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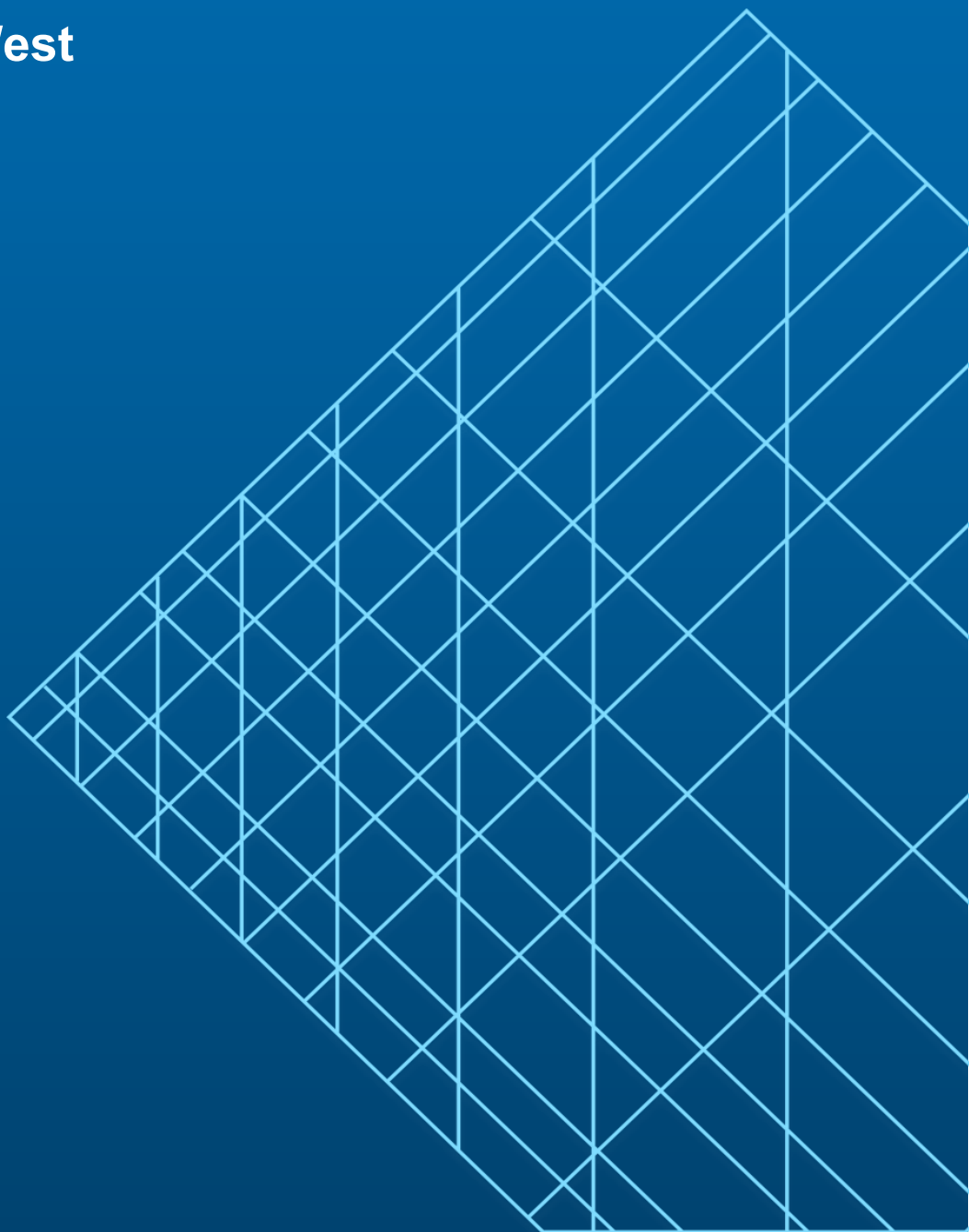
Environmental Noise Assessment

Carmarthen West

7774/ENS1



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Environmental Noise Assessment

Project:	**Carmarthen West**
HA Reference:	7774/ENS1
Date:	21/10/2025
Client:	Lovell Unit 5 Cae Gwyrdd Greenmeadow Springs Business Park Tongwynlais Cardiff CF15 7AB
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ISSUE / REVISION

Rev	Date			
0	21 October 2025	**Filename**	25.7774_ENS1	
		Description	First issue	
			Prepared by:	**Checked by:**
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1. INTRODUCTION

We understand a residential development consisting of 84no dwellings is proposed at Carmarthen West.

The Environmental Health Officer has requested a noise impact assessment is submitted to accompany the planning application.

This report has therefore been commissioned to assess existing ambient and background noise levels impinging on the site from local sources.

Survey results have been used for comparison with typical Local Authority Planning conditions and current planning guidance.

2. CRITERIA

2.1 Planning Policy Wales

The Welsh Government's Planning Policy Wales (Edition 12) dated February 2024, states the following;

"6.7.20 Where sensitive developments need to be located close to existing transportation infrastructure for sustainable movement and access they should be designed, as far as practicable, to limit harmful substances and noise levels within and around those developments both now and in the future. This may include employing the principles of good acoustic design and the inclusion of active travel or travel management measures as part of development proposals. Such development, however, should preferably be located away from existing sources of significant noise, which may include aircraft noise or roads, particularly new roads or those with programmed route improvements."

The document states *"For more information on the principles of good acoustic design, readers are referred to Professional Planning Guidance (ProPG) Supplementary Document 2, produced by the Association of Noise Consultants, the Institute of Acoustics and the Chartered Institute of Environmental Health (http://www.association-of-noise-consultants.co.uk/propg/). ProPG has been written principally to assist with the planning process in England, but the design principles put forward in Supplementary Document 2 may also be adopted in Wales.*

2.2 ProPG Supplementary Document 2

Professional Practice Guidance on Planning & Noise, New Residential Development 'Supplementary Document 2 – Good Acoustic Design' produced by the ANC, IOA and CIEH discusses the general principles of Good Acoustic Design, including the following hierarchy of noise management measures in descending order of preference;

i) Maximising the spatial separation of noise source(s) and receptor(s).
ii) Investigating the necessity and feasibility of reducing existing noise levels and relocating existing noise sources.
iii) Using existing topography and existing structures (that are likely to last the expected life of the noise-sensitive scheme) to screen the proposed development site from significant sources of noise.
iv) Incorporating noise barriers as part of the scheme to screen the proposed development site from significant sources of noise.
v) Using the layout of the scheme to reduce noise propagation across the site.
vi) Using the orientation of the buildings to reduce the noise exposure of noise-sensitive rooms.
vii) Using the building envelope to mitigate noise to acceptable levels.

"It should be remembered that good acoustic design is a process that begins as soon as land is under consideration for development. The timeline for good acoustic design stretches from the conceptual design stage, through quality control during construction, and beyond to post construction performance testing.

Both internal and external spaces should be considered in the acoustic design process. Care should be taken to ensure that acoustic mitigation measures do not result in an otherwise unsatisfactory development. Good acoustic design must be regarded as an integrated part of the overall design process".

2.3 Technical Advice Note (Wales) 11

Noise bands defining categories A-D of TAN 11 are set in terms of $L_{Aeq,16hr}$ daytime and $L_{Aeq,8hr}$ night time levels for road traffic noise and mixed sources, free field 1.2-1.5m above ground level as follows;

Table 2.1 – TAN11 Noise Exposure Categories

Recommended noise exposure categories for new dwellings near existing noise sources (ref Table 2 of TAN 11 (Wales) October 1997)					
Noise Source	**Time**	**Noise Exposure Categories**			
		A	**B**	**C**	**D**
Road Traffic	07:00-23:00	<55	55-63	63-72	>72
	23:00-07:00	<45	45-57	57-66	>66
Rail Traffic	07:00-23:00	<55	55-66	66-74	>74
	23:00-07:00	<45	45-59	59-66	>66
Air Traffic	07:00-23:00	<57	57-66	66-72	>72
	23:00-07:00	<48	48-57	57-66	>66
Mixed Sources(4)	07:00-23:00	<55	55-63	63-72	>72
	23:00-07:00	<45	45-57	57-66	>66

Note: In addition, sites where individual noise events regularly exceed 82dB(A) L_{max}(slow), several times in any night time hour should be treated as being in NEC C, unless the L_{eq}(8 hour) already puts the site in NEC D.

