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TECHNICAL REPORT P8471

THE DRAFT PROJECT
363 UNION STREET
ABERDEEN

NOISE IMPACT ASSESSMENT FOR PUBLIC BAR MARQUEE

Prepared For

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1.0 INTRODUCTION

At the request of Mr Richard Slater, Design & Delivery Lead, Tinto Architects, an environmental noise impact assessment has been undertaken at:

363 Union Street
ABERDEEN

The assessment has been carried out to ascertain what noise levels would be experienced at the nearest noise sensitive residences when the marquee is operating and to suggest mitigation measures should the levels indicate that they would be likely to result in an adverse noise impact.

The current background noise levels were measured at the one of the noise sensitive residences and an assessment was undertaken for the likelihood of complaints. This was done by comparing it with the information contained within PAN 1/2011.

This noise measurements were taken by Mr William Hay, Acoustic Technician and the assessment was undertaken by Mr Scott Carlin MIOA, Senior Acoustic Consultant, Ethos Environmental Ltd.

2.0 BACKGROUND & METHODOLOGY

2.1 Site Location

The site is located on Langstane Place, Aberdeen, between Union Street and Langstane Place. See Figure 1 below.

Draft Project Location

Noise sensitive receptors

The nearest noise-sensitive receptors are:

House on Bon Accord Terrace adjacent to Hardgate and Langstane Place (26 Bon Accord terrace and 33 Hardgate), southwest of the Draft Project
343 Union Street to the Northeast of the Draft Project
375 Union Street to the Northwest of the Draft Project.

The site location and proposed site layout is shown in Figure 1 below and in Appendix 2.

The measurement positions are shown in Figure 1 below and detailed as follows.

Sample Position 1: Inside the compound under the canopy of the Marquee
Sample Position 2: Inside the Marquee
Sample Position 3: Bon Accord Terrace at NSR

These were one-hour measurements; however they have been broken down into 5-minute measurements to identify particularly noisy events.

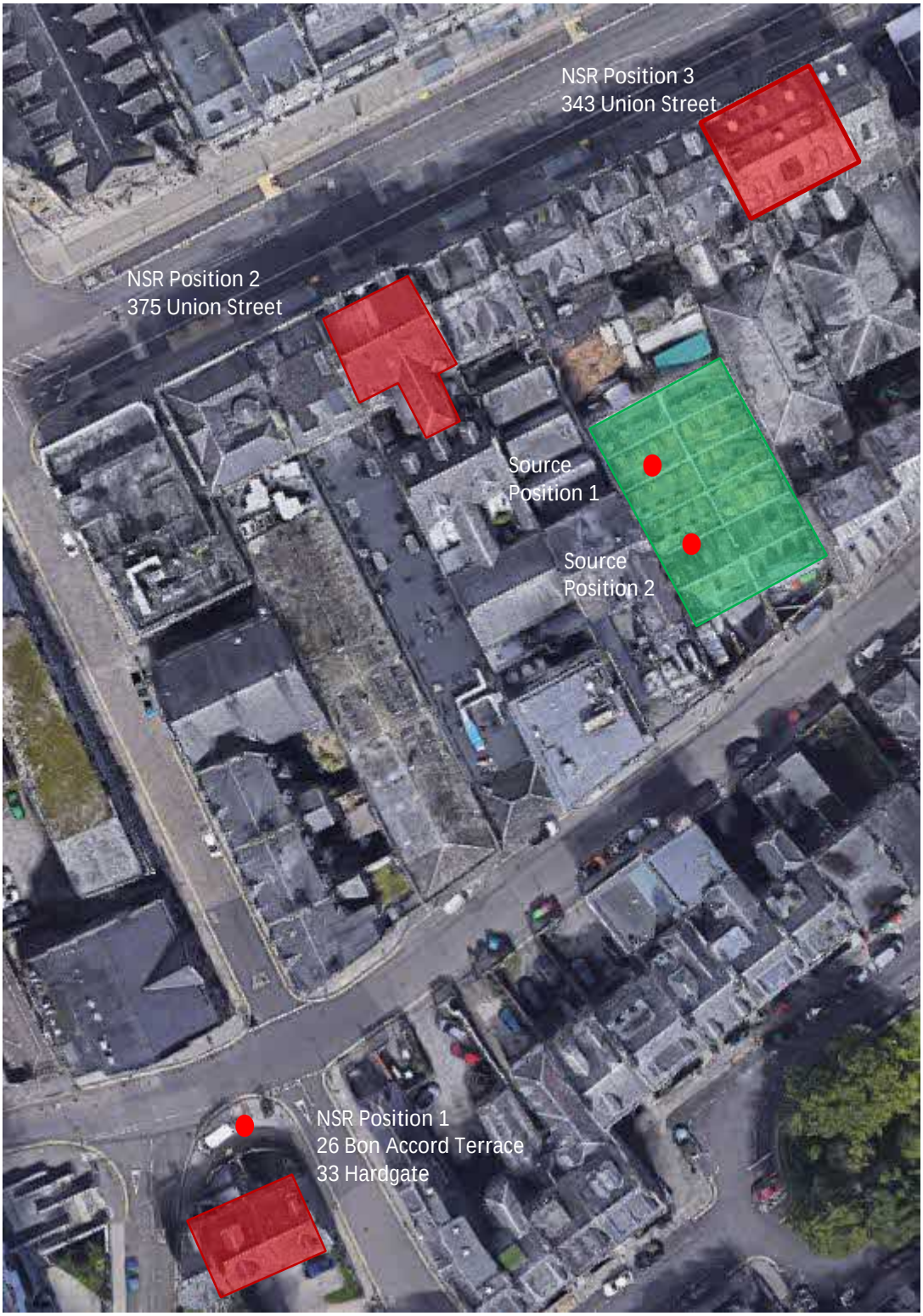


Figure 1: Location of the Draft Project and Receptor Locations

2.2 Assessment Strategy

The assessment strategy was agreed with the client and following discussions with an EHO representative of Aberdeen City Council. The objective is to assess the likelihood of complaints from the nearest noise-sensitive residences, considered to be the flats on Union Street (see Figure 1).

The Council identified the location of all the noise sensitive receptors to be considered in the assessment.

2.3 Methodology

Noise measurements from amplified music were taken from the Ethos Environmental Measurement Library. This amplified music was recorded at a Dance Studio and was dance music genre with an overall noise level of 90dB L_{Aeq} which is considered a level commensurate with a public house playing music.

The noise levels at the façade of the nearest noise sensitive residences are calculated by the CADNA A noise modelling software (see Appendix 3).

A background noise level was measured at the one of the noise sensitive receptors on Bon Accord Terrace. There are two additional receptors to the northwest and northeast on Union Street. All other surrounding properties are commercial businesses.

All measurements take due cognisance of information contained in BS7445: Part 1: 2003 Description and measurement of environmental noise - Guide to quantities and procedures and BS7445: Part 2: 1991 Description and measurement of environmental noise - Guide to the acquisition of data pertinent to land use.

2.4 Instrumentation

Measurements were taken with a Norsonic 140 and Norsonic 150 Class 1 integrating sound level meter and octave band analysers.

These meters satisfy BS EN 61672-1:2013 Electroacoustics. Sound level meters - Specifications.

3.0 DISCUSSION OF RESULTS

3.1 Environmental Conditions

Site assessment and monitoring was undertaken on the 16th of July 2021 between 1330 and 1700. The weather conditions were as follows:

Barometer - mb	1026.5
Temp - °C	11.4
Hum - %	86.4
Wind Speed - m/s	0.3
Wind Direction	NE
Rain - mm	0
Cloud Cover	3 octas

3.2 Monitoring Results

Monitoring was undertaken to establish the background noise level at one of the noise-sensitive receptors as well as some existing source measurements within the Draft Project public house.

These measurements are not used as the source measurements, as no amplified music was playing in the Draft Project at the time. Amplified dance music, taken from the Ethos Environmental Noise Library was used in the modelling and the noise levels plotted to the nearest noise sensitive receptors, which are:

- 343 Union Street
- 375 Union Street
- House on the corner of Hardgate and Bon Accord Terrace.

The current opening times of the public house are as follows:

Mon - Thurs: 4-10pm
Fri, Sat & Sun: 12-10pm

The results from source monitoring are presented in Table 1 below.

Table 1: Source Noise Measurements

Measurement Type	Location[1]	Duration	Run Time	Average Noise Levels L_{Aeq} dB	Maximum Noise Level L_{Amax} dB
Source – Position 1	Southwest of Bar – Under external canopy	1 hour	1712 to 1810	60.2	81.4
		1 hour	2054 to 2153	74.8	90.1
		1 hour	2215 to 2314	62.0	84.3
		1 hour	1108 to 1207	61.9	83.2
Source – Position 2	Northwest of Bar – Under external canopy	1 hour	1711 to 1809	62.1	81.2
		1 hour	2054 to 2152	80.8	92.7
		1 hour	2215 to 2314	60.1	84.4
		1 hour	1108 to 1207	56.3	83.7
Noise Sensitive Receiver – Position 3	Bon Accord Terrace at Hardgate and Langstane Place	0.5 hours	2347 to 0021	63.9	86.1
				Background L_{A90} dB	49.1

[1] for activities during measurements see Table 4 below.

Table 2 details the $L_{Aeq,5min}$ inside the Draft Project when operational. This parameter is used to highlight periods of particular higher noise levels by patrons.

Table 2: Average Source Noise Measurements ($L_{Aeq,5min}$)

Measurement Type	Location[1]	Duration	Time of Measurement	Average Noise Levels L_{Aeq} dB
Source – Position 1	Southwest of Bar – Under external canopy	5mins	1810	62.2
		5mins	2137	80.8
		5mins	2254	59.1
		5mins	1207	56.4
Source – Position 2	Northwest of Bar – Under external canopy	5mins	1802	60.3
		5mins	2059	74.6
		5mins	2220	61.9
		5mins	1207	62.3

Table 3 below shows the maximum measured 5-min L_{Aeq} dB for all the measurements.

Table 3: Maximum Source Noise Measurements ($L_{Aeq,5min}$)

Measurement Type	Location[1]	Duration	Time of Measurement	Average Noise Levels L_{Aeq} dB
Source – Position 1	Southwest of Bar – Under external canopy	5mins	1810	65.2
		5mins	2137	81.6
		5mins	2254	65.0
		5mins	1207	60.1
Source – Position 2	Northwest of Bar – Under external canopy	5mins	1802	64.1
		5mins	2059	76.0
		5mins	2220	65.4
		5mins	1207	70.9

The bar's capacity is set at 342 persons. The monitoring undertaken was for 74 people (81.6 $L_{Aeq,5min}$ dBA). The worst-case noise level for maximum capacity is therefore calculated to be:

$L_{Aeq,5min}$ of 88.2 dB

This has been factored into the noise levels associated with the model by combining the 88.2dBA with the 96.0dBA associated with the music to produce a worst case noise level of 96.7dBA within the Marquee.

Table 4: Activities Being Undertaken During Monitoring

Measurement	Time	Activities Undertaken
Source Measurements	03/09/21 1700 to 1800	17:10 – 6 customers in bar 17:30 - 6 customers in bar Noise mainly from flooring from people walking about, various traffic noises, nothing of note.
	03/09/21 2100 to 2200	Approx. 74 people in marquee at start of measurement, low drone of plant noise from behind bar, all internal noise from customers talking/moving about, TVs on but on mute. Approx. 94 people at 21:15, down to approx. 62 at 21:49 External noise (NOR150) mainly from traffic and noise from Prohibition Nightclub on Langstane place
	03/09/21 2215 to 2314	Inside noise mainly from staff cleaning up Outside noise from traffic, music/public at Prohibition Nightclub, various instances of cars with big exhausts revving in street going past nightclub. Mr Brightside played at 22:27 from nightclub across the street perfectly audible inside marquee.
	04/09/21 1110 to 1210	No customers in bar after opening at 12 Light rain/drizzle, some traffic noise, most internal noise from staff moving about getting ready to open. Various instances of power tool use from Langstane Place, unsure of exact location, resembled oscillating multi-tool cutting plastic pipe. Loud noise at 12:05 on NOR150 is manager opening main roller-shutter entrance door to street
Receiver – Bon Accord Terrace.	06/10/21 2347 to 0021	Traffic on Union Street and Bon Accord Terrace. Overflowing drain halfway down street causing running water sound.

The modelled levels around the Marquee are presented in Tables 5 and 6 below. These modelled measurements assume that the Marquee south wall will be improved with Perspex to the roof level and 4mm glass to the bottom section. It also assumes that amplified music will not be played in excess of 96dBA.

At present the site has doors which remain open, as such the noise levels have been modelled with doors open and closed. These are presented in Tables 5 and 6 below.

The modelled noise levels with the doors open are presented in Table 5 below.

Table 5: Modelled Noise Level – Doors Open

Measurement Type	Location	Activity	Noise Level dB
Modelled	Bon Accord Street & Langstane Place	Music playing in Draft Project at 96dBA including the noise level from 342 persons (88.7dBA) which equals 96.7dBA	50.4
Modelled	Rear Façade of 343 Union Street		59.5
Modelled	Rear Façade of 375 Union Street		56.1
Modelled	Pavement Outside Draft Project		70.9
Modelled	Pavement Across Street from Draft Project		67.2
Modelled	Bon Accord Terrace		47.9

Noise levels with the doors (to Langstane Place) closed are presented in Table 6 below.

Table 6: Modelled Noise Level – Doors Closed

Measurement Type	Location	Activity	Noise Level dB
Modelled	Bon Accord Street & Langstane Place	Music playing in Draft Project at 96dBA including the noise level from 342 persons (88.7dBA) which equals 96.7dBA	23.6
Modelled	Rear Façade of 343 Union Street		45.6
Modelled	Rear Façade of 375 Union Street		44.1
Modelled	Pavement Outside Draft Project		47.6
Modelled	Pavement Across Street from Draft Project		47.2
Modelled	Bon Accord Terrace		20.9

As the modelled noise levels are below the background levels, considered to be representative of the rear of Union Street, this is a good indication that noise levels from the Draft Project are unlikely to be heard at these locations with the doors closed.

3.3 Noise Rating Assessment

In order to assess the impact of the noise from the Draft Project, the modelled noise levels were compared against the measured background noise level. A noise level 10dB below the background noise level is an indication that the noise will be inaudible at the nearest residences.

Table 7 below details the noise levels used for the noise impact assessment.

Table 7: Modelled Noise Level Used in Impact Assessment

Location	Modelled Levels		Measured Background L_{A90} dB
	Doors Open Noise Level dBA	Doors Closed Noise Level dBA	
Rear Façade of 343 Union Street	59.5	45.6	49.1[1]
Rear Façade of 375 Union Street	56.1	44.1	
26 Bon Accord Terrace	47.9	20.9	

3.4 Noise Impact Assessment

3.4.1 Stage 1: Sensitivity

The nearest noise sensitive receptors are (see Figure 1):

NSR Position 1: House on Bon Accord Terrace adjacent to Hardgate and Langstane Place (26 Bon Accord terrace and 33 Hardgate), southwest of the Draft Project
NSR Position 2: 343 Union Street to the Northeast of the Draft Project
NSR Position 3: 375 Union Street to the Northwest of the Draft Project

If we look at the assessment of how the source noise level will compare against background noise levels, we can see the modelled levels will be well above the background levels when the doors to the Draft Project are open and below the background noise level when the doors are closed.

[1] Background noise level L_{A90} dB was measured at Bon Accord Terrace, far away from the noise from the club.

However, in assessing the impact of an amplified music source affecting residential dwellings the residences would mostly be classed as highly sensitive.

3.4.2 Stage 2: Quantitative Assessment

The estimate of the magnitude of the noise impact is calculated from the estimate of the change in noise level at the nearest noise sensitive residence with amplified music playing and not playing.

It should be noted that the modelled levels are for the worst-case scenario of the Draft Project being at capacity (342 persons) and highest levels of amplified music playing.

Table 8: Difference of Modelled Levels to Measured Background

Location	Modelled Levels		Measured	Difference Against Background with Doors Open (dB)	Difference Against Background with Doors Closed (dB)
	Doors Open Noise Level dBA	Doors Closed Noise Level dBA	Background		
Rear Façade of 343 Union Street	59.5	45.6	49.1	10.4	-3.5
Rear Façade of 375 Union Street	56.1	44.1		7	-5
26 Bon Accord Terrace	47.9	20.9		-1.2	-28.2

As can be seen from Table 8 above, with the doors to the Draft Project open, the modelled noise levels at the properties on Union Street will be above the background levels assuming an internal music source of 96dBA and worst case situation of a full capacity of 342 persons.

The attenuation of an open window will afford 12dB[2] attenuation (worst case)[3] which will decrease the impact of the noise level within the bedrooms of the NSRs.

[2] NANR116: 'Open/Closed Window Research' Sound Insulation Through Ventilated Domestic Windows - The Building Performance Centre, School of the Built Environment, Napier University

[3] The current windows are likely to be sash and case, the attenuation is likely to be 14dB, however as a worst-case scenario we have assumed 12dB.

Table 9: Difference of Modelled Levels in Bedrooms to Levels in BS8233

Location	Modelled Levels		BS8233[4]	Difference Against BS8233 with Doors Open (dB)	Difference Against BS8233 with Doors Closed (dB)
	Doors Open Internal Noise Level dBA	Doors Closed Internal Noise Level dBA	Levels in Bedrooms for Sleep		
Rear Façade of 343 Union Street	47.5	33.6	35.0*	+12.5	-1.4
Rear Façade of 375 Union Street	44.1	32.1		+9.1	-2.9
26 Bon Accord Terrace	35.9	8.9		+0.9	-26.1

* This level has been selected over the recommended 30dB level s due the high background noise within the area, the noise level attributed to background noise with an open window would result in an internal noise level of 37dB.

