Project Sona
Ardwick

Condition Discharge Report

32292/RP1

11/05/2026

For:
GGC Polygon Manchester Ltd
c/o GWB Consultants Ltd
15 Esplanade,
St Helier,
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Hann Tucker Associates

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Document Control

Rev	Date	Comment	Prepared by	Authorised by
1	11/05/2026	Minor amendments following comments	[redacted] Will Robertson Consultant BSc(Hons), AMIOA	[redacted] Jake Howarth Senior Associate BEng(Hons), MIOA
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1.0 Introduction

This report presents results for acoustic commissioning tests undertaken by Will Robertson, Consultant, AMIOA at Project Sona, Ardwick and assesses the results against the criterion of Condition 12 and Condition 7.

2.0 Objectives

To undertake sound insulation and internal ambient noise levels tests to compare the results against the requirements of Conditions 12 and 7 and comment upon the acceptability.

3.0 Required Condition Criteria

3.1 Condition 7

a) Prior to the first use of commercial unit, residents lounge, co working spaces and gymnasium as indicated on drawing 2066-ABWA-Z1-01-DR-A-(20)-0100 stamped as received by the City Council, as Local Planning Authority, on 23 December 2021, a scheme of acoustic insulation for those spaces shall be submitted for approval in writing by the City Council, as Local Planning Authority.

Where entertainment noise is proposed the LAeq (entertainment noise) shall be controlled to 5dB below the LA90 (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63HZ and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq,5min), respectively.

(b) Prior to the first use of those spaces within phase D2, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition.

3.2 Condition 12

a) Prior to the first occupation of the residential element of the development, a scheme for acoustically insulating the proposed residential accommodation against noise from Stockport Road and the Apollo shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved noise insulation scheme shall be completed before the first

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

- Bedrooms (night time - 23.00 - 07.00) 30 dB LAeq (individual noise events shall not exceed 45 dB LAmax,F by more than 15 times)
- Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq
- Gardens and terraces (daytime) 55 dB LAeq

b) Prior to the first occupation of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non-conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ.

4.0 Condition 12 Assessment

4.1 Internal Ambient Noise Level Test Locations

Internal ambient noise level measurements were taken in 4No different rooms across the development as described in Table 1 below. All measurements were taken in bedrooms:

Table 1: Test Locations

Test Ref.	Apt No.	Period
IANL 1	201	17/04/2026 - 20/04/2026
IANL 2	205	
IANL 3	208	
IANL 4	408	

The survey dates included the following events at the O2 Apollo:

- Max Amini at O2 Apollo Manchester. Event started at 18:30.
- Cat Burns at O2 Apollo Manchester. Event started at 19:00.

Figure 1 and 2 below highlight the locations where internal noise measurements were undertaken.

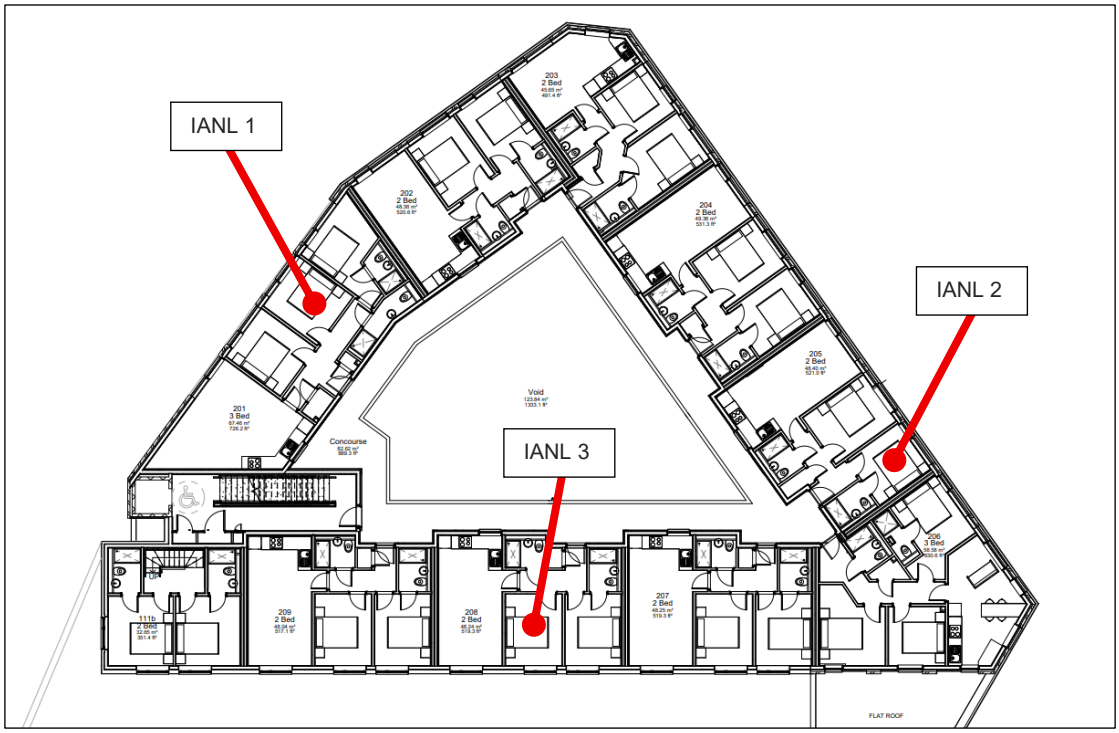


Figure 1 Showing Floor 2 Measurement Locations (Drawing No. 2066-ABWA-Z1-02-DR-A-(20)-0102)