(4) Mixed sources: this refers to any combination of road, rail, air and industrial noise sources. The "mixed source" values are based on the lowest numerical values of the single source limits in the table. The "mixed source" NECs should only be used where no individual noise source is dominant.

2.4 British Standard 8233:2014

British Standard 8233:2014 'Guidance on sound insulation and noise reduction for buildings' includes internal noise criteria of habitable rooms in residential dwellings, as shown below;

Table 2.2 – BS 8233:2014 Internal Ambient Noise Criteria for Habitable Rooms

Location	Desired		Reasonable *	
	07:00 to 23:00	23:00 to 07:00	07:00 to 23:00	23:00 to 07:00
Living room	35 dB $L_{Aeq,16hr}$	-	40 dB $L_{Aeq,16hr}$	-
Dining room/area	40 dB $L_{Aeq,16hr}$	-	45 dB $L_{Aeq,16hr}$	-
Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$	40 dB $L_{Aeq,16hr}$	35 dB $L_{Aeq,8hr}$

* *NOTE 7 states "Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5dB and reasonable internal conditions still achieved.*

In addition BS 8233:2014 states: *"Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values."*

Reference is therefore made to World Health Organisation (WHO) 'Guidelines for Community Noise, 1999' which states *"For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45dB L_{Amax} more than 10-15 times per night (Vallet & Vernet 1991)".*

Section 7.7.3.2 of BS 8233:2014 entitled 'Design criteria for external noise' states;

"For traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognised that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs to be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited."

The above criteria in BS 8233:2014 apply for sources without specific character, previously termed “anonymous noise”. BS 8233:2014 7.7.1 advises:

“NOTE: Noise has a specific character if it contains features such as a distinguishable, discrete and continuous tone, is irregular enough to attract attention, or has strong low-frequency content, in which case lower noise limits might be appropriate.”

2.5 British Standard 4142:2014+A1:2019

British Standard 4142:2014+A1:2019 “Methods for rating and assessing industrial and commercial sound”, provides current guidance for the assessment of industrial noise affecting residential receivers.

This standard describes a rating method comparing L_{Aeq} noise levels from the industrial source with pre-existing background L_{A90} levels at the residential receiver. It advises at a difference (industrial noise - background) of:

- +10dB or higher, likely to be an indication of a significant adverse impact, depending on the context.
- A difference of + 5dB, 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.

A sliding scale of penalties can be applied to industrial/commercial sound levels which have acoustically distinguishing characteristics, including tonality, impulsivity and intermittency.

Tonality – A penalty of 2dB for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible, and 6dB where it is highly perceptible.

Impulsivity – A penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it clearly perceptible, and 9dB where it is highly perceptible.

Other sound characteristics – Where the specific sound features characteristics that are neither tonal nor impulsive, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied

Intermittency – If intermittency is readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied.

BS 4142:2014 states under Section 11;

"Where the initial estimate of the impact needs to be modified due to the context, take all pertinent factors into consideration, including the following.

1) *The absolute level of sound. For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.*

   Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.

   Where residual sound levels are very high, the residual sound might itself result in adverse impacts or significant adverse impacts, and the margin by which the rating level exceeds the background might simply be an indication of the extent to which the specific sound source is likely to make those impacts worse.

2) *The character and level of the residual sound compared to the character and level of the specific sound. Consider whether it would be beneficial to compare the frequency spectrum and temporal variation of the specific sound with that of the ambient or residual sound to assess the degree to which the specific sound source is likely to be distinguishable and will represent an incongruous sound by comparison to the acoustic environment that would occur in the absence of the specific sound. Any sound parameters, sampling periods and averaging time periods used to undertake character comparisons should reflect the way in which sound of an industrial and/ or commercial nature is likely to be perceived and how people react to it.*

   NOTE 3 Consideration should be given to evidence on human response to sound and, in particular, industrial and/or commercial sound where it is available. A number of studies are listed in the "Effects on humans of industrial and commercial sound" portion of the "Further reading" list in the Bibliography.

3) *The sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions, such as:*

   i) facade insulation treatment;
   ii) ventilation and/or cooling that will reduce the need to have windows open so as to provide rapid or purge ventilation; and
   iii) acoustic screening."

In addition to the above, the Association of Noise Consultants (ANC) have produced a Technical Note to BS 4142:2014+A1:2019, dated March 2020 (v1.0).

It states under 'Other Contextual Matters' – *"The assessor may also wish to consider matters such as the:*

- *character of a particular neighbourhood;*
- *former uses at or close to a site;*
- *legitimacy of the industrial use, e.g. planning permissions or environmental permits;*
- *implementation of best practicable means for a given process or activity; or*
- *local convention or perceptions.*

When relying on such matters, it is incumbent for the assessor to make clear all elements of context."

It goes on to say, *"There is no theoretical limit to how the context can or should influence the impact assessment, but any alteration of the conclusions of an assessment due to context should be sufficiently explained and justified for the specific circumstances in question."*

2.6 Environmental Health Comments

The following noise related comments have been made by the Environmental Health Officer;

"Due to the characteristics of the locality, and the proximity of the proposed residential development to an existing agricultural facility ('WYNNSTAY', LLYSONNEN ROAD, SA31 3SG), I would recommend that a Noise Impact Assessment (NIA) be provided as a part of the full planning application, if and when submitted.

The NIA should consider all services /plant /equipment and any associated activities, and their predicted noise level relevant to background noise levels at the proposed residential units."

3. ENVIRONMENTAL NOISE SURVEY

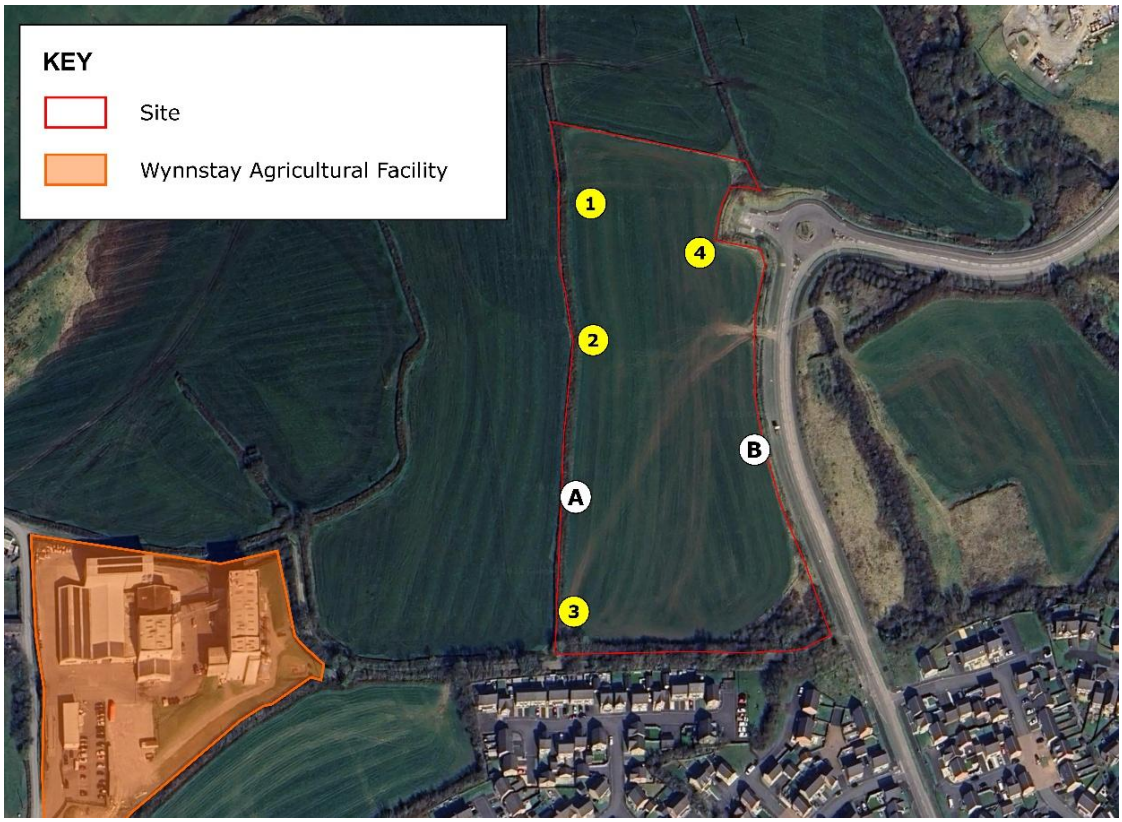
3.1 Procedures

3.1.1 Continuous Monitoring

Continuous noise monitoring was carried out from 1300hrs on Monday, 06 October 2025 to 1500hrs on Wednesday, 08 October 2025 at positions A and B.