The assignation of the magnitude is provided in Table 10 below.[5]

Table 10: Assigning Magnitudes of Noise Impact

Magnitude	Difference over Background Noise dB
Major	≥10
Major/Moderate	8 to 9.9
Moderate	6 to 7.9
Moderate/Marginal	4 to 5.9
Marginal	2 to 3.9
Marginal/Minor	0 to 1.9
Minor	0
Minor/Negligible	-2.0 to -0.1
Negligible	-4.0 to -2.1
Negligible /No Change	-6 to -4.1
No Change	-10 to -6.1

The magnitude of the noise impact at the facades of the NSRs for the doors being open and closed are presented in Table 11 below.

Table 11: Assessment of Magnitude at Façades

Location	Difference Against Background with Doors Open (dB)	Magnitude of Impact for Doors Open	Difference Against Background with Doors Closed (dB)	Magnitude of Impact for Doors Closed
Rear Façade of 343 Union Street	+10.4	Major	-3.5	Negligible
Rear Façade of 375 Union Street	+7.0	Moderate	-5	Negligible /No Change
26 Bon Accord Terrace	-1.2	Minor/ Negligible	-28.2	No Change

[4] BS8233:2014 Guidance for Sound Insulation and Noise Reduction in Buildings

[5] Taken from Table 3.4 in the Technical Advice Note issued under PAN 1/2011

The magnitude of impact for the internal rooms of the NSRs facing the Draft Project are presented in Table 12 below. This impact assumes a 12dB attenuation from an open window.

Table 12: Assessment of Magnitude Inside NSRs

Location	Difference Against BS8233 with Doors Open (dB)	Magnitude of Impact for Doors Open inside NSRs	Difference Against BS8233 with Doors Closed (dB)	Magnitude of Impact for Doors Closed Inside NSRs
Rear Façade of 343 Union Street	+12.5	Major	-1.4	Minor/ Negligible
Rear Façade of 375 Union Street	+9.1	Major/ Moderate	-2.9	Negligible
26 Bon Accord Terrace	+0.9	Marginal/ Minor	-26.1	No Change

3.4.3 Stage 3: Qualitative Assessment

The Draft Project is held within a Marquee consisting of 4mm toughened glass panels (see Appendix 5) throughout the Marquee and on the doors.

The doors seemed to remain open during the measurements, however this may have been during the summer months where the structure would get warm. Currently, the entrance doors on Langstane Place are shielded behind a wooden hoarding on the east side and a stone wall on the west. Patrons enter through a roller door to the marquee behind.

The wall and the hoarding act as barriers to the noise to a degree and reduce the breaking onto Langstane Place. The east and west of the site is bounded by stone walls which direct the sound vertically.

According to the register of Council tax, there are two residences on Union Street to the northeast and northwest of the site of the Draft Project. These are flatted dwellings which extend up to a height of approximately 12m.

The area is dominated by traffic movement on Union Street, Bon Accord Terrace and on Bon Accord Street, which continue to be busy during the evening hours and as such the noise climate is continuously dominated by traffic movements, resulting in high background and ambient noise levels.

The modelled worst case noise levels at the NSRs are in excess of the background noise levels with the doors to the Draft Project remaining open. This is primarily due to the number of reflective surfaces around where the Draft Project is located.

With the doors closed, and assuming these are airtight and constructed of a minimum of 4mm toughened glass, the noise levels at the noise sensitive receptors are below the background noise level.

It should be noted that an open window will provide 12dB of attenuation to noise which will further reduce the impact of the site when considering the noise level within the bedrooms of the NSRs. The noise levels within the bedrooms are compared against the values an internal noise level for resting of 35dB. The night sleeping level in BS8233 is stated as 30dB, however, given the external background noise levels and that the flats are located on Union Street, the noise levels with the windows open are likely to exceed 30dB.

As discussed, the model has been run with the worst-case noise levels, which is the Marquee at capacity (342 persons) and amplified music playing in the background at 96dBA.

Internal noise levels have been modelled to determine what level the interior of the Draft Project would need to be at or below in order to ensure that the noise levels were 10dB below background (as specified by the Aberdeen City Council EHO department) with the doors to the Marquee open.

3.4.4 Stage 4: Level of Significance

The level of significance is presented in Table 13 below.

Table 13: Level of Significance[6]

Magnitude of Impact* (After – Before) dB	Sensitivity of Receptor based on Likelihood of Complaint		
	Low	Medium	High
Major	Very Large	Very Large/ Extremely Large	Extremely Large
Major/Moderate	Large/Very Large	Very Large	Very Large/ Extremely Large
Moderate	Large	Large/Very Large	Very Large
Moderate/Marginal	Moderate/Large	Large	Large/Very Large
Marginal	Moderate	Moderate/Large	Large
Marginal/Minor	Slight/Moderate	Moderate	Moderate/Large
Minor	Slight	Slight/Moderate	Moderate
Minor/Negligible	Negligible/Slight	Slight	Slight/Moderate
Negligible	Negligible	Negligible/Slight	Slight
Negligible /No Change	Neutral/Negligible	Negligible	Negligible/Slight
No Change	Neutral	Neutral/Negligible	Negligible

(* see Table 10 above)

[6] This table is based upon the BS4142 system which states that a noise level 10dB below the background is positive evidence that complaints are unlikely. Levels 10dB above background will almost always result in complaints.

The level of significance of the NSRs around the Draft Project is presented in Table 14 below.

Table 14: Level of Significance of NSRs at the Façade

Location	Level of Significance for Doors Open	Level of Significance for Doors Closed
Rear Façade of 343 Union Street	Extremely Large	Slight/Moderate
Rear Façade of 375 Union Street	Very Large	Negligible/Slight
26 Bon Accord Terrace	Slight/Moderate	Negligible

Assuming a noise level of 96dB playing when the Draft Project is at full capacity of 342 persons, the noise level inside will be 96.7dBA. This will present a large/very large level of significance to the two properties on Union Street when the doors to the Draft Project are open. When they are closed, the impact is reduced to slight.

If we examine the noise levels within the rooms of the NSRs facing the Draft Project and assuming that the open window will afford an attenuation of 12dB, the level of significance is presented in Table 15 below.

Table 15: Level of Significance of NSRs within Rooms

Location	Level of Significance for Doors Open	Level of Significance for Doors Closed
Rear Façade of 343 Union Street	Extremely Large	Slight/Moderate
Rear Façade of 375 Union Street	Very Large/ Extremely Large	Slight
26 Bon Accord Terrace	Moderate/Large	Negligible/Slight

The noise levels at inside the bedrooms are likely to meet the 35dB for daytime resting as stated in BS8233. This figure has been selected due to the fact that the noise levels within the properties, currently exceed the 30dB level (stated for night-time sleeping detailed in BS8233) with the windows open, due to the existing background noise levels.

3.4.5 Conclusion

The model has been run with the walls of the marquee being constructed of 4mm toughened glass, all with an airtight seal. The roof is constructed of 4mm perspex, also with an airtight seal.

When the Draft Project is at full capacity and music is played at 96dBA, the noise levels experienced at the façade of the residential premises on Union Street to the north, will not be 10dB below background noise (343 Union Street and 375 Union Street – see Table 11). However, the noise level at the façade of the NSRs will be below the background noise level with the Draft Project's doors closed.

In order to achieve a level of 10dB below background noise levels at the rear façade of the residential premises with the doors closed, the noise level within the Draft Project must not exceed 83dBA.

It should be noted that the doors were observed to be open in the summer months. It may be possible to operate the Draft Project with the doors open, however the internal noise levels would need to be carefully controlled.

Should the Draft Project wish to operate with the doors open (e.g. during the summer months), in order for the noise level at the rear façade of the residential properties on Union Street to be acceptable (i.e below background noise level), the noise level within the Draft House must not exceed 86dBA. Should it be required to be at least 10dB below background noise level at the façade, then the noise level must not exceed 77dBA which is only slightly higher than current measured noise levels.

Keeping the Draft Project's doors closed will significantly reduce the noise impact of the premises, as such a two-door system which minimises the amount of time the doors remain open will assist in reducing this impact.

Assuming the entire Marquee is constructed with 4mm toughened glass, including the doors and the building is airtight with no gaps to allow the passage of sound, and a solution can be found to keep the doors closed (e.g. double door system) when entering and leaving the premises, the Draft Project should not present a noise nuisance. An appropriate noise control system would need to be devised to ensure that the noise levels are controlled where the doors are to be left open.

3.5 Uncertainty

The excess of the residual noise level over the modelled noise level is significantly large to allow for higher noise levels to be played within the Draft Project and as such, the uncertainty of the measurement is unlikely to have any influence on the determination of the sensitivity of the property.

The background noise level was taken at Bon Accord Terrace, as no representative background noise could be taken at the NSRs. This is deemed to be of little effect to the overall uncertainty.

4.0 CONCLUSION & RECOMMENDATIONS

4.1 General

The noise level increase by the Draft Project playing amplified music within their premises is unlikely to have an adverse noise impact in the nearest noise sensitive residences considered to be:

Rear Façade of 343 Union Street
Rear Façade of 375 Union Street
26 Bon Accord Terrace

This is assuming that a mechanism for the doors to remain closed is developed and the entire structure is constructed of at least 4mm toughened glass in airtight seals.

The noise levels were modelled at 96.7dBA as this is considered an appropriate level from amplified music from a public house venue and a capacity of 342 persons. In order to play this music, a two-door system will need to be implemented to ensure that the doors do not remain open.

Should the doors wish to remain open (e.g. in the summer months), in order for the noise level at the façade of the properties on Union Street to be below background, the noise level inside the Draft Project must not exceed 86dBA.

In order for the the noise level to be 10dB below the background at the façade of the properties on Union Street, the noise level within the Draft Project would need to be below 77dBA.

4.2 Noise Management Plan

In order to further ensure that the Draft Project does not create a noise nuisance to the nearest noise sensitive receptors, a noise management plan is proposed to assist management control the noise levels within the bar and external areas.

This system will utilise the LiveNoise LNT-320 Noise Processor connected via WiFi and will include three processors with accompanying logging modules.

These units will be located within the marquee, 1no at either end, mounted internally on the north and south gables, and a third mounted centrally within the space. All processors will be mounted at high level, adjacent to the external fabric of the marquee.

The noise processors and logging modules will communicate continuously with the LiveNoise Supervisor software to provide real-time noise levels, store long-term noise measurements and signal high-noise alarms. All managers of the premises will have access to the LiveNoise Supervisor software so that they are notified of alarms and can access live and historic noise data. Alerts can be provided so that management can make realtime decisions regarding noise within the establishment (see Appendix 8 for Noise Management Plan).

Appendix 1 Glossary of Terms

The following terminology is employed in this report:

L_{Aeq}: The continuous equivalent noise level, LAeq, of a time-varying noise; the steady noise level (in dB(A)) which, over the period under consideration, contains the same amount of (A-weighted) sound energy as the time-varying noise over the same period.

A-Weighted: The A in dB(A) refers to the A-weighted sound pressure level of the noise in decibels. A-weighting is obtained through the use of a filter in the sound level meter which is designed to produce the relative response of the human ear to sound at different frequencies.

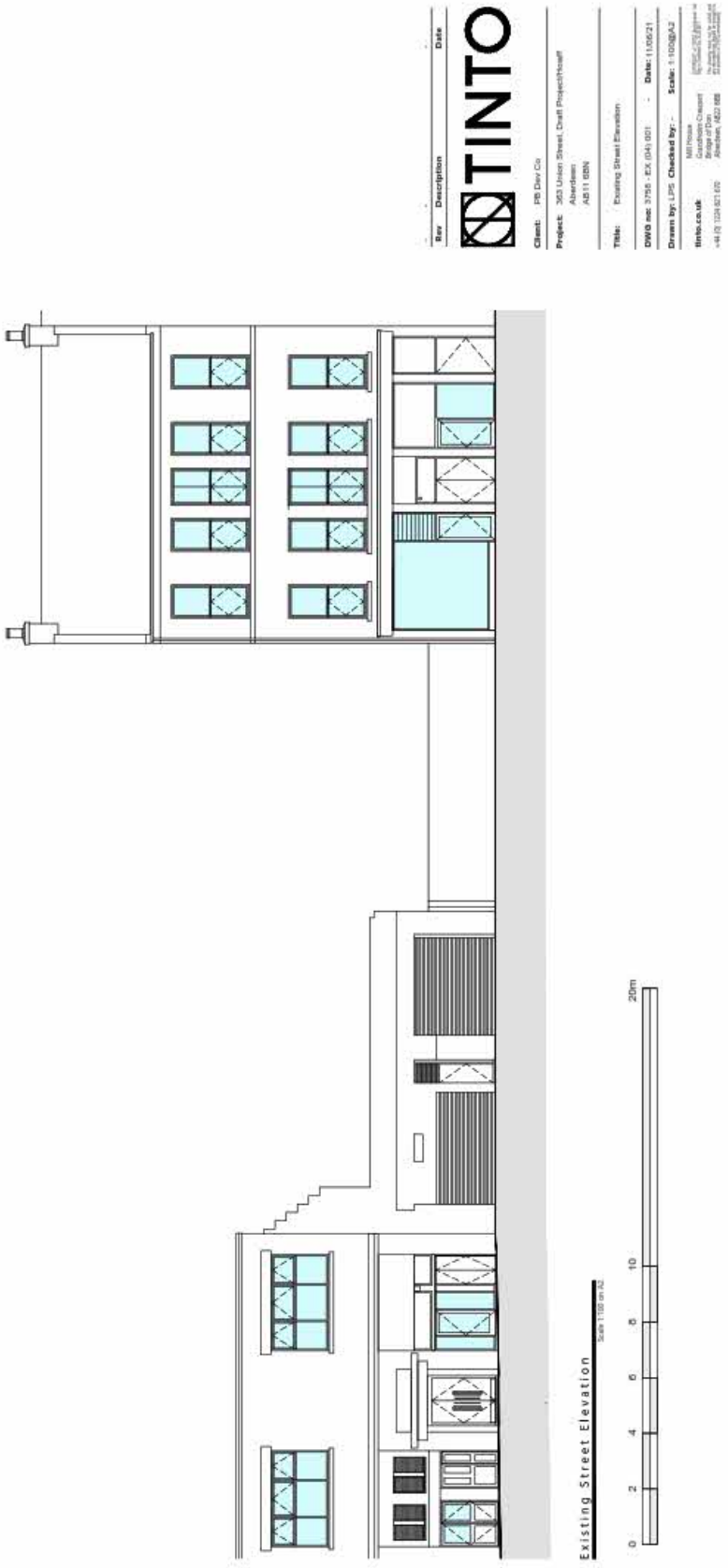
Specific Noise Source: The noise source under investigation for assessing the likelihood of complaints.

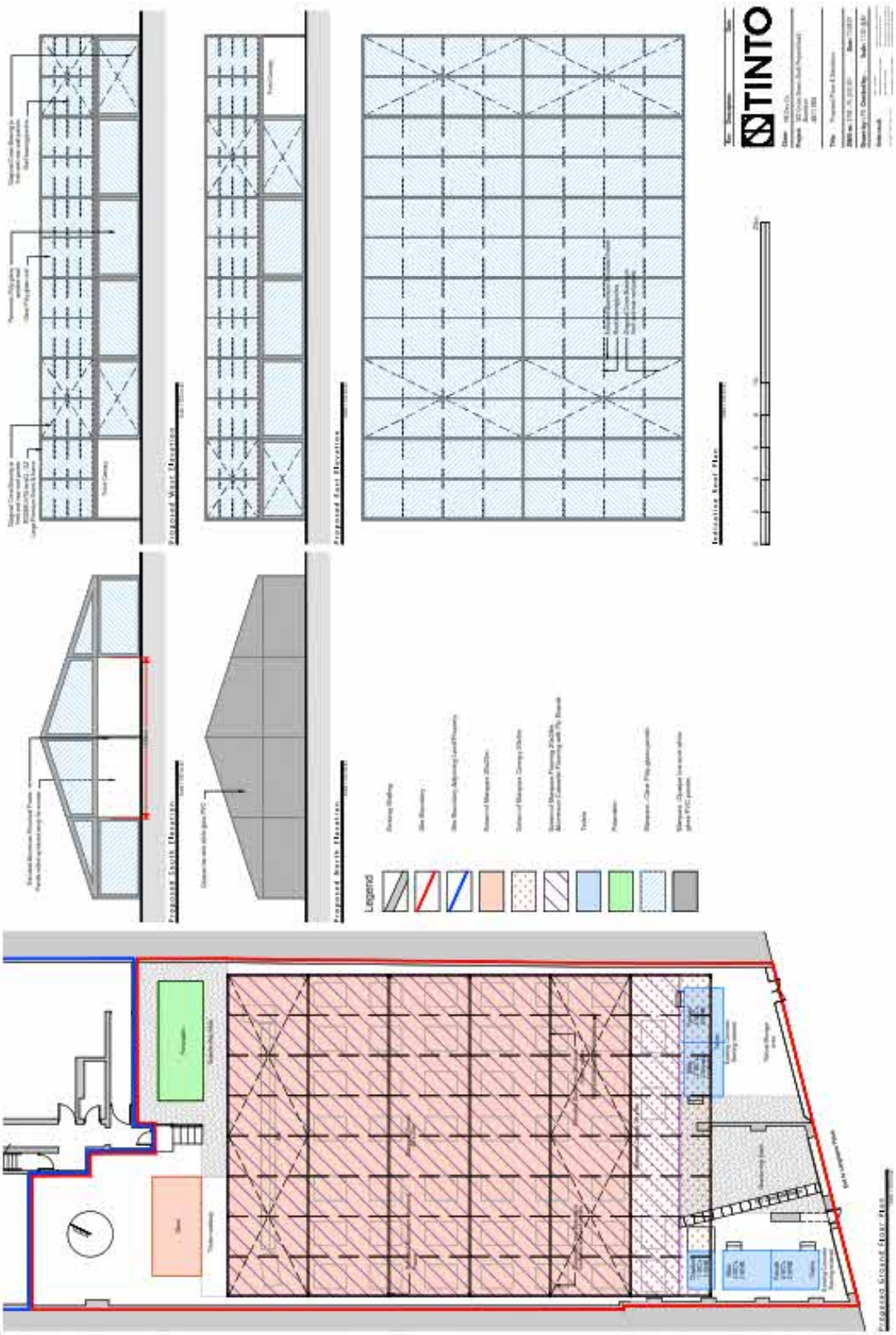
Background Noise Level (L_{A90}): The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90% of a given time interval, T, measured using time weighting, F, and quoted to the nearest whole number of decibels.

