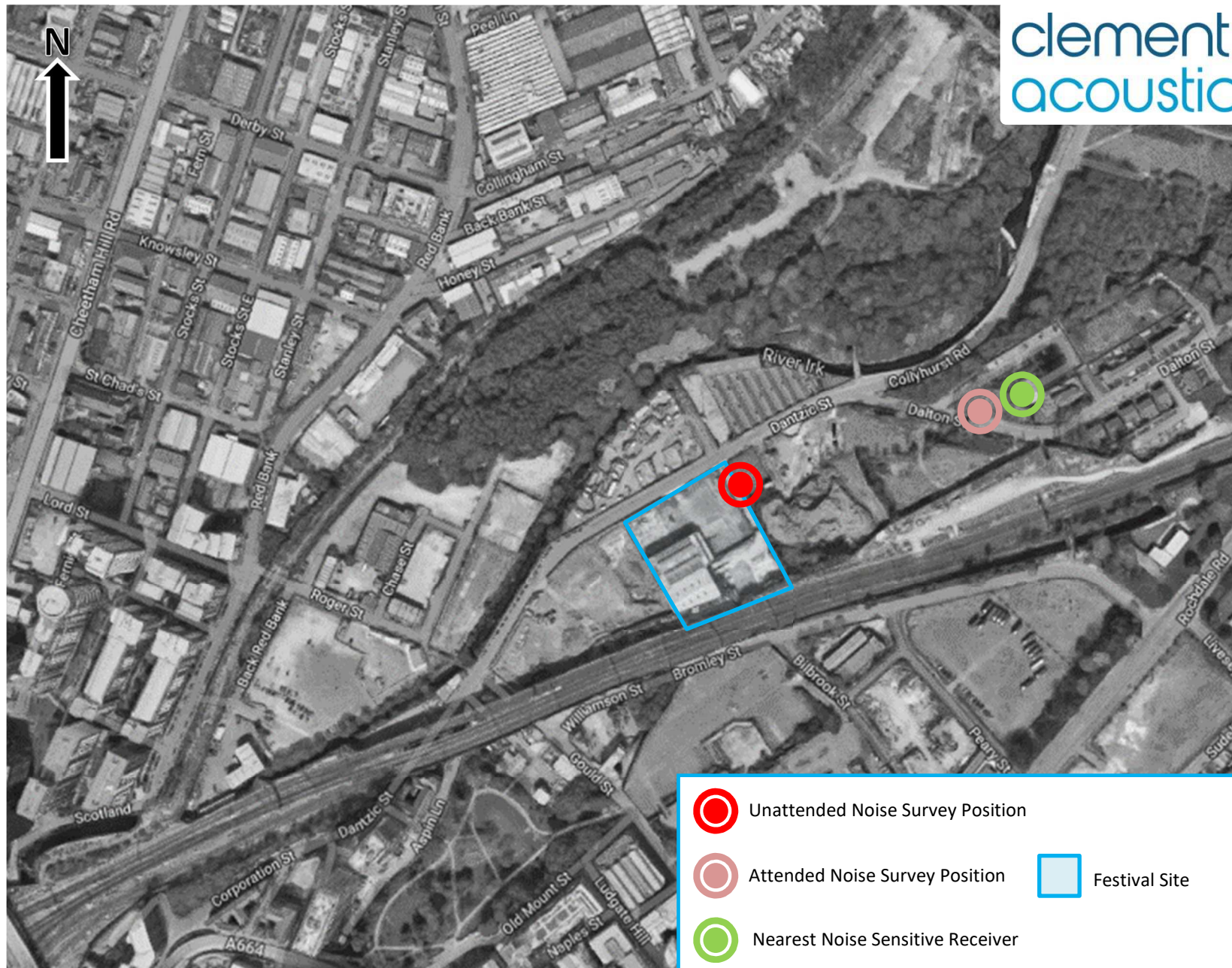


27 September 2022

Checked & Approved
Duncan Martin
Director
BSc (Hons) MIOA



27 September 2022

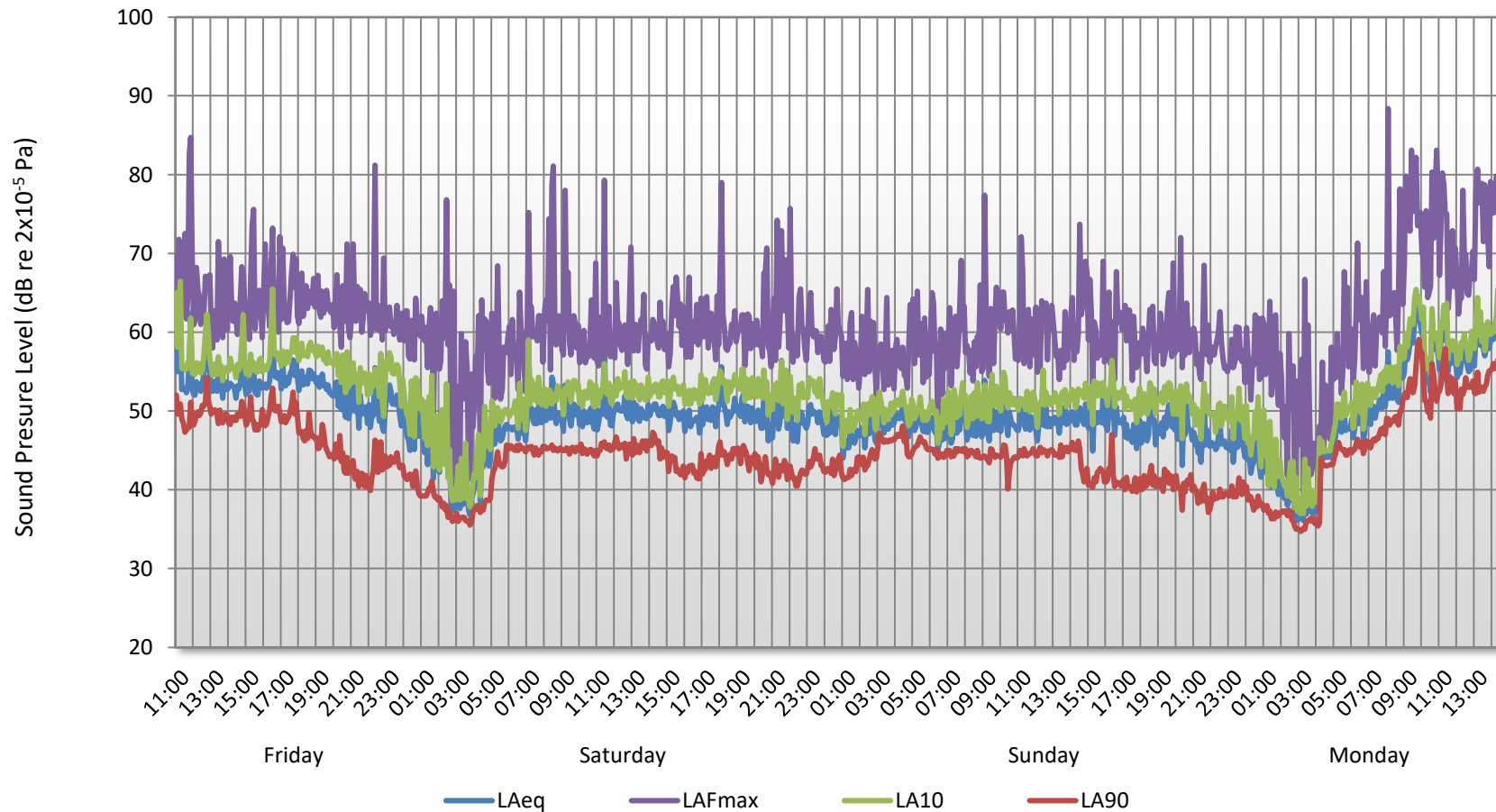


17576-SP1 Indicative site plan indicating noise monitoring position and nearest noise sensitive receivers

Date: 27 September
2022

202 - 204 Dantzic Street, Manchester

Environmental Noise Time History
06 May 2022 to 09 May 2022



Introduction

Clement Acoustics has been commissioned by Connecting Dots Group Limited to produce a noise management plan for 202 - 204 Dantzic Street, Manchester, to support a planning application for the use of two warehouses and associated land for arts, music and cultural venue/event space including theatre, dance performance-related activities (Sui Generis) with associated food and drink festivals (Flexible Use Class E / Sui Generis), for a temporary period of two years.

