



**Independent Acoustic
Consultancy Practice**

Environmental Noise Assessment

**Kelvedon Street
Newport**

7482/ENS1



Independent Acoustic Consultancy Practice

Henstaff Court Business Centre
Llantrisant Road, Cardiff
CF72 8NG

t: +44(0)2920 891020

e: enquiries@hunteracoustics.co.uk



w: www.hunteracoustics.co.uk

Environmental Noise Assessment

| | |
|----------------------|--------------------------------------------------------------------------------------------------|
| Project: | Kelvedon Street |
| Site Address: | Newport NP19 0DW |
| HA Reference: | 7482/ENS1 |
| Date: | 02/12/2024 |
| Client: | MVR Solutions Unit 4, A & B Mariner Way Felnex Industrial Estate Newport NP19 4PQ |
| Contact: | jonmoore@mvr solutions.co.uk |



ISSUE / REVISION

| Rev | Date | | | |
|-----|------------------|--------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 0 | 02 December 2024 | Filename | 24.7482_ENS1 | |
| | | Description | First issue | |
| | | | Prepared by: | Checked by: |
| | | Name | Sam Shapley BSc(Hons) MIOA | Meirion Townsend BSc(Hons) MIOA |
| | | Signature |  |  |

DOCUMENT CONTROL

Hunter Acoustics has prepared this report for MVR Solutions (“the Client”), under the agreed terms of appointment for acoustic consultancy services. This report is for the sole and specific use of the Client, and Hunter Acoustics shall not be responsible for any use of this report or its contents for any purpose other than that for which it was prepared and provided.

Should the Client wish to distribute copies of this report to other parties for information, the whole report should be copied, however no professional liability or warranty shall be extended to other parties by Hunter Acoustics in this connection without the explicit written agreement thereto by Hunter Acoustics.

ACCESSIBILITY HELP

- Zoom in or out by holding down CTRL and turning the mouse wheel.
- CTRL and click on the table of contents or references to tables/figures/sections to navigate.
- Press CTRL and Home key to return to the top of the document.
- Press Alt-left arrow to return to your previous location.

TABLE OF CONTENTS

| | |
|-----------------------------------------------------------------------|-----------|
| 1. INTRODUCTION | 4 |
| 2. CRITERIA..... | 5 |
| 2.1 Planning Policy Wales | 5 |
| 2.2 ProPG Supplementary Document 2..... | 5 |
| 2.3 Technical Advice Note (Wales) 11 | 6 |
| 2.4 British Standard 8233:2014 | 7 |
| 2.5 Building Regulations Part O 2022 Edition - For use in Wales | 8 |
| 2.6 AVO Guide: 2020 | 10 |
| 2.7 British Standard 4142:2014+A1:2019 | 11 |
| 3. ENVIRONMENTAL NOISE SURVEY | 13 |
| 3.1 Procedures..... | 13 |
| 3.2 Meteorological Conditions | 14 |
| 3.3 Measurement Equipment | 14 |
| 3.4 Results | 15 |
| 4. INDUSTRIAL NOISE CONTRIBUTIONS..... | 17 |
| 5. EXTERNAL BUILDING FABRIC ASSESSMENT..... | 18 |
| 5.1 Mitigation Measures | 18 |
| 5.2 Ventilation | 19 |
| 5.3 Overheating..... | 20 |
| 6. CONCLUSION..... | 21 |
| APPENDIX A - ACOUSTIC TERMINOLOGY | 22 |
| APPENDIX B - DIAGRAMS, GRAPHS AND TABLES..... | 23 |
| APPENDIX C - DRAWING LISTS..... | 31 |

1. INTRODUCTION

We understand a residential development is proposed at Kelvedon Street, Newport, NP19 0DW.

The Local Planning Authority / Client 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 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 $L_{eq}(8\text{ hour})$ 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 Building Regulations Part O 2022 Edition - For use in Wales

Requirement O1 of Part O in Wales applies when a new residential building is erected and states,

“(1) Reasonable provision must be made to –

- a) limit unwanted solar gains in summer;*
- b) provide an adequate means to remove heat from the indoor environment.*

“(2) In meeting the obligations in sub-paragraph(1) –

- a) **account must be taken of the safety of any occupant, and their reasonable enjoyment of the building; and***
- b) mechanical cooling may only be used where insufficient heat is capable of being removed from the indoor environment without it.*

Under the heading “*Intention*”, it states that requirement O1(2)(a) is met if the building’s overheating mitigation strategy takes account of all the following:

- a. Noise at night
- b. Pollution
- c. Security
- d. Protection from falling
- e. Protection from entrapment

Noise at night is covered in paragraphs 2.2 to 2.4 as follows:

“2.2 High levels of external noise could limit the use of cross-ventilation to mitigate the risk of summer overheating. External noise is a material consideration considered when applying for Planning permission and mitigating measures may be required in the design in order to obtain Planning permission and controlled through a condition imposed on the consent. In exceptional cases, this could include non-openable windows. More commonly, windows will be openable in order to enable natural ventilation to occur at less sensitive times of day, when there is lower noise, when people are not present in the room, or when they are present but not engaged in noise-sensitive activities. But those windows may need to be kept closed at times to maintain acceptable indoor acoustic conditions, for example when people are using the rooms for sleep or

office work. A noise issue may be identified at the Planning stage but rely on occupants to close windows at noise-sensitive times rather than prevent them from ever opening them, and in those cases overheating strategies should assume windows will be closed during noise-sensitive periods even if they are not fixed closed.

2.3 *When the removing excess heat as part of the overheating strategy, noise levels in bedrooms should be kept to a minimum during the sleeping hours of 23:00 – 07:00. Building control bodies may accept as evidence that this requirement is satisfied:*

- a. *documentation to demonstrate that the local planning authority did not consider external noise to be an issue at the site at the planning stage or;*
- b. *if the local planning authority did consider external noise to be an issue that should be controlled through a condition at planning stage, then documentation to demonstrate that the proposals for heat removal (during the sleeping hours of 23.00 – 07.00) are accommodated within or do not conflict with documentation provided to the local planning authority to satisfy any related planning permission condition(s). (For example any expectation that windows on one or more façade, or in certain rooms, will need to be kept closed during noise-sensitive periods.)*

2.4 *Where active measures (e.g. mechanical system) are used for removing excess heat within the overheating strategy, the noise generated by these measures, particularly within bedrooms and living rooms should be considered. Noise generated by ventilation/cooling systems (which may travel through ducts) and noise from the fan unit may disturb the occupants of the building and so discourage their use. Therefore, the designer should consider minimising noise by careful design and the specification of quieter products. Further guidance on mechanical ventilation systems can be found in Approved Document F.*

There are no further criteria or guidance on internal noise levels within Building Regulations Part O in Wales and therefore guidance is sought from the Acoustics, Ventilation and Overheating Residential Design Guide (AVO Guide): 2020 prepared by the Association of Noise Consultants (ANC) and the Institute of Acoustics (IOA).