Data including L_{Amax}, L_{Aeq} and background L_{A90} was logged at 1 minute intervals over the monitoring period, along with continuous audio and 100ms data to allow source identification and further detailed analysis of results if required.

Figure 3.1 – Site Plan Showing Monitoring Locations



Site plan in Figure 3.1 above shows the development site and continuous monitoring positions used, namely:

Table 3.1 – Continuous Monitoring Location Details

Position	Description
A	Along western boundary of proposed site, in line with northern end of Wynnstay factory
B	Along eastern boundary of proposed site, southern end of site

Note: All microphone positions approximately 1.5m above local ground level.

3.1.2 Sample Measurements

Additional sample measurements were taken on Wednesday, 08 October 2025. Parameters recorded include L_{max} and L_{eq} levels including 1/3 octave band spectra.

Site plan in Figure 3.1 shows the sample measurement positions used, namely:

Table 3.2 – Sample Measurement Location Details

Position	Description
1	Along western boundary of proposed site, in northern end of site
2	Along western boundary of proposed site, towards middle of site
3	Along western boundary of proposed site, in line with southern end of Wynnstay factory
4	Along eastern boundary of proposed site, in northern end of site

Note: All microphone positions approximately 1.5m above local ground level.

3.2 Meteorological Conditions

Approximate weather conditions are shown in time history graphs in Figure B.1, Figure B.2 and Figure B.3 of Appendix B.

To summarise, the weather conditions during the monitoring period were mostly dry with a breeze.

During set-up the wind was noted to be blowing in a south-westerly direction (from the Wynnstay facility towards the site), and in the opposite direction during take-down.

3.3 Measurement Equipment

The following measurement equipment was used during the surveys:

Table 3.3 – Noise Monitoring Equipment List

Make	Description	Model	Serial Number	Last Calibrated	Certificate No.
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-08723-E0	11 June 2025	UK-25-074
	Preamplifier	MA220	1820	11 June 2025	UK-25-074
	Filters	XL2-TA	A2A-08723-E0	11 June 2025	UK-25-074
	Microphone Capsule	MC230	9381	11 June 2025	UK-25-074
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-14577-E0	21 June 2024	UK-24-065
	Preamplifier	MA220	7485	21 June 2024	UK-24-065
	Microphone Capsule	MC230	A15594	21 June 2024	UK-24-065
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-19813-E0	27 October 2023	UK-23-128
	Preamplifier	MA220	10302	27 October 2023	UK-23-128
	Microphone Capsule	MC230A	A21824	27 October 2023	UK-23-128
Larson Davis	Calibrator (94.00dB / 114.03dB @ 1kHz)	CAL200	19047	29 August 2025	45898-19047-CAL200

Measurement systems were calibrated before and after the surveys and no variation occurred.

Note: Copies of traceable calibration certificates for all equipment are available upon request.

3.4 Results

3.4.1 Continuous Monitoring

Time history graphs in Figure B.4 and Figure B.5 of Appendix B show L_{Amax}, L_{Aeq} and L_{A90} sound pressure levels measured at positions A and B respectively.

The following $L_{Aeq,16hr}$ daytime (0700-2300hrs) and $L_{Aeq,8hr}$ night-time (2300-0700hrs) noise levels were measured;

Table 3.4 – Summary of Daytime $L_{Aeq,16hr}$ and Night-time $L_{Aeq,8hr}$ Results

Period	Date	Position	
		A	B
Daytime $L_{Aeq,10hr}$ (dB)	06/10/2025	49	56
Night-time $L_{Aeq,8hr}$ (dB)	06-07/10/2025	45	47
Daytime $L_{Aeq,16hr}$ (dB)	07/10/2025	49	57
Night-time $L_{Aeq,8hr}$ (dB)	07-08/10/2025	45	48
Daytime $L_{Aeq,8hr}$ (dB)	08/10/2025	48	59

There were no $L_{Amax,F}$ events over 82dB measured during the night-time period (2300-0700hrs) at any of the monitoring locations.

Graphs in Figure B.6 and Figure B.7 of Appendix B show statistical analysis of background sound levels measured at positions A and B respectively.

The following minimum consistent daytime and night-time background L_{A90} sound levels have been determined;

Table 3.5 – Minimum Consistent Daytime and Night-time Background L_{A90} Results

Period	Position	
	A	B
Daytime (0700-2300hrs) L_{A90} (dB)	46	43
Night-time (2300-0700hrs) L_{A90} (dB)	43	41

At position A, the ambient and background noise climate was controlled by continuous plant noise from the Wynnstay factory. At position B, the ambient noise climate was controlled by vehicle pass-bys on Ffordd Pendre, with background noise climate controlled by industrial noise.

3.4.2 *Sample Measurements*

Results of sample measurements are shown in Table 3.6 below.

Table 3.6 – Sample Measurement Results

Position	Time (hh:mm)	Duration (mm:ss)	L_{Aeq} (dB)	$L_{Amax,F}$ (dB)	L_{A90} (dB)
1	13:53	15:00	45	60	41
2	14:10	15:00	45	60	41
2	14:47	05:00	44	55	42
3	14:28	13:18	47	59	43
4	14:55	15:00	47	59	43

Octave band spectra are included in Figure B.8.

4. NOISE MAP MODELLING

Three-dimensional noise map modelling has been undertaken using environmental noise mapping software package, which in turn uses calculation methods of Calculation of Road Traffic Noise (CRTN) and ISO 9613.

Models have been set up to predict daytime and night-time noise levels across the site from surrounding sources based on measured noise levels discussed in section 3.4 of this report.

Note: The model has been calibrated to measurements taken on the proposed development site and is therefore only an estimate of the propagation of industrial noise across the site.

The model takes into account distance and screening losses from existing and new structures, allowing garden noise levels to be assessed, as well as predicting noise levels at proposed residential facades.

4.1 Undeveloped Site

The noise map models below show predicted noise levels at 1.5m above local ground level across the undeveloped site.

Figure 4.1 - Daytime Model (Undeveloped Site) $L_{Aeq,16hr}$ Contours at 1.5m Height

Figure 4.2 – Night-time Model (Undeveloped Site) $L_{Aeq,8hr}$ Contours at 1.5m Height

The majority of the site is indicated to fall under NEC A of TAN11, with exception of the eastern boundary which falls under NEC B of TAN11.

4.2 Developed Site

The proposed housing layout plan referenced in Appendix D has been used for the developed model.

Noise map models in Figure 4.3 and Figure 4.4 below show predicted noise levels during the critical daytime period (0700-2300hrs) at 1.5m and 4.5m above local ground level on the developed site respectively.