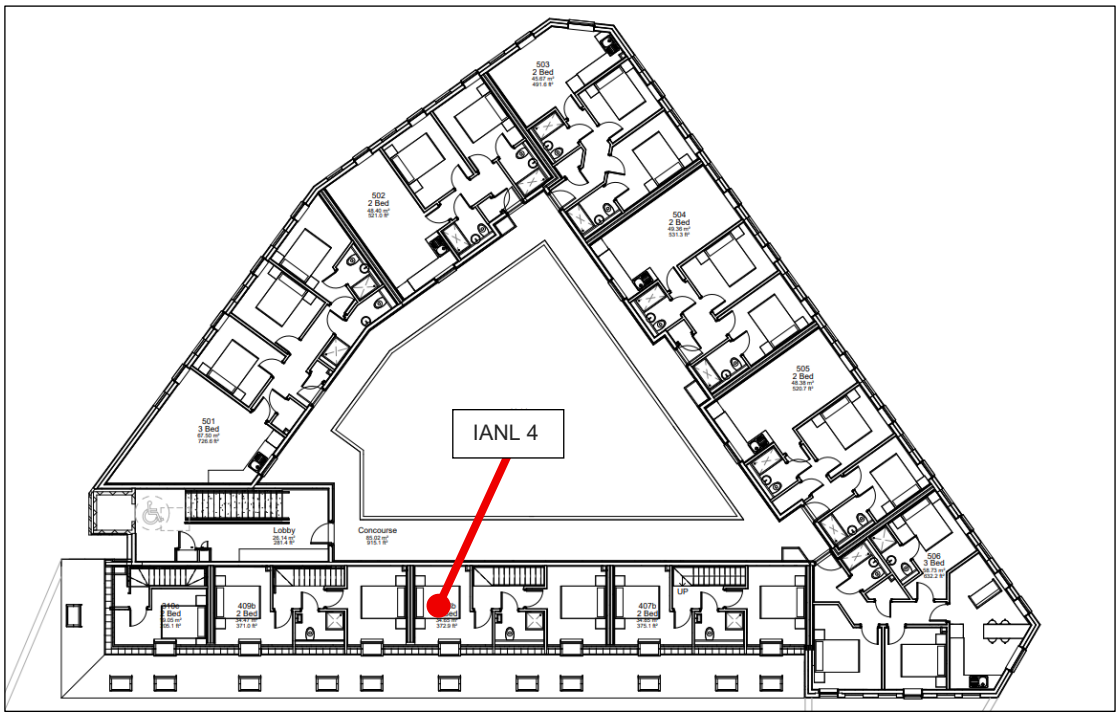


Figure 2 Showing Floor 5 Measurement Locations (Drawing No. 2066-ABWA-Z1-05-DR-A-(20)-0105)

4.2 Instrumentation

The instrumentation used during the survey is presented in Table 2 below:

Table 2: Instrumentation

Position	Description	Manufacturer	Type	Serial Number	Calibration
Apt 201	Type 1 Data Logging Sound Level Meter	Larson Davis	LxT	LxT	Calibration on 30/05/2024
	Type 1 ½" Condenser Microphone	Larson Davis	3777B02	317684	
	Pre Amp	Larson Davis	PRMLxTL1	42842	
Apt 205	Type 1 Data Logging Sound Level Meter	Larson Davis	LxT	4086	Calibration on 28/05/2024
	Type 1 ½" Condenser Microphone	Larson Davis	3777B02	174436	
	Pre Amp	Larson Davis	PRMLxTL1	42843	
Apt 408	Type 1 Data Logging Sound Level Meter	Larson Davis	LxT	4569	Calibration on 05/08/2025
	Type 1 ½" Condenser Microphone	PCB	377B02	318357	
	Pre Amp	PCB	PRMLxTL1	69927	
Apt 208	Type 1 Data Logging Sound Level Meter	Larson Davis	824	3157	Calibration on 05/08/2025
	Type 1 ½" Condenser Microphone	B&K	4169	2470594	
	Pre Amp	Larson Davis	PRM902	3936	
Apt 208	Type 1 Data Logging Sound Level Meter	Brüel and Kjær	2250	3025254	Calibration on 25/02/2026
	Type 1 Calibrator	Bruel & Kjaer	4231	2308993	Calibration on 25/02/2026
All	Type 1 Calibrator	Bruel & Kjaer	Cal200	3083	Calibrated on 28/02/2025

4.3 Survey Results

Table 3 below summarises the results at each measurement position. Please refer to Section 4.4 for detailed discussion and analysis of the results.

Table 3: Measurement Results

Test Ref.	Measurement Location	Day / period	Daytime (07:00 – 23:00 hrs)	Night-time (23:00 – 07:00 hrs)	
			$L_{Aeq,16hr}$	$L_{Aeq,8hr}$	15th Highest $L_{Amax,2min}$
IANL1	201 (Bedroom)	17/04/2026	32	25	42
		18/04/2026	28	27	45
		19/04/2026	28	26	40
IANL 2	205 (Bedroom)	17/04/2026	35	30	46
		18/04/2026	35	35	48
		19/04/2026	35	30	45
IANL 3	208 (Bedroom)	17/04/2026	41	37	49
		18/04/2026	40	39	50
		19/04/2026	39	37	48
IANL 4	408 (Bedroom)	17/04/2026	32	30	39
		18/04/2026	31	30	41
		19/04/2026	31	29	39

4.4 Discussion of Results

4.4.1 Apartment 201

The measured noise levels in Apartment 201 complied with the condition requirements.

4.4.2 Apartment 205

The measured noise levels in Apartment 205 complied with the condition requirements with the exception of the night-time ambient noise level on 18/04/2026 where a noise level of 35 dBA was recorded and marginal exceedances in the night-time L_{AFmax} criteria.

The 35 dBA ambient noise level at night was impacted by 2No events, the first is assumed to occupants leaving the concert at the 02 Apollo and the second appears to be an external siren, located directly outside the window of Apartment 205. The external siren located so close to the apartment is considered to be atypical.

If the siren alone is removed from the assessment the ambient noise level over the course of the night reduces to 31 dB $L_{Aeq,8h}$.

Figure 3 shows a time history plot of the $L_{Aeq,15min}$ noise levels with each event highlighted along with the average $L_{Aeq,8h}$ not considering the siren event.