2.6 AVO Guide: 2020

The Acoustics, Ventilation and Overheating – Residential Design Guide (AVO Guide) 2020 aims to assist designers to adopt an integrated approach to the acoustic design of residential dwellings within the context of ventilation and thermal comfort requirements.

The following Internal Ambient Noise Levels are quoted for guidance in AVOG.

Figure 2.1 Guidance for Level 2 assessment of noise from transport noise sources relating to overheating condition

| Internal ambient noise level ^[Note 2] | | | Examples of Outcomes ^[Note 5] | |
|-----------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $L_{Aeq,T}$ ^[Note 3] during 07:00 – 23:00 ^[Note 6] | $L_{Aeq,8h}$ during 23:00 – 07:00 | Individual noise events during 23:00 – 07:00 ^[Note 4] | | |
| > 50 dB | > 42 dB | Normally exceeds 65 dB $L_{AF,max}$ | Noise causes a material change in behaviour e.g. having to keep windows closed most of the time | Avoiding certain activities during periods of intrusion. Having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area. |
| | | | Increasing likelihood of impact on reliable speech communication during the day or sleep disturbance at night | <p>At higher noise levels, more significant behavioural change is expected and may only be considered suitable if occurring for limited periods.</p> <p>As noise levels increase, small behaviour changes are expected e.g. turning up the volume on the television; speaking a little more loudly; having to close windows for certain activities, for example ones which require a high level of concentration. Potential for some reported sleep disturbance. Affects the acoustic environment inside the dwelling such that there is a perceived change in quality of life.</p> <p>At lower noise levels, limited behavioural change is expected unless conditions are prevalent for most of the time. ^[Note 8]</p> |
| ≤ 35 dB | ≤ 30 dB | Do not normally exceed $L_{AF,max}$ 45 dB more than 10 times a night | Noise can be heard, but does not cause any change in behaviour | Noise can be heard, but does not cause any change in behaviour, attitude, or other physiological response ^[Note 9] . Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life. |

2.7 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.”

3. ENVIRONMENTAL NOISE SURVEY

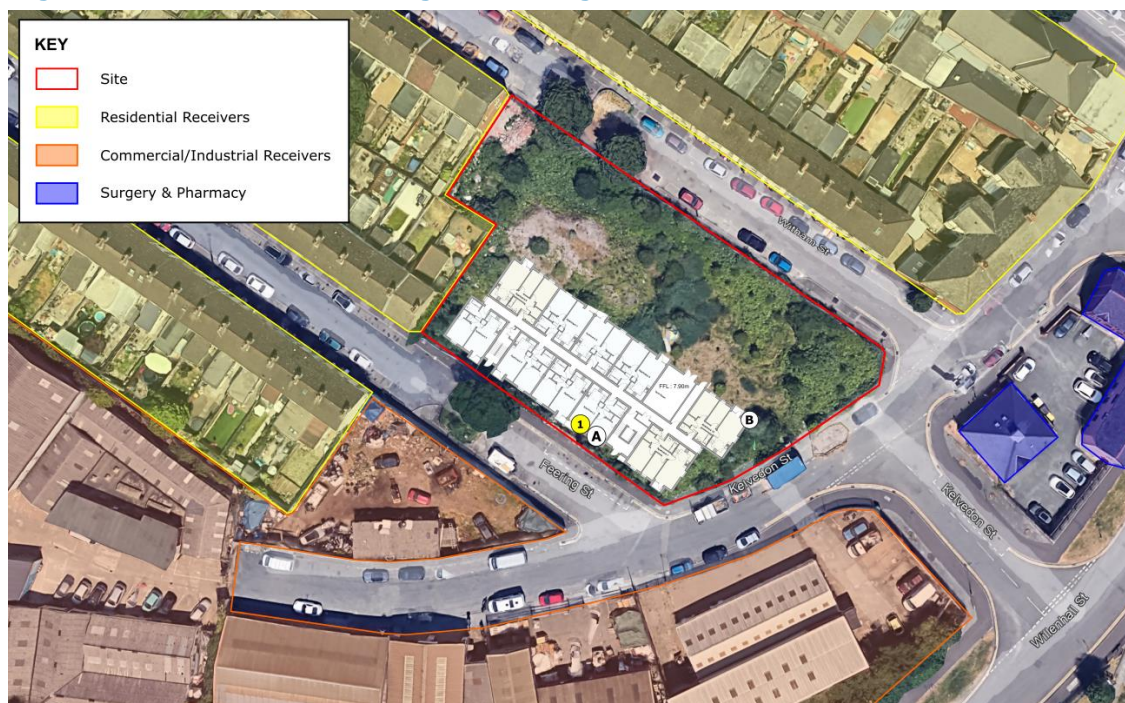
3.1 Procedures

3.1.1 Continuous Monitoring

Continuous noise monitoring was carried out from 1130hrs on Tuesday, 19 November 2024 to 1200hrs on Thursday, 21 November 2024 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



The 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 | Nearest proposed façade to Fearing Street |
| B | Nearest proposed façade to Kelvedon Street |

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

3.1.2 Sample Measurements

Additional sample measurements were taken on Thursday, 21 November 2024. 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 Feering Street – 4.5m 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 dry with an occasional breeze with exception to the period which contained light snow 1100-1500hrs 19/11/2024.

