

Baseline Noise Survey Report

Coleg Gwent, Newport



Prepared for:
WEPCo

Prepared by:
Paul Gurney BSc (Hons) MIOA

Date:
23 May 2025

Project/File:
NE0101-STN-XX-XX-RP-U-10001

Document control sheet

Issued by	Stantec Hydrock Limited Wharton Place, 13 Wharton Street Cardiff CF10 1GS UNITED KINGDOM stantec.com	+44(0) 2920 023665 hydrock.com
Client	WEPCo	
Project name	Coleg Gwent Knowledge Quarter, Newport	
Title	Baseline Noise Survey Report	
Doc ref	NE0101-STN-XX-XX-RP-U-10001	
Project number	37766	
Status	A1 - Suitable for Stage Approval	
Date	18 September 2025	

Document production record

Issue number	P02	Name
Prepared by	Paul Gurney BSc (Hons) MIOA	
Checked by	Rhodri Owen	
Approved by	Tom Quaife-Jones	

Document revision record

Issue number	Status	Date	Revision details
P01	D1	22/05/2025	DRAFT WEPCo 1 Submission
P02	A1	18/09/2025	WEPCo Stage 1 Submission

Stantec Hydrock Limited has prepared this report in accordance with the instructions of the above named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.



Table of Contents

Document control sheet	i
1 Introduction	1
1.1 Proposed Development Site	1
1.2 Policy & Guidance Documents	2
1.2.1 Building Bulletin 93 (2015)	2
1.2.2 British Standard 4142 (2014)	2
2 Environmental Noise Survey	3
2.1 Personnel	3
2.2 Methodology	3
2.3 Equipment	4
2.4 Weather Conditions	5
2.5 Noise Survey Results	5
3 Preliminary Noise Intrusion Assessment	7
3.1 Noise Modelling	7
3.2 Internal Ambient Noise Level Design Criteria	8
3.3 Ventilation Feasibility Assessment	8
4 External Plant Noise	10
4.1 Nearest Identified Noise Sensitive Receptors	10
4.2 Proposed Plant Rating Noise Limits	10

List of Tables

Table 1: Noise Monitoring Locations	4
Table 2: Equipment Table	4
Table 3: Measured Average Ambient Noise Levels at Unattended Positions	6
Table 4: Typical Background Sound Levels at Unattended Positions	6
Table 5: Summary of Discrete Noise Events at Unattended Positions	6
Table 6: BB93 IANL Criteria for Noise Sensitive Room Types	8
Table 7: Proposed Plant Rating Noise Limits	10

List of Figures

Figure 1: Proposed Development Site	1
Figure 2: Monitoring Positions	3
Figure 3: Highest Predicted External Noise Levels at Proposed Development Façades (Daytime)	7
Figure 4: Facades Which May Require Mechanical Ventilation	9
Figure 5: Nearest Identified Noise Sensitive Receptors	10

List of Appendices

Appendix A Approximate Weather History

Appendix B Noise Time History Graphs

Appendix C Background Sound Level Distribution Graphs



1 Introduction

Hydrock, now Stantec has been appointed to carry out a baseline noise survey at the proposed Coleg Gwent Knowledge Quarter campus building in Newport.

Unattended environmental noise monitoring was undertaken between 11:00 on Wednesday 7th May and 11:30 on Friday 9th May 2025 to measure prevailing ambient and background sound levels at the proposed development site. Additional short-term attended measurements were carried out at the Kingsway Centre car park between 09:50 and 10:35 on Wednesday 7th May 2025 to assist in modelling car park noise impinging on the proposed development building.

A preliminary noise intrusion assessment has been prepared to assess the feasibility of natural and mechanical ventilation strategies for noise sensitive room types at the development.

The typical measured background sound levels during daytime (07:00 – 23:00) and night-time (23:00 – 07:00) hours have been used to establish plant rating noise limits at the nearest identified noise sensitive receptors. New external plant should be designed to achieve the proposed plant rating noise limits at the nearest identified noise sensitive receptors.

1.1 Proposed Development Site

The proposed development site is shown in Figure 1, which is bounded by the A4042 to the east, Emlyn Street to the south and Kingsway Centre Car Park to the west. Current proposals show that a new 5-storey building is proposed at the site, which will include classrooms, practical workshops, administration spaces (i.e. offices) and staff rest areas.

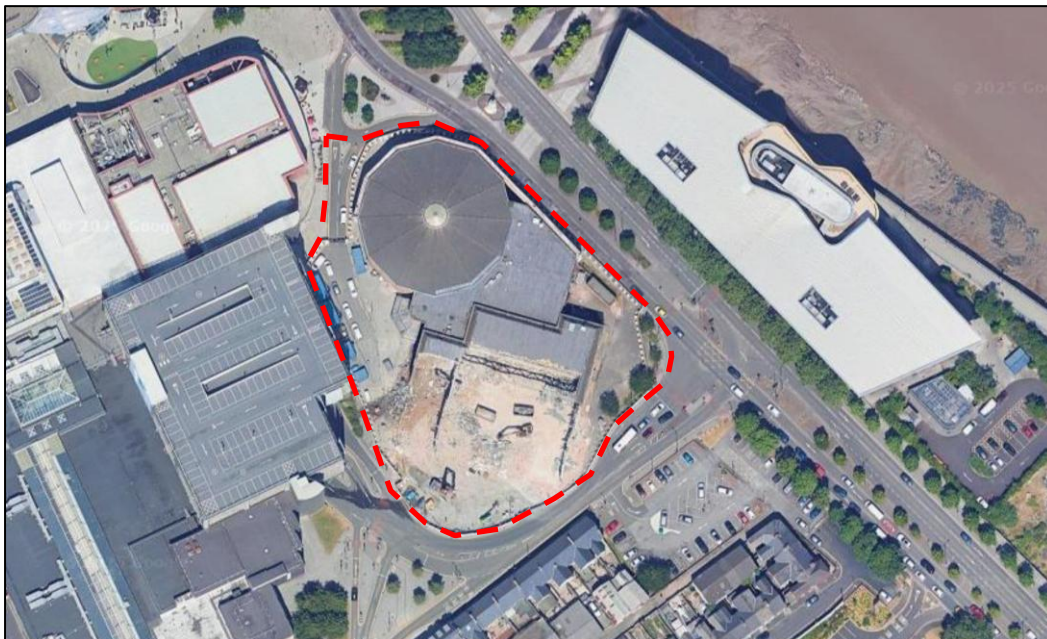


Figure 1: Proposed Development Site

1.2 Policy & Guidance Documents

1.2.1 Building Bulletin 93 (2015)

Building Bulletin 93 – ‘Acoustic Design of Schools: Performance Standards’ (hereafter referred to as BB93) provides acoustic design criteria for new-build educational facilities in relation internal ambient noise levels, sound insulation and reverberation time.

New-build educational facilities should adhere to the acoustic criteria and performance standards outlined within BB93.