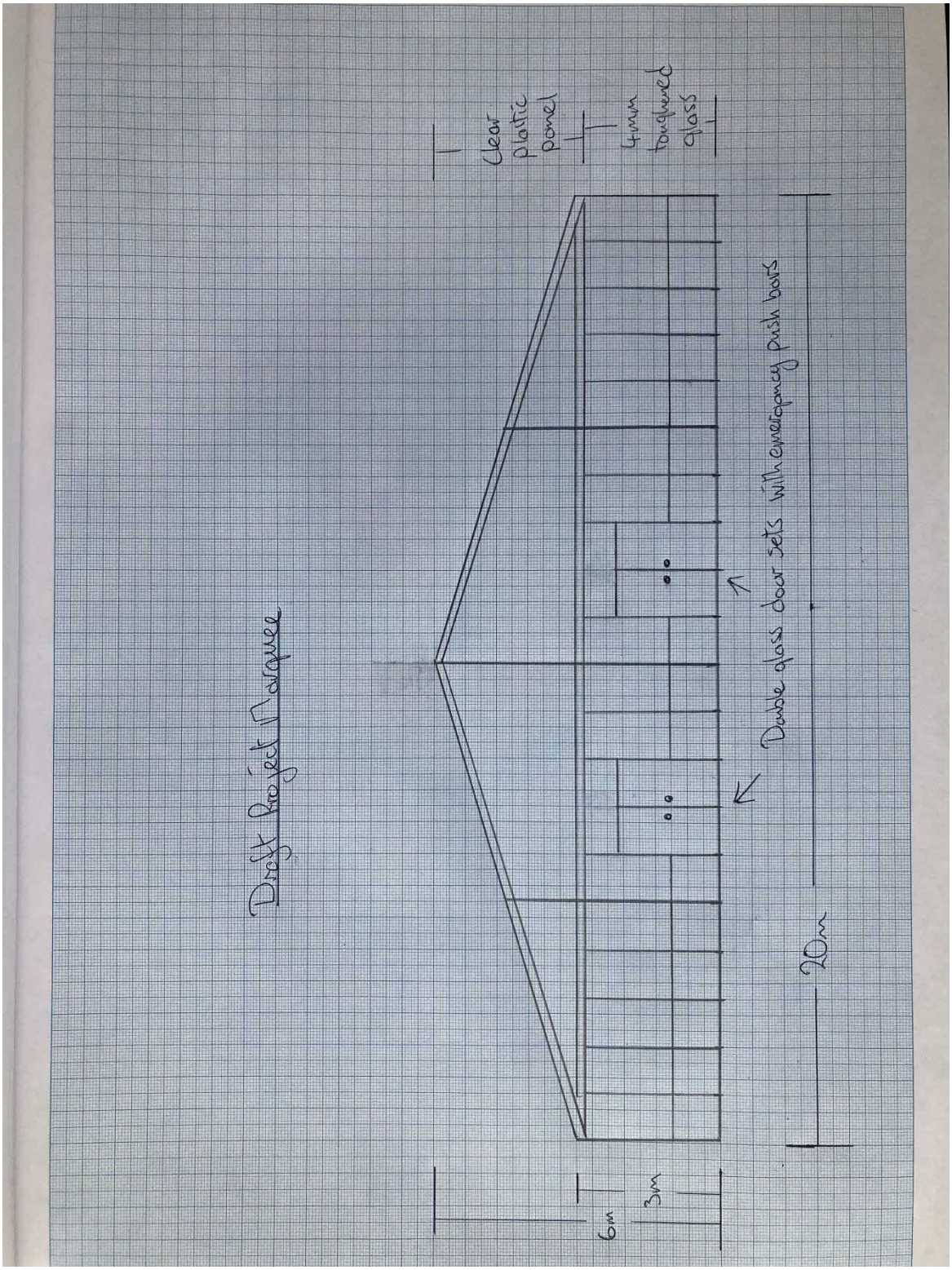
Residual Noise: The ambient noise remaining at a given position in a given situation when the specific noise source is suppressed to a degree such that it does not contribute to the ambient noise.

Ambient Noise: Totally encompassing sound in a given situation at a time usually composed of sound from many sources near and far.

Appendix 2 Proposed Site Plans and Location

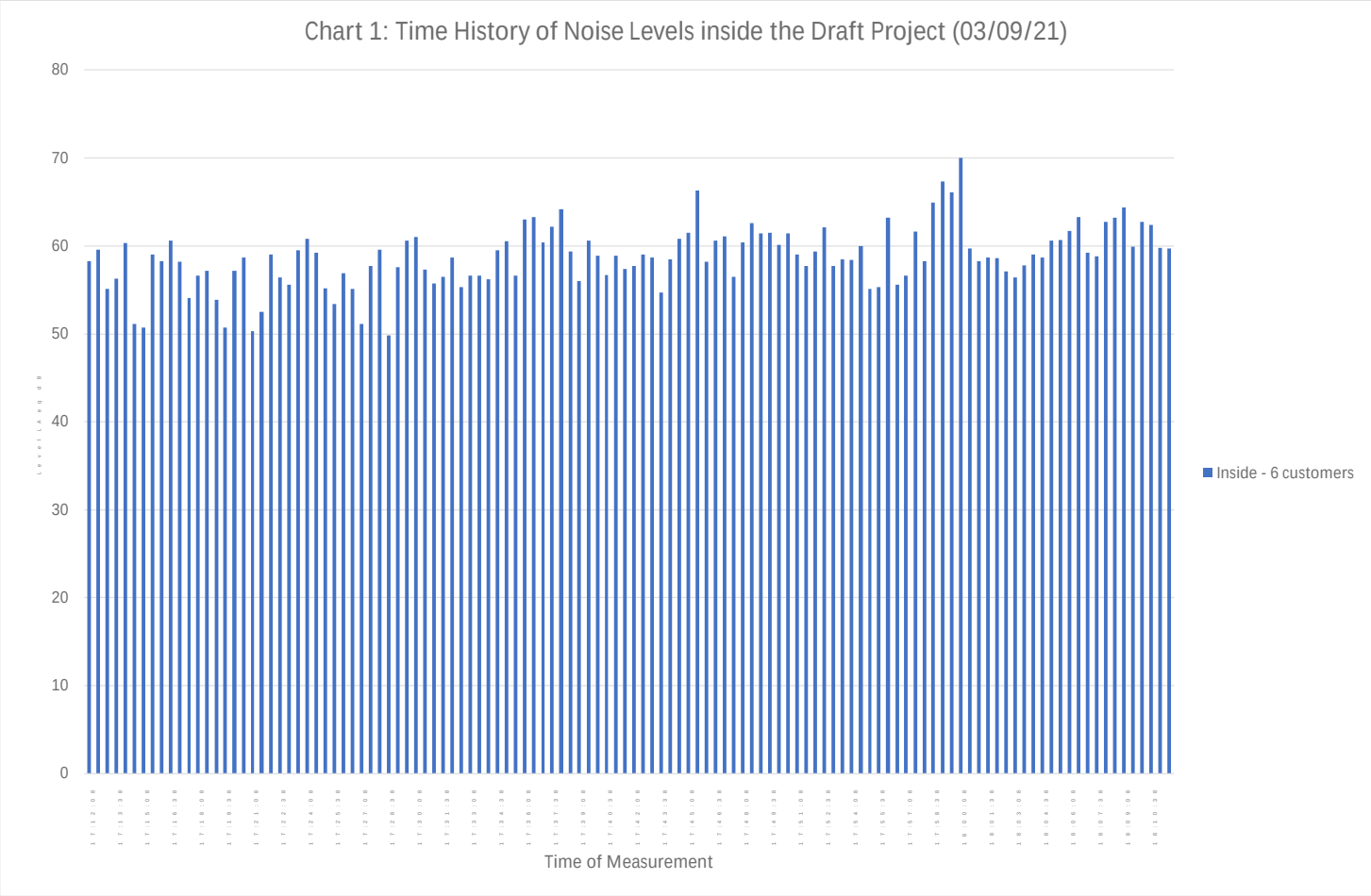



TINTO
Legend


Draft Project Purpose
Clear plastic panel
4mm toughened glass
Double glass door sets with emergency push bars
20m
6m
3m

Appendix 3 Time History

A3.1 30-Second Time Histories



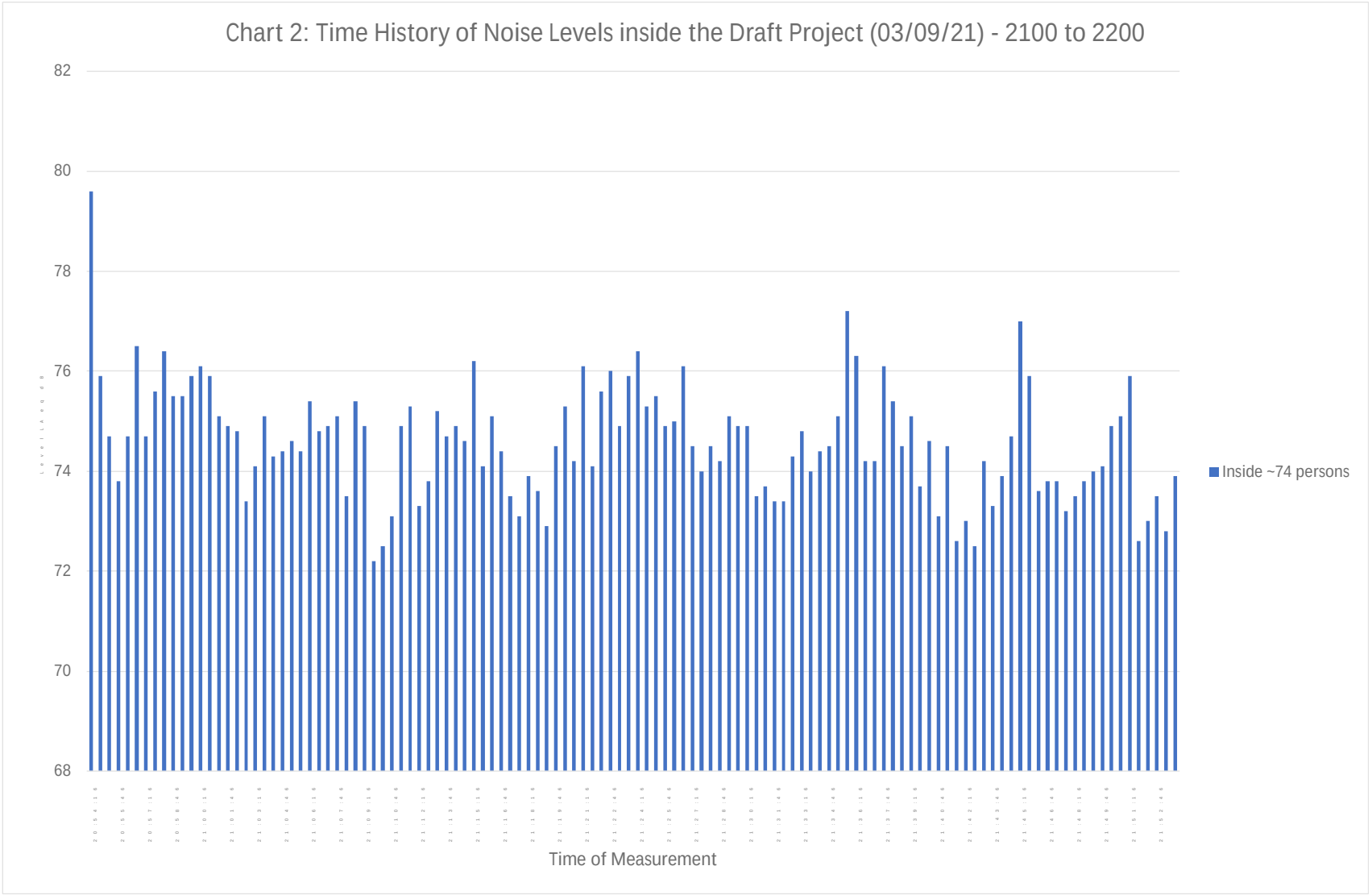


Chart 2: Time History of Noise Levels inside the Draft Project (03/09/21) - 2100 to 2200
82
80
78
76
74
72
70
68
Inside ~74 persons
Time of Measurement

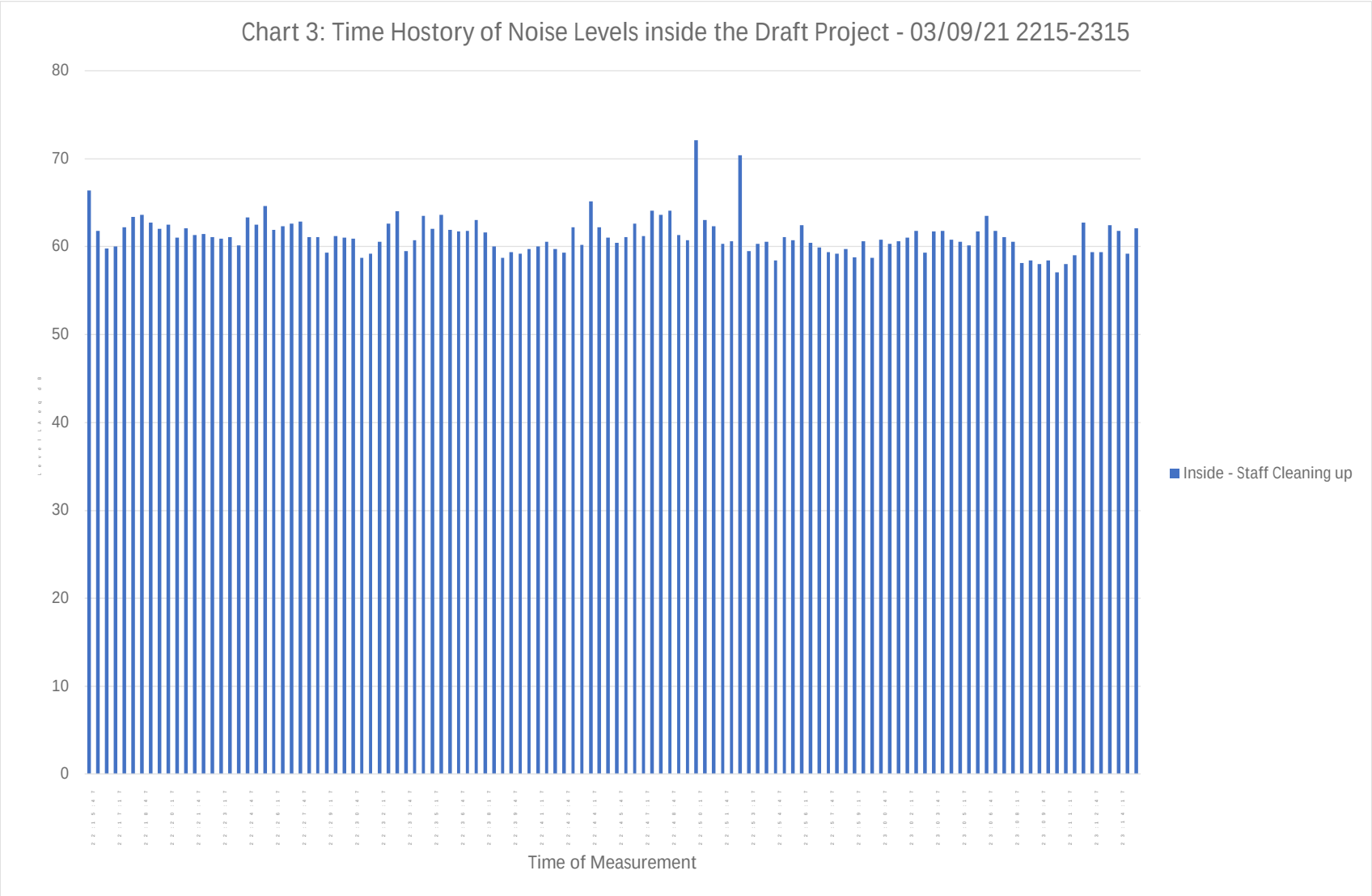


Chart 3: Time Hostory of Noise Levels inside the Draft Project - 03/09/21 2215-2315
80
70
60
50
40
30
20
10
0
Level LAeq dB
Time of Measurement
Inside - Staff Cleaning up

