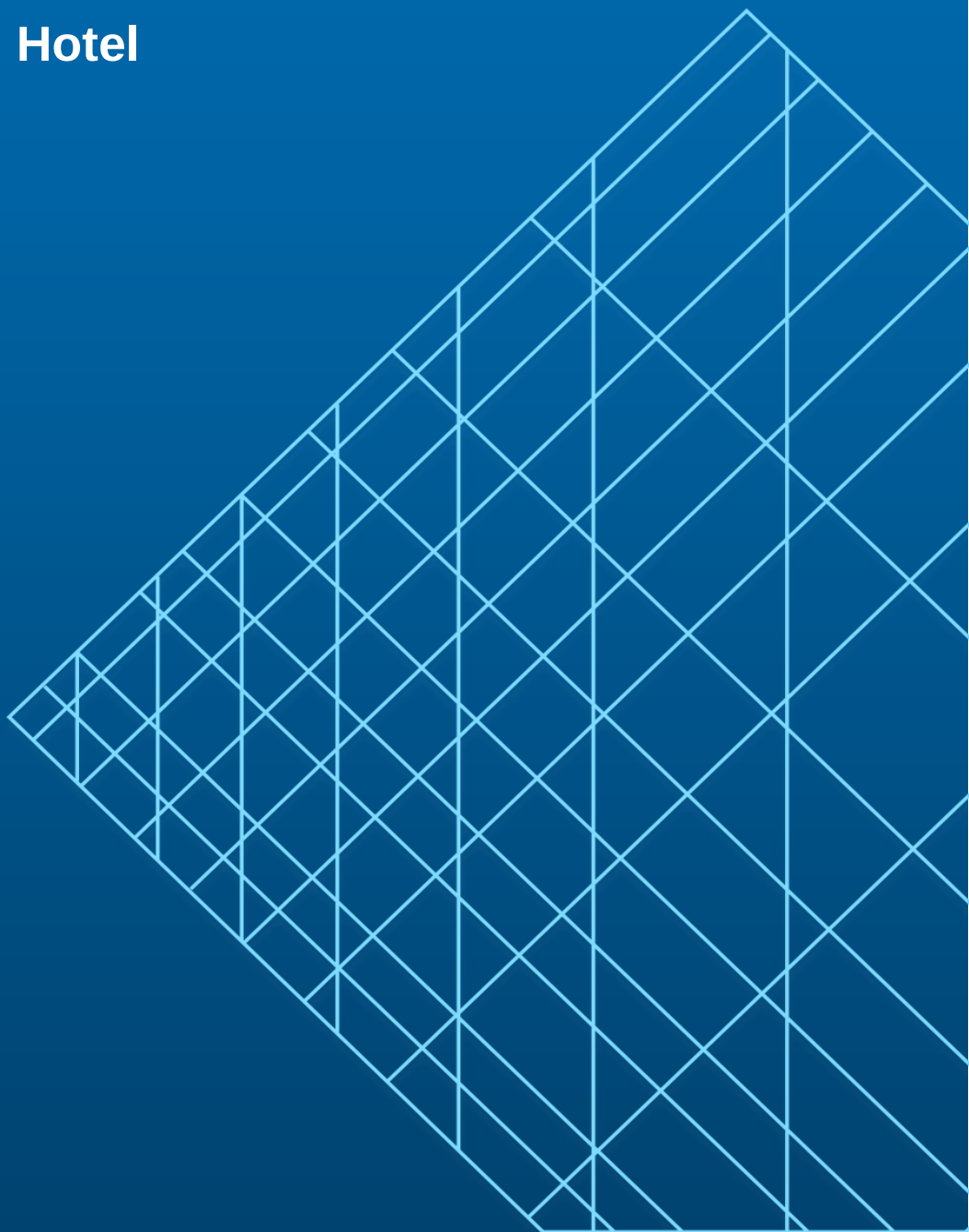
Hunter Acoustics

Independent Acoustic Consultancy Practice

Environmental Noise Assessment

The Porthcawl Hotel
Porthcawl

4925/ENS1_Rev5



Hunter ACOUSTICS

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:	**The Porthcawl Hotel**
Site Address:	Porthcawl CF36 3AP
HA Reference:	4925/ENS1_Rev5
Date:	30/09/2024
Client:	Costal Housing Group 3rd Floor 220 High Street Swansea SA1 1NW
Contact:	cellan@prime-arch.co.uk