1.2.2 British Standard 4142 (2014)

The standard method for assessing noise from commercial and industrial premises is British Standard 4142:2014+A1:2019 “Method for rating and assessing industrial and commercial sound” (hereafter referred to as BS4142). The standard is applicable for assessing noise affecting “dwellings or premises used for residential purposes”.

A BS4142 assessment is made by determining the difference between the specific noise under consideration and the background sound level, as represented by the L_{A90} parameter, determined in the absence of the commercial sound. The L_{A90} parameter is defined as the level exceeded for 90% of the measurement time. This parameter therefore excludes short duration noise events, such as individual vehicle movements, and represents the underlying continuous noise.

The commercial or industrial sound is assessed in terms of the equivalent continuous noise level, L_{Aeq} . The equivalent continuous noise level (L_{Aeq}) of the commercial or industrial sound, over the applicable assessment period, is known as the specific sound level.

A character correction penalty can be applied to the specific sound level where the commercial noise exhibits distinguishable tones, impulsiveness, intermittency or other characteristics which “are otherwise readily distinctive against the residual acoustic environment”.

The specific noise level with the character correction (if necessary) is known as rating level (L_{Ar}) and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The following is then considered:

- Typically, the greater this difference, the greater the magnitude of the impact.
- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.



2 Environmental Noise Survey

2.1 Personnel

The environmental noise survey was undertaken by Sophie Bryan (Graduate Acoustic Consultant at Hydrock now Stantec). Sophie is an Associate Member of the Institute of Acoustics (AMIOA), and holds the following qualifications:

- Institute of Acoustics Diploma in Acoustics and Noise Control
- Institute of Acoustics Competence in Environmental Noise Measurement

2.2 Methodology

Unattended environmental noise measurements were undertaken between 11:00 on Wednesday 7th May 2025 and 11:30 on Friday 9th May 2025 by unattended noise monitoring equipment. Additional attended short-term noise measurements were undertaken between 09:50 and 10:35 Wednesday 7th May 2025. The noise monitoring locations are shown in Figure 2 and summarised in Table 1.

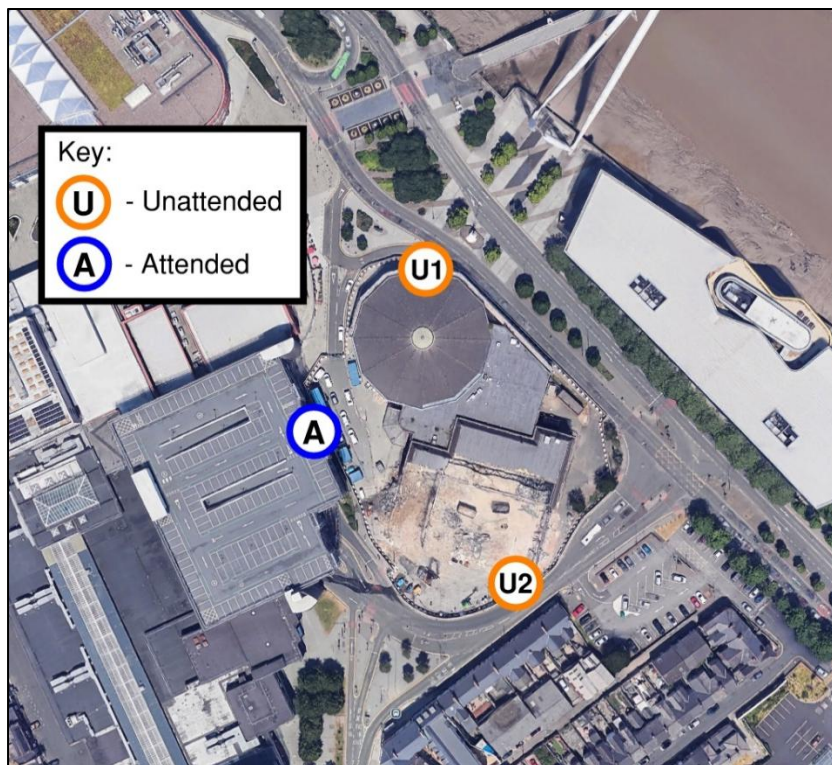


Figure 2: Monitoring Positions

Table 1: Noise Monitoring Locations

ID	Description of Noise Monitoring Location
U1	Unattended continuous noise monitoring undertaken at the northern boundary of the site, overlooking the A4042. The microphone was attached to a tripod and secured to the site hoarding.
U2	Unattended continuous noise monitoring undertaken at the northern boundary of the site, overlooking Emlyn Street. The microphone was attached to a tripod and secured to the site hoarding. The monitoring position is deemed representative of noise levels at the residential properties on Emlyn Street.
A	Attended short-term noise measurements undertaken within Kingsway Car Park on floors 1, 3 and 5.

The measurement microphones were located at a height of ~1.5m above local ground in all instances. Measurements were undertaken in accordance with the guidance outlined in the relevant British Standards, BS 4142:2014 and BS 7445-1:2003. The monitoring procedure followed the guidance outlined in BS 7445:2003 Part 1, Section 5.2.3 and section 5.2.2.

Unattended measurements were 'free field', i.e. the microphone was more than 3.5m from reflective elements except the ground. A suitable wind shield was fitted to the monitoring equipment throughout the monitoring period.

Observation and subjective evaluation of noise sources was carried out during the setup and collection of the survey equipment.

2.3 Equipment

The noise monitoring equipment used for the survey is summarised in Table 2

Table 2: Equipment Table

Monitoring ID	Equipment	Manufacturer	Instrument	Serial No.	Date of Last Laboratory Calibration
U1	Sound Level Meter	01dB	FUSION	14526	26/04/2024
	Microphone	GRAS	40CD	470800	26/04/2024
	Calibrator	Cirrus	CR:515	96051	19/06/2024
U2 & A	Sound Level Meter	NTi Audio	XL2-TA	A2A-20607-E0	03/06/2024
	Pre-amp		MA220	10684	03/06/2024
	Microphone		MC230A	A23089	03/06/2024
	Calibrator		CR:515	95714	19/06/2024



The sound level meters used for the noise survey have been verified as conforming to BS EN 61672-1. The acoustic calibrators used conform to BS EN IEC 60942. Equipment calibration certificates can be provided on request. The sound level meters were calibrated to a reference level of 94 dB at 1kHz both prior to, and on completion of, the noise survey period. No significant drift in calibration was noted during the survey (≤ 0.5 dB).

2.4 Weather Conditions

Approximate weather history for Newport can be viewed in Appendix A. To summarise conditions, the weather was dry and calm with a gentle breeze.

“Average recorded wind speeds during the environmental noise measurement process did not exceed 5 m/s. BS 4142:2014 provides the following guidance with regards to the acquisition of environmental noise measurements and weather conditions:

An effective windshield should be used to minimize turbulence at the microphone.

NOTE Windshields are generally effective up to wind speeds of 5 m/s’ and ‘exercise caution when making measurements in poor weather conditions such as wind speeds greater than 5 m/s.’

Weather conditions during the noise survey were suitable for the acquisition of noise data. Measurements are therefore considered to adhere to the guidance of the relevant British Standard and no corrections to the measured noise dataset has been applied.