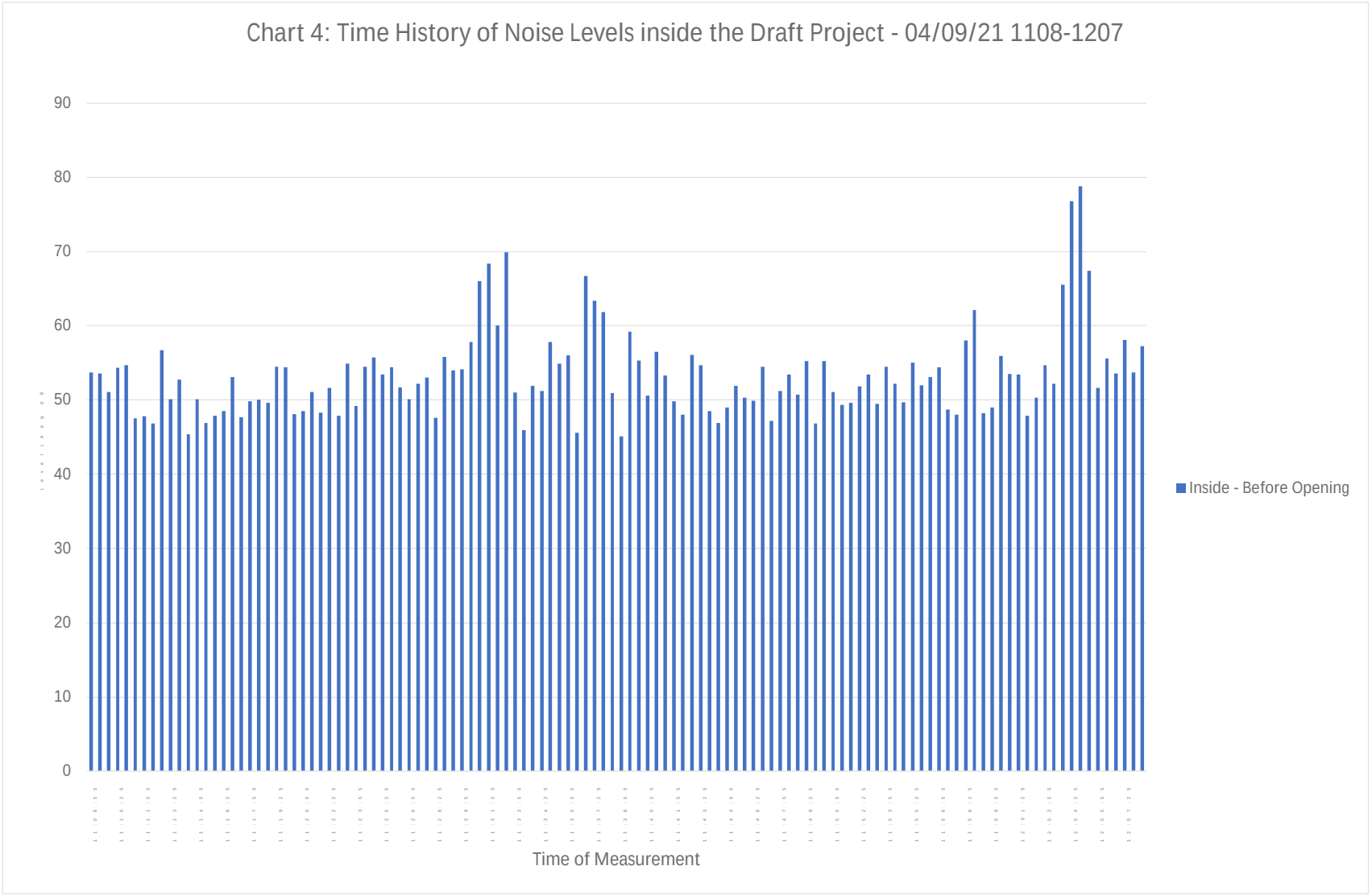


Chart 4: Time History of Noise Levels inside the Draft Project - 04/09/21 1108-1207
90
80
70
60
50
40
30
20
10
0
Time of Measurement
Inside - Before Opening

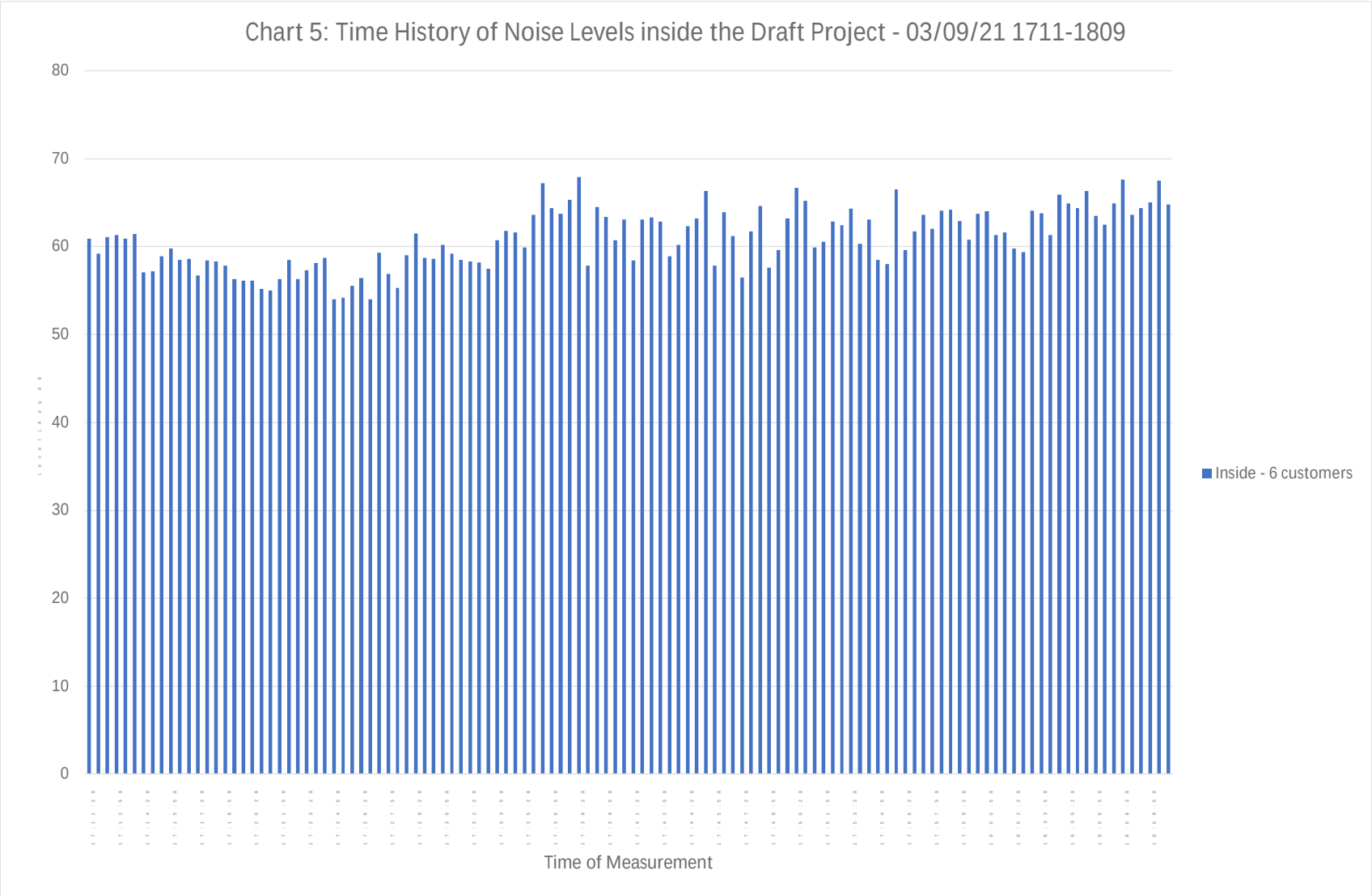


Chart 5: Time History of Noise Levels inside the Draft Project - 03/09/21 1711-1809
80
70
60
50
40
30
20
10
0
Time of Measurement
Inside - 6 customers

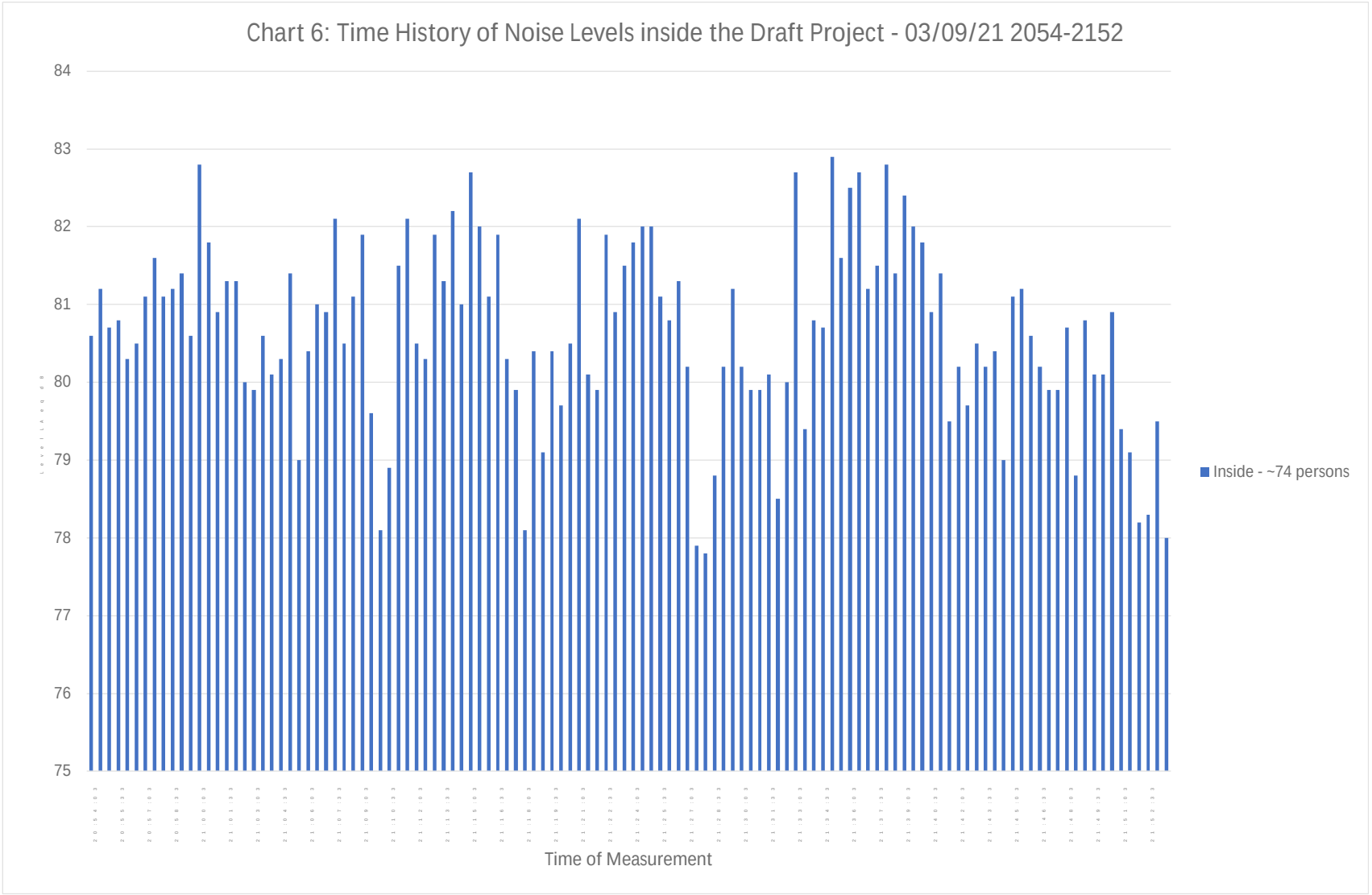


Chart 6: Time History of Noise Levels inside the Draft Project - 03/09/21 2054-2152
84
83
82
81
80
79
78
77
76
75
Inside - ~74 persons
Time of Measurement

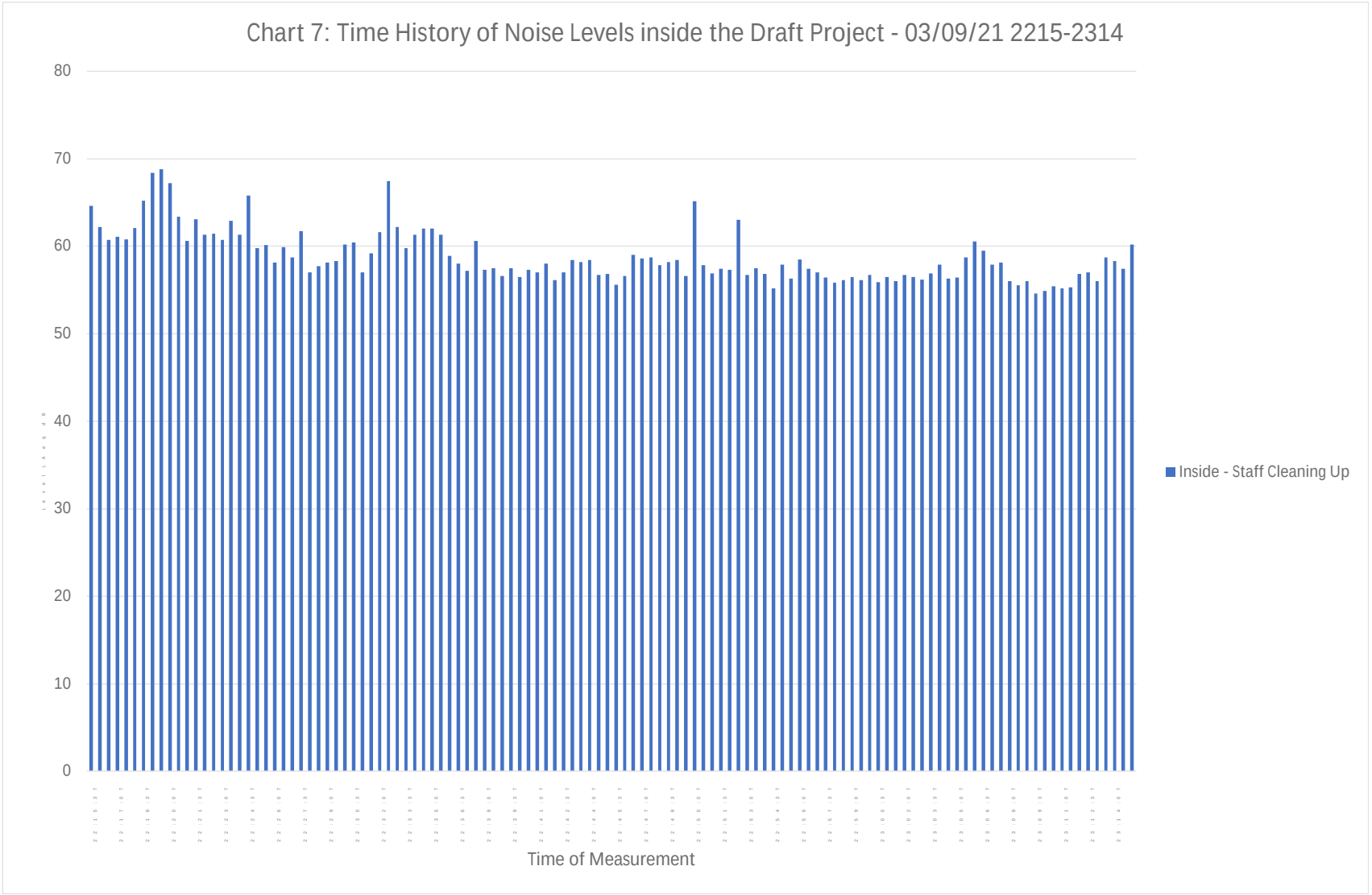


Chart 7: Time History of Noise Levels inside the Draft Project - 03/09/21 2215-2314
80
70
60
50
40
30
20
10
0
Inside - Staff Cleaning Up
Time of Measurement