The purpose of this document is to put in place best available techniques (BAT) to reduce noise emissions from the proposed use.

Site Description

The site comprises two warehouses and associated outdoor space on Dantzic Street. Annual proposals are for two indoor stages and four outdoor stages with amplified music. Smaller event proposals are predominantly for use of the two indoor warehouse spaces, with some outdoor use depending on the time of year.

The surrounding area is predominantly industrial in nature. The nearest noise sensitive receiver has been identified as Emmeline Apartments, approximately 230 m from the eastern site boundary of the site.

Proposed Noise Management Plan - Festival

In order to reduce the likelihood of causing an adverse impact during the festival's operation it has been recommended that the following mitigation measures are implemented:

- The noise limits as stated in the Clement Acoustics document 17576-NIA-01_Rev1 must be achieved for all amplified music. These limits should be met at 1 m from the stage structures for outdoor stages, and 1 m from the capacity areas for indoor stages (measured within the building).

Location	Low Frequency Limits		Overall Limit
	63Hz	125Hz	
At Source ^[1]	90 dB	90 dB	91 dB(A)
At Receivers	75 dB	75 dB	65 dB(A)

Note [1]: The limits shown are predictions, based on the stated assumptions and calculations

- The procedures detailed in document 'Temporary Use Planning and Events Strategy' must be followed, in order to ensure that the onsite noise limits shown above, and the receiver noise limits shown in Tables 7.2 and 7.4 of 17576-NIA-01 RevI are not exceeded.
- Each event that will take place on the site will be different in its nature and therefore, no permanent sound system will be installed. Once a sound system is installed and prior to the commencement of the event, the methodology of spot measurements should be undertaken to demonstrate the noise limits are complied with. This shall include noise measurements taken 1 m from the stage structures for outdoor stages, and 1 m from the capacity areas for indoor stages (measured within the building) to confirm compliance with the limits presented in table 7.3 of the NIA and noise measurements at the identified receptors to confirm compliance with the noise levels at the receivers presented in Table 7.4 of the NIA dated 16th September 2022.
- Should it be found that during noise testing prior to commencement of the festival, the noise levels presented in table 7.3 lead to an exceedance of the limits at the receptor presented in table 7.4, then noise levels will need to be reduced accordingly to ensure compliance with Table 7.4. These actions and revised limits will be recorded.
- Once compliance confirmed, the noise levels at the sound system shall be set and locked / made tamperproof and complied with throughout the duration of the festival. Measurements taken during this verification exercise along with photographic evidence that the limits have been set on the sound system must be securely stored and made available to the Local Authority on request.
- Further measurements should be taken during the festival to ensure continued compliance, as detailed in 'Temporary Use Planning and Events Strategy'. Measurements will be securely stored and made available to the Local Authority on request.
- All loudspeakers should be isolated from the warehouse building structure. For fixed speakers, this should be achieved using neoprene fixings for all speaker mountings. For free standing speakers, these should be sited on a suitable isolating material.
- The behaviour of patrons can be a significant factor in the levels of generated noise, particularly where the sale of alcohol is concerned. Regular patrols should be undertaken during and after the festival to identify and prevent any potential for unnecessary noise due to the behaviour of patrons.

- Patrons should also be reminded of the nature of surrounding premises upon leaving the premises following the end of festival operations

Proposed Noise Management Plan - Events

In order to reduce the likelihood of causing an adverse impact during event operations it has been recommended that the following mitigation measures are implemented:

- The noise limits as stated in the Clement Acoustics document 17576-NIA-01_RevH must be achieved for all amplified music.