2.5 Noise Survey Results

The following noise level indices are relevant to this assessment:

- $L_{Aeq,T}$ dB (‘A’ weighted equivalent continuous sound pressure level) - defined as the level of a continuous noise with the same total energy as the actual fluctuating sound over the measurement time periods. It is sometimes referred to as the ‘ambient noise level’ and can be considered an average.
- $L_{A90,T}$ dB - defined as the ‘A’ weighted sound pressure level exceeded for 90% of the measurement period ‘T’. It is used to describe the prevailing background sound level within BS4142:2014 +A1 2019.
- $L_{A1,T}$ dB - defined as the ‘A’ weighted sound pressure level exceeded for 1% of the measurement period ‘T’.

A summary of the measured average ambient noise levels at the unattended noise monitoring positions is presented in Table 3. The ambient noise levels (L_{Aeq}) are logarithmically averaged over each period. The full results are provided graphically in Appendix B.



Table 3: Measured Average Ambient Noise Levels at Unattended Positions

Position	Period	Range of Measured Ambient Noise Levels, dB $L_{Aeq,30mins}$	Average Ambient Noise Level, dB $L_{Aeq,08:00 - 21:00hrs}$
U1	Operational Hours (08:00-21:00)	53-73	67
U2	Operational Hours (08:00-21:00)	48-79	63

The typical daytime & night-time background sound levels are presented in Table 4, and are determined by observing the most commonly-occurring background sound levels during daytime (07:00 – 23:00) and night-time (23:00 – 07:00) hours. The background sound level distribution graphs are shown in Appendix C.

Table 4: Typical Background Sound Levels at Unattended Positions

Position	Period	Typical Background Sound Level, dB $L_{A90,T}$
U1	Daytime (07:00 – 23:00)	58dB $L_{A90,1hr}$
	Night-time (23:00 – 07:00)	44dB $L_{A90,15mins}$
U2	Daytime (07:00 – 23:00)	54dB $L_{A90,1hr}$
	Night-time (23:00 – 07:00)	47dB $L_{A90,15mins}$

Table 5 presents a summary of the discrete noise events ($L_{A1,30mins}$) measured at the site that exceeds 60dB during the daytime period (07:00 – 23:00) on each day of the survey period. The range, median and mode are presented to determine typical discrete noise events at the proposed development site. This assessment has been carried out interrogating 30-minute $L_{A1,30min}$ data, in line with Building Bulletin 93 (BB93) guidance.

Table 5: Summary of Discrete Noise Events at Unattended Positions

Position	Discrete Noise Events during daytime, dB $L_{A1,30min}$		
	Range	Median	Mode
U1	69 - 82	76	76
U2	67 - 77	72	72

Additional short-term attended measurements were carried out at the Kingsway Centre car park between 09:50 and 10:35 on Wednesday 7th May 2025 to assist in modelling car park noise impinging on the proposed development building. Six 15-minute sample measurements were taken at the façade of the car park overlooking the development site across three floors. The measured noise level ($L_{Aeq,15min}$) ranged between 60dB and 61dB at all short-term attended measurement positions.

3 Preliminary Noise Intrusion Assessment

3.1 Noise Modelling

A noise model has been generated using SoundPlan 9.1 to predict noise levels impinging on the proposed development façades during daytime hours (07:00 – 23:00). Noise emissions from the nearby roads (A4042 and Emlyn Street) and Kingsway Centre Car Park have been predicted based on the unattended and attended noise survey results.

The noise model has been developed on the basis of the current design proposals, however it should be noted that the design proposals are subject to change.

The SoundPlan 9.1 noise model has been used to calculate the highest predicted external noise levels at each façade of the proposed development; the noise modelling results are presented in Figure 3.

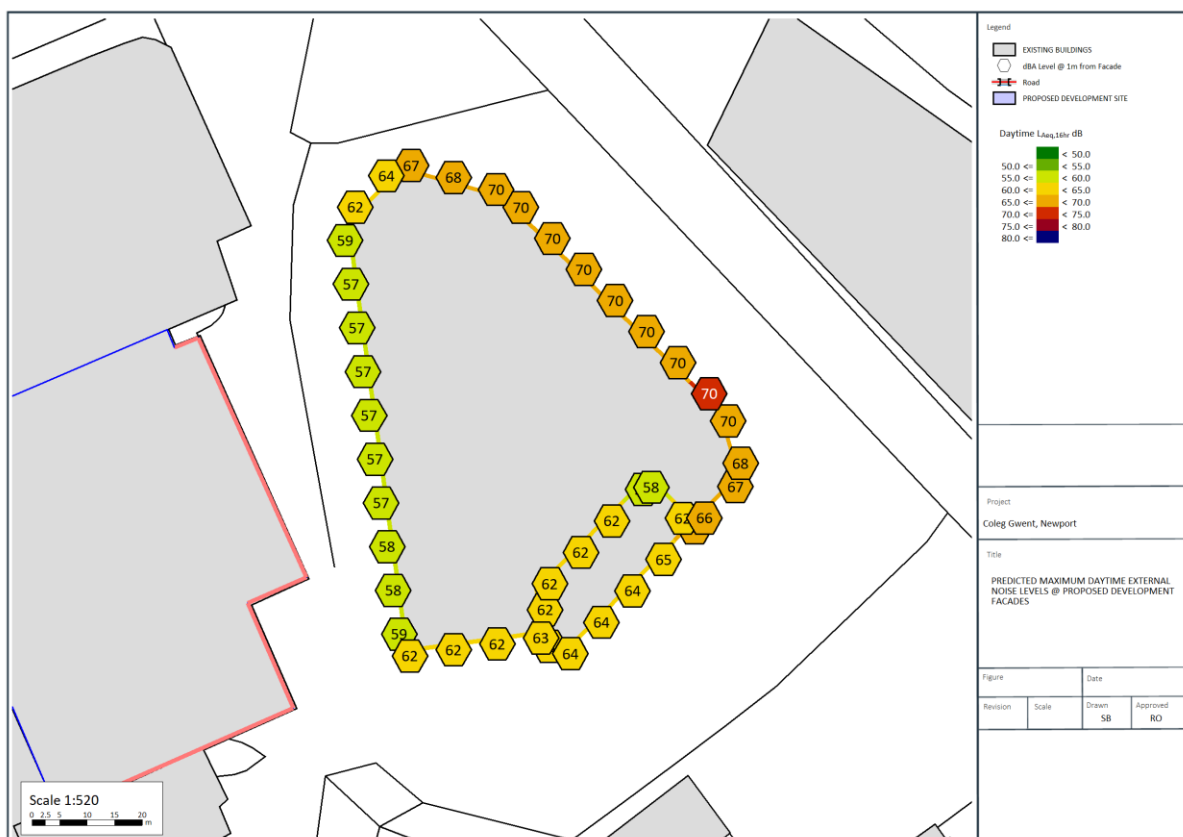


Figure 3: Highest Predicted External Noise Levels at Proposed Development Façades (Daytime)

3.2 Internal Ambient Noise Level Design Criteria

BB93 sets out indoor ambient noise level (IANL) criteria for a variety of spaces and is a legislative requirement for new-build schools. The IANL includes contributions from:

- External sources outside the building (including, but not limited to, road/rail/air traffic noise and/or noise from industrial and commercial premises).
- Building services (e.g. ventilation systems, plant, drainage, etc.). If a room is naturally ventilated, the IANL is calculated and measured with ventilators or windows open as required to provided ventilation. If a room is mechanically ventilated or cooled, the plant should be assumed to be running at its normal operating duty.