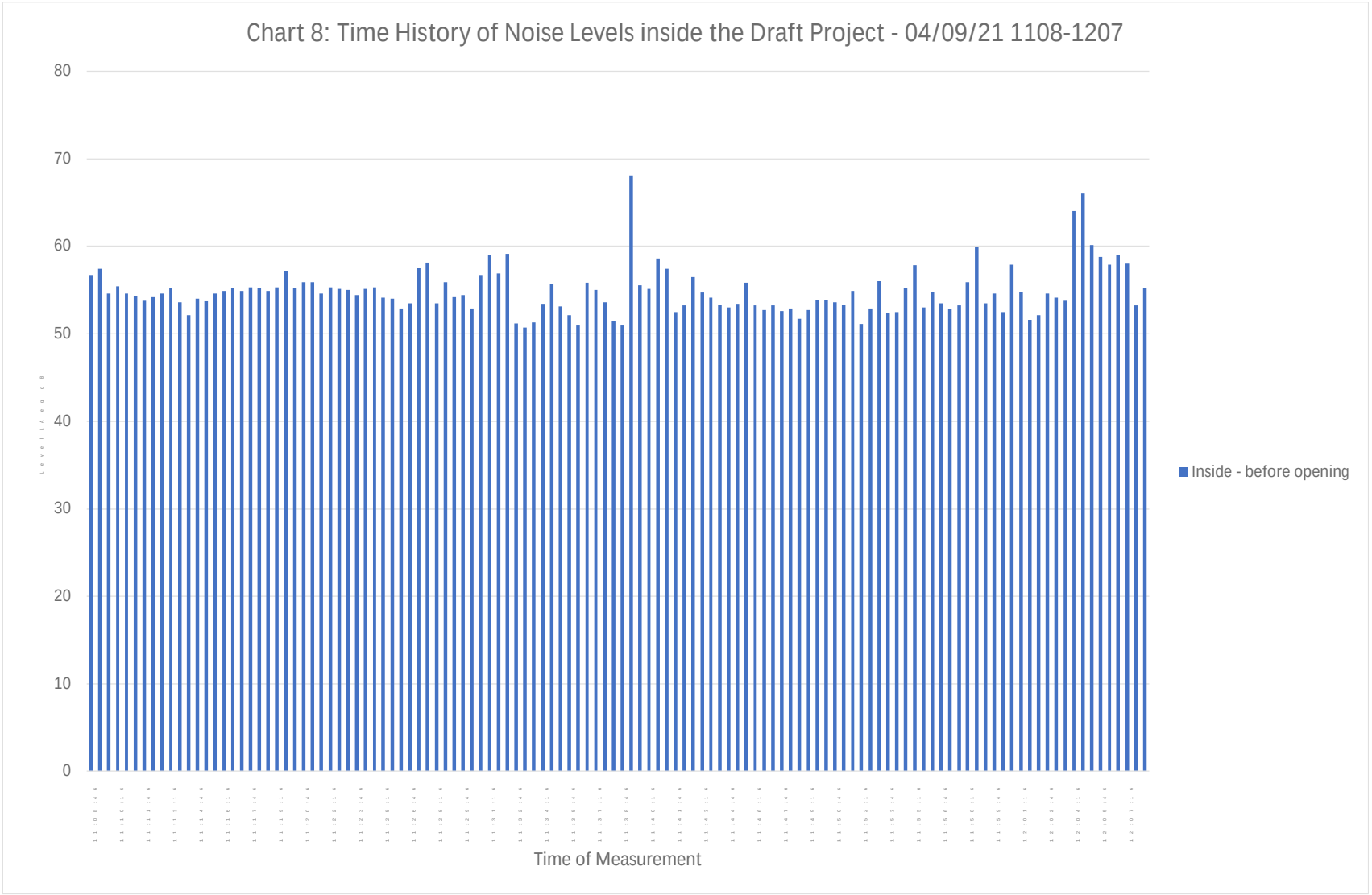
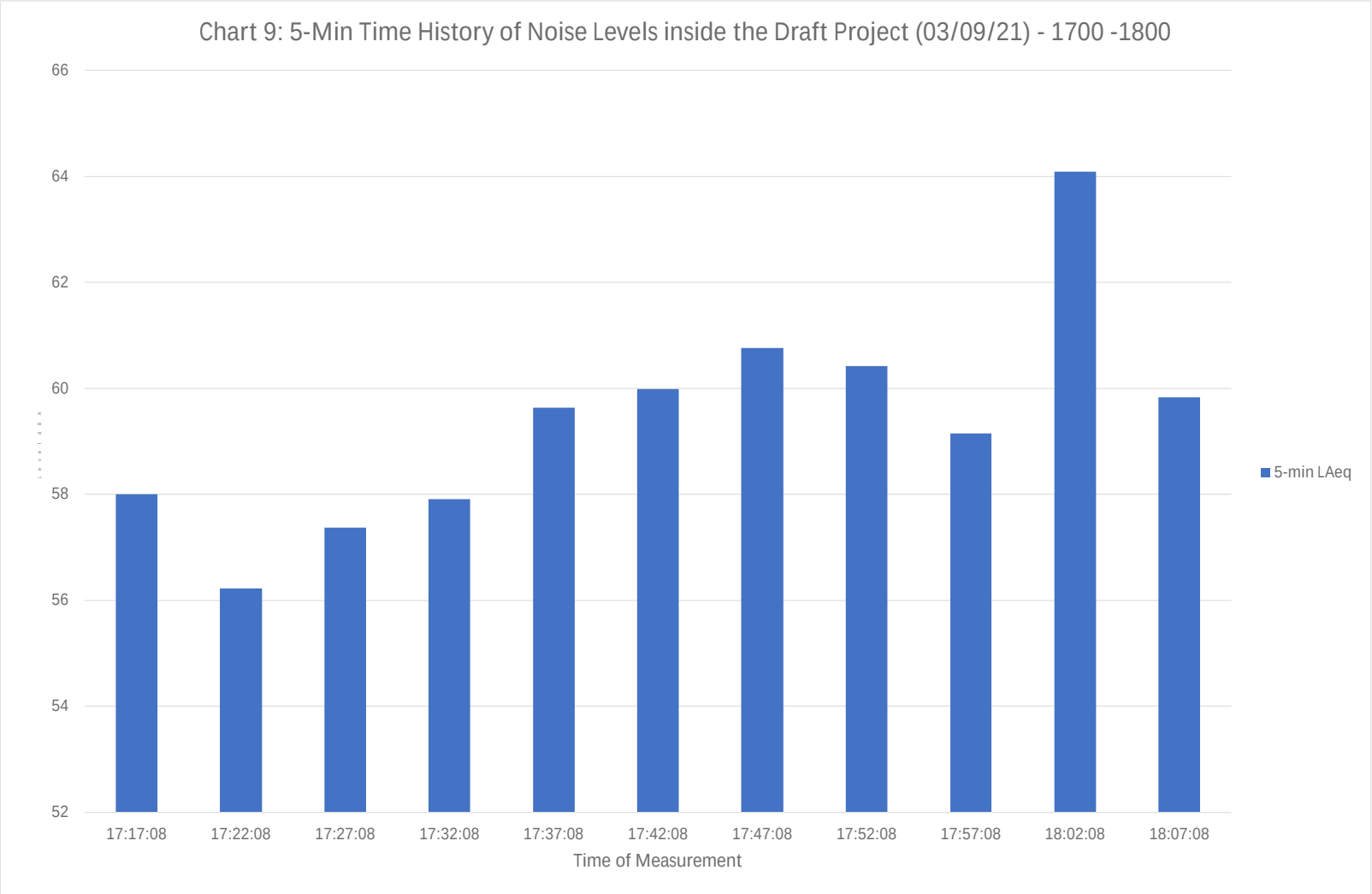


Chart 8: Time History of Noise Levels inside the Draft Project - 04/09/21 1108-1207
80
70
60
50
40
30
20
10
0
Inside - before opening
Time of Measurement

A3.2:5-Minute Time Histories



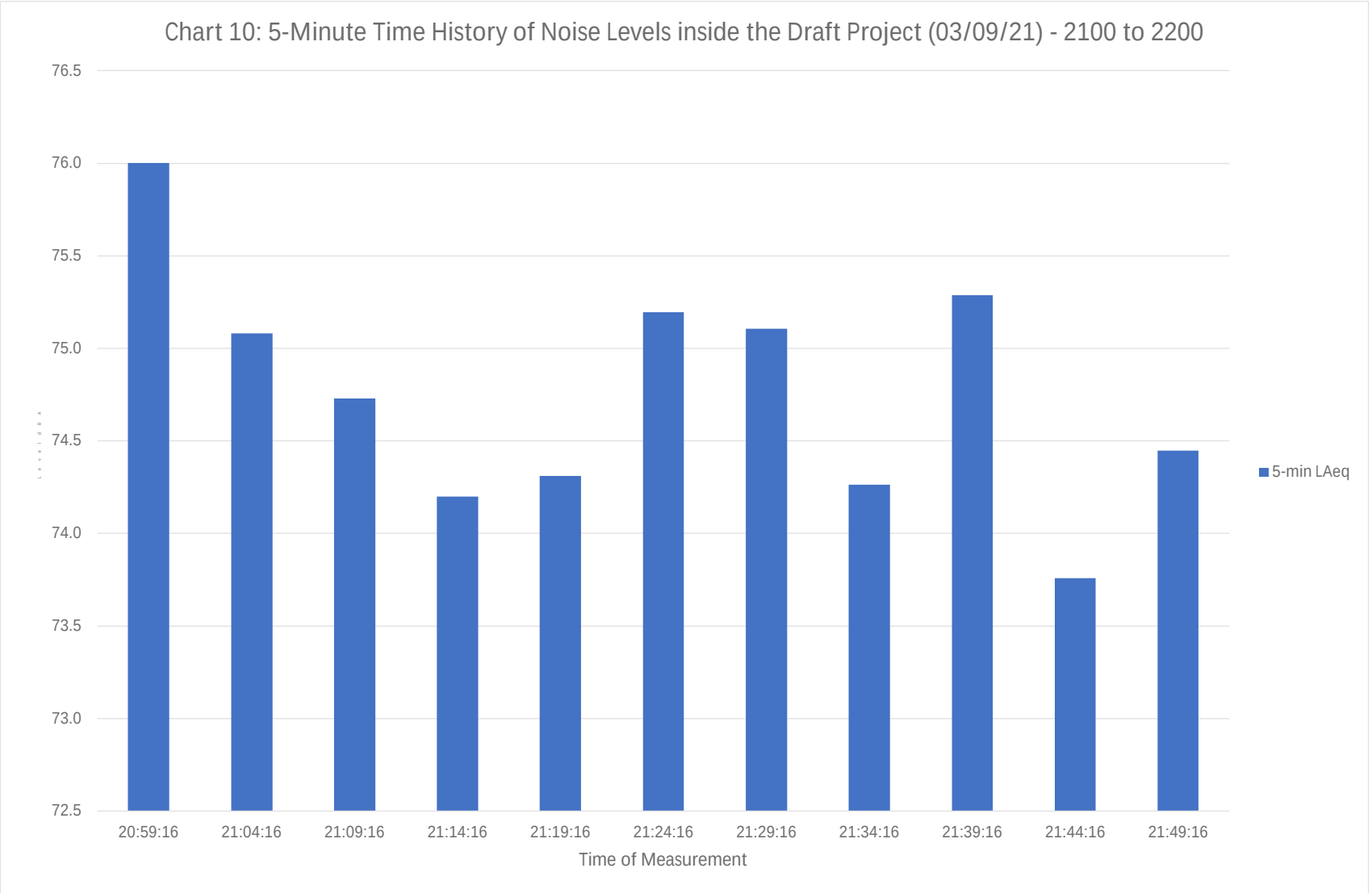


Chart 10: 5-Minute Time History of Noise Levels inside the Draft Project (03/09/21) - 2100 to 2200
76.5
76.0
75.5
75.0
74.5
74.0
73.5
73.0
72.5
Level dBA
20:59:16
21:04:16
21:09:16
21:14:16
21:19:16
21:24:16
21:29:16
21:34:16
21:39:16
21:44:16
21:49:16
Time of Measurement
5-min LAeq

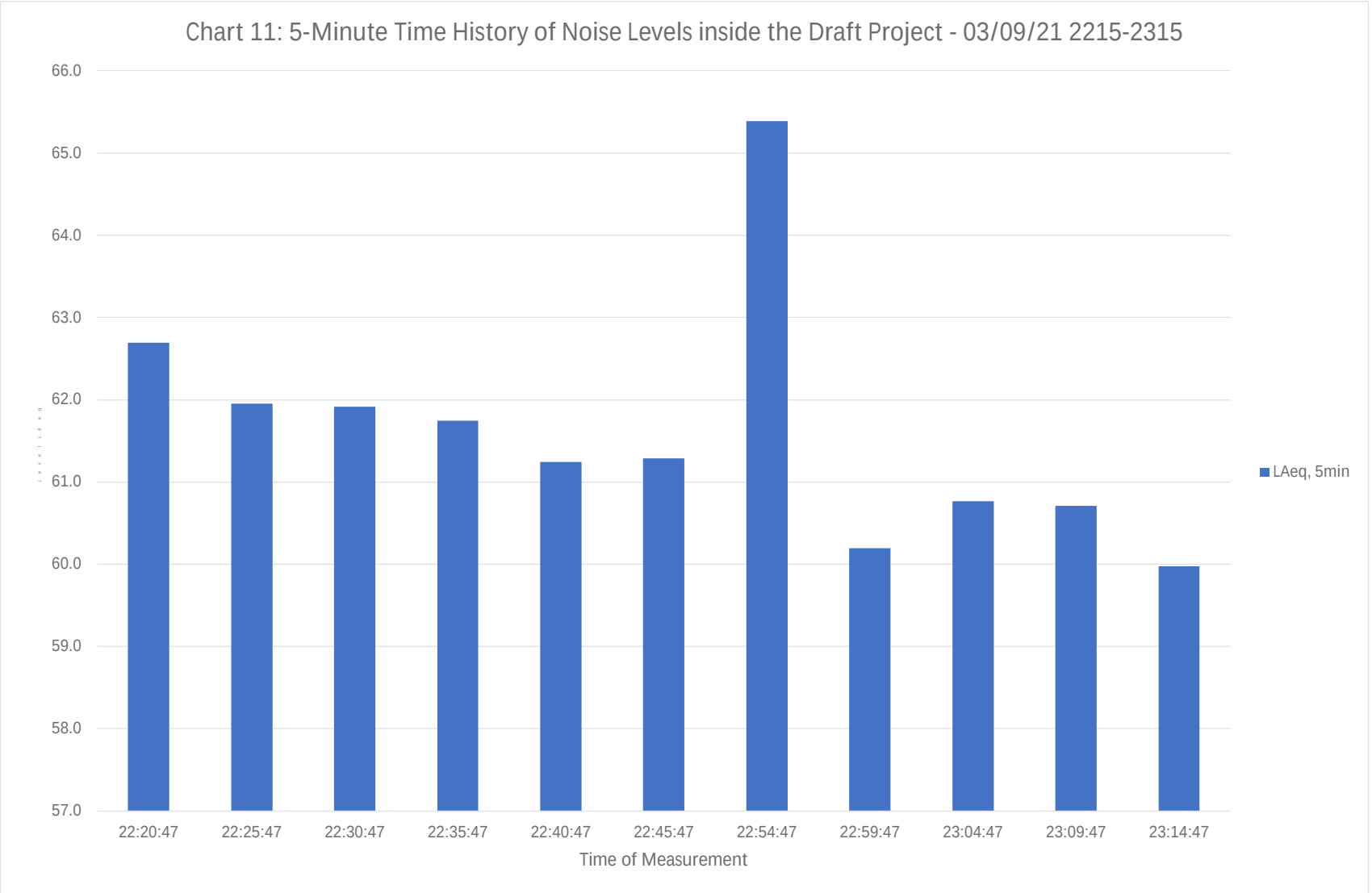


Chart 11: 5-Minute Time History of Noise Levels inside the Draft Project - 03/09/21 2215-2315
66.0
65.0
64.0
63.0
62.0
61.0
60.0
59.0
58.0
57.0
Level LAeq
22:20:47
22:25:47
22:30:47
22:35:47
22:40:47
22:45:47
22:54:47
22:59:47
23:04:47
23:09:47
23:14:47
Time of Measurement
LAeq, 5min

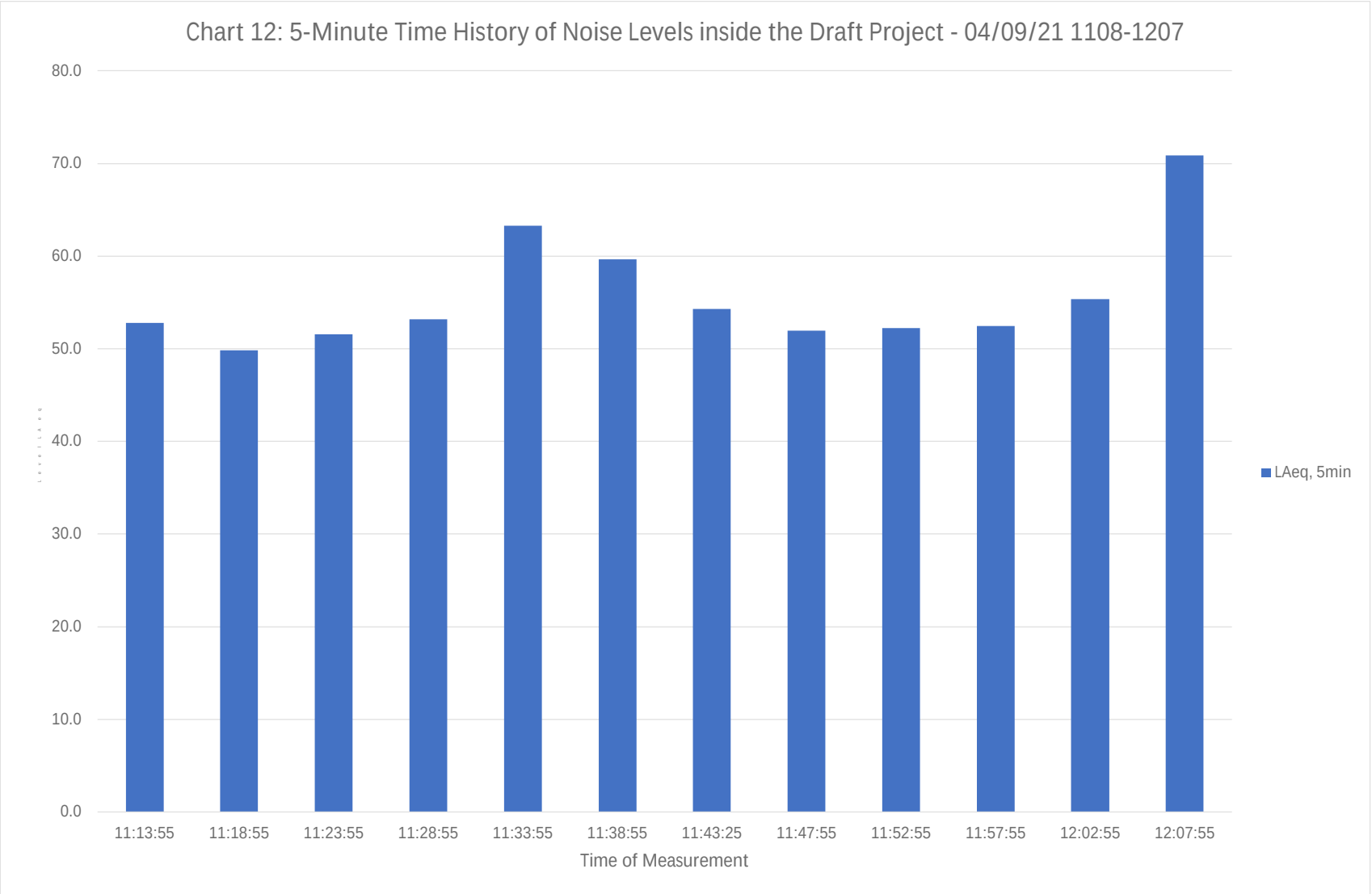


Chart 12: 5-Minute Time History of Noise Levels inside the Draft Project - 04/09/21 1108-1207
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
11:13:55
11:18:55
11:23:55
11:28:55
11:33:55
11:38:55
11:43:25
11:47:55
11:52:55
11:57:55
12:02:55
12:07:55
Time of Measurement
LAeq, 5min