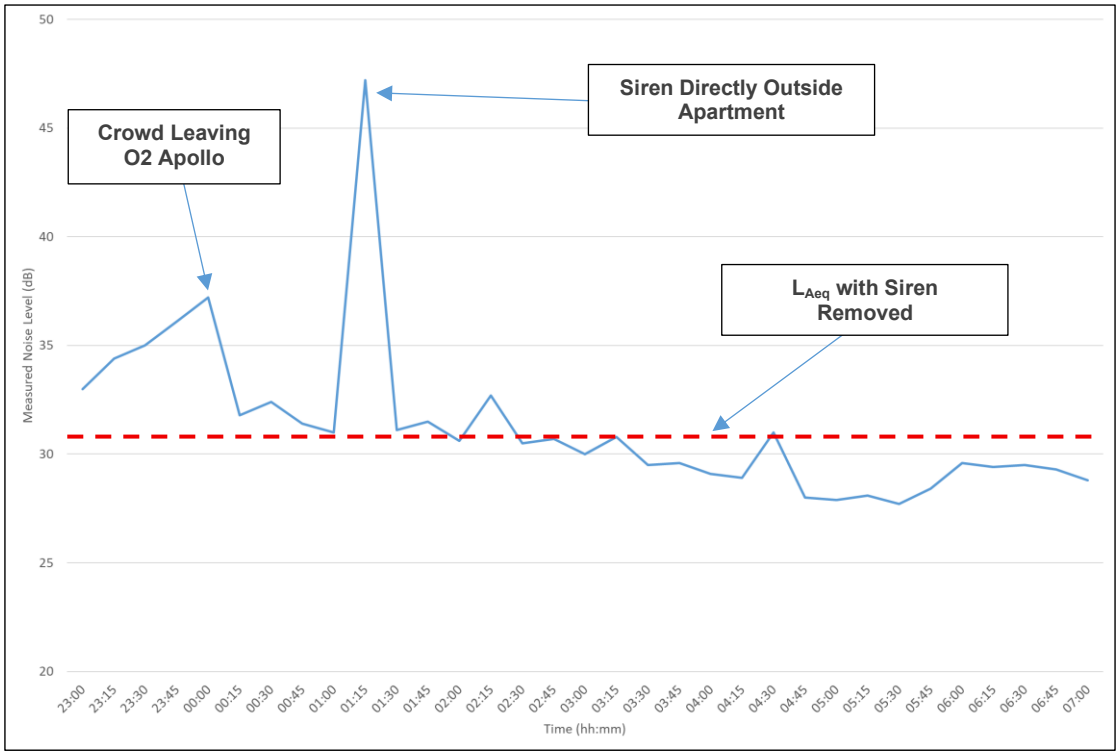


Figure 3 Time History Plot showing L_{Aeq} between 23:00 and 07:00

It should also be noted that the rooms were unfurnished and once furniture is installed the noise level could reduce by a further 1 dBA and therefore comply with the Condition requirements.

Regarding the maximum noise events during the night, correcting for furniture, the L_{Amax} level would have complied in 2No of the 3No nights surveyed. With the exceedance on the night of 18 April 2024 being 2 dBA.

4.4.3 Apartment 208

The measured noise levels in Apartment 208 failed to meet the criterion, exceeding the daytime $L_{Aeq,16hr}$ criteria by approximately 5dB, the nighttime $L_{Aeq,8hr}$ by approximately 9dB, and exceeding the 15th Highest $L_{Amax,2min}$ by approximately 5dB.

Further investigation carried out by the contractor has been revealed that the rubber seals around the window were not engaging the frame properly, significantly reducing the acoustic performance. Remediation measures have since been carried out which have considerably improved the acoustic performance.

Following the remediation measures the internal noise levels were retested this apartment and a reduction of approximately 10 dB was measured when compared to the original daytime $L_{Aeq,16hr}$.

Table 4 below presents the IANL measurement results taken both before and after the remediation works were carried out.

Table 4: Comparison of original results to re-tested results

Description.	Measurement Location	Day / period	Daytime (07:00 – 23:00 hrs)
			$L_{Aeq,16hr}$
Original Test	208 (Bedroom)	17/04/2026	41
		18/04/2026	40
		19/04/2026	39
Re-tested following remediation works		06/05/2026 13:30 – 13:45 (15 Minute)	30

As the results above show approximately a 10 dB reduction in internal noise levels when compared to the original daytime measurement, it can be expected that the noise levels will also meet the criterion for nighttime hours (i.e. Nighttime $L_{Aeq,8hr}$ and 15th Highest $L_{Amax,2min}$).

In can be concluded that that the faulty window seal was the cause of the noise level exceedance and this has now been fixed Therefore internal noise levels are expected to be met during both daytime and nighttime hours.

4.4.4 Apartment 408

The measured noise levels in Apartment 408 complied with the condition requirements.

5.0 Condition 7b Assessment

This assessment aims to calculate limiting noise levels for commercial unit operation within the development. Sound insulation results from airborne floor tests and façade tests have been used to carry our assessment. To comply with Condition 7b, noise within the apartments above should not exceed a noise rating (NR) value of 25 during the daytime hours and NR20 during nighttime hours.

Assessment of entertainment noise from commercial unit operation has been assessed based on historical measured commercial noise operation. Noise has been assessed to meet 47dB at 63Hz and 41dB at 125Hz as required by Condition 7b.

5.1 Sound Insulation Testing

5.1.1 Locations

Table 5 summarises the sound insulation testing location for airborne floor measurements.

Table 5: Sound Insulation Testing Locations

Test Ref.	Apt No.
AF1	111
AF 2	107
AF 3	102

Table 4 below highlights the locations where airborne floor measurements were undertaken.



Figure 4 Showing Floor 1 Measurement Locations (Drawing No. 2066-ABWA-Z1-01-DR-A-(20)-0101)

5.1.2 Sound Insulation Testing Results

Table 6 below summarises sound insulation results for airborne floor measurements.