Note: 1.8m high closed boarded fences have been modelled around gardens

Figure 4.3 - Daytime Model (Developed Site) $L_{Aeq,16hr}$ Contours at 1.5m Height

Figure 4.4 - Daytime Model (Developed Site) $L_{Aeq,16hr}$ Contours at 4.5m Height

5. INDUSTRIAL NOISE CONTRIBUTIONS

Noise from the Wynnstay agricultural facility has been observed to be audible across the site and is indicated to be running constantly. It is therefore not feasible to undertake a BS 4142 assessment, as the background noise levels across the site are controlled by noise from the facility which form part of the background sound climate in this area.

Section 8.5 of BS 4142 *'Introduction of a new noise-sensitive receptor'* states:

NOTE Where a new noise-sensitive receptor is introduced and there is extant industrial and/or commercial sound, it should be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation.

The noise from the facility has been observed to be clearly tonal and objectively calculated in line with Annex D of BS 4142 resulting in a +4dB character correction for tonality. The rating levels of the noise from the facility can therefore be predicted at the closest proposed dwellings during the night-time, when the road traffic is at a minimum, to be around 49dB $L_{Ar,15mins.}$

Absolute noise levels across the site are assessed low enough for the internal noise level criteria set out in BS 8233:2014 to be comfortably met within proposed dwellings without any upgrades to the external building fabric.

As the Wynnstay agricultural facility is an existing facility, the agent of change principle dictates that the responsibility of mitigating any noise disturbance to the proposed dwellings falls on the developer. However, as discussed above, absolute noise levels from the facility are indicated to be sufficiently controlled to dwellings without any upgrades to the external building fabric.

6. EXTERNAL BUILDING FABRIC ASSESSMENT

Based on survey results and noise map models, standard thermal double glazing and trickle vents are indicated sufficient to control noise intrusion to habitable rooms to meet 35dB $L_{Aeq,16hr}$ daytime and 30dB $L_{Aeq,8hr}$ night-time, in line with the desirable internal ambient noise values quoted in BS 8233:2014 (see section 2.4 of this report) under whole dwelling ventilation conditions, based on assumed constructions referenced in subsequent sections.

It should also be noted that noise levels through a partially open window on plots at the western boundary are indicate to meet desirable levels from BS 8233 during both daytime and night-time.

This preliminary assessment is intended to provide an initial indication of the sound insulation measures required to control noise intrusion. Final design proposals should be confirmed acceptable with a suitably qualified acoustician at the detailed design stage.

This preliminary assessment has been carried out based on the following assumptions;

- Noise intrusion is calculated to a bedroom with dimensions of 4m (l) x 2.5m (w) x 2.4m (h)
- Façade area, exposed to road traffic of 10m^2 (l x h)
- Glazing area of 2m^2

The analysis is based on the noise spectra quoted in Figure B.8.

6.1 External Walls

The following external wall construction has been used in our analysis;

- Brick / cavity / Block *or* Brick / cavity / Timber Frame

The following SRI performance figures are taken from BS 8233:2014 for 'Brick and block external wall'. The proposed constructions should be capable of achieving these figures as a minimum;

Table 6.1 – External Wall Sound Reduction Index Figures

Element	Description	Sound Reduction Index dB *R* (BS EN ISO 10140-2:2010) @ Octave Band Centre Frequency (Hz)				
		125	250	500	1k	2k
External Wall	Brick / Cavity / Block *or* Brick / Cavity / Timer frame	40	44	45	51	56

6.2 Roof

The following roof constructions have been used in our analysis;

• Pitched tiles on felt roof, 9mm plasterboard ceiling + 100mm insulation

The following minimum SRI performance figures are taken from BS 8233:2014: "tiles on felt roof with 100mm mineral wool on plasterboard ceiling";

Table 6.2 – Roof Sound Reduction Index Figures

Element	Description	Sound Reduction Index dB *R* (BS EN ISO 10140-2:2010) @ Octave Band Centre Frequency (Hz)				
		125	250	500	1k	2k
Pitched Roof	Tiles on felt, 9mm plasterboard ceiling, 100mm mineral wool insulation	28	34	40	45	49

6.3 Glazing

Standard thermal double glazing is indicated sufficient:

Table 6.3 - Glazing Sound Reduction Index Figures

Description	Sound Reduction Index dB *R* (BS EN ISO 10140-2:2010) @ Octave Band Centre Frequency (Hz)				
	125	250	500	1k	2k
For budgetary guidance: based on Pilkington 4mm / 6 – 16mm / 4mm	21	17	25	35	37

A typical glazing system that should be capable of achieving the quoted SRI figures (based on Pilkington test data) is included in the table for initial budgetary guidance, however;

The successful glazing suppliers shall provide independent laboratory test data to BS EN ISO 10140-5 – 2010, confirming their proposed systems (including frames/seals) meet the quoted octave band sound reduction performance figures above.

6.4 Ventilation

A natural ventilation strategy utilising background ventilators and intermittent extract fans is indicated to be feasible on all plots, as specified in Building Regulations Part F, Regulation F1(1) 2010 *2022 Edition.*

> ***Natural Ventilation with background ventilators and intermittent extract fans (guidance suitable only for less airtight dwellings*).*** *Guidance on minimum provisions for intermittent extract and background ventilators is set out in Para 1.47 & 1.59 of Building Regulations Part F.*

The final proposed ventilation strategy should be confirmed acceptable with planners/ EHO and Building Control.

6.4.1 Natural Ventilation

This strategy relies on windows being closed; however, occupiers may still open windows for purge ventilation, or under normal ventilation conditions if they so choose.

Standard background (trickle) ventilators are indicated sufficient. The following minimum ventilator ($D_{n,e}$) performance has been used in our assessment

Table 6.4 – Acoustic Background Ventilator Specifications

Element	Description	Element-Normalised Level Difference dB $D_{n,e}$ (BS EN ISO 10140-2:2010)				
		125	250	500	1k	2k
Ventilator	RW Simon FrameVent (open)	36	33	33	31	29

The calculation has allowed for a maximum of 2no acoustic background ventilators per room, required to meeting the minimum 8000mm^2 equivalent area requirement of Part F.

The successful trickle ventilator suppliers shall provide independent laboratory test data to BS EN ISO 10140-5 – 2010, confirming their proposed ventilator meet the quoted octave band performance figures above.

6.4.2 Continuous Mechanical Extract Ventilation

Alternatively continuous mechanical ventilation may be provided where dwellings are not less airtight. “Less airtight” dwellings are defined in Part F as:

a. A design air permeability higher than 5m^3/(h·m^2) at 50Pa.
b. An as-built air permeability higher than 3m^3/(h·m^2) at 50Pa.

Continuous mechanical extract. *Guidance on minimum provisions for extract and whole building ventilation is set out in Para 1.61 & 1.62 of Building Regulations Part F.*

6.4.3 Mechanical Ventilation System Noise

All mechanical ventilation systems should be designed to meet the noise criteria set out in Building Regulations Approved Document Part F, 2022 Edition – For use in Wales which states the following:

“Although there is no requirement to undertake noise testing, achieving the levels in the following guidance should ensure good acoustic conditions. The average A-weighted sound pressure level for a ventilator operating under normal conditions and not at boost rates should not exceed both of the following.

a) *30dB LAeq,T for noise-sensitive rooms (e.g. bedrooms and living rooms) when a continuous mechanical ventilation system is running on its minimum low rate.*

b) *45dB LAeq,T in less noise-sensitive rooms (e.g. kitchens and bathrooms) when a continuous operation system is running at the minimum high rate or an intermittent operation system is running."*

6.4.4 General

Final proposals should be confirmed with Building Control and Environmental Health prior to orders being placed.

7. EXTERNAL NOISE ASSESSMENT (GARDENS)

Private garden areas are generally located behind the dwellings, maximising screening to the road.

The noise map model in Figure 4.3 indicates that all garden areas meet the desirable 50dB(A) figure quoted in BS 8233:2014.

8. CONCLUSION

An environmental noise assessment has been carried out for the proposed residential development at Carmarthen West.

Noise from the Wynnstay agricultural facility and road traffic are both indicated to control the ambient noise climate.