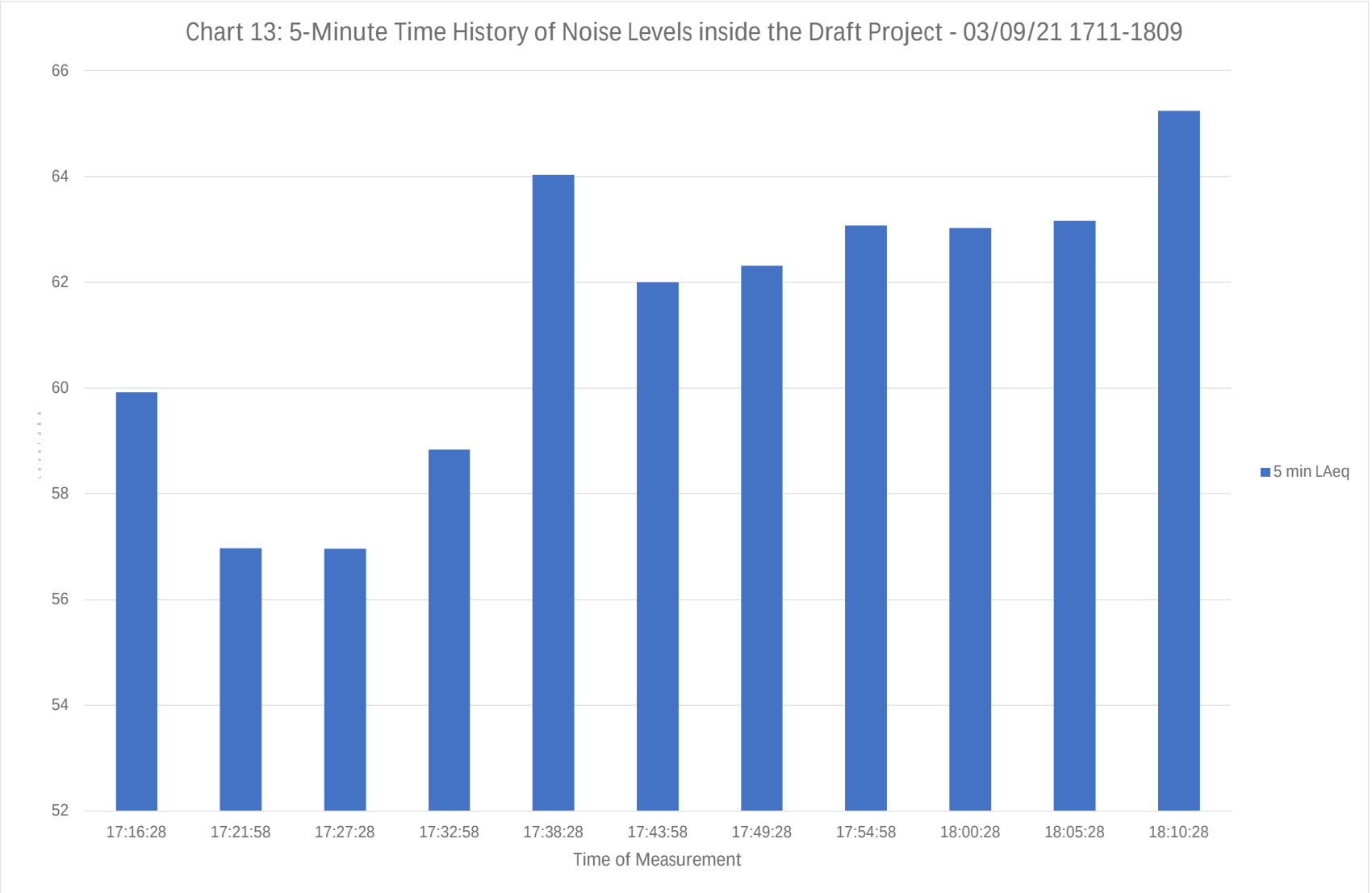


Chart 13: 5-Minute Time History of Noise Levels inside the Draft Project - 03/09/21 1711-1809
66
64
62
60
58
56
54
52
Level dBA
17:16:28
17:21:58
17:27:28
17:32:58
17:38:28
17:43:58
17:49:28
17:54:58
18:00:28
18:05:28
18:10:28
Time of Measurement
5 min LAeq

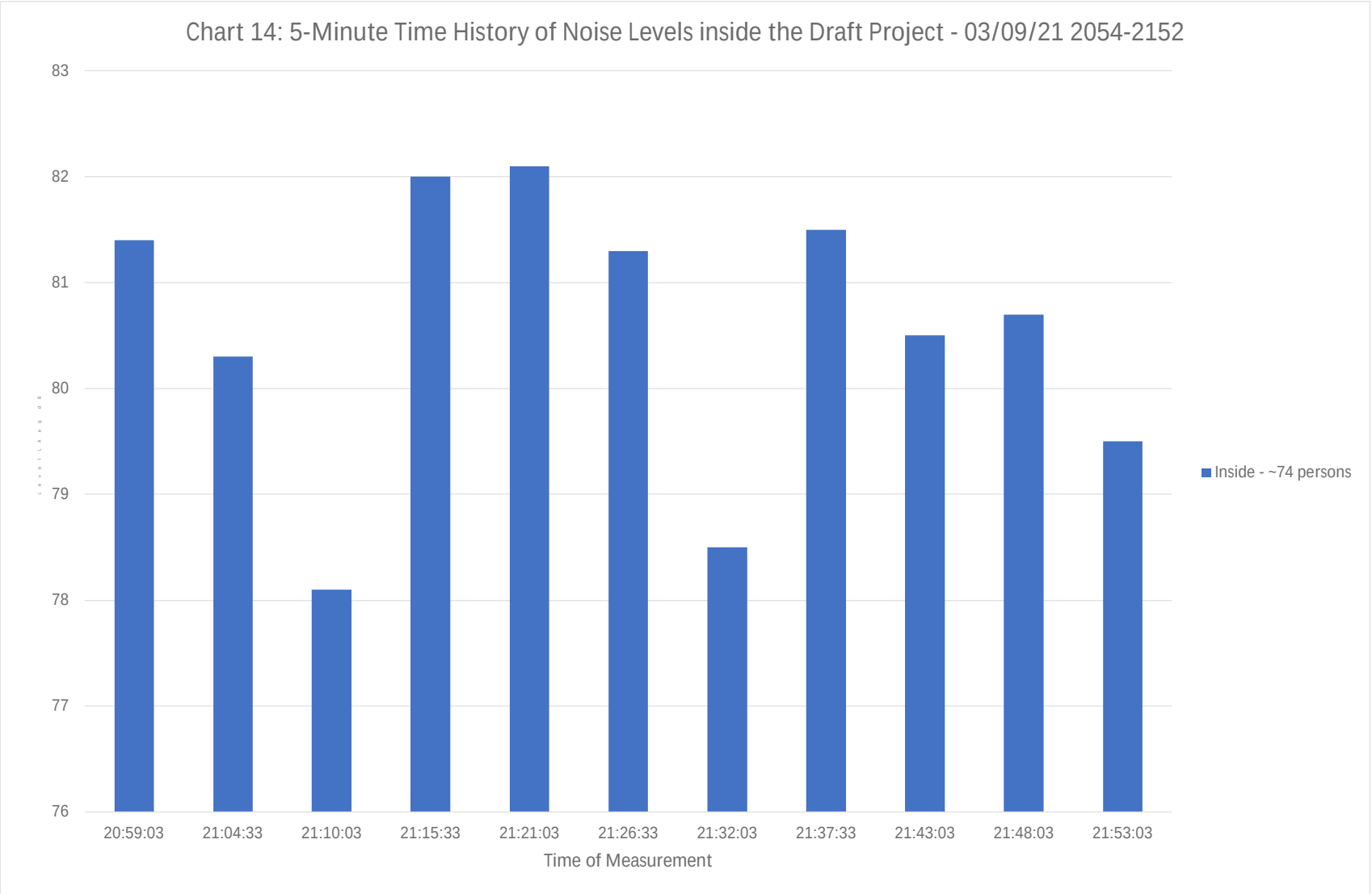


Chart 14: 5-Minute Time History of Noise Levels inside the Draft Project - 03/09/21 2054-2152
83
82
81
80
79
78
77
76
20:59:03
21:04:33
21:10:03
21:15:33
21:21:03
21:26:33
21:32:03
21:37:33
21:43:03
21:48:03
21:53:03
Time of Measurement
Inside - ~74 persons

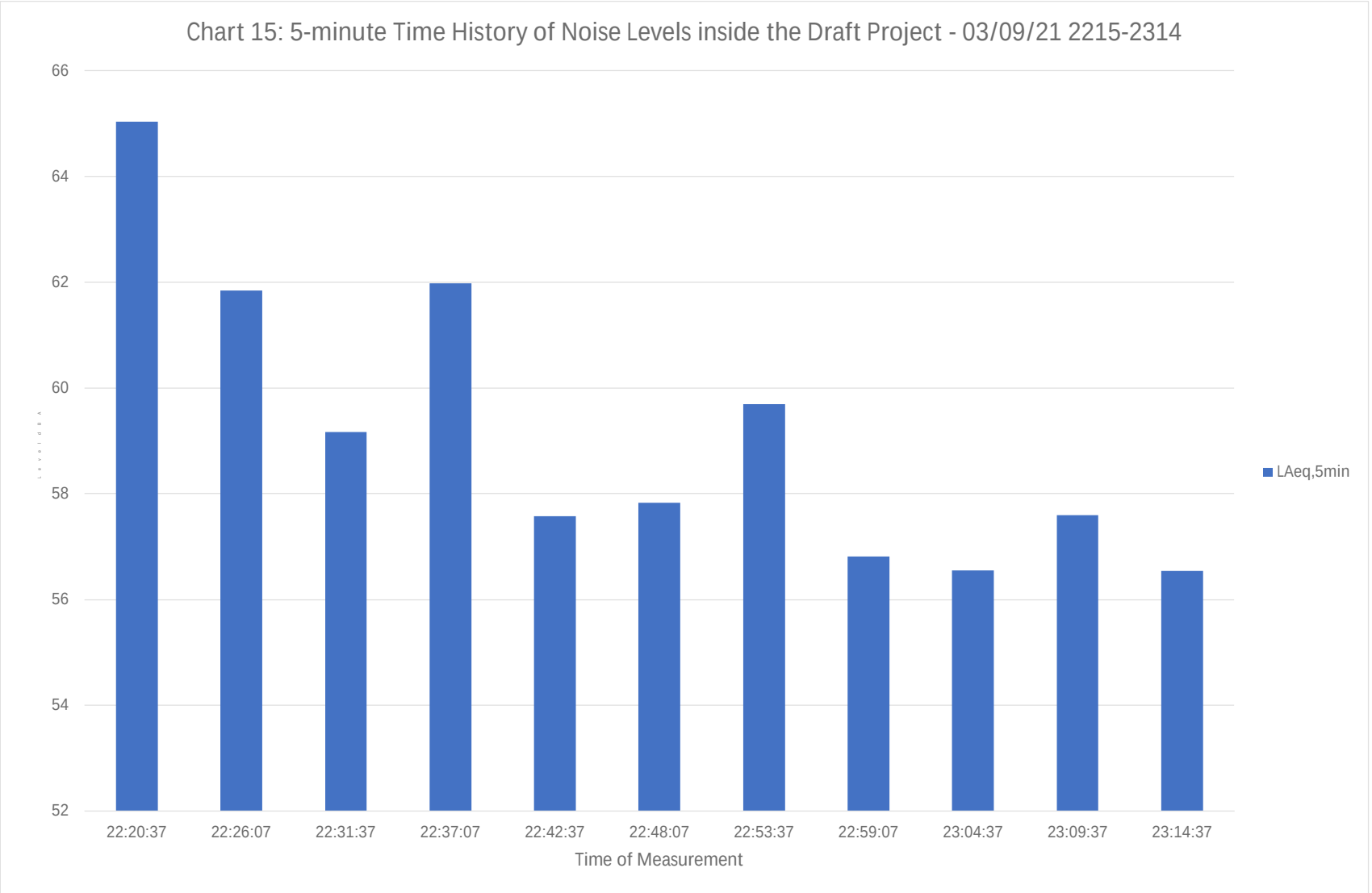


Chart 15: 5-minute Time History of Noise Levels inside the Draft Project - 03/09/21 2215-2314
66
64
62
60
58
56
54
52
LAeq,5min
22:20:37
22:26:07
22:31:37
22:37:07
22:42:37
22:48:07
22:53:37
22:59:07
23:04:37
23:09:37
23:14:37
Time of Measurement

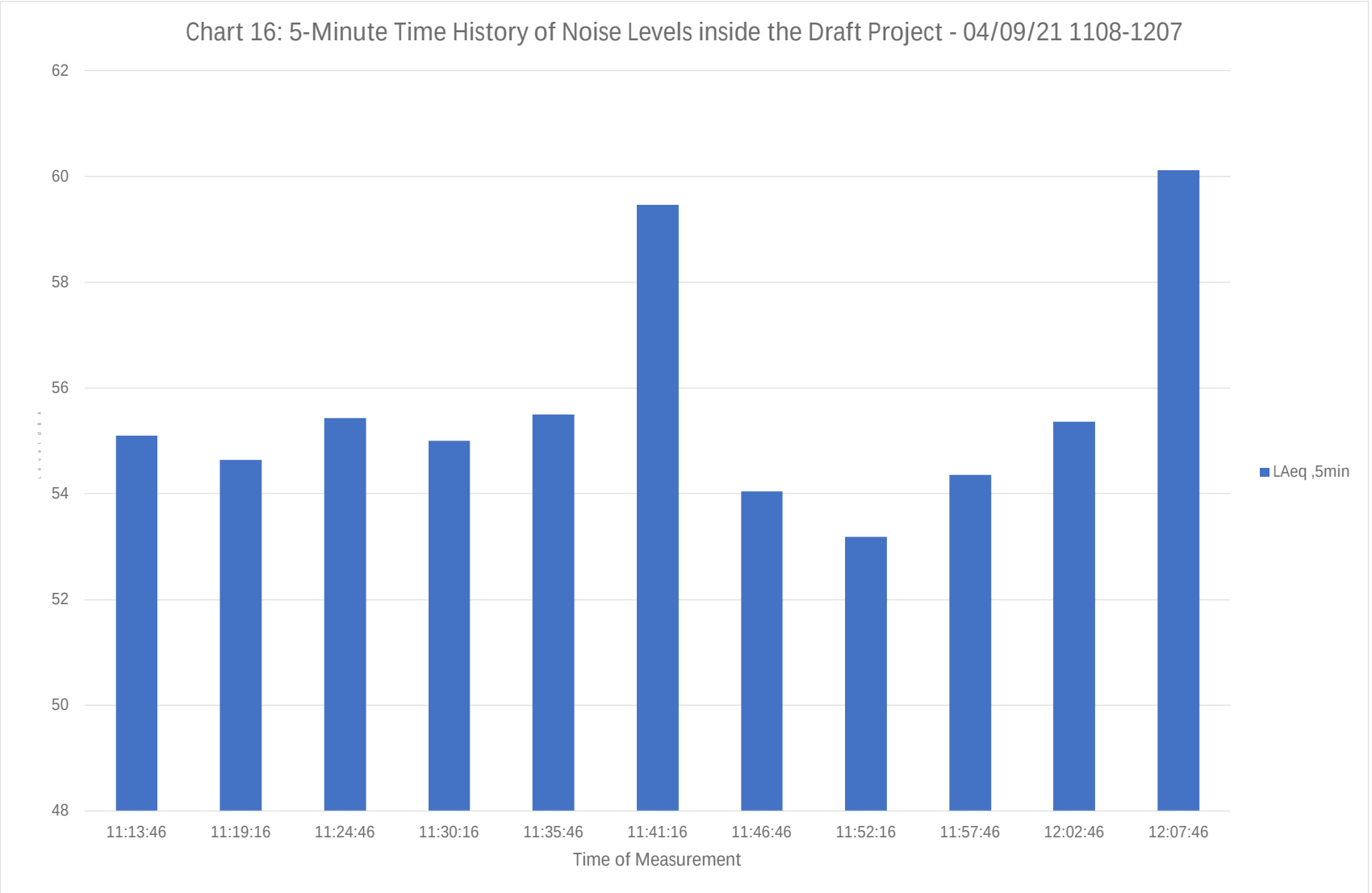


Chart 16: 5-Minute Time History of Noise Levels inside the Draft Project - 04/09/21 1108-1207
62
60
58
56
54
52
50
48
11:13:46
11:19:16
11:24:46
11:30:16
11:35:46
11:41:16
11:46:46
11:52:16
11:57:46
12:02:46
12:07:46
Time of Measurement
LAeq ,5min