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		Name	Matthew Hunter AMIOA	Meirion Townsend BSc(Hons) MIOA
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		Name	Matthew Hunter AMIOA	Meirion Townsend BSc(Hons) MIOA
		Signature		

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1. INTRODUCTION

It is proposed to convert an existing hotel into 22 affordable residential units (floors 1-3) above a bar/restaurant and commercial unit at ground and first floor at The Porthcawl Hotel, Porthcawl, CF36 3AP.

The existing structure houses the following:

- Nightclub
- Sports Bar
- Taxi Office
- Gymnasium
- Hotel Accommodation (28 rooms)
- Hotel Amenities/ Lounge Bar

It is understood the live music venue and gym will **not** be retained.

This report has been commissioned to assess existing ambient and background noise levels impinging on the site from road traffic and street noise. Survey results have been used for comparison with the Local Planning Authority's Condition in section 2.1 and current planning guidance.

2. CRITERIA

2.1 Planning Conditions

The following noise related planning condition has been included on the planning consent;

2.1.1 Condition 6

"Prior to the commencement of development a scheme shall be submitted to and approved in writing by the Local Planning Authority to provide that all habitable rooms exposed to noise levels in excess of 55dBA Leq 16 hour (free field) during the day (07.00 to 23.00 hours) or 45dBA Leq 8 hour (free field) at night (23.00 to 07.00 hours) are subject to sound insulation measures to ensure that all such rooms achieve an internal noise level of 35 dBA Leq 16 hour during the day and 30 dBA Leq 8 hour at night. The sound insulation measures shall not be less than the recommendations contained within section 5 of Hunter Acoustic's revised Noise Report dated 21 March 2021. Where it is a requirement that in order to achieve these internal noise levels the windows shall remain in the closed position, a scheme of alternative ventilation measures designed to the latest Building Regulations Part F and to meet the internal noise levels shall be submitted to and agreed with the Local Planning Authority. The scheme shall also include an assessment of delivery noise from the new commercial units to assess the impact on the new residential premises above to determine whether any additional sound insulation measures are required to the facades overlooking John Street to control delivery noise break in and if so, stipulate what the additional recommendations are. The scheme shall be implemented in full as agreed. No habitable room shall be occupied until the approved sound insulation and ventilation measures have been installed in that room.

Reason: In the interests of residential amenities."

The above internal ambient noise levels quoted are in line with the desirable values quoted in BS 8233:2014.

2.1.2 Condition 10

"Deliveries to the commercial premises shall only take place via John Street (not Hillsboro Place unless the deliveries are being made via the underground car park which is accessed from Hillsboro Place) between the hours of 07:30 and 20:00 hours Monday to Friday and between 08:00 and 20:00 hours Saturdays, Sundays and Bank Holidays.

Reason: In the interests of residential amenities."

2.2 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 2.1 – BS 8233:2014 Internal Ambient Noise Criteria for Habitable Rooms

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

2.3 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. *façade 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."*