Table 6 Airborne Floor Measurement Results

Airborne Tests Across Separating Walls	$D_{nT,w} + C_{tr}$(dB)		Complies with ADE
	Test Result	Required	
AF1	56	45	Yes
AF2	56	45	Yes
AF3	56	45	Yes

Table 7 below presents the measured octave band sound reduction performance of the separating floors. This will then be used to provide limiting noise levels for commercial and entertainment spaces ensuring the noise limits are adhered to in line with the planning condition requirements of Condition 7b. Limiting noise levels for commercial and entertainment noise have been presented in Section 5.3.

Table 7: Octave Band Sound Insulation Performance

Description	Sound Insulation Performance in each octave band centre frequency (Hz)								D_w
	63	125	250	500	1000	2000	4000	8000	
Measured Sound Insulation of Floor, D, (dB) (Apt 111)	47	49	59	65	64	71	76	72	61
Measured Sound Insulation of Floor, D, (dB) (Apt 107)	42	51	62	73	75	73	73	71	62
Measured Sound Insulation of Floor, D, (dB) (Apt 102)	42	49	58	65	72	72	73	70	62

5.2 Facade Sound Insulation Testing

5.2.1 Locations

Figure 5 below highlights the locations where façade insulation tests were carried out.

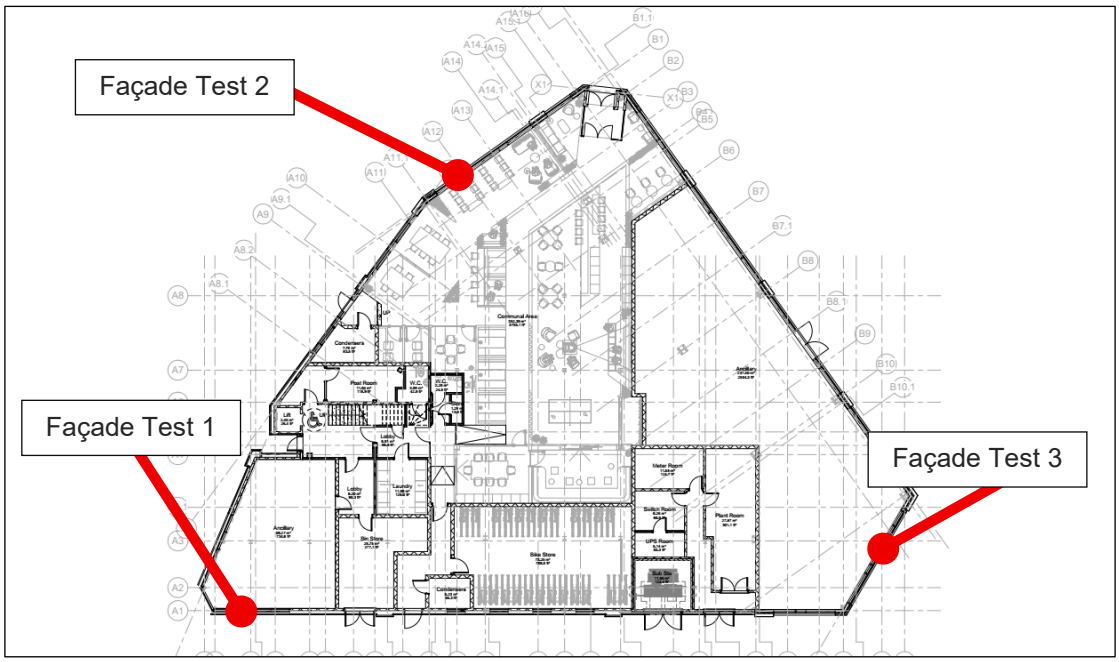


Figure 5 Showing Façade Testing Locations (Drawing No. 2066-ABWA-Z1-01-DR-A-(20)-0101)

5.2.2 Façade testing Insulation Testing Results

Table 8 presents the measured sound reduction at each octave band provided by each façade.

Table 8: Octave Band Façade Sound Insulation

Test	Level Difference Across Façade, D (dB) in each Octave Band Centre Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
1	20	21	21	25	21	24	31	33
2	29	28	34	36	32	33	40	47
3	32	30	34	35	27	29	41	51

The facade sound insulation measured during Test 1 was limited due to a open louvre in the façade. It is understood that the louvre provides fresh air to the unit and there will be no connection into the louvre as part of the base build. As such, the test was carried out across the façade including the open louvre.

5.2.3 Historical Measured Background Noise Levels

Table 9 presents the historical external background noise levels measured on Polygon Street, Stockport Road, and Brunswick Street by taken by BDP Acoustics and presented in their report titled *"(REP)U001 Brunswick Street, Manchester - Environmental Noise Assessment Report*". The noise levels presented in Table 9 are averaged L_{90} levels captured over multiple dates and time periods by BDP Acoustics to establish the typical background noise levels at each position.

Table 9: Historical Background Noise Level Measurements

Position	Period	Noise Level in each octave band centre frequency (Hz) dB L_{eq}								dBA (L_{90})
		63	125	250	500	1000	2000	4000	8000	
Polygon Street	Daytime (07:00 – 23:00)	68	65	58	55	55	51	42	30	60
	Night-time (23:00 – 07:00)	65	62	55	51	51	46	37	25	56
Stockport Road	Daytime (07:00 – 23:00)	70	66	62	60	61	58	50	41	65
	Night-time (23:00 – 07:00)	67	64	59	58	60	56	47	33	64
Brunswick Street	Daytime (07:00 – 23:00)	69	62	58	57	58	55	46	34	62
	Night-time (23:00 – 07:00)	65	59	54	52	53	49	40	30	57

The L_{90} data presented above has been used to calculate commercial unit limiting noise levels as shown in Section 5.3.

5.3 Commercial Noise Transfer Assessment

The assessment of Noise transfer from the commercial units need to consider both noise transfer to above and noise egress through the façade.

Calculations have been carried out to establishing the limiting operational noise level for each unit that will comply with the requirements of Condition 7. These calculations considered:

a) The existing sound insulation performance of the separating slabs
b) The existing sound insulation performance of the facades.