Noise surveys have been carried out across the site. Additional sample measurements were undertaken to aid calibration of a noise map model.

Noise map models have been generated to show noise propagation across both the undeveloped and developed sites.

An external building fabric assessment has been carried out, and standard building fabric elements are indicated sufficient to control noise intrusion.

An assessment of external noise in gardens has been undertaken and shows that all gardens meet the $L_{Aeq,16hr}$ 50dB garden guideline.

APPENDIX A - ACOUSTIC TERMINOLOGY

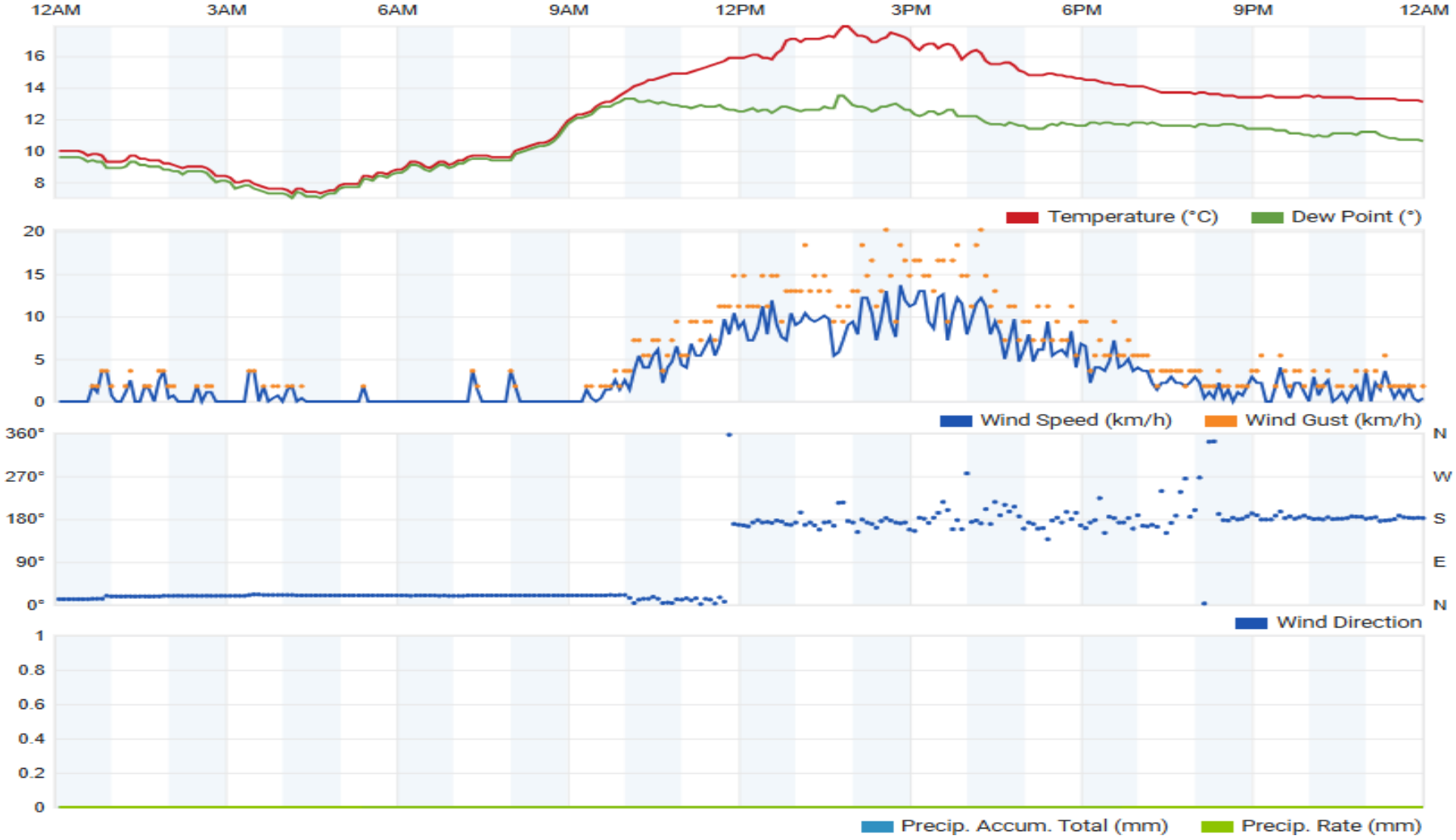
Human response to noise depends on a number of factors including loudness, frequency content and variations in level with time. Various frequency weightings and statistical indices have been developed in order to objectively quantify 'annoyance'.

The following units have been used in this report:

dB(A)	The sound pressure level A-weighted to correspond with the frequency response of the human ear and therefore a persons' subjective response to frequency content.
L_{eq}	The equivalent continuous sound level is a notional steady state level which over a quoted time period would have the same acoustic energy content as the actual fluctuating noise measured over that period.
L_{max}	The highest instantaneous sound level recorded during the measurement period.
L_{10}	The sound level which is exceeded for 10% of the measurement period. i.e. The level exceeded for 6 minutes of a 1 hour measurement - used as a measure of background noise.
L_{90}	The sound level which is exceeded for 90% of the measurement period. i.e. The level exceeded for 54 minutes of a 1 hour measurement.
$L_{Ar,Tr}$	The 'rating' level, as described in BS 4142:2014 – the specific noise plus any adjustment for the characteristic features of the noise.
SSR	Sound sensitive receiver

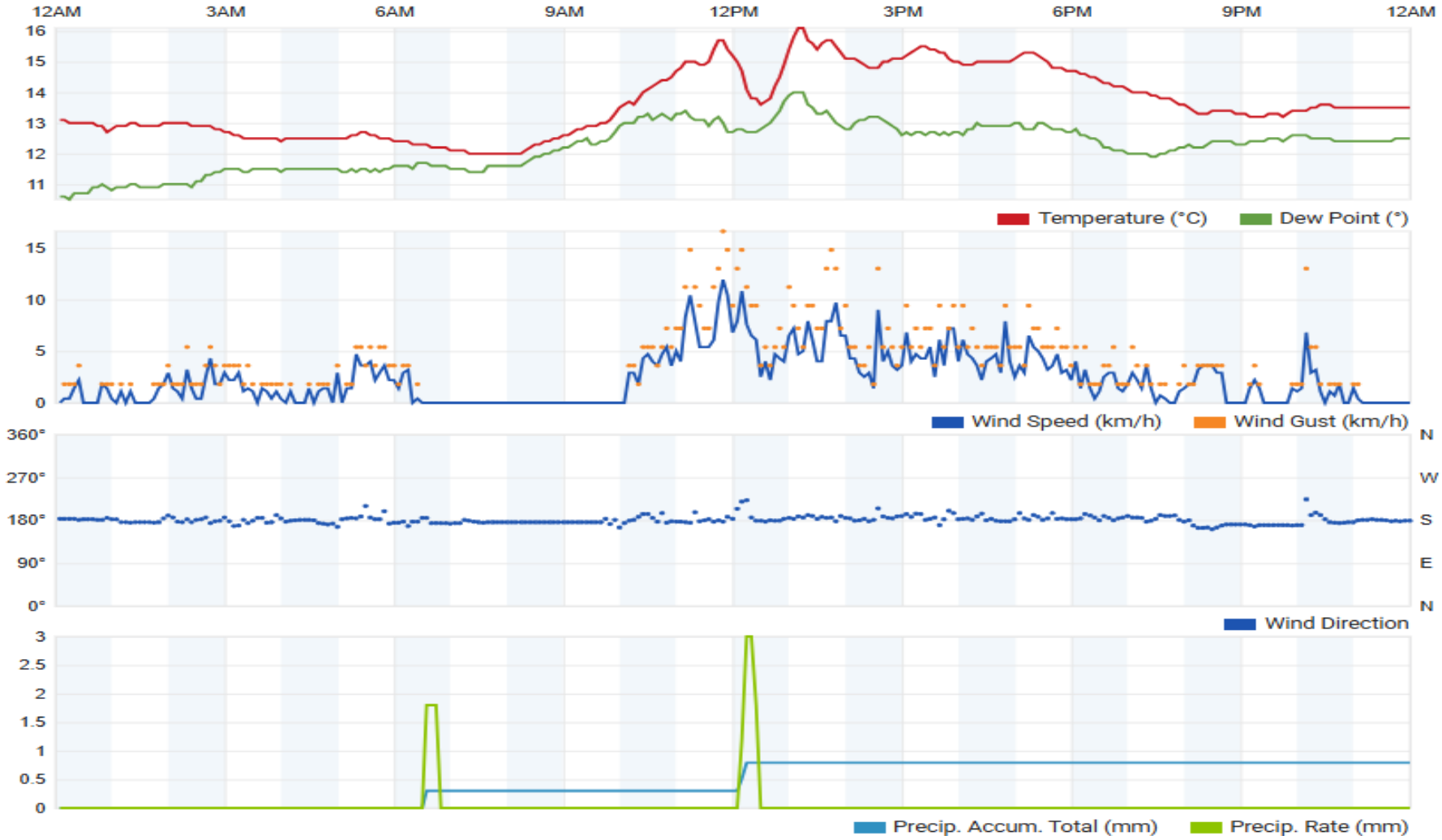
APPENDIX B - DIAGRAMS, GRAPHS AND TABLES