BB93 states that for spaces which are naturally ventilated, the noise level including external noise ingress may exceed the IANL limit by up to 5dB. This can usually be achieved where external ambient free-field noise levels at the façade, expressed as $L_{Aeq,30mins}$, do not exceed the most onerous IANL design criterion by more than 16dB for single-sided ventilated spaces, and 20dB for cross-ventilated or roof-ventilated spaces.

BB93 internal ambient noise level criteria for noise sensitive room types (i.e. rooms targeting an IANL $\leq 40dB L_{Aeq,30mins}$) are shown in Table 6.

Table 6: BB93 IANL Criteria for Noise Sensitive Room Types

Noise Sensitive Room Type	BB93 IANL Criterion, dB $L_{Aeq,30mins}$
ILS Classrooms	30
Standard Teaching Classrooms	35
Offices, Staff Rooms, Meeting Rooms, Open Plan Teaching Area, Open Plan Resource/Breakout Area, Workshops	40

3.3 Ventilation Feasibility Assessment

Based on current proposals, there are ILS classrooms located on the northeast façade of the proposed building which directly overlook the A4042.

Based on the measured average ambient noise levels at monitoring position U1 (see Table 3), and the results of the preliminary noise modelling (see Figure 3), natural ventilation for noise sensitive room types (see Table 6) is deemed unlikely to be feasible on façades overlooking the A4042 and Emlyn Walk due to excessive traffic noise.

Therefore, mechanical ventilation will likely be required within noise sensitive room types on façades overlooking the A4042 and Emlyn Walk, as shown in Figure 4.



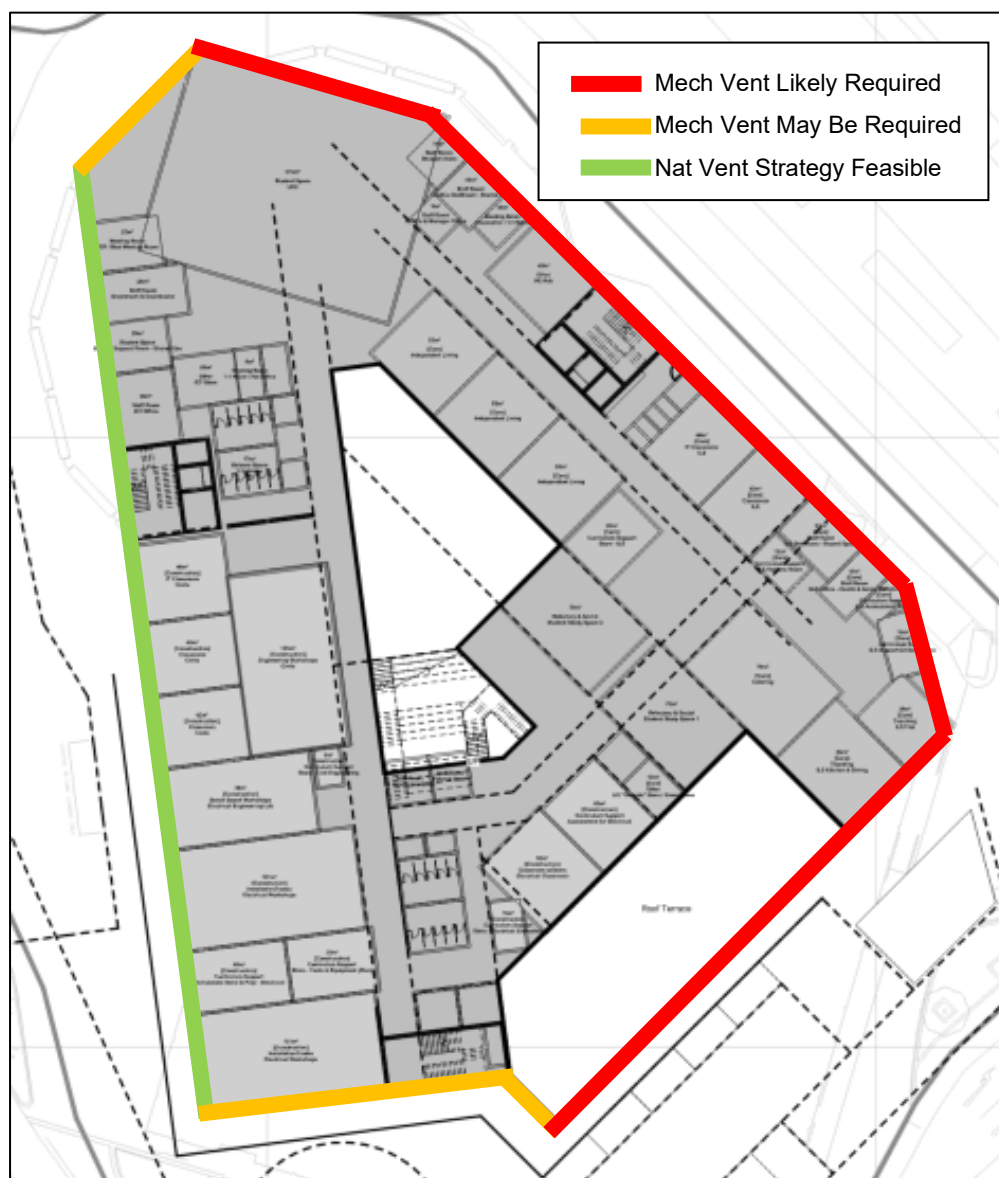


Figure 4: Facades Which May Require Mechanical Ventilation

BB93 also states that to protect students from regular discrete noise events, e.g. aircraft or trains, indoor ambient noise levels should not exceed 60dB $L_{A1,30mins}$. External noise levels in the vicinity of the proposed building typically exceed this by up to 16dB (based on median and modal discrete noise level measured at monitoring position U1, see Table 5). Therefore, additional acoustic measures are unlikely to be required to control noise from discrete events.

4 External Plant Noise

4.1 Nearest Identified Noise Sensitive Receptors

The nearest identified noise sensitive receptors are identified as being the terraced residential houses on Emlyn Street, as shown in Figure 5.