3. ENVIRONMENTAL NOISE SURVEY

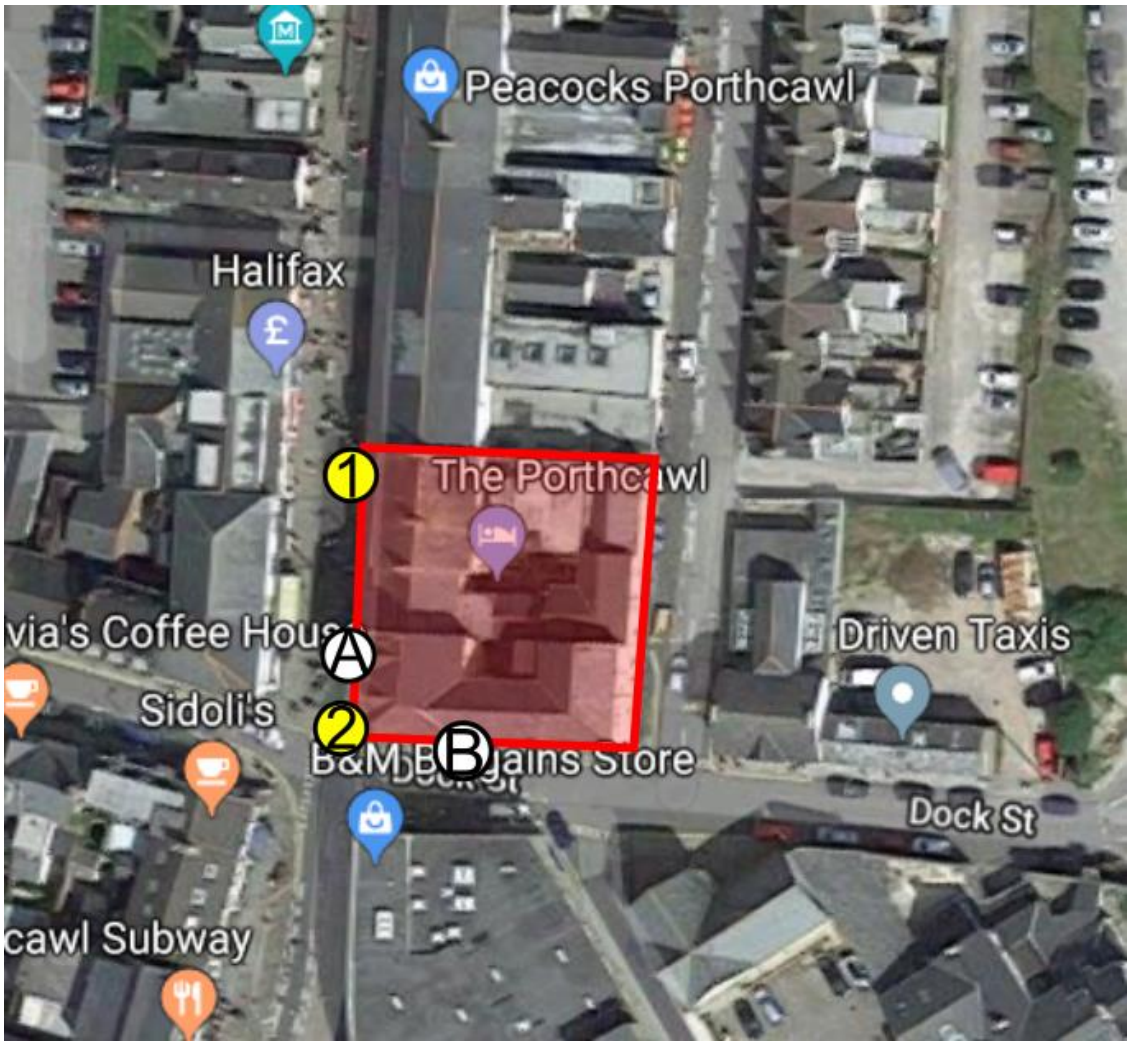
3.1 Procedures

3.1.1 Continuous Monitoring

Continuous noise monitoring was carried out from 1620hrs on Friday, 13 July 2018 to 1516hrs on Monday, 16 July 2018 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	Located on the western façade out of window at first floor level, overlooking the main pedestrianised high street.
B	Located on the southern façade out of window at first floor level, overlooking Dock Street.

Note: All microphone positions approximately 4.5m above local ground level.

3.1.2 Sample Measurements

Additional sample measurements were taken on Friday, 20 July 2018. 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	Located adjacent to the western façade on the main pedestrianised high street
2	Located on the south western corner of the site overlooking Dock Street, Well Street and the main pedestrianised high street

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 Appendix B.

To summarise, the weather was dry with occasional breeze throughout the monitoring periods.

During the manned sample measurements, weather conditions were calm, hot and dry.