Figure B.1 – Approximate Weather History for Monday, 06 October 2025



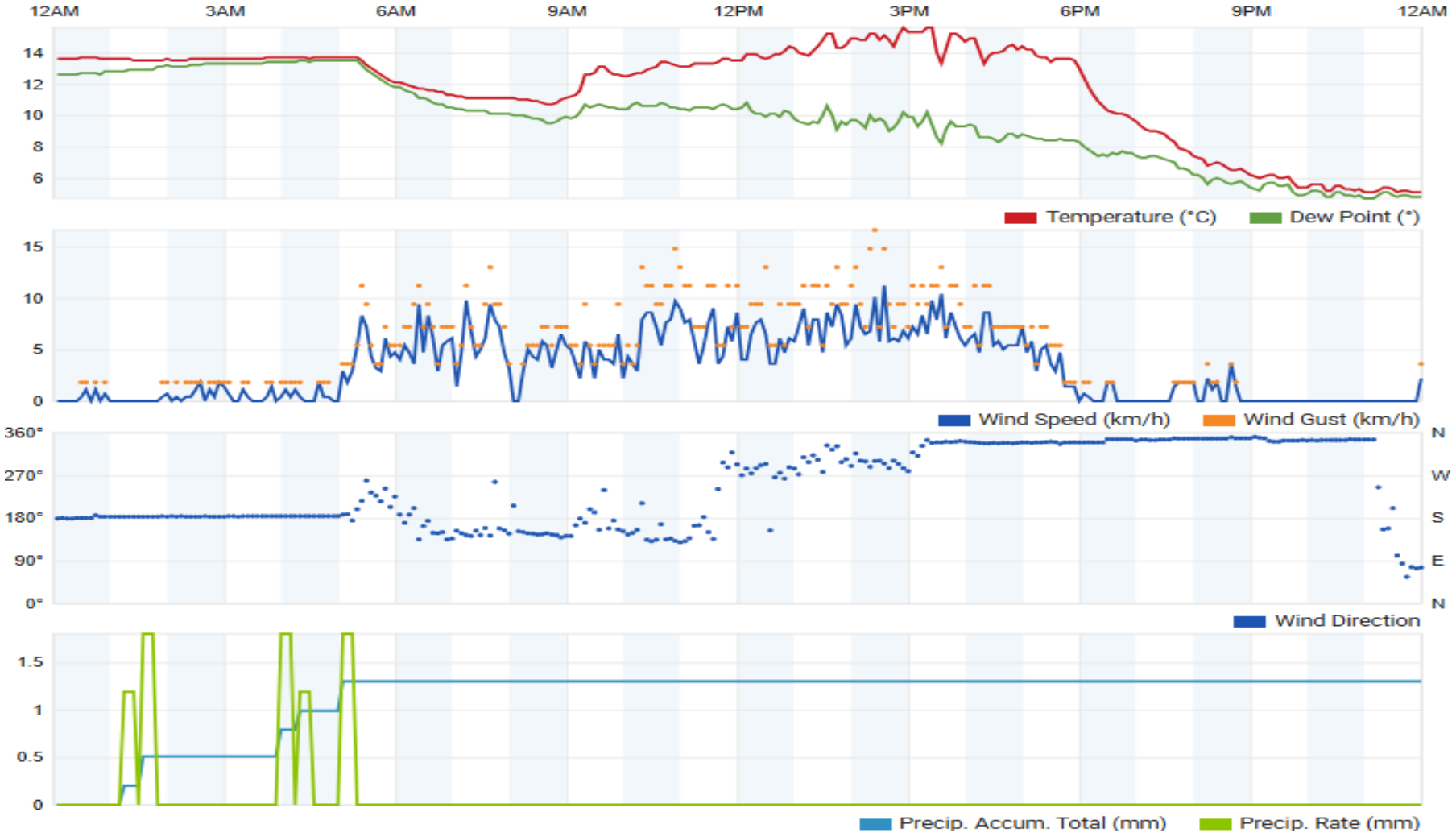
Note: Taken from www.wunderground.com - weather station ICARMA44 located in Felingwmisaf [Elev 19 m, 51.89 °N, 4.17 °W]

Figure B.2 – Approximate Weather History for Tuesday, 07 October 2025



Note: Taken from www.wunderground.com - weather station ICARMA44 located in Felingwmisaf [Elev 19 m, 51.89 °N, 4.17 °W]

Figure B.3 – Approximate Weather History for Wednesday, 08 October 2025



Note: Taken from www.wunderground.com - weather station ICARMA44 located in Felingwmisaf [Elev 19 m, 51.89 °N, 4.17 °W]

Figure B.4 – Time History at Position A (Monday, 06 October 2025 to Wednesday, 08 October 2025)