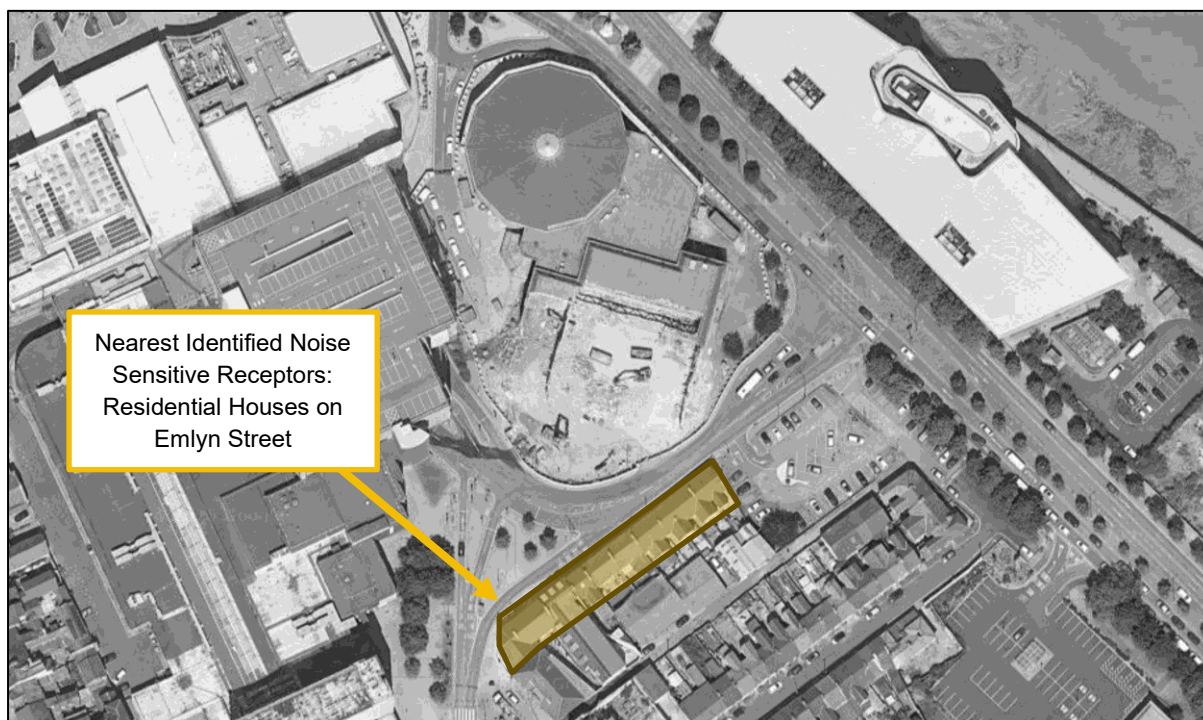


Figure 5: Nearest Identified Noise Sensitive Receptors

4.2 Proposed Plant Rating Noise Limits

It is proposed to control external plant noise emissions to the limits set out in Table 7 at the nearest identified noise-sensitive receptors. Rating plant noise limits have been set to be 5dB below the typical background sound level at the nearest identified noise sensitive receptors, which would achieve a 'low likelihood of adverse impact' as per the guidance presented in BS4142.

Table 7: Proposed Plant Rating Noise Limits

Nearest Noise Sensitive Receptor	Period	Typical Measured Background Sound Level	Proposed Rating Plant Noise Limit
Residential houses on Emlyn Street	Daytime (07:00-23:00)	54dB LA90,1hour	≤ 49dB LA _r ,1hour
	Night-time (23:00-07:00)	47dB LA90,15mins	≤ 42dB LA _r ,15mins