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. |
|-------------|----------------------------------|--------|---------------|------------------|-----------------|
| Norsonic AS | Calibrator (113.97dB @ 999.14Hz) | 1251 | 24202 | 13 August 2024 | U48533 |
| NTi | Type 1 - Sound Level Meter | XL2-TA | A2A-08723-E0 | 27 October 2023 | UK-23-127 |
| | Preamplifier | MA220 | 1820 | 27 October 2023 | UK-23-127 |
| | Filters | XL2-TA | A2A-08723-E0 | 27 October 2023 | UK-23-127 |
| | Microphone Capsule | MC230 | 9381 | 27 October 2023 | UK-23-127 |
| NTi | Type 1 - Sound Level Meter | XL2-TA | A2A-13022-E0 | 21 November 2023 | UK-23-093 |
| | Preamplifier | MA220 | 13634 | 21 November 2023 | UK-23-093 |
| | Microphone Capsule | MC230 | A14127 | 21 November 2023 | UK-23-093 |
| 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 |

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, B, C and D 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 $L_{Aeq,11hr}$ (dB) | 19/11/2024 | 51 | 51 |
| Night-time $L_{Aeq,8hr}$ (dB) | 19-20/11/2024 | 44 | 45 |
| Daytime $L_{Aeq,16hr}$ (dB) | 20/11/2024 | 50 | 50 |
| Night-time $L_{Aeq,8hr}$ (dB) | 20-21/11/2024 | 42 | 42 |
| Daytime $L_{Aeq,5hr}$ (dB) | 21/11/2024 | 51 | 51 |

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

Daytime period is therefore assessed as critical (>5dB difference between daytime and night-time).

Based on the noise levels measured across the survey period, site is indicated to fall under NEC A of TAN11 during the daytime and night-time period, see section 2.3 for TAN11 criteria.

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) | 34 | 34 |

The background noise level was controlled by distant road traffic during the daytime and night-time period.

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 | 11:00 | 60:00 | 53 | 74 | 47 |

L_{eq} and $L_{max,F}$ spectra measured at Position 1 are included in Figure B.8 in Appendix B.

4. INDUSTRIAL NOISE CONTRIBUTIONS

An assessment has been carried out for the industrial noise impact on the proposed residential apartments.

The proposed apartment block is to be located directly north of several commercial units which include vehicle garages, a martial arts gymnasium and a tile warehouse.

The industrial noise detected consisted of forklift truck reversing alarm beeps and occasional bangs from the vehicle garage, no noise was detected from the gymnasium.

Based on online information, the vehicle garage is understood to operate 0900-1700hrs weekdays only. The martial arts gym is understood to operate between 1000-2130hrs and has the potential to have classes on every day of the week. No published opening hours are given for the tile warehouse.

Daytime activity from these units was audible at positions A, B and 1.

No noise from these units was detected outside of the period 0900-1700hrs at any of the positions.

Based on the above, a BS4142:2014 noise impact assessment has been carried out for the impact of the nearby commercial units operating in the vicinity of the proposed residential development.

Our assessment has been carried out based on the assumption that the commercial units are in use between the period 0700-1700hrs.

A BS 4142:2014 assessment for the critical daytime period is included in Table B.1

The rating noise level against the background sound level is indicated at -4dB. BS4142:2014 would assess as likely to be an indication of a low impact, depending on context.

5. EXTERNAL BUILDING FABRIC ASSESSMENT

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 10m² (l x h)
- Glazing area of 2m²

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

5.1 Mitigation Measures

Based on survey results, we have carried out an external building fabric assessment with the aim of controlling 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.

The assessment also aims to control noise intrusion from regular events to <45dB $L_{Amax,F}$ in bedrooms during the night.

Note: Habitable rooms include bedrooms, lounges, dining rooms and kitchen/diners but not kitchens or bathrooms.

Based on measured daytime road traffic levels at worst-case critical facades (ground and first floor level) standard thermal double glazing and trickle ventilation is indicated sufficient to control road traffic noise intrusion on all plots on the site.

The analysis is based on the noise spectra quoted in Figure B.8 and the sound insulation values for the external building fabric shown in Table 5.1 below;

Table 5.1 – Summary of Sound Insulation Requirements for All Plots

| External Wall (Brick/Cavity/ Block) | Roof (Pitched Tiled) | Glazing | Ventilators |
|----------------------------------------|-------------------------|-------------------|---------------------------------------------------|
| 50dB R_w | 43dB R_w | 25dB R_w+C_{tr} | Standard Trickle Vents 31dB $D_{n,e,w}+C_{tr}$ |

5.2 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.

5.2.1 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 5.2 – 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 8000mm² 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.

5.2.2 General

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

5.3 Overheating

Our assessment determines standard double glazing and a natural ventilation strategy is feasible on all plots to control noise intrusion under whole dwelling ventilation conditions. This is based on windows normally being closed (excluding purge ventilation).

Approved Document O (Wales) advises:

When the removing excess heat as part of the overheating strategy, noise levels in bedrooms should be kept to a minimum during the sleeping hours of 23:00 – 07:00.

There are no further criteria or guidance on internal noise levels within Building Regulations Part O in Wales and therefore guidance is sought from the Acoustics, Ventilation and Overheating Residential Design Guide (AVO Guide): 2020 prepared by the Association of Noise Consultants (ANC) and the Institute of Acoustics (IOA).

It is therefore proposed to refer to the upper 42dB $L_{Aeq,8hr}$ and 65dB $L_{Amax,F}$ quoted in AVO Guide (Figure 2.1) as initial internal ambient noise criteria during overheating conditions.

At this stage and for guidance, if the upper internal night-time AVO Guide values of 42dB $L_{Aeq,8h}$ and 65dB $L_{Amax,F}$ are to be met (providing approximately 3dB sound reduction); we would advise that the “geometric open area” of the bedroom windows (not the “equivalent area”) should not exceed 2.0m² based on a 10m² room at 2.4m high and 0.5s reverberation time.

This should be confirmed acceptable with a suitably qualified thermal modelling engineer. If this is not sufficient, an alternative means of controlling overheating is likely to be required.

6. CONCLUSION

An environmental noise assessment has been carried out for the proposed residential development at Kelvedon Street, Newport, NP19 0DW.

Road traffic is indicated to control the ambient noise climate day and night across the site.

Noise surveys have been carried out across the site. Additional sample measurements were undertaken to determine road traffic noise and industrial noise impact at first floor level.

The noise survey indicates that daytime is the critical period (day/night difference > 5dB).

A BS4142:2014 assessment has been carried out to determine the noise impact of the nearby commercial units. The existing commercial activity is indicated to be a low impact.

The context is a new residential apartment is proposed near existing commercial units. Façade sound insulation treatments and ventilation have been specified to meet suitable internal noise levels.

An external building fabric assessment has been carried out. Specifications for external wall, roof, ventilation and glazing are included.