Appendix 4 Cadna Data

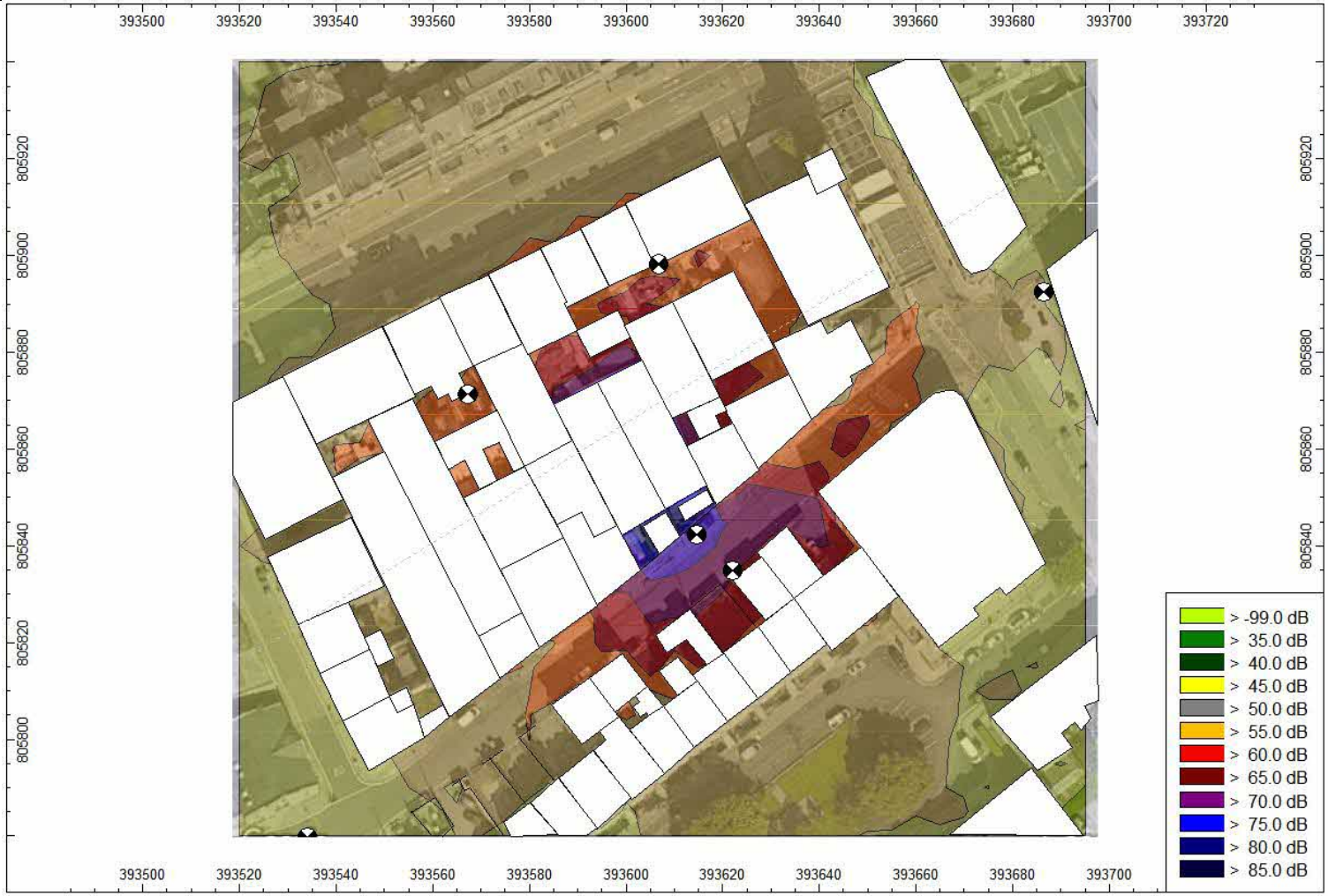


Figure A4.1: Horizontal Plan Grid – Doors Open

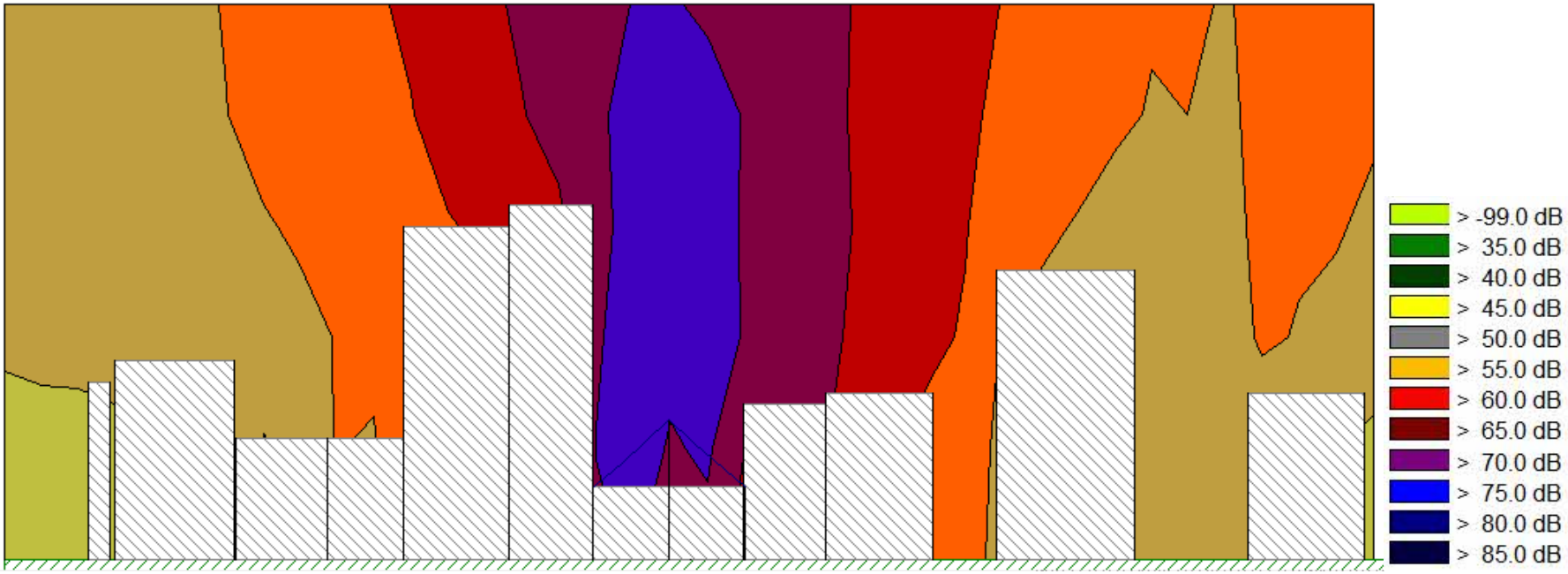


Figure A4.2: Vertical Noise Grid – Doors Open

Figure A4.3: 3D Noise Grid with Vertical Grid – Doors Open

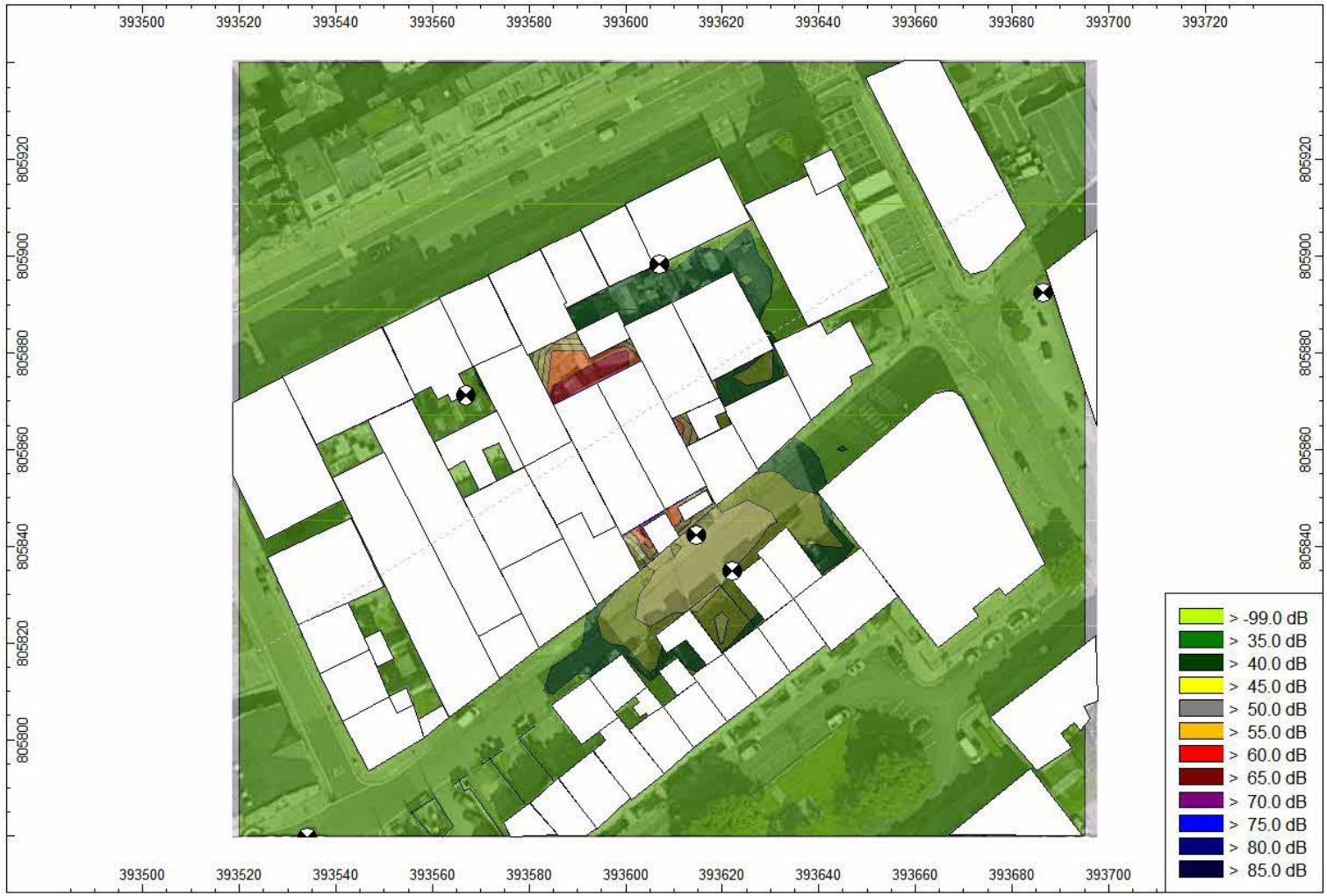


Figure A4.4: Horizontal Plan Grid – Doors Closed

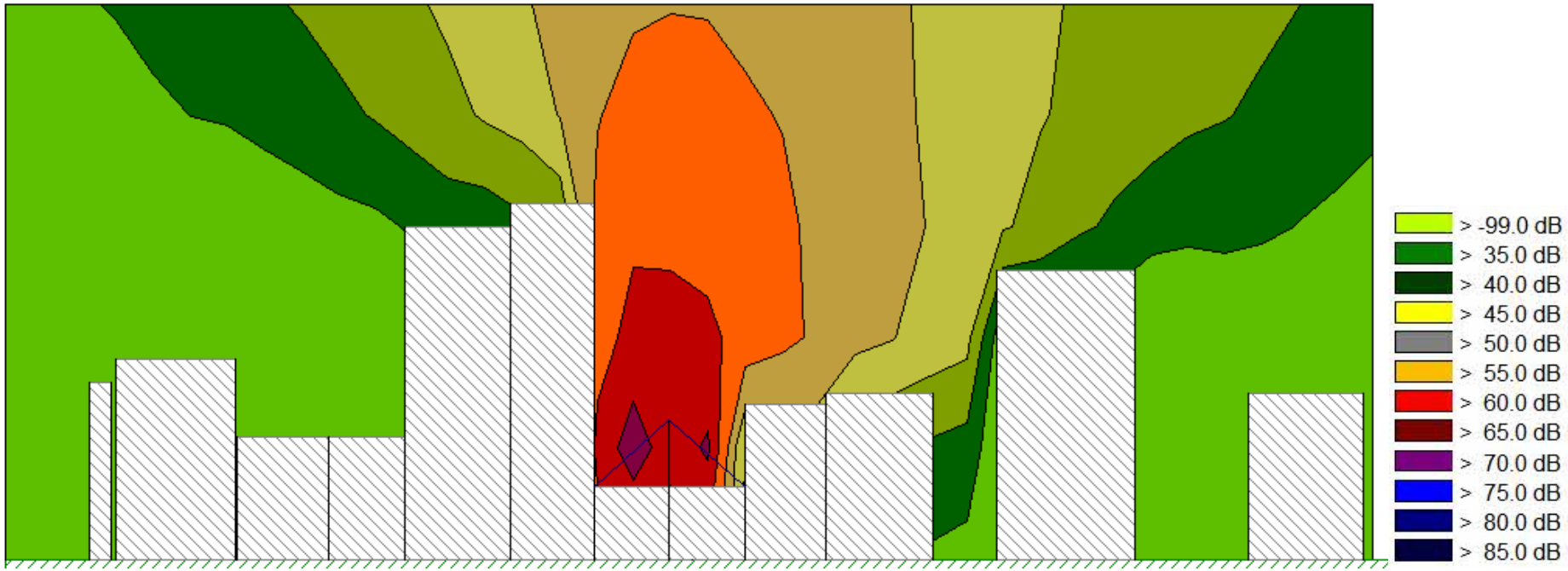


Figure A4.5: Vertical Noise Grid – Doors Closed

Figure A4.6: 3D Noise Grid with Vertical Grid – Doors Closed

Appendix 5: Window Types for Attenuation

	Octave Band Centre Frequency (Hz)							
	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	$D_{n,e,W}$ ($C;C_{tr}$)
Opening A-1	21.8	16.6	17.1	21.6	18.9	23.0	24.5	21 (0; -1)
Opening A-2	21.3	17.5	16.7	21.7	19.2	23.2	24.5	22 (-1; -2)
Opening A-3	22.0	15.7	19.2	20.4	16.0	21.4	24.5	20 (-1; -2)
Opening B	23.4	16.2	17.3	20.5	13.9	20.1	23.6	18 (-1; -2)
Opening C-1	25.5	19.8	23.8	20.3	17.9	22.0	26.2	21 (-1; -1)
Opening C-2	25.9	19.9	22.6	22.5	18.9	23.2	27.8	22 (-1; -1)
Opening C-3	25.5	20.9	26.5	20.4	18.5	22.5	27.0	21 (0; -1)
Opening C-4	24.6	19.3	23.2	20.4	16.2	23.5	27.2	21 (-1; -2)
Opening D-1	25.1	18.9	23.0	19.1	18.4	23.5	24.5	21 (0; -1)
Opening D-2	26.0	18.0	17.0	23.7	15.4	19.5	21.5	19 (-1; -1)
Opening D-3	26.7	19.0	18.9	22.5	17.4	26.0	24.6	23 (-2; -3)
Opening E	25.7	19.9	21.3	20.3	19.2	22.0	23.6	21 (0; -1)
Opening F	27.0	19.4	21.5	20.4	20.4	22.5	25.1	22 (-1; -1)
Opening G	25.1	18.6	20.5	19.6	18.7	17.9	20.1	18 (0; 1)

Table 5-3 Derived $D_{n,e}$ result for "50,000 mm^2" open windows (L6, S1, R2-6) (dB)

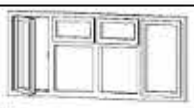
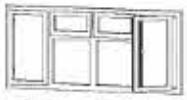
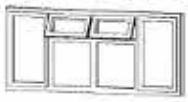
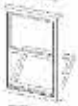
Window	Measurement	Opening	Comparative Level Difference (dBA)			
ID	D_w (C ; C_{tr}).	Illustration	$D_{A,road}$	$D_{A,rail}$	$D_{A,air}$	$D_{A,music}$
A-1	18(-1; -2)		17	17	18	16
A-2	18(-1; -2)		17	17	18	16
A-3	16(-1; -2)		14	14	16	16
B	14(-1; -2)		12	12	14	15
C-1	17(-1; -1)		16	16	17	19
C-2	18(0; -1)		17	17	19	20
C-3	17(0; -1)		16	16	18	19
C-4	17(-1; -2)		15	15	17	18
D-1	18(-1; -2)		16	16	18	18
D-2	16(-1; -2)		14	14	16	17
D-3	20(-3; -4)		16	16	18	18
E	17(0; 0)		17	17	18	18
F	18(0; -1)		18	18	18	18
G	15(0; 0)		15	15	15	17

Table 5-8 dBA level difference for different source characteristics (50k mm² open windows)

Windows of residences of surrounding properties are as Type D windows. (Sash and case).