Based on above the following limiting noise levels have been calculated to ensure that both noise transferred to surrounding rooms within the development and noise egress to off-site receptors are line with the requirements of Condition 7b.

Figure 6 highlights the locations where commercial units are expected to be built.

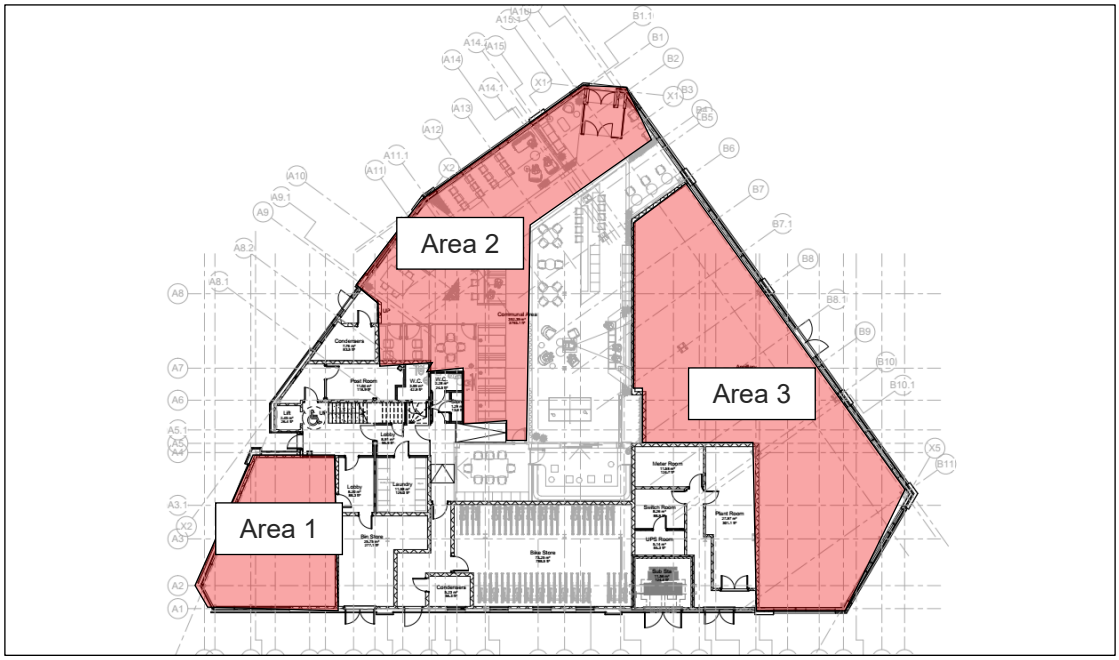


Figure 6 Showing Possible Commercial Areas (Drawing No. 2066-ABWA-Z1-01-DR-A-(20)-0101)

Table 10: Limiting Noise Levels to for Commercial Units

Unit	Period	Commercial Limiting Noise Level in each Octave Band Centre Frequency (Hz) dB							
		63	125	250	500	1000	2000	4000	8000
Commercial Area 1	Day	83	81	74	75	71	70	68	58
	Night	80	78	71	71	67	65	63	53
Commercial Area 2	Day	88	87	87	87	80	79	82	80
	Night	88	89	86	88	82	80	82	78
Commercial Area 3	Day	88	89	87	88	88	86	85	82
	Night	88	82	82	83	80	77	75	72

The following table highlights the typical operational noise levels for a number of potential use types in each retail unit to give context to the limits provided above.

Table 11 Typical Operational Noise Levels

Use Type	Typical Operational Noise Level, L_{eq}, (dB) at each Octave Band Centre Frequency (Hz)						
	63	125	250	500	1000	2000	4000
Typical Retail Store	67	70	66	63	63	62	54
Chain Restaurant	64	65	69	74	73	69	63
Bar with Low Level Music	76	74	74	77	74	71	69
Typical Office Use	67	70	66	63	63	62	54
Retail Gym Specification	75	80	80	80	80	80	80

Comparing the above levels with the calculated limiting noise levels it can be seen that the units could operate as the following and comply with the noise egress criteria:

Table 12 Feasibility of Different Use Types

Use Type	Use Type Feasible with Typical Glazing					
	Retail Area 1		Retail Ara 2		Retail Ar 3	
	Day	Night	Day	Night	Day	Night
Typical Retail Store	Yes	Yes	Yes	Yes	Yes	Yes
Chain Restaurant	No	No	Yes	Yes	Yes	Yes
Bar with Low Level Music	No	No	Yes	Yes	Yes	Yes
Typical Office Use	Yes	Yes	Yes	Yes	Yes	Yes
Retail Gym Specification	No	No	Yes[1]	Yes	Yes	Yes[1]

Note 1: With application of suitable noise limiter.

Based on the above, Retail Area 1 would have the most limited allowable uses due to the limited façade sound protection. However, typical retail or office use types would be feasible for the unit. Retail Area 2 and 3 would allow most typical uses without the need for dedicated mitigation measures.

However, it should be noted that the limits in Table 10 are the overriding limits to be achieved. Should any operator wish to generate higher noise levels than are presented it would be their responsibility to provided mitigation to ensure requirements of Condition 7 are achieved.

Acoustic Terminology

The acoustic terms used in this report are defined as follows:

dB — Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form. The relationships between Decibel levels do not work in the same way that non-logarithmic (linear) numbers work (e.g. 30dB + 30dB = 33dB, not 60dB).

dBA — The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted

It should be noted that levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is just perceptible.