3.3 Measurement Equipment

The following measurement equipment was used during the surveys:

Table 3.3 – Continuous Noise Monitoring Equipment List

Make	Description	Model	Serial Number	Last Calibrated	Certificate No.
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-08723-E0	20-Dec-16	1612652
NTi	Preamplifier	MA220	1820	20-Dec-16	1612650
NTi	Filters	XL2-TA	A2A-08723-E0	20-Dec-16	1612651
NTi	Microphone	Capsule	9381	20-Dec-16	1612650
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-10021-E0	24-Aug-17	UCRT17/1722
NTi	Preamplifier	MA220	5435	24-Aug-17	UCRT17/1722
NTi	Microphone	Capsule	8547	24-Aug-17	UCRT17/1722
Rion	Calibrator (94.00dB @ 985Hz)	NC-73	10355197	05-Mar-18	UCRT18/1238

Table 3.4 – Sample Noise Monitoring Equipment List

Norsonic AS	Type 1 - Integrating - averaging Sound Level Meter	118	31808	10-Aug-16	U22383	10-Aug-18
Norsonic AS	Preamplifier	1206	30892	10-Aug-16	U22383	10-Aug-18
Norsonic AS	Microphone	1225	62659	10-Aug-16	22381	10-Aug-18
Norsonic AS	Calibrator (113.95dB @ 999.27Hz)	1251	24202	24-Aug-17	UCRT17/1718	24-Aug-18

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.2 & Figure B.3 of Appendix B show L_{Amax}, L_{Aeq} and L_{A90} sound pressure levels measured at positions A & B respectively.

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

Table 3.5 – Summary of Daytime $L_{Aeq,16hr}$ and Night-time $L_{Aeq,8hr}$ Results

Period	Date	Position			
		A	A (Removing Bar/Gym Sources Night Time)	B	B (Removing Bar/Gym Sources Night Time)
Daytime $L_{Aeq,16hr}$ (dB)	13/07/2018	57.3	-	56	-
Night-time $L_{Aeq,8hr}$ (dB)		58	53	57.5	48.6
Daytime $L_{Aeq,16hr}$ (dB)	14/07/2018	62.7	-	60.3	-
Night-time $L_{Aeq,8hr}$ (dB)		67	54.3	63.4	43.6
Daytime $L_{Aeq,16hr}$ (dB)	15/07/2018	57.2	-	55.3	-
Night-time $L_{Aeq,8hr}$ (dB)		54.2	48.7	50	46.7
Daytime $L_{Aeq,16hr}$ (dB)	16/07/2018	58.6	-	57.3	-
Night-time $L_{Aeq,8hr}$ (dB)		N/A	N/A	N/A	-

Note: -3dB Façade correction applied

There were 40no $L_{Amax,F}$ events over 82dB measured at Position A and 22no $L_{Amax,F}$ events over 82dB measured at Position B during the night-time period (2300-0700hrs).

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	15:47	10:00	56.7	83.1	50.0
1	16:09	10:00	55.9	73.6	50.8
2	15:32	10:00	59.5	74.2	52.2
2	15:58	10:00	59.9	73.6	50.8
2	16:21	10:00	61.5	85	51.8

The ambient and background sound climate during daytime sample hours was controlled by pedestrians in the street, road traffic on Dock Street and occasionally commercial activity from nearby businesses.

Listening to audio recordings, evening/night-time periods appear to be controlled by entertainment noise from Streets Nightclub situated on the ground floor of the existing building and music from the gym at first floor level, as well as occasional shouts from people on the street. Commercial units in the local vicinity of the site include clothes shops, a grocery store, cafés and banks - all of which do not in themselves produce a high level of noise, or patrons likely to generate noise/shout. As the nightclub and gym are proposed to cease operating/relocate as part of the proposed development, we have excluded these sources from our assessment.

Overall the noise limits stated in the planning condition in condition 6 (see section 2.1) are exceeded and so an external building fabric assessment has been carried out (see Section 5).

3.4.3 Background L_{A90} Results

Graphs in Figure B.4, Figure B.5, Figure B.6, Figure B.7, Figure B.8, Figure B.9, Figure B.10, Figure B.11 of Appendix B show statistical analysis of background sound levels measured at positions A & B respectively.