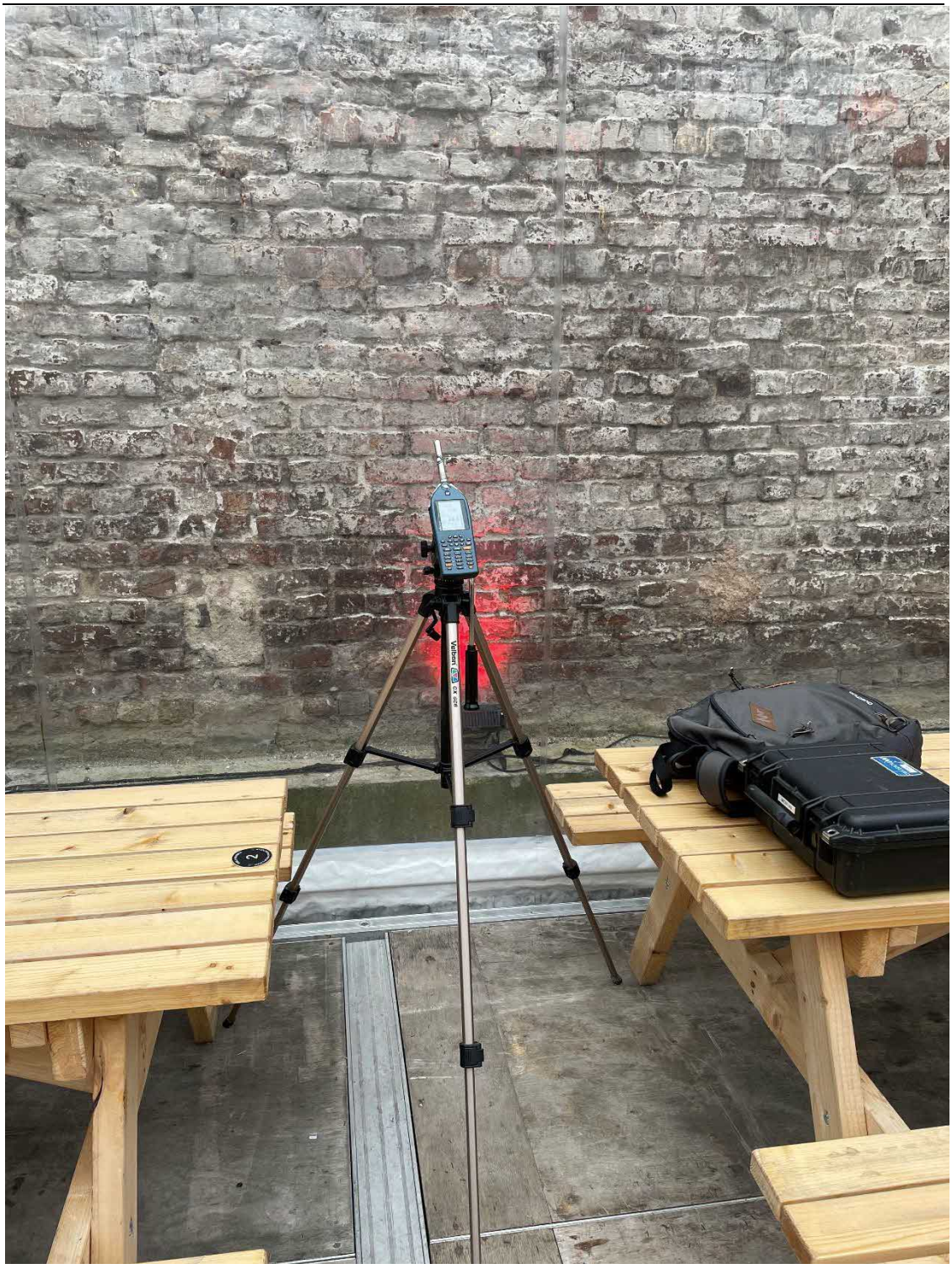
Attenuation for Glass-types[7]

Frequency Hz	3mm	4mm	5mm	6mm	8mm	10mm	12mm	15mm	19mm
100	15	17	17	18	19	24	25	25	25
125	22	23	25	22	27	26	29	29	29
160	19	22	23	22	22	28	31	31	31
200	18	21	23	22	27	26	30	30	31
250	20	21	23	26	25	28	30	31	32
315	22	24	25	26	28	29	32	33	35
400	25	26	28	29	30	32	34	35	36
500	27	29	30	31	33	34	36	37	38
630	29	30	32	33	35	36	36	35	36
800	30	32	33	34	36	37	36	32	35
1000	32	34	35	36	37	36	33	33	38
1250	33	34	36	36	34	33	32	35	40
1600	34	36	36	32	30	33	36	39	44
2000	35	36	32	26	33	38	39	42	47
2500	35	31	26	30	37	41	42	45	50
3150	30	25	32	34	40	43	46	50	52
4000	26	31	35	37	41	44	47	51	55
R_w	30	31	32	32	34	36	37	37	40
C	-1	-2	-2	-2	-1	-1	-2	-1	-1
C_{tr}	-4	-3	-3	-3	-3	-3	-3	-3	-4
STC	29	29	30	30	34	36	36	37	40

Table A1. Sound Attenuation for Monolithic Glass

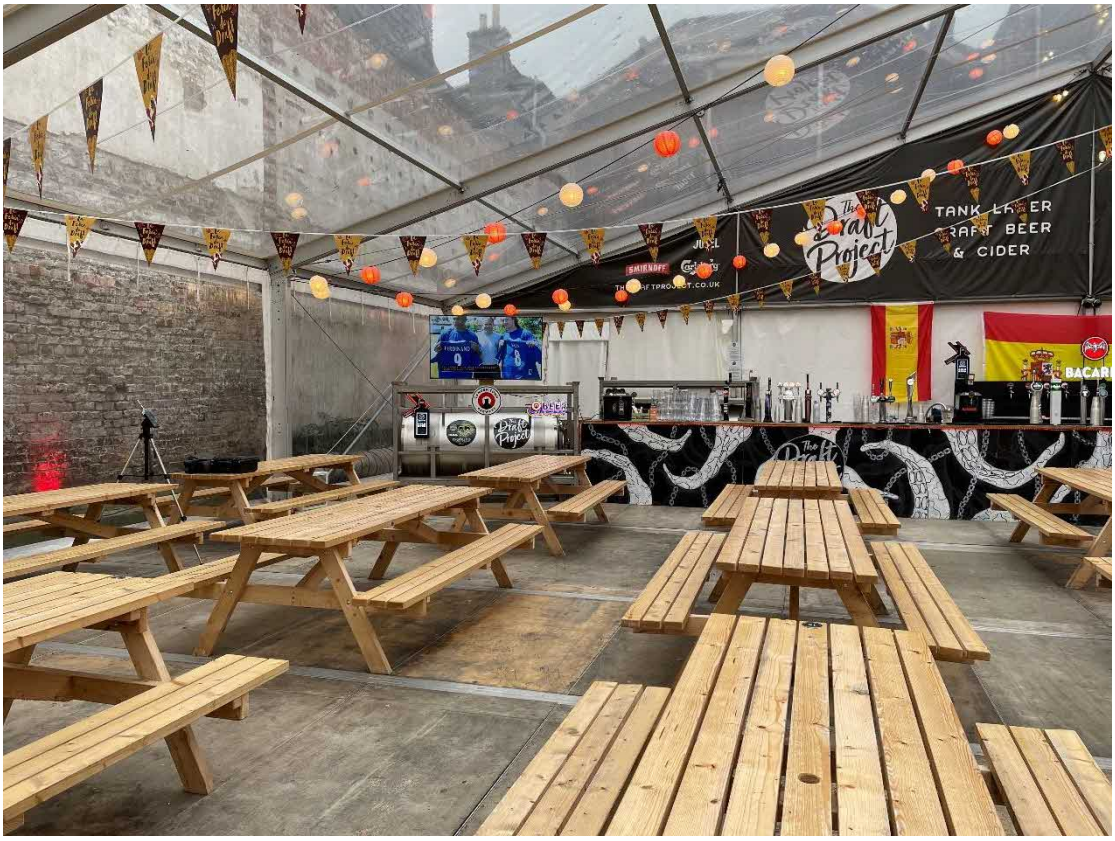
[7] Viridian Glass (https://www.viridianglass.com/media/leubgvmf/sound_and_noise.pdf)

Appendix 6: Photographs



Position 1


GENTS
CAMDEN TOWN
BREWERY
GUINNESS
RAISING THE BAR
GUINNESS
GUINNESS
RAISING THE BAR
Position 2



Layout of Draft Project

Appendix 7: Calibration Certificate

MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 12 December 2019

Issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Certificate Number: UCRT19/2345

Page 1 of 3 Pages

Approved Signatory [redacted]

K. Mistry

CUSTOMER Ethos Environmental Edinburgh
Unit 16
32 Dumbryden Road
Dumbryden Industrial Estate
Edinburgh
EH14 2AB

ORDER No PO-2114 Job No UKAS19/12798

DATE OF RECEIPT 10 December 2019

PROCEDURE Calibration Engineer's Handbook, section 25: periodic testing of sound level meters to IEC 61672-3:2006 (BS EN 61672-3:2006) as modified by UKAS TPS 49 Edition 2:June 2009

IDENTIFICATION Sound level meter Norsonic type 140 serial No 1404830 connected via a preamplifier type 1209 serial No 20316 to a half-inch microphone type 1225 serial No 180299. Associated calibrator Norsonic type 1251 serial No 33325 with a one-inch housing and adapter type 1443 for half-inch microphone.

CALIBRATED ON 12 December 2019

PREVIOUS CALIBRATION Calibrated on 04 December 2017, Certificate No. U27199/U27200 issued by a UKAS accredited calibration laboratory No. 0789

Appendix 8: Noise Management Plan

TINTO

Our Ref: 3758-E9.015 - Noise Management Plan

ABERDEEN CITY COUNCIL
Business hub 10, L2 HUB
MARISCHAL COLLAGE
BROAD STREET, ABERDEEN
AB10 1AB

30th March 2022

Noise Management Plan - Draft Project, 363 Union Street, Aberdeen

The following Noise Management Plan is based on the supporting information contained in Technical Report P8471 prepared by ethosenvironmental dated February 2022.

The venue will operate within the noise levels as noted within report P8471.

In order to operate within those noise levels, the following procedures will be put in place and implemented continually by the venue owner and their management team.

1. SITE DESCRIPTION

The premises are known as 'THE DRAFT PROJECT' of Aberdeen. The property fronts onto the pavement adjoining Langstane Place, and is located on the site of a former Bruce Miller music shop. The frontage of the shop has been retained onto Union Street and is not part of this venue.

Immediately adjacent to the premises are a mix of rear entrances to restaurants, arts/retail units at ground floor level, with various property types located on the first floor neighbouring property. There are further residential properties to upper floors on Union Street. These are considered to be most at risk of noise disturbance from the operations of the premises.

2. INTENDED USE OF THE PREMISES

It is anticipated that the premises will be operated as a 'ruined pub' and will be licensed to sell alcohol. All ruin pubs strive for a welcoming, low key atmosphere, where patrons can come and have a quiet beverage and chat.

3. MANAGEMENT POLICIES & PROCEDURES TO CONTROL NOISE

A) INTRODUCTION

Mill House
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The venue is committed to developing and maintaining good relations with local residents, businesses, neighbours and the local authority. The objective of this plan is to minimise disturbance to local residents and to ensure that any relevant licensing conditions and objectives or other controls at the venue are being upheld. This plan sets out the measures which will be adopted.

B) GENERAL

The premises will be open to the public between the hours as agreed within the venue licence. A minimum of four members of staff will be on the premises at all times; this allows one member of staff to manage the bar, whilst the others manage the customers.

Customers will not be admitted to premises outside of opening hours. There shall be no re-admission to the premises 15 minutes before closing.

Customers will be permitted to use the outdoor space to the south of the marquee, adjacent to Langstane Place, if they wish to smoke. This will give door staff visibility on the numbers gathered and allow constant monitoring. To prevent unsatisfactory numbers gathering in the smoking area, staff will make requests for customers to return inside, or move on to another establishment. Steps will be taken to educate regulars on the limited area for smokers.

C) DISPERSAL OF CUSTOMERS

Staff will actively encourage the gradual dispersal of customers at closing time to minimise nuisance to the surrounding properties.

During the last 20 minutes of trading the following strategies will be implemented to encourage the gradual dispersal of customers. These include the gradual increase in ambient lighting levels and playing of music of slower content and reduced volume. Music will stop playing 5 minutes before the closure of the premises.

Customers shall not leave the premises other than by the doors to the Langstane Place frontage of the premises. A member of staff will be positioned in an area close to this exit to oversee the end of night departure period. Customers will be encouraged to be considerate of their behaviours/noise levels while leaving the premises. Customers will be asked not to stand around talking loudly in the street immediately outside the premises.

D) PROVISION OF MUSIC/ SOUND

The provision of background music shall be permitted at any time the premises is open to the public. By definition this is music or other audio played whose main function is to

create an atmosphere suitable to a specific occasion rather than to be listened to and is incidental to speech and conversation.

Televised sporting events will be shown from time to time.

E) NOISE MONITORING

Due to the 'open' nature of the venue and having regard to the amenity of surrounding noise sensitive properties, the following noise monitoring procedure is proposed.

The noise levels within the venue have been assessed on a maximum capacity of 342 patrons. The management will control this number in accordance with their licensing requirements. In practice it is unlikely that this number of patrons will be within the venue at any one time.

The speakers within the premises are located centrally within the marquee. Noise monitoring equipment will be located inside the marquee at the Union Street gable & Langstane Place gable to give a consistent reading that can be interpreted without direct influence from the speakers.

The noise monitoring equipment used will be LiveNoise LNT-320 Noise Processor with WiFi and Ethernet. 3no. processors and accompanying logging modules will be located within the marquee. 1no at either end, mounted internally on the north and south gables, and a third mounted centrally within the space. All processors will be mounted at high level, adjacent to the external fabric of the marquee.

The noise processors and logging modules will communicate continuously with the LiveNoise Supervisor software to provide real-time noise levels, store long-term noise measurements and signal high-noise alarms. All managers of the premises will have access to the LiveNoise Supervisor software so that they are notified of alarms and can access live and historic noise data.

During normal daytime working of the premises, the entrance doors will remain open, subject to the following procedures. The management will review the measurements from the noise monitoring equipment on an hourly basis to ensure that the noise levels stay within the parameters set out in report P8471. In accordance with the report the doors may remain open provided the noise level does not exceed 77dBA. Should the noise monitoring disclose that the noise level has exceeded 77dBA, the premises manager must either close the doors or reduce the noise level to at or below 77dBA. This reduction may be achieved by either reducing the background music or sounds and/or reducing the numbers of patrons within the venue.

When the doors are closed, the maximum noise level must not exceed 83dBA. The premises manager will continue to monitor measurements from the noise monitoring

equipment on an hourly basis and will ensure that the noise levels do not exceed the aforementioned level. Should noise levels exceed 83dBA, the premises manager will take action to reduce noise levels to at or below the specified threshold, either by reducing the background music/ sounds and/or controlling the number of patrons within the venue.

The LiveNoise Supervisor software will act as a 'noise log book' which will accessible anywhere via internet connection, and will maintain a live log of the noise levels and times. This will be made available for inspection by the Local Authority upon request. This software will provide management with live notification of incidents of the noise level reaching 77dBA. At that point management will take action to address the number of patrons, close the doors or adjust background noise to address the issue as quickly as possible. A second notification point will be set within the software to take account of the situation where the doors are closed and the noise level could be higher than 77dBA. The management team will therefore be alerted where the noise level reaches 83dBA. Management will then take any further action to address the potential issue by reducing patron numbers or reducing the background music noise level.

The number of patrons in the venue at any one time will be monitored by door staff with 'in' and 'out' click counters. This number can then be assessed by the management staff before implementing actions to address a noise issue.

F) TRAINING

All staff will be made fully aware and conversant with the noise management policy and procedures. Managers will be trained in the use of the noise monitoring software, and the actions open to them in order to address an issue. Managers will also be trained on how to operate the noise monitoring equipment.

G) PROVISION OF INFORMATION

Notices will inform customers of the venue's commitment to respecting the amenity of neighbouring properties.

Prominent, clear and legible notices will be displayed at the exits requesting that the public respect residents and leave the premises and the area quietly.

H) PREMISES

The premises have been designed in a manner which creates a unique venue in the city centre, with consideration having been given to its ability to operate in a manner which does not give rise to disturbance. The controls and limitations of the venue are reflected in this noise management plan.

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Management will consider carefully the issue of thermal comfort during the operation of the venue, particularly during summer. Plans will be implemented to control the temperature in the venue to allow the public and staff to open doors to assist in cooling. In this situation where natural cooling is required the management staff will act as noted above to reduce noise levels in line with requirements. This will mean keeping the doors open and reducing background music and limiting patron numbers. No plans to install an air conditioner are intended.

No significant structural alterations shall be made to the premises without due consideration of its potential impact on noise management.

K) PROCEDURAL

This noise management plan is to be considered as a live document and will be reviewed by the owners and their management team annually to ensure that it is meeting its stated objective.

Richard Slater
on behalf of TINTO Architecture & PB Devco

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