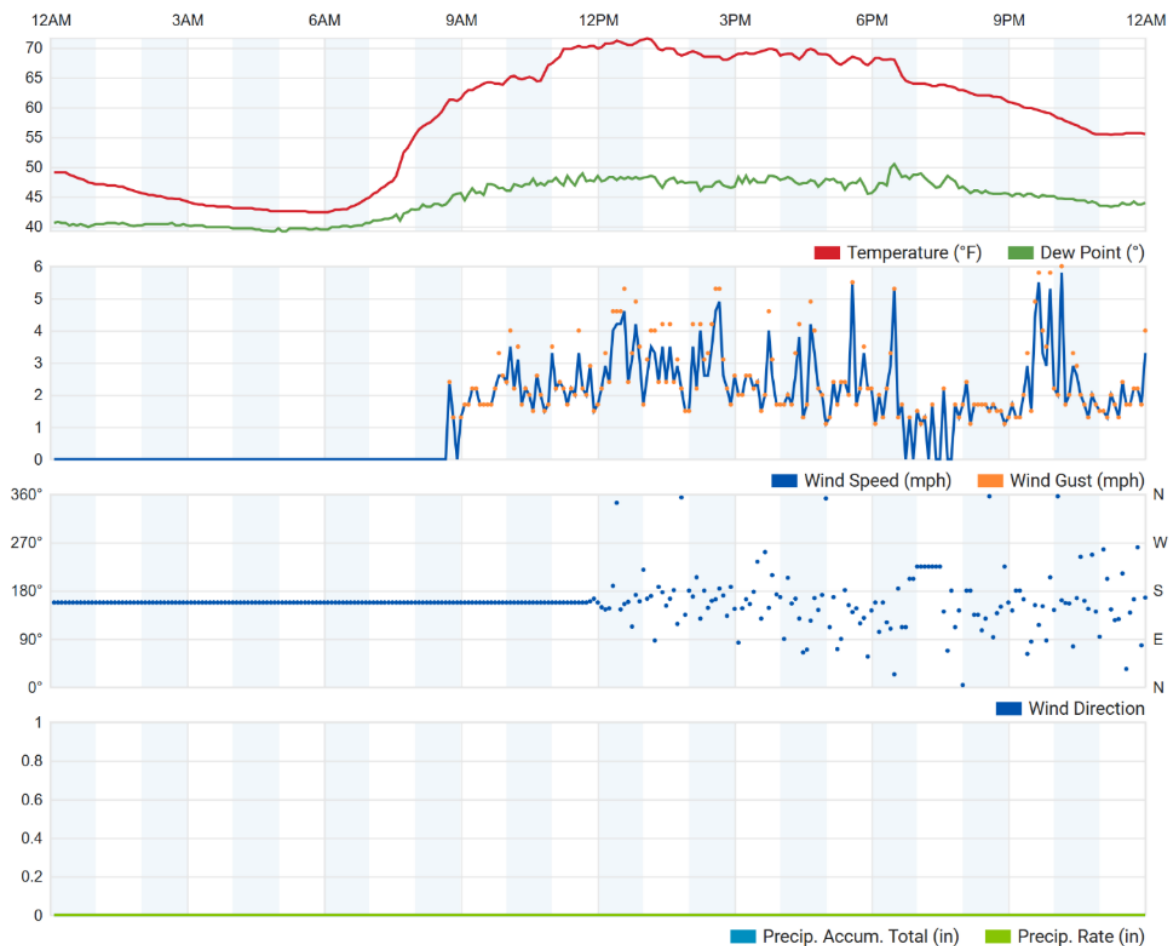
Appendices



Appendix A Approximate Weather History

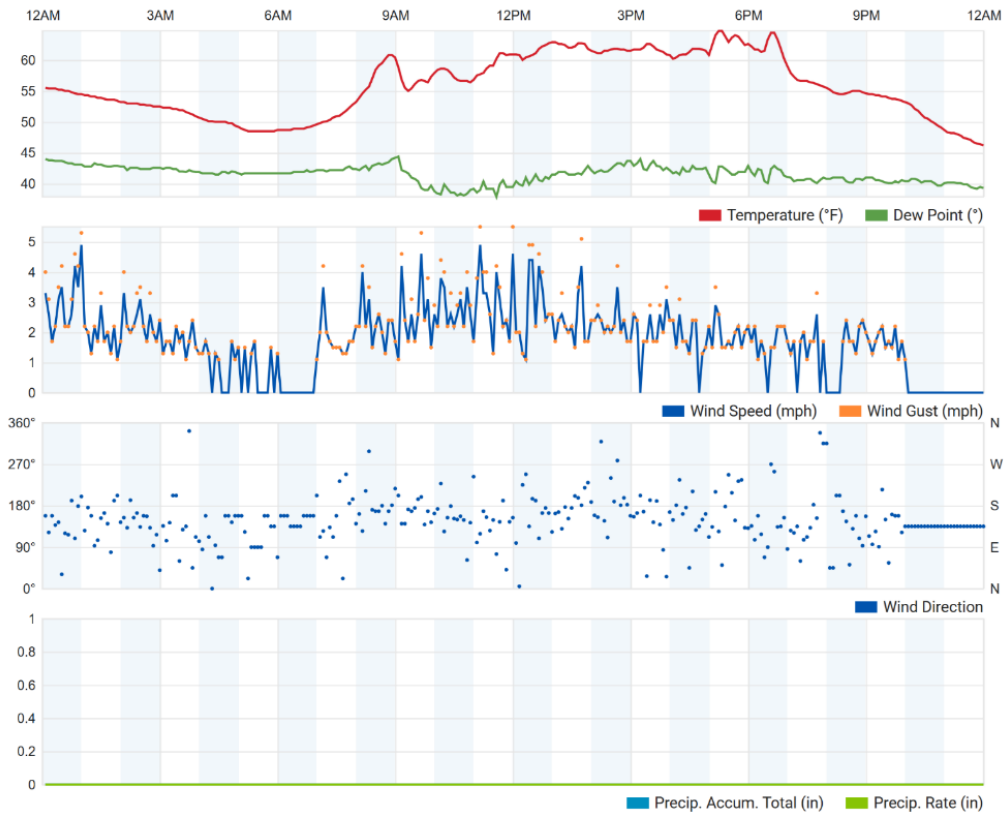
Note: Weather history graphs taken from www.wunderground.com (INEWPO127)