APPENDIX A - ACOUSTIC TERMINOLOGY

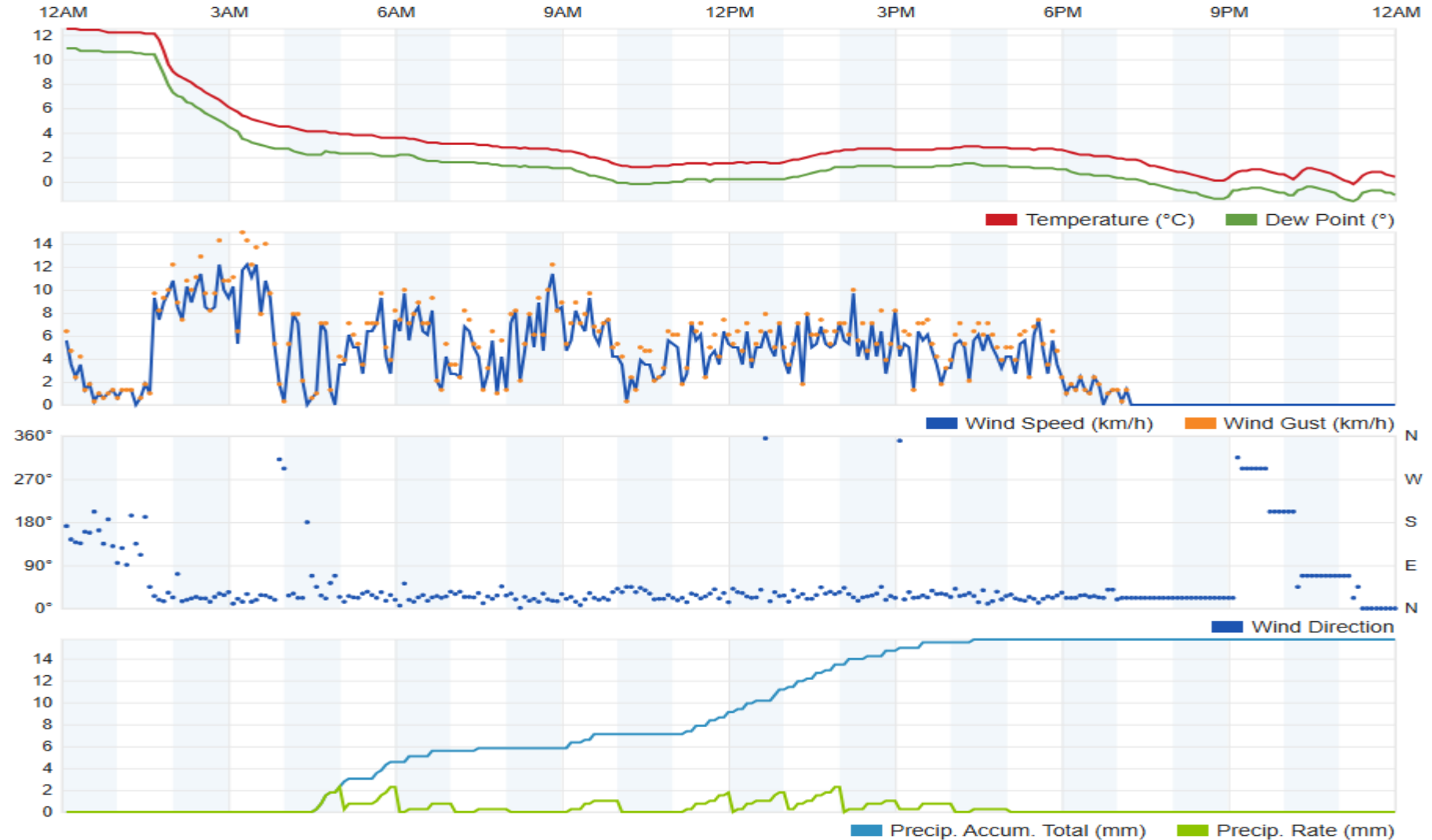
Human response to noise depends on a number of factors including loudness, frequency content and variations in level with time. Various frequency weightings and statistical indices have been developed in order to objectively quantify 'annoyance'.

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. |
| $L_{A,Tf}$ | 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 |
| SEL | 'Sound Exposure Level', The dB(A) level which, if it lasted 1 second, would produce the same sound energy as the event in question (e.g. a train pass-by). |

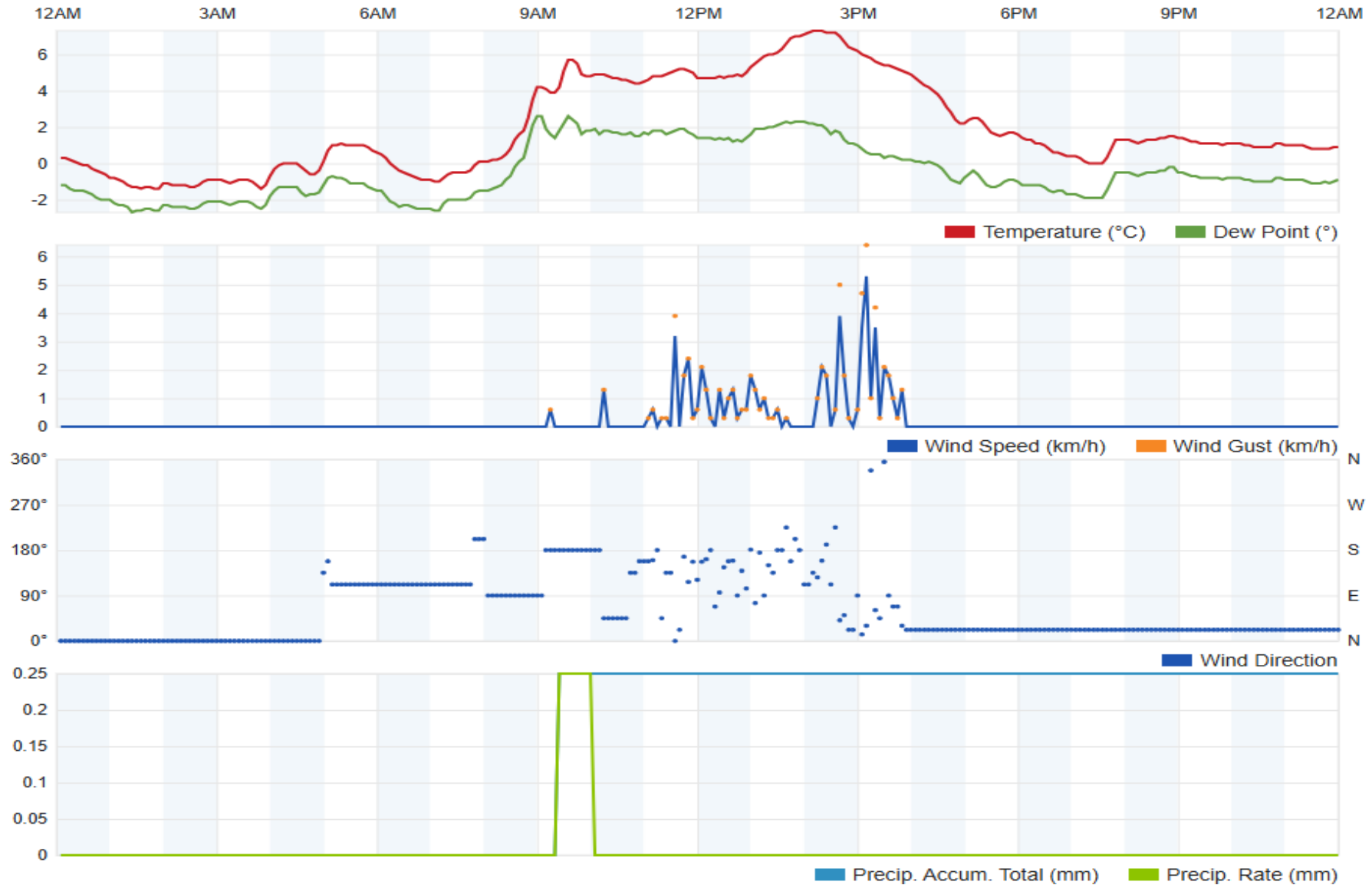
APPENDIX B - DIAGRAMS, GRAPHS AND TABLES