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

Table 3.7 - Minimum Consistent Daytime and Night-time Background L_{A90} Results

Period	Position	
	A	B
Daytime (1700-2300hrs) L_{A90} (dB) 13/07/18	53	42
Night-time (2300-0700hrs) L_{A90} (dB) 13/07/18	35	34
Daytime (0700-2300hrs) L_{A90} (dB) 14/07/18	47	48
Night-time (2300-0700hrs) L_{A90} (dB) 14/07/18	34	34
Daytime (0700-2300hrs) L_{A90} (dB) 14/07/18	57	48
Night-time (2300-0700hrs) L_{A90} (dB) 15/07/18	35	34
Daytime (0700-1500hrs) L_{A90} (dB) 15/07/18	52	48

4. PRELIMINARY DELIVERY NOISE ASSESSMENT

Ground floor commercial units are proposed on the scheme, delivery activities are likely to take place directly below proposed apartments.

Delivery noise data from Hunter Acoustics in-house database has been used to predict noise impact at proposed apartments in the following example scenario. Based on database figures a level of 63dB L_{Aeq} at 5m for a 15minute period is indicated.

In order to form a robust assessment, daytime scenarios have been assessed to first floor apartments on the eastern façade. This has been assessed as the most critical façade given planning condition 10 (See Section 2.1.2).

A further assumption is that 1no delivery is to take place in a 1hr daytime period.

A 3dB penalty for impulsivity with good practice measures in place has also been included.

4.1 Daytime Deliveries

Detailed example BS 4142:2014+A1:2019 assessments for daytime weekday and weekend scenarios of a 15minute delivery between 0730-2000hrs is located in Table B.1 & Table B.2 of Appendix B.

An excess of 8dB & 13dB over background is indicated during daytime deliveries to the apartments above.

At 8dB above background, BS4142 indicates an adverse impact depending on the context.

At 13dB above background BS4142 states a significant adverse impact, depending on context.

In this instance, we would advise that façade mitigation measures applied to the apartments (discussed in Section 5) should form part of the context (refer to Section 11 of BS 4142, repeated in Section 2.3 of this report). These measures are indicated to control absolute noise levels from deliveries (63dB $L_{Aeq,15min}$ at the window) to below the 35dB L_{Aeq} daytime criteria referenced in BS 8233:2014 in Section 2.2 of this report (with windows closed and trickle vents open).

Therefore, modifying the outcome of the assessments for context, an adverse impact is indicated less likely during weekdays and an adverse impact is indicated during weekends.

4.2 Delivery Noise Mitigation

Sounds from deliveries can generally be described as impulsive.

The Department of Transport's Good Practice Guidance – Key Principals and Processes for Freight operators (April 2014) describes measures to minimise impact. Appendix A of that Guide is included as Appendix C to this report. Based on our historic observations of deliveries, such measures could include:

- Delivery drivers / staff being made aware of noise-sensitive receptors
- Park lorries so that the lorry screens noise from rear of the truck to the closest residential receiver as far as practical (where it is safe to do so). This should be easier for more critical late night/early morning deliveries when the store is closed to the public.
- Avoid slamming van/lorry doors and switch off radio on arrival.
- Avoid lorry reversing (reversing beeper) on site.
- Minimising the use of noisy roll-cages and trolleys.
- Loading vans so that boxes/trolleys do not need to be moved around in the van upon arrival, before unloading.
- Ensure access paths to the door into the store are smooth to minimise vibration/noise from cages.

This should reduce the number, frequency and magnitude of individual 'impulsive' noise events, as well as reducing the overall noise levels over the delivery period.

4.3 Summary

Overall, it is envisaged that delivery noise can be controlled by a combination of façade sound insulation measures to the proposed apartments above (discussed in Section 5 below) and by commercial operators following good practise guidance.

5. EXTERNAL BUILDING FABRIC ASSESSMENT

Based on survey results and noise map models, 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 internal ambient noise criteria quoted in the planning conditions under normal extract and whole dwelling ventilation conditions.

This assessment is based on proposed layout and elevation drawings listed in Appendix D.