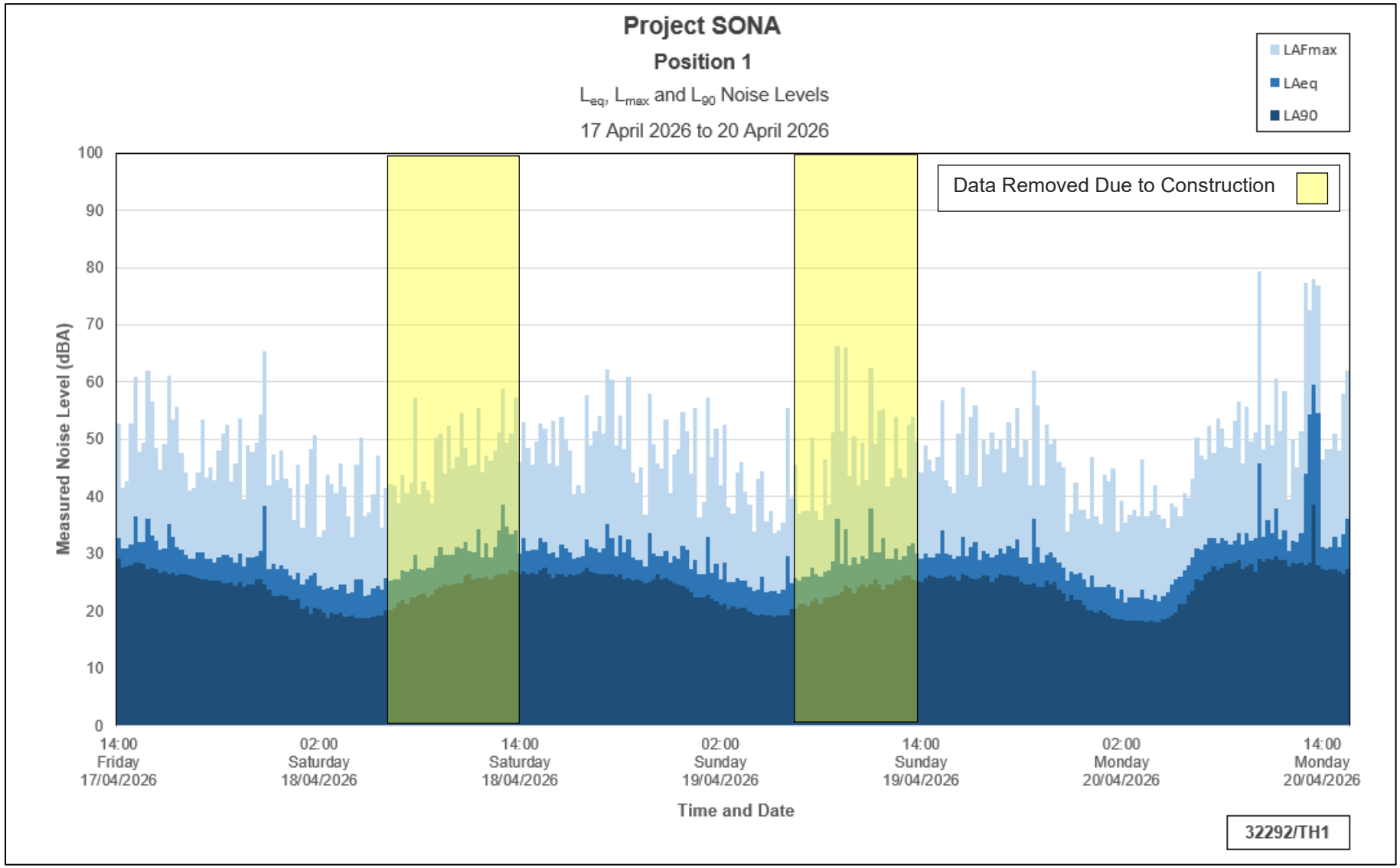
$L_{90,T}$ — L_{90} is the noise level exceeded for 90% of the period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the background noise level.

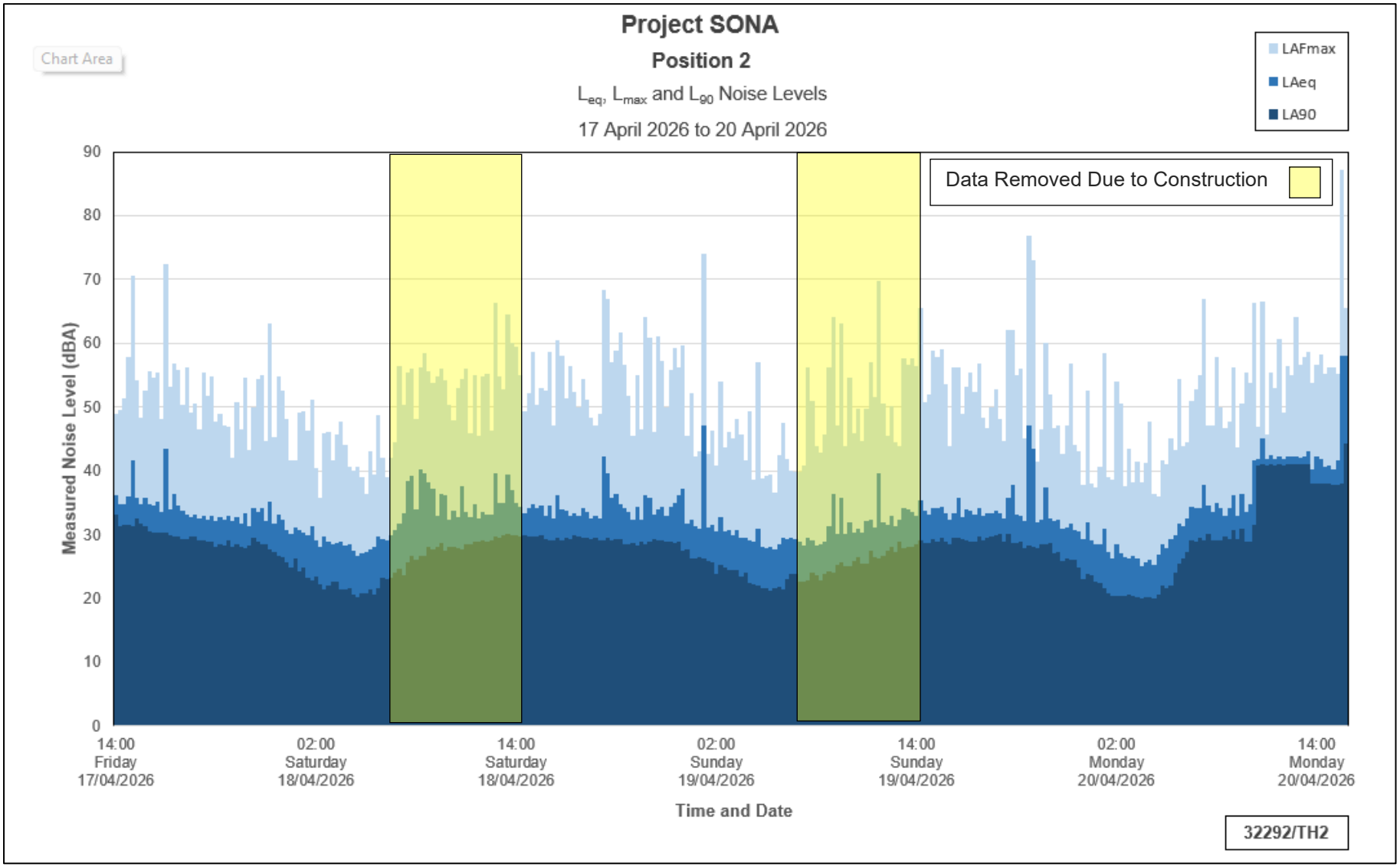
$L_{eq,T}$ — $L_{eq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time period, *T*.