Figure B.1 – Approximate Weather History for Tuesday, 19 November 2024



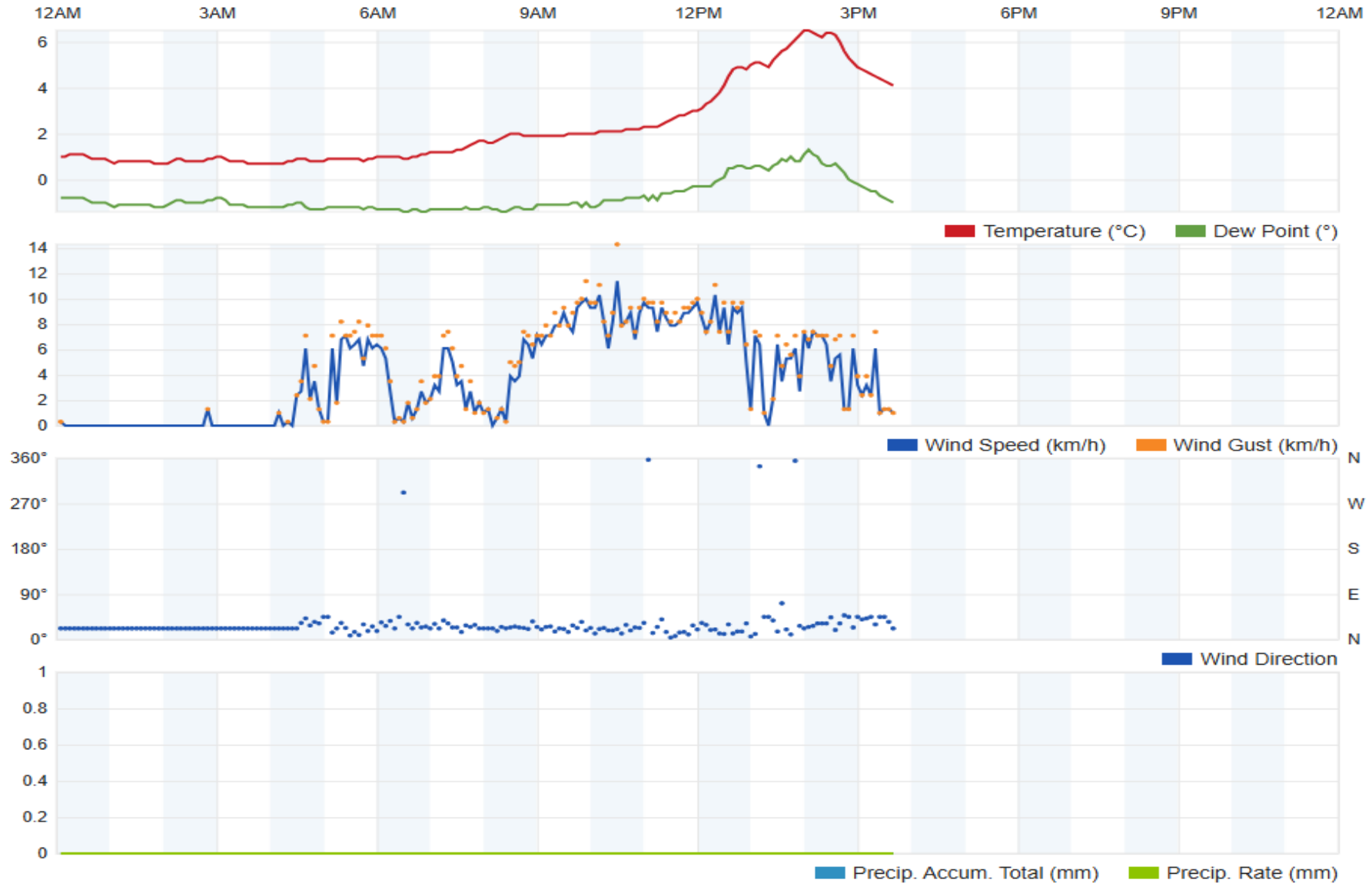
Note: Taken from www.wunderground.com - weather station INEWPO60 located in Newport [Elev 9 m, 51.59 °N, 2.97 °W]

Figure B.2 – Approximate Weather History for Wednesday, 20 November 2024



Note: Taken from www.wunderground.com - weather station INEWPO60 located in Newport [Elev 9 m, 51.59 °N, 2.97 °W]

Figure B.3 – Approximate Weather History for Thursday, 21 November 2024



Note: Taken from www.wunderground.com - weather station INEWPO60 located in Newport [Elev 9 m, 51.59 °N, 2.97 °W]