5.1 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 5.1 – 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

5.2 Dormer Roof

The following roof constructions have been used in our analysis;

- Pitched tiles on felt roof, 2no x 15mm plasterboard ceiling + 100mm insulation

The following minimum SRI performance figures are proposed;

Table 5.2 – 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, 2no x 15mm plasterboard ceiling, 100mm mineral wool insulation	29	43	49	54	58

5.3 Glazing

The following sound reduction index figures shall be met for glazing:

Table 5.3 - Glazing 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
Glazing	For budgetary guidance: based on Pilkington 8mm / 6 – 16mm / 4mm	22	21	28	38	40

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.

5.4 Ventilation

All habitable rooms require a ventilation strategy that does not rely on opening windows to achieve 'extract ventilation' and 'whole building ventilation' rates as required by Building Regulations Part F, Regulation F1(1) 2010 *2022 Edition.*

> ***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.*
>
> ***Continuous mechanical supply and extract with heat recovery.*** *Guidance on minimum provisions for extract and whole building ventilation is set out Para 1.69 of Building Regulations Part F.*

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

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 to, and so glazing would not be 'fixed pane'.

5.4.1 Continuous Mechanical Extract with Background Ventilators

Building Regs Part F advises: "***1.64*** *Where continuous mechanical extract ventilation is used, background ventilators should satisfy all of the following conditions:*

a. not be in wet rooms

b. provide minimum equivalent area of 4,000 mm^2 for each habitable room in the dwelling

c. Provide a minimum total number of ventilators that is the same as the number of bedrooms plus two ventilators (i.e. a one-bedroom dwelling should have three background ventilators, a two- bedroom dwelling should have four background ventilators, etc.)."

The trickle ventilators shall be acoustically treated to achieve the following ($D_{n,e}$) performance;

Table 5.4 – Acoustic Trickle Ventilator Specifications

Element	Description	Element-Normalised Level Difference dB $D_{n,e}$ (BS EN ISO 10140-2:2010)				
		125	250	500	1k	2k
Ventilator	For budgetary guidance: based on Renson AK80/3 (open)	37	32	34	46	52

The calculation has allowed for a maximum of 2no acoustic trickle ventilators per room, meeting the minimum 4000mm^2 equivalent area requirement of Part F.

For budgetary guidance the above ventilator figures are based on Renson AK80 ventilators. The successful tenderer shall provide independent laboratory test data showing their vent meets the above performance requirements.

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.

5.4.2 Mechanical Ventilation with Heat Recovery

Alternatively, a Mechanical Ventilation with Heat Recovery (MVHR) strategy could be utilised which does not require any trickle vents in the external façade.

5.4.3 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."*

5.4.4 General

Do not include standard trickle ventilation within window frames on critical facades.

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

6. CONCLUSION

An environmental noise assessment has been carried out for the proposed residential development at The Porthcawl Hotel, Porthcawl, CF36 3AP.

The site has been assessed in line with TAN11 NECs for mixed sources and falls under TAN11 NEC B during both the daytime (0700-2300hrs) and night-time (2300-0700hrs), when contributions from the existing ground floor nightclub and first floor gym are excluded (neither are included in the new residential scheme, and there are no other bars/clubs in the vicinity of the existing hotel).

An external building fabric assessment has been carried out. Additional sound insulation measures have been specified for external wall, roof, ventilation and glazing.

An assessment for proposed deliveries for the commercial units has been undertaken.

The current assessment is based on 1no delivery in an hour period during daytime hours.

Our assessment indicated the impact from delivery noise during the weekday has a low impact and during the weekend an adverse impact is less likely given the context

Final proposals for glazing and ventilation specifications should be confirmed acceptable by Building Control and Environmental Health.