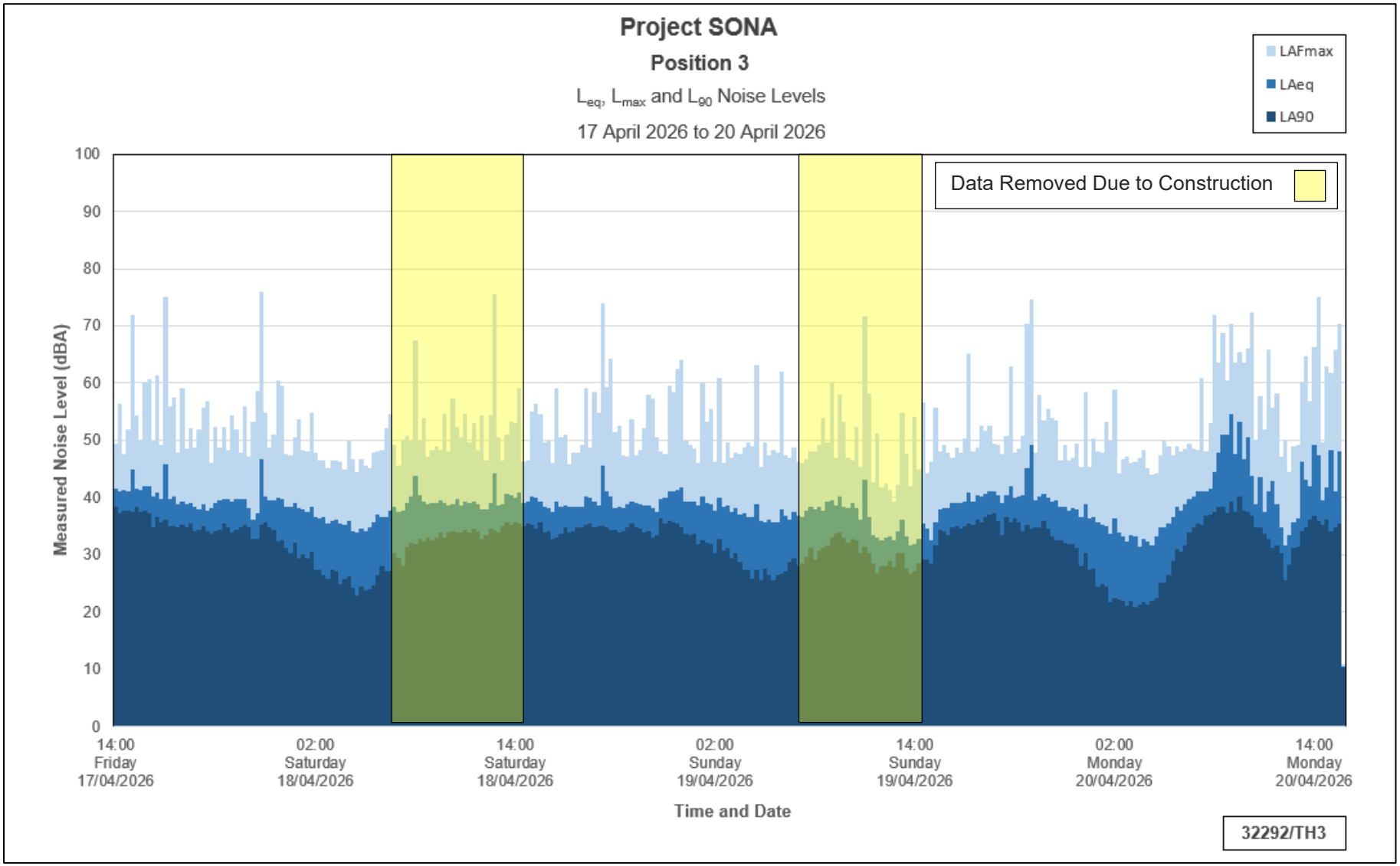
L_{max} — L_{max} is the maximum sound pressure level recorded over the period stated. L_{max} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the L_{eq} noise level.