Figure B.4 – Time History at Position A (Tuesday, 19 November 2024 to Thursday, 21 November 2024)

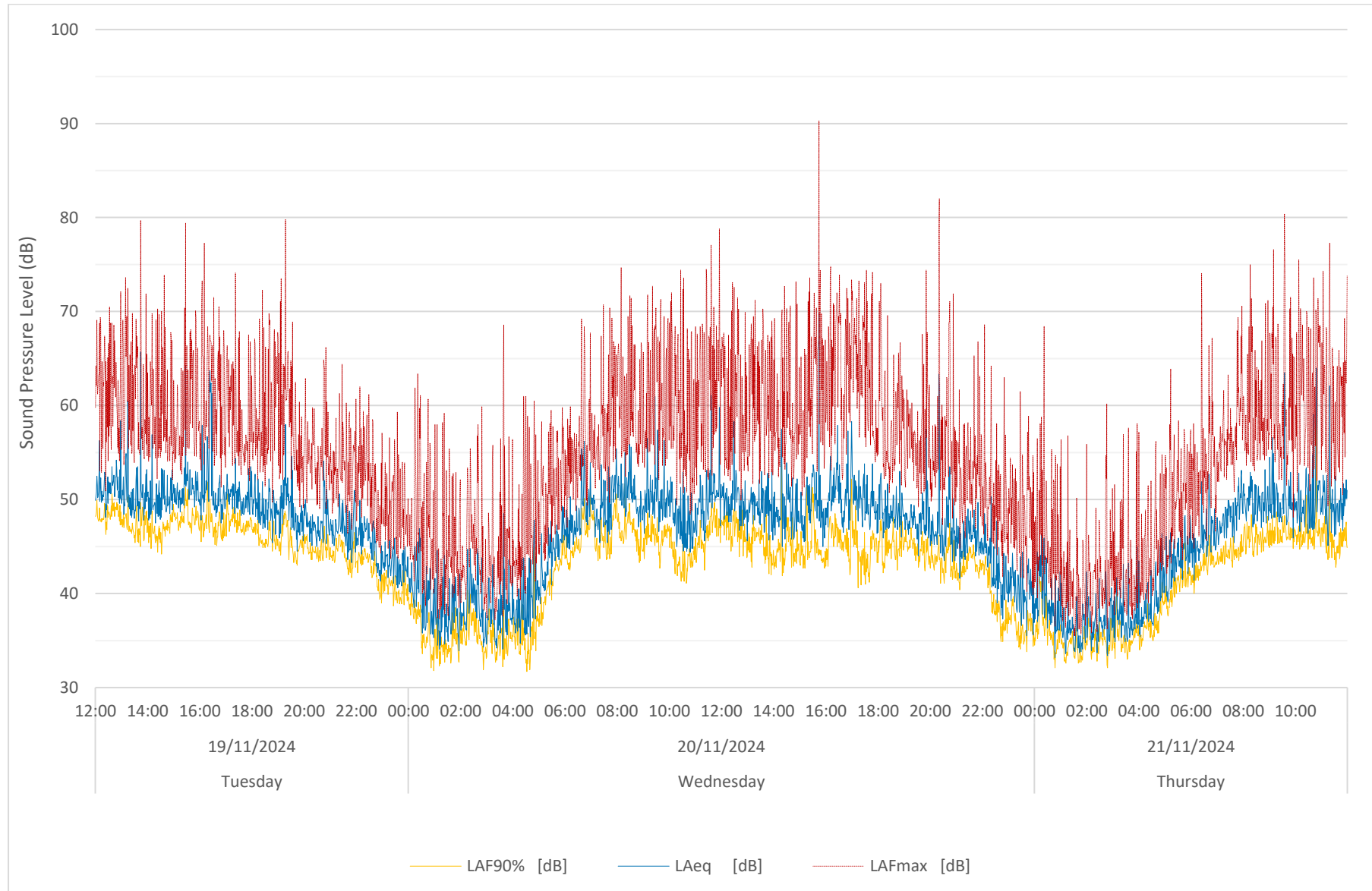


Figure B.5 – Time History at Position B (Tuesday, 19 November 2024 to Thursday, 21 November 2024)