Location	Low Frequency Limits		Overall Limit
	63Hz	125Hz	
Limit for Indoor Activities at Source ^[1]	82 dB	90 dB	91 dB(A)
Limit for Outdoor Activities at Source ^[1]	53 dB	59 dB	59 dB(A)
Limit at Receiver	42 dB	36 dB	35 dB(A)

Note [1]: The limits shown are predictions, based on the stated assumptions and calculations

- The procedures detailed in document 'Temporary Use Planning and Events Strategy' must be followed, in order to ensure that the onsite noise limits shown above, and the receiver noise limits shown in Table 8.3 of 17576-NIA-01 RevH are not exceeded.
- Each event that will take place on the site will be different in its nature and therefore, no permanent sound system will be installed. Once a sound system is installed and prior to the commencement of the event, the methodology of spot measurements should be undertaken to demonstrate the noise limits are complied with. This shall include noise measurements taken 1 m from the stage structures for outdoor stages, and 1 m from the capacity areas for indoor stages (measured within the building) to confirm compliance with the limits presented in Table 8.2 of the NIA and noise measurements at the identified receptors to confirm compliance with the noise levels at the receivers presented in Table 8.3 of the NIA dated 16th September 2022.
- Should it be found that during noise testing prior to commencement of the event, the noise levels presented in Table 8.2 lead to an exceedance of the limits at the receptor presented in Table 8.3, then noise levels will need to be reduced accordingly to ensure compliance with Table 8.3. These actions and revised limits will be recorded.

- Once compliance confirmed, the noise levels at the sound system shall be set and locked / made tamperproof and complied with throughout the duration of the event. Measurements taken during this verification exercise along with photographic evidence that the limits have been set on the sound system must be securely stored and made available to the Local Authority on request.
- Further measurements should be taken during the event to ensure continued compliance, as detailed in 'Temporary Use Planning and Events Strategy'. Measurements will be securely stored and made available to the Local Authority on request.
- All loudspeakers should be isolated from the warehouse building structure. For fixed speakers, this should be achieved using neoprene fixings for all speaker mountings. For free standing speakers, these should be sited on a suitable isolating material.
- Roller shutters should be closed throughout the smaller weekly event operations, with access and exit provided by smaller doors to the buildings.
- Access doors to all warehouses where amplified music will be played must be treated with lobbies and controlled such that one door can remain closed at all times. Each door to the lobby should have a minimum sound reduction of R_w 35 dB.
- Prior to any event taking place, details of proposed doors must be submitted to, and approved by, Clement Acoustics.
- The screening of sports events should only be undertaken in warehouses treated with acoustic lobby areas.
- The behaviour of patrons can be a significant factor in the levels of generated noise, particularly where the sale of alcohol is concerned. Regular patrols should be undertaken during and after the events to identify and prevent any potential for unnecessary noise due to the behaviour of patrons.
- Patrons should also be reminded of the nature of surrounding premises upon leaving the premises following the end of event operations

GLOSSARY OF ACOUSTIC TERMINOLOGY

dB(A)

The human ear is less sensitive to low (below 125Hz) and high (above 16kHz) frequency sounds. A sound level meter duplicates the ear's variable sensitivity to sound of different frequencies. This is achieved by building a filter into the instrument with a similar frequency response to that of the ear. This is called an A-weighting filter. Measurements of sound made with this filter are called A-weighted sound level measurements and the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq} . The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for not more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise

L_{90}

This is the level exceeded for not more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 10 such octave bands whose centre frequencies are defined in accordance with international standards.

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than one alone and 10 sources produce a 10 dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3 dB for each doubling of distance.

Subjective impression of noise

Sound intensity is not perceived directly at the ear; rather it is transferred by the complex hearing mechanism to the brain where acoustic sensations can be interpreted as loudness. This makes hearing perception highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a reasonable guide to help explain increases or decreases in sound levels for many acoustic scenarios.

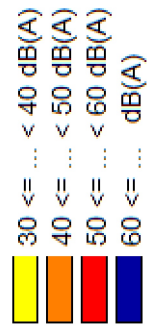
Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud
20	About 4 times as loud

Barriers

Outdoor barriers can be used to reduce environmental noises, such as traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and its construction.

Reverberation control

When sound falls on the surfaces of a room, part of its energy is absorbed and part is reflected back into the room. The amount of reflected sound defines the reverberation of a room, a characteristic that is critical for spaces of different uses as it can affect the quality of audio signals such as speech or music. Excess reverberation in a room can be controlled by the effective use of sound-absorbing treatment on the surfaces, such as fibrous ceiling boards, curtains and carpets.



17576 - 204 Dantzic Street, Manchester

Appendix B2 - Event Noise Model