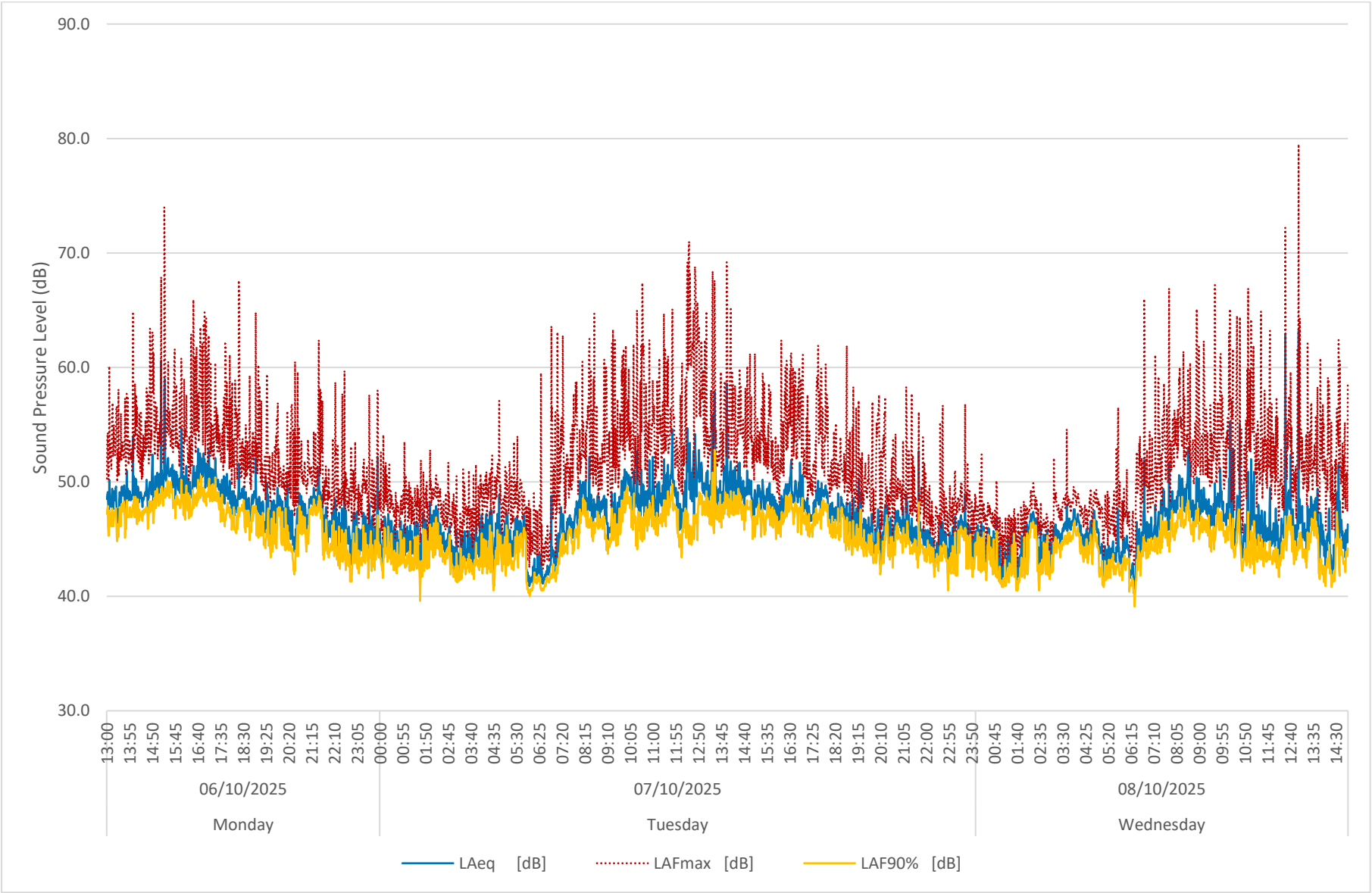


Figure B.5 – Time History at Position B (Monday, 06 October 2025 to Wednesday, 08 October 2025)

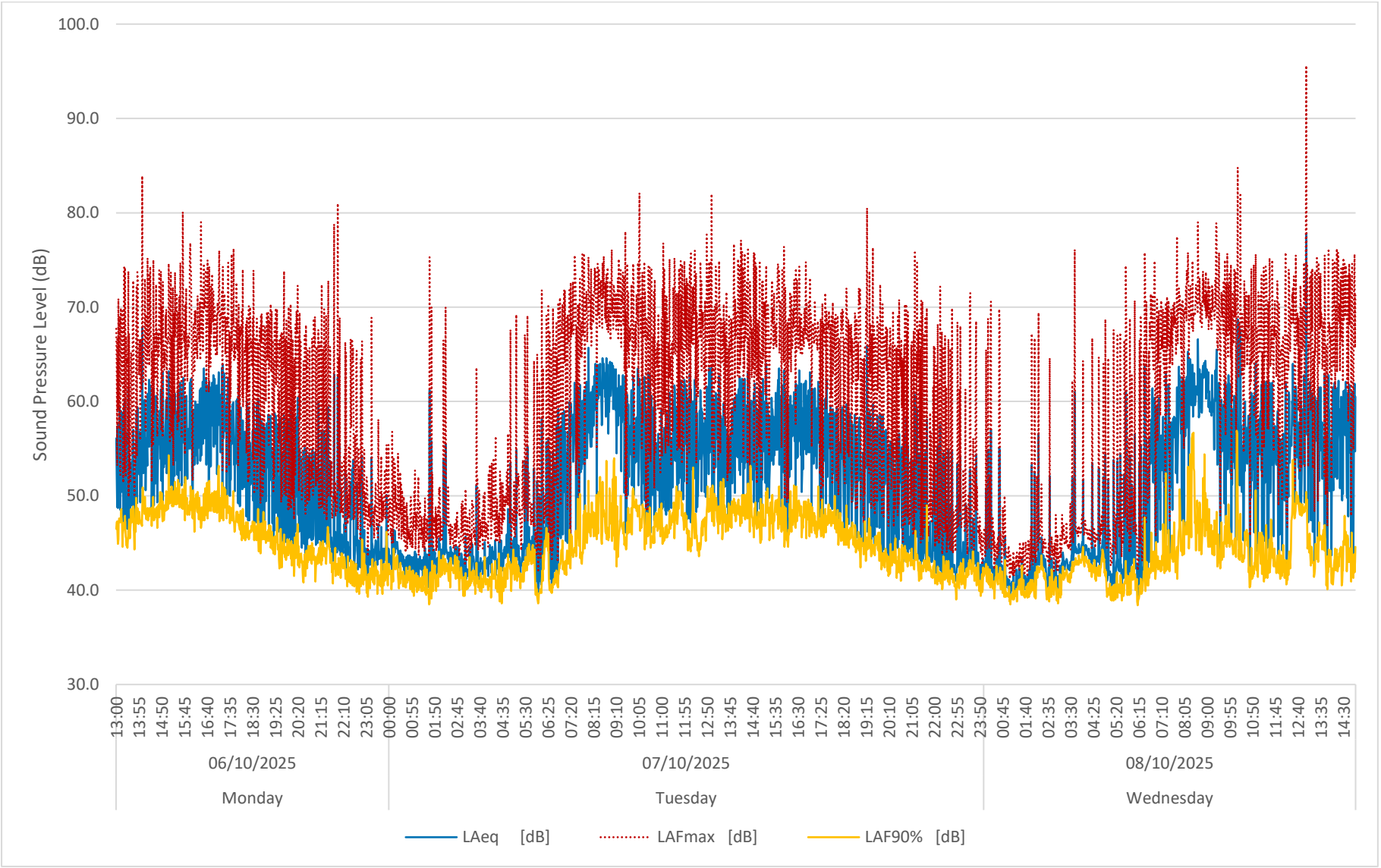


Figure B.6 – Statistical Analysis of Background Sound Levels Measured at Position A

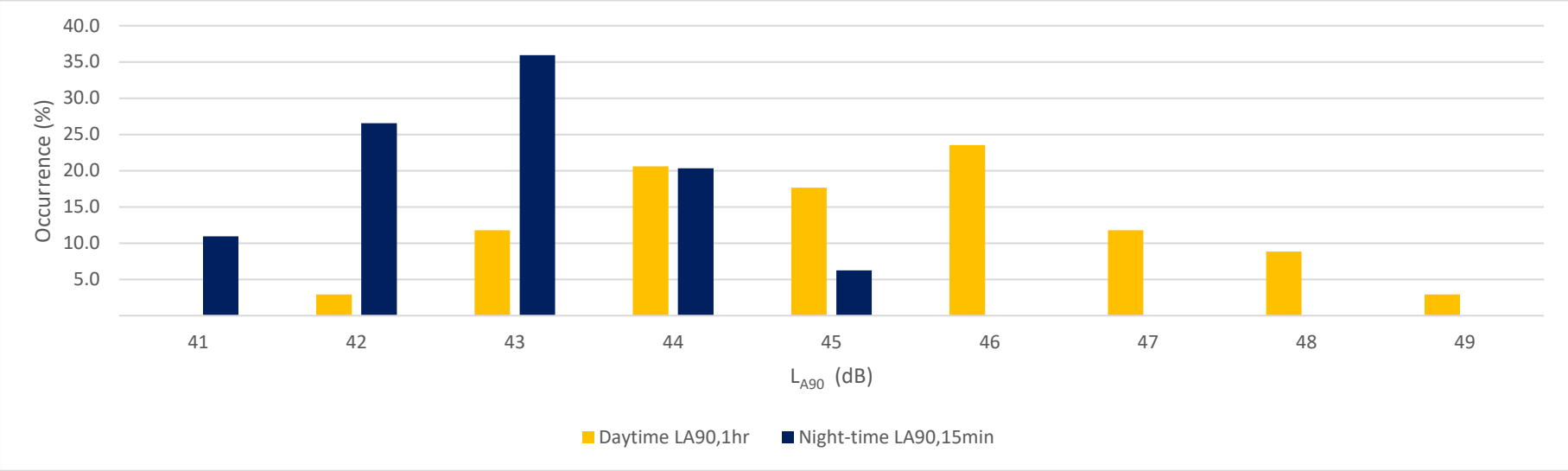


Figure B.7 – Statistical Analysis of Background Sound Levels Measured at Position B