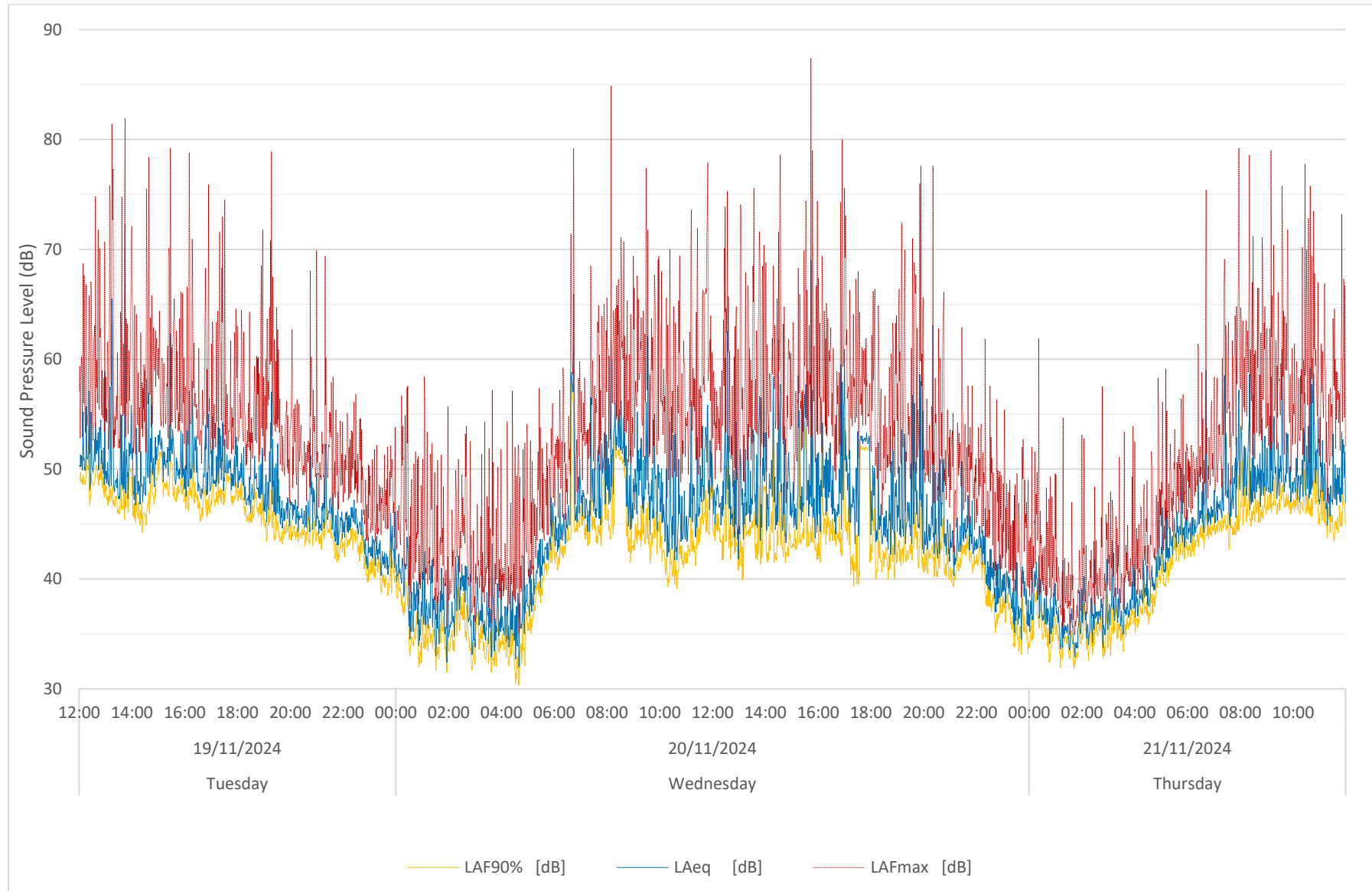


Figure B.6 – Analysis of Background Sound Levels at Position A (Tuesday, 19 November 2024 to Thursday, 21 November 2024)

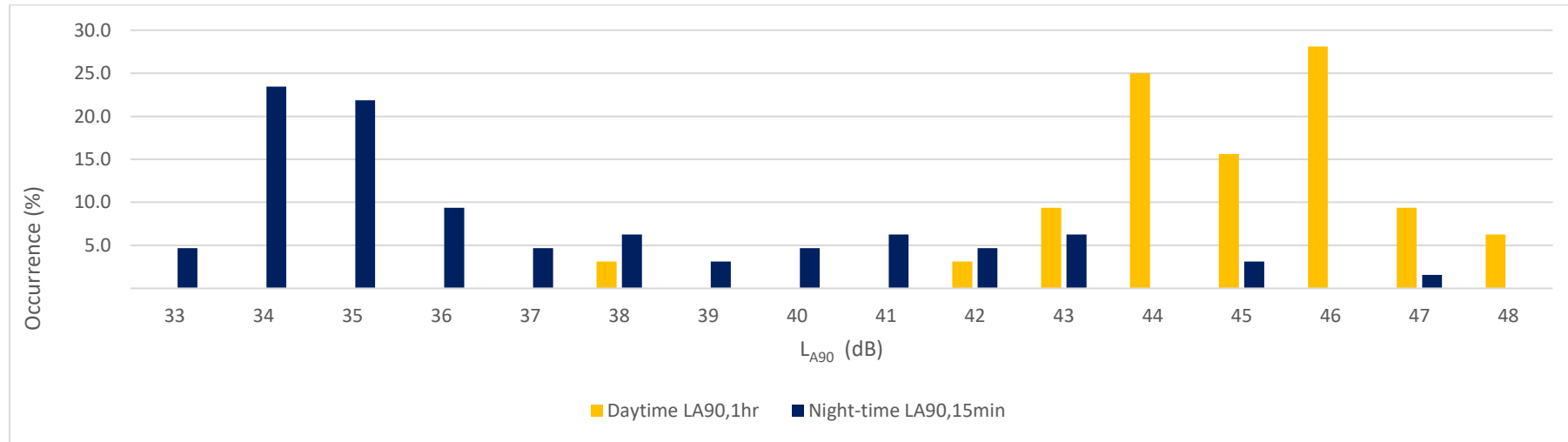


Figure B.7 – Analysis of Background Sound Levels at Position B (Tuesday, 19 November 2024 to Thursday, 21 November 2024)

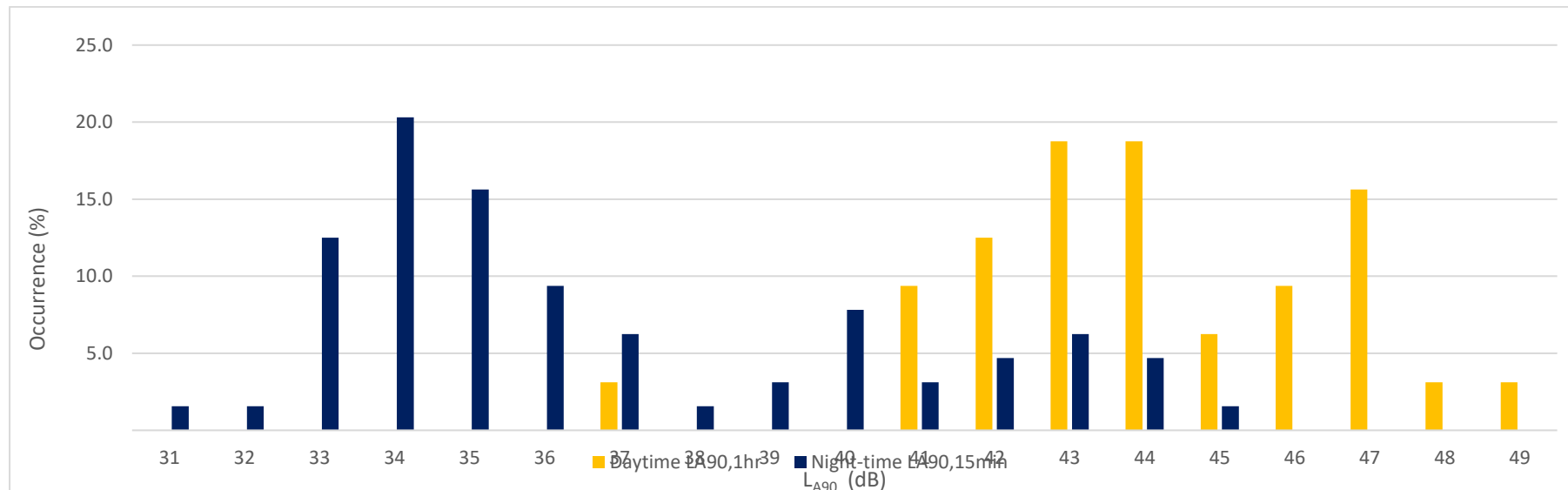


Figure B.8 – L_{eq} and $L_{max,F}$ Octave Band Spectra Measured at Position 1 (Thursday, 21 November 2024)