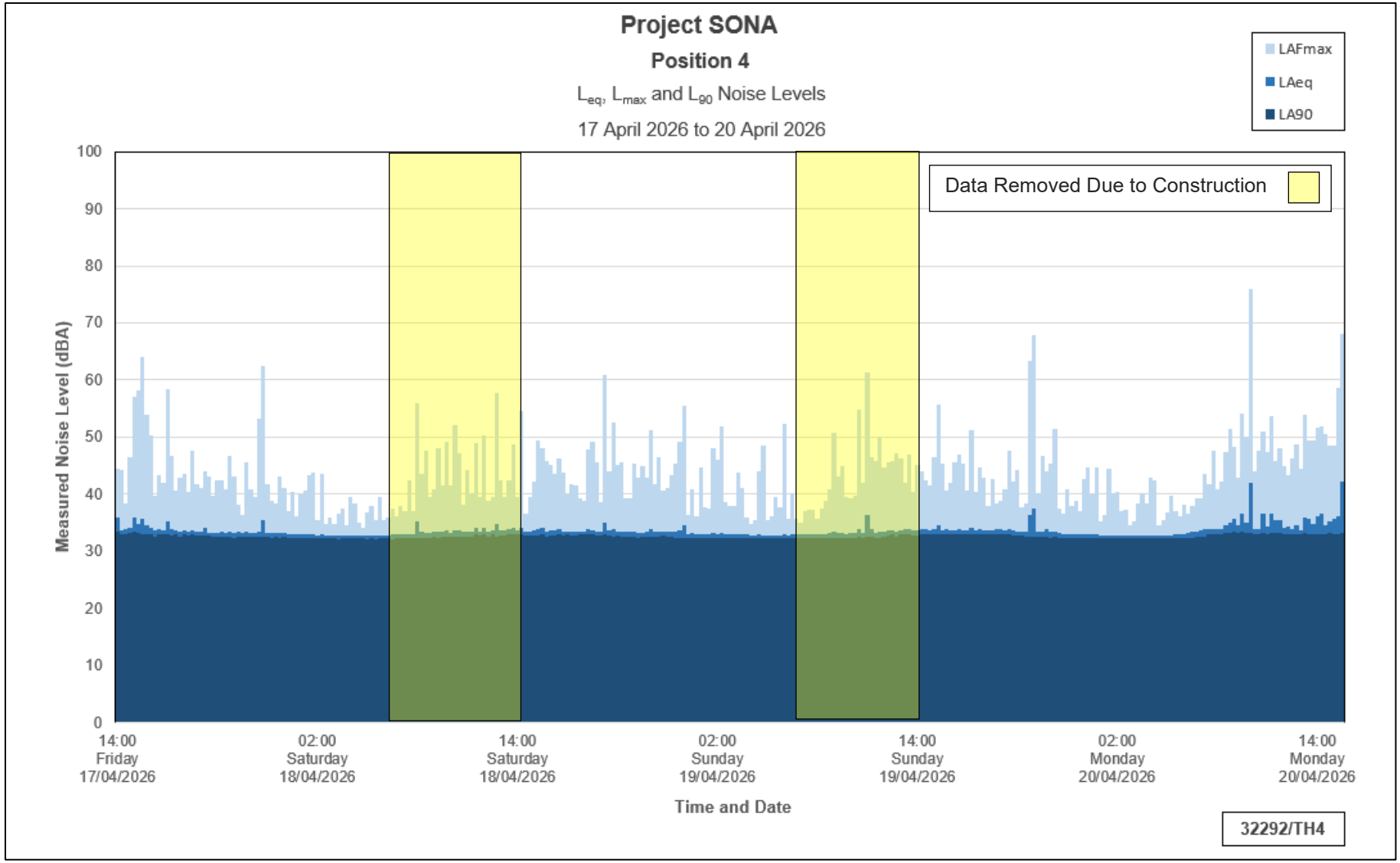
L_p — Sound Pressure Level (SPL) is the sound pressure relative to a standard reference pressure of 2×10^{-5} Pa. This level varies for a given source according to a number of factors (including but not limited to: distance from the source; positioning; screening and meteorological effects).

L_w — Sound Power Level (SWL) is the total amount of sound energy inherent in a particular sound source, independent of its environment. It is a logarithmic measure of the sound power in comparison to a specified reference level (usually 10^{-12} W).


Project SONA
Position 1
L_{eq}, L_{max} and L_{90} Noise Levels
17 April 2026 to 20 April 2026
LAFmax
LAeq
LA90
Data Removed Due to Construction
Measured Noise Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
14:00 Friday 17/04/2026
02:00 Saturday 18/04/2026
14:00 Saturday 18/04/2026
02:00 Sunday 19/04/2026
14:00 Sunday 19/04/2026
02:00 Monday 20/04/2026
14:00 Monday 20/04/2026
Time and Date
32292/TH1


Project SONA
Position 2
L_{eq}, L_{max} and L_{90} Noise Levels
17 April 2026 to 20 April 2026
Chart Area
LAFmax
LAeq
LA90
Data Removed Due to Construction
Measured Noise Level (dBA)
90
80
70
60
50
40
30
20
10
0
14:00 Friday 17/04/2026
02:00 Saturday 18/04/2026
14:00 Saturday 18/04/2026
02:00 Sunday 19/04/2026
14:00 Sunday 19/04/2026
02:00 Monday 20/04/2026
14:00 Monday 20/04/2026
Time and Date
32292/TH2


Project SONA
Position 3
L_{eq}, L_{max} and L_{90} Noise Levels
17 April 2026 to 20 April 2026
LAFmax
LAeq
LA90
Data Removed Due to Construction
Measured Noise Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
14:00 Friday 17/04/2026
02:00 Saturday 18/04/2026
14:00 Saturday 18/04/2026
02:00 Sunday 19/04/2026
14:00 Sunday 19/04/2026
02:00 Monday 20/04/2026
14:00 Monday 20/04/2026
Time and Date
32292/TH3


Project SONA
Position 4
L_{eq}, L_{max} and L_{90} Noise Levels
17 April 2026 to 20 April 2026
LAFmax
LAeq
LA90
Data Removed Due to Construction
Measured Noise Level (dBA)
100
90
80
70
60
50
40
30
20
10
0
14:00 Friday 17/04/2026
02:00 Saturday 18/04/2026
14:00 Saturday 18/04/2026
02:00 Sunday 19/04/2026
14:00 Sunday 19/04/2026
02:00 Monday 20/04/2026
14:00 Monday 20/04/2026
Time and Date
32292/TH4