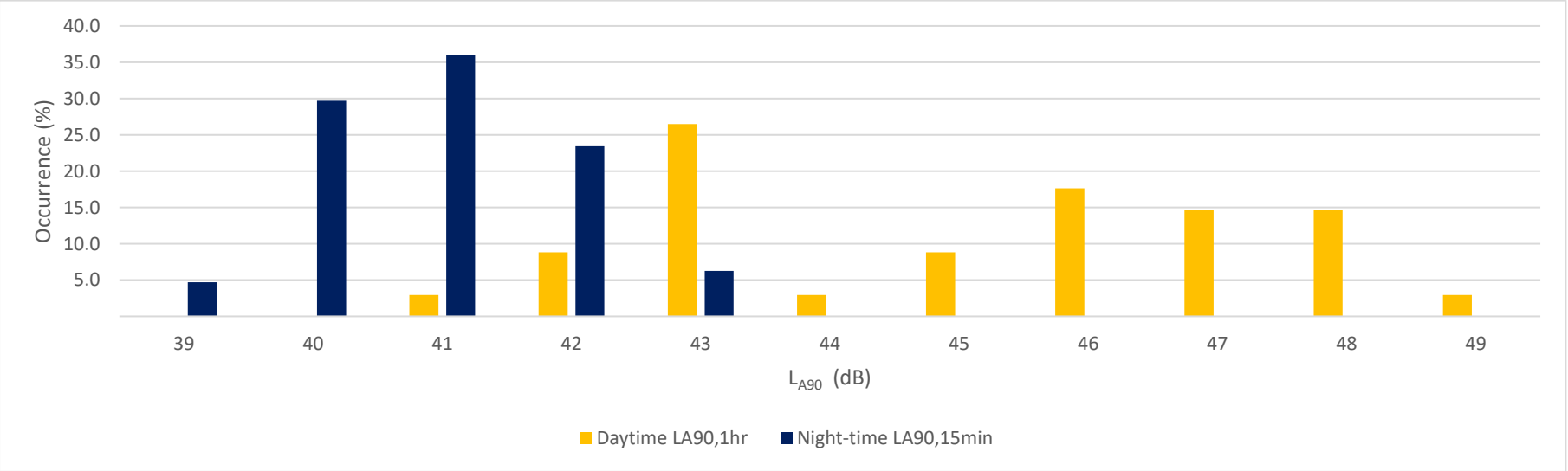
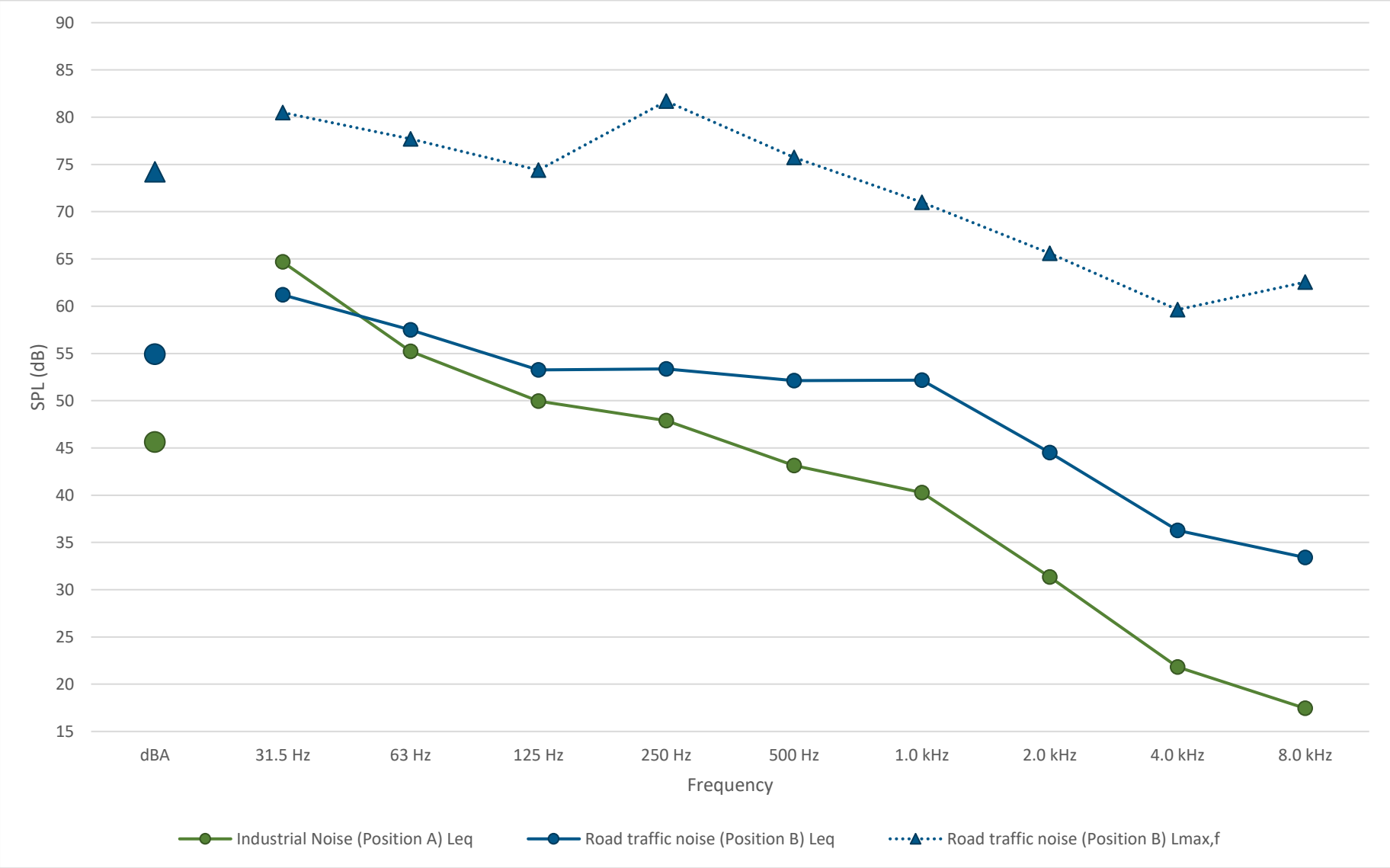


Figure B.8 – L_{eq} and $L_{max,F}$ Octave Band Spectra



APPENDIX C - NOISE MAP MODELS

Figure C.1 – Daytime Noise Map (Undeveloped Site) $L_{Aeq,16hr}$ Contours at 1.5m Height

Figure C.2 – Night-time Noise Map (Undeveloped Site) $L_{Aeq,8hr}$ Contours at 1.5m Height

Figure C.3 – Daytime Noise Map (Developed Site) $L_{Aeq,16hr}$ Contours at 1.5m Height

Figure C.4 – Daytime Noise Map (Developed Site) $L_{Aeq,16hr}$ Contours at 4.5m Height

Figure C.5 – Night-time Noise Map (Developed Site) $L_{Aeq,8hr}$ Contours at 1.5m Height

Figure C.6 – Night-time Noise Map (Developed Site) $L_{Aeq,8hr}$ Contours at 4.5m Height

APPENDIX D - DRAWING LISTS

The following The Urbanists drawings and documents have been used in our assessment;

Table D.1 – Drawing List

Drawing Title	Drawing Number	Rev	Date
Site Layout	2511-URB-XX-XX-DR-UD-001-S0	D	19/09/2025