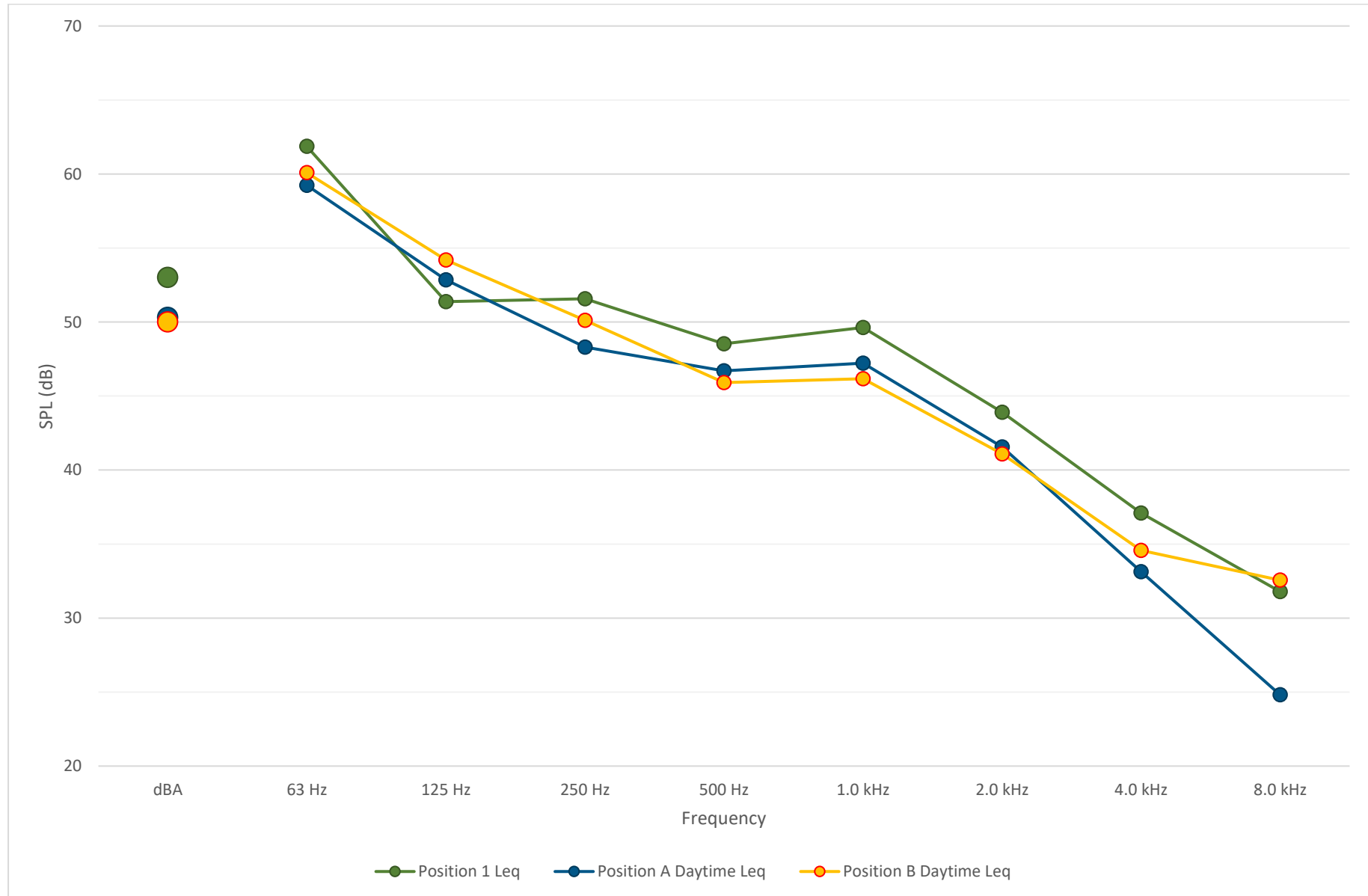


Table B.1 – BS 4142:2014 Daytime Assessment at Position 1

| Results | | Relevant Clause | Commentary |
|---------------------------------------------------------------------------|-------------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Measured Level of Daytime Industrial Activity at Position 1 | $L_{Aeq,90sec} = 53\text{dB}$ | 7.3.2 | Commercial activity measured level at Position 1 – Mainly consisted of forklift truck reversing beeps. Measured between 1100-1200hrs on 21/11/2024. |
| Background sound level (daytime) | $L_{A90(0700-2300hrs)} = 47\text{dB}$ | 8.1.1 8.1.3 8.3 | Background sound level measured at Position B |
| Assessment made during the daytime so the reference time interval is 1hr. | $53\text{dB} - 16\text{dB} = 37\text{dB}$ | | |
| Acoustic feature correction | 5dB | 9.2 | Both tonal and impulsive characteristics displayed. +2dB for tonality and +3dB for impulsivity just perceptible have been included |
| Rating Level | $(37 + 5) = 42\text{dB}$ | | |
| Background sound level (daytime) | $L_{A90(0700-1700hrs)} = 46\text{dB}$ | 8.3 | |
| Excess of rating over background sound level | $(42 - 46) \text{dB} = -4\text{dB}$ | 11 | |
| Assessment indicates adverse impact unlikely depending on context | | 11 | At 4dB below background BS 4142:2014 advises: "is likely to be an indication of low impact, depending on the context" |
| Uncertainty of assessment | | 10 | Uncertainty in background noise measurements is considered low. |

APPENDIX C - DRAWING LISTS

The following Kennedy James Griffiths drawings have been used in our assessment;

Table C.1 – Drawing List

| Drawing Title | Drawing Number | Rev | Date |
|--------------------|----------------|-----|------------|
| Location Plan | 1660-PA-01 | | 06 07 2023 |
| Proposed Site Plan | 1660-PA-02 | D | 05 03 24 |
| Proposed Elevation | 1660-PA-04 | D | 05 03 24 |