May 7, 2025

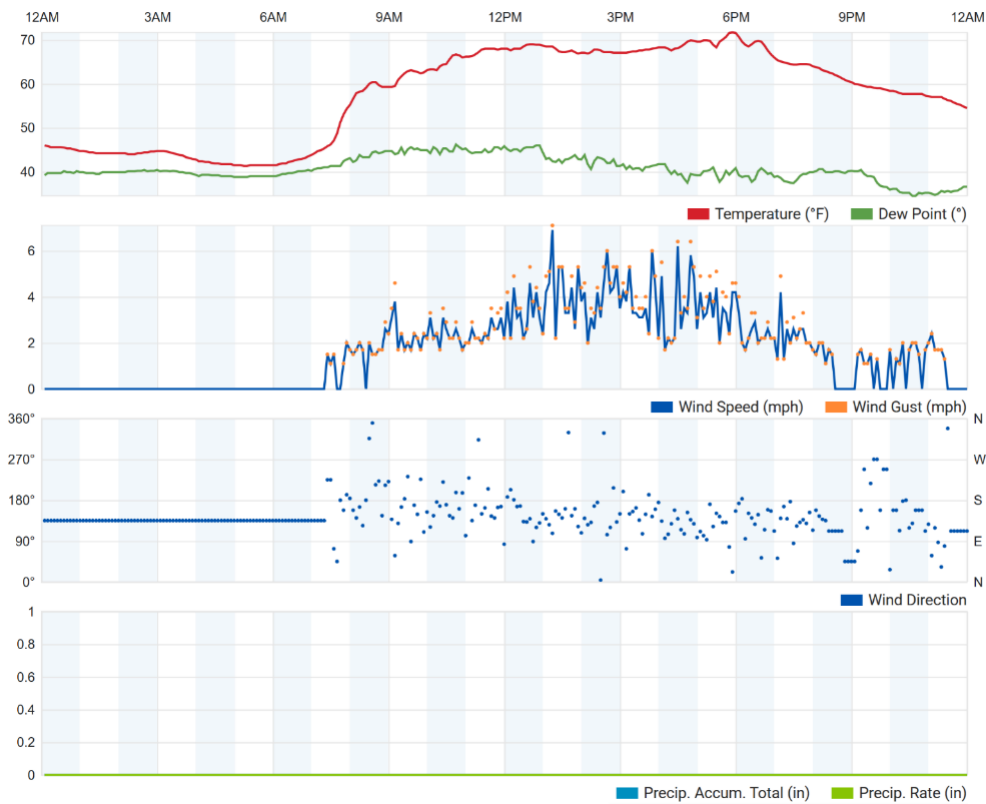


Baseline Noise Survey Report

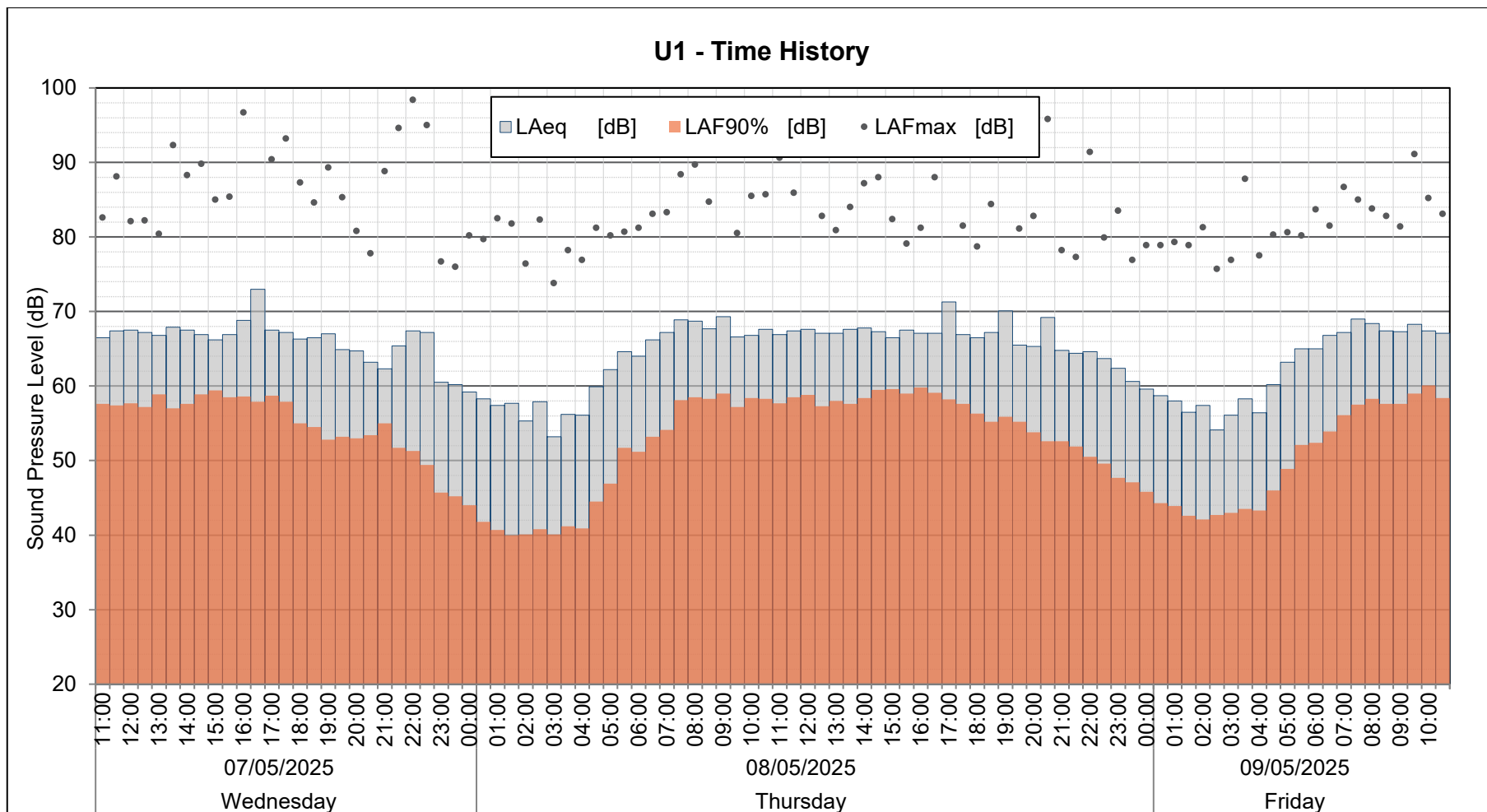
May 8, 2025

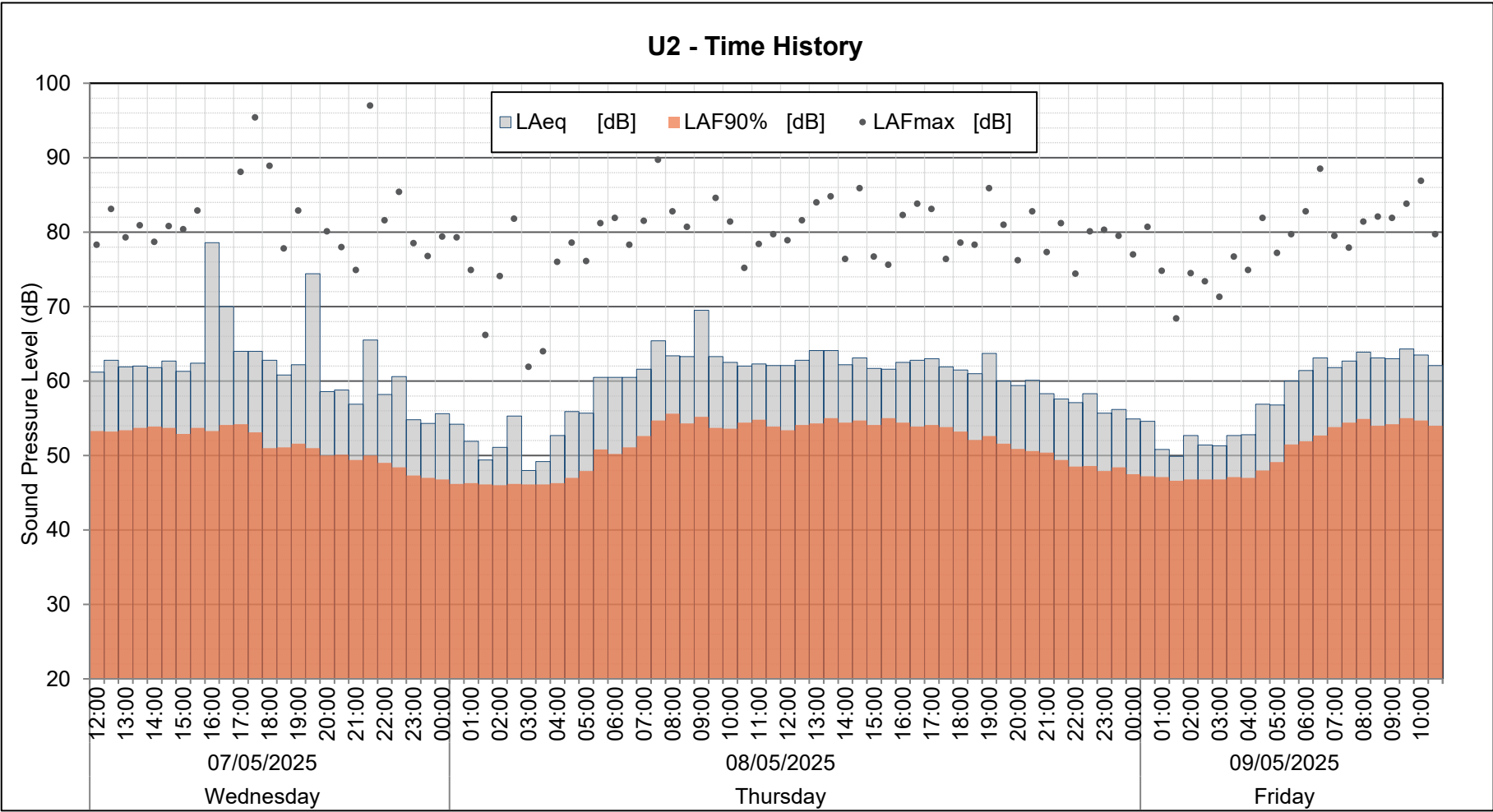


May 9, 2025

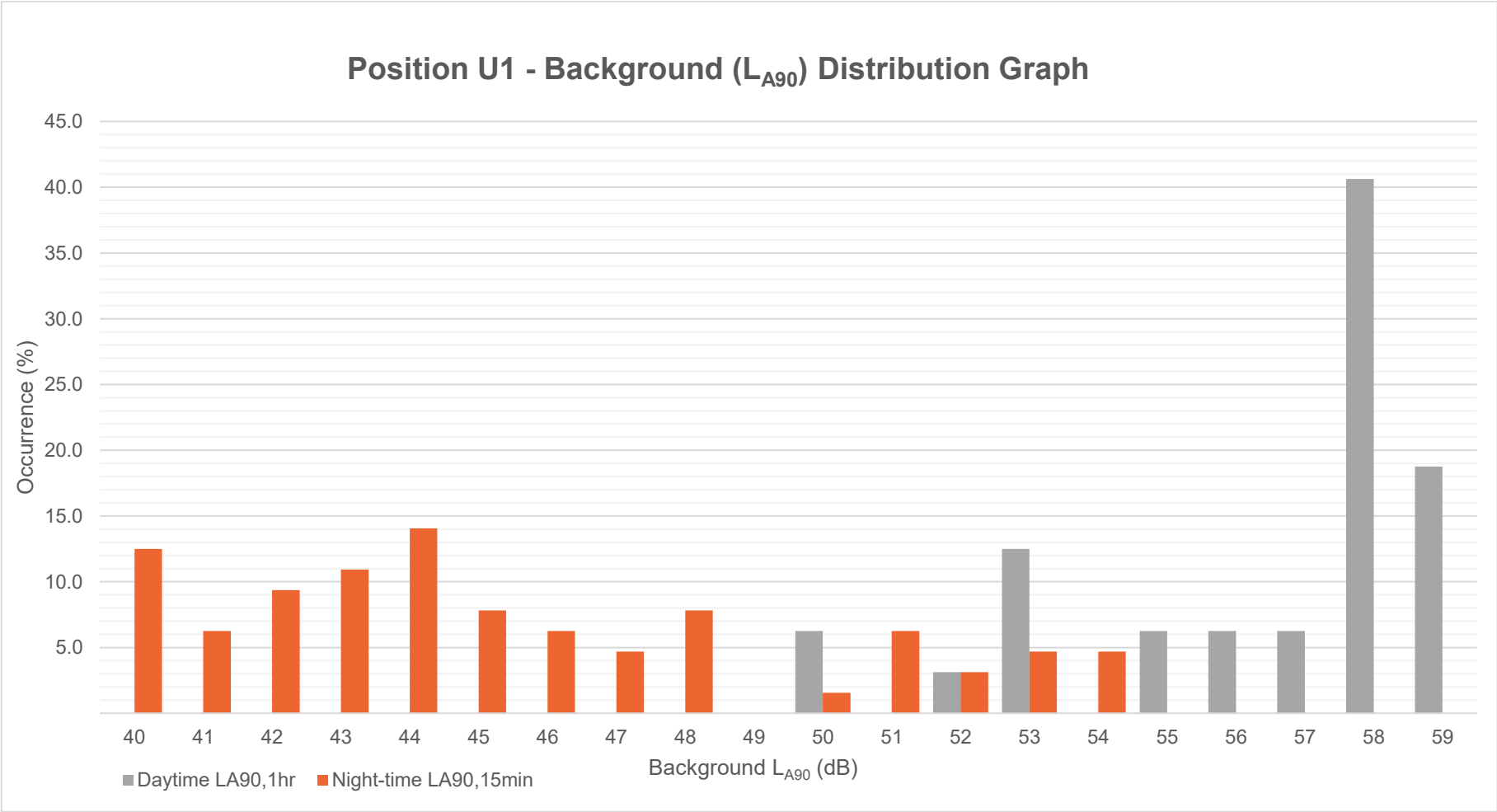


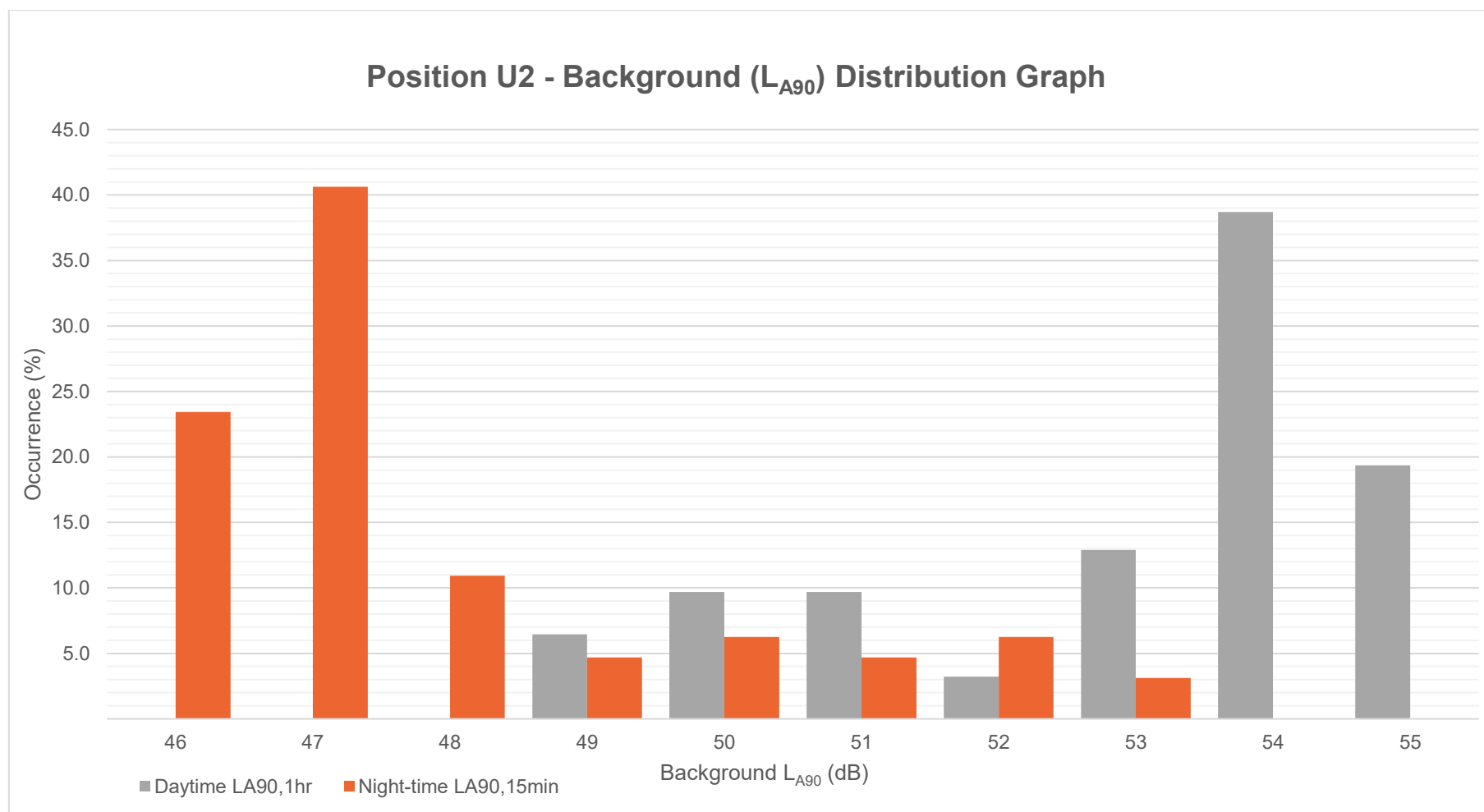
Appendix B Noise Time History Graphs





Appendix C **Background Sound Level Distribution Graphs**





With every community, we redefine what's possible.



Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

Stantec Hydrock Limited

Wharton Place, 13 Wharton Street
Cardiff
CF10 1GS
UNITED KINGDOM
stantec.com