APPENDIX A - ACOUSTIC TERMINOLOGY

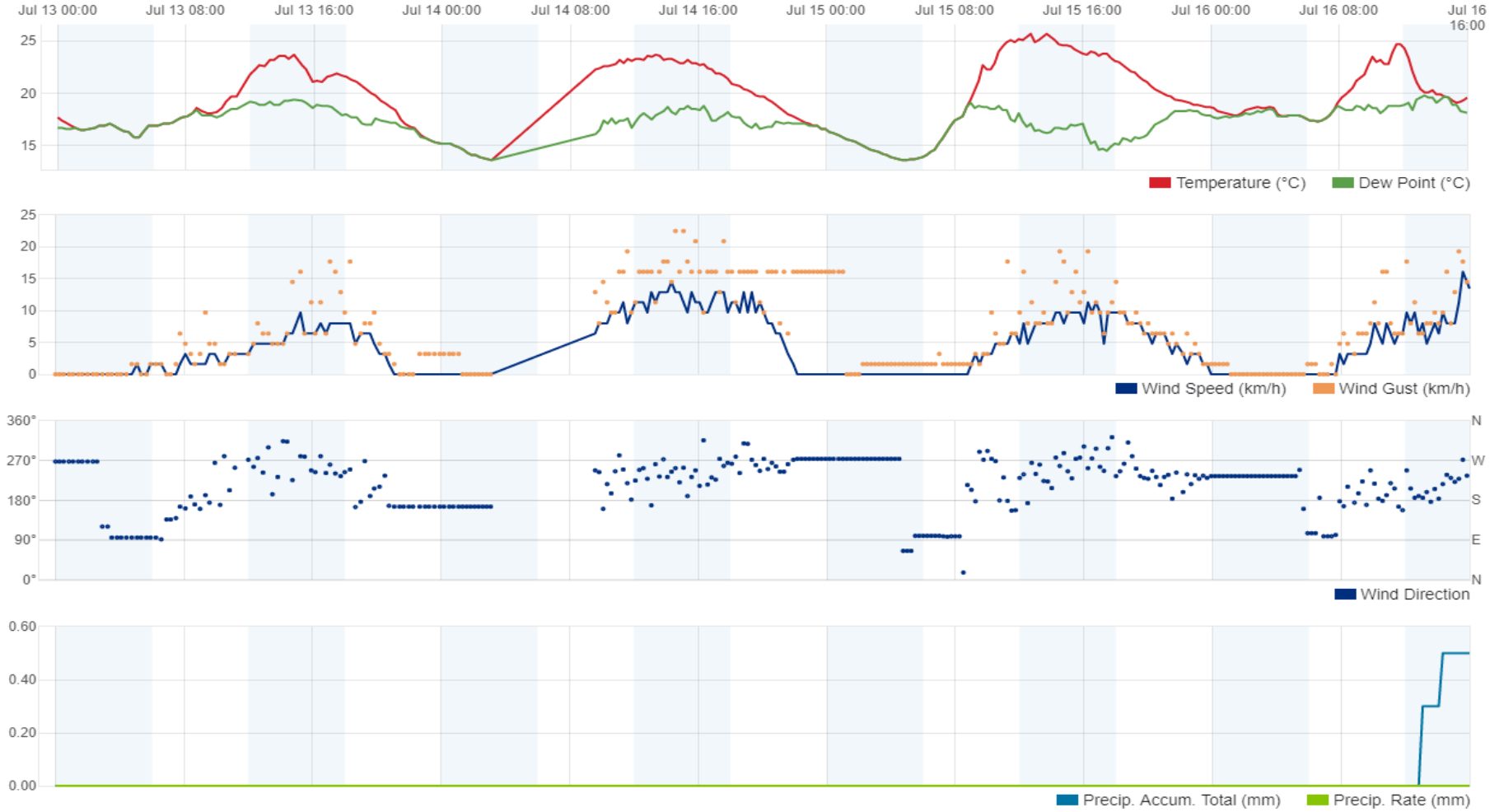
Human response to noise depends on a number of factors including loudness, frequency content and variations in level with time. Various frequency weightings and statistical indices have been developed in order to objectively quantify 'annoyance'.

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 - used as a measure of background noise.
$L_{Ar,Tr}$	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 (13/07/2018 – 16/07/2018)



* Taken from www.wunderground.com - weather station IPYLE2 located in Pile (N 51 ° 31 ' 37 ", W 3 ° 41 ' 48 ")

Figure B.2 – Time History at Position A (Friday, 13 July 2018 to Monday, 16 July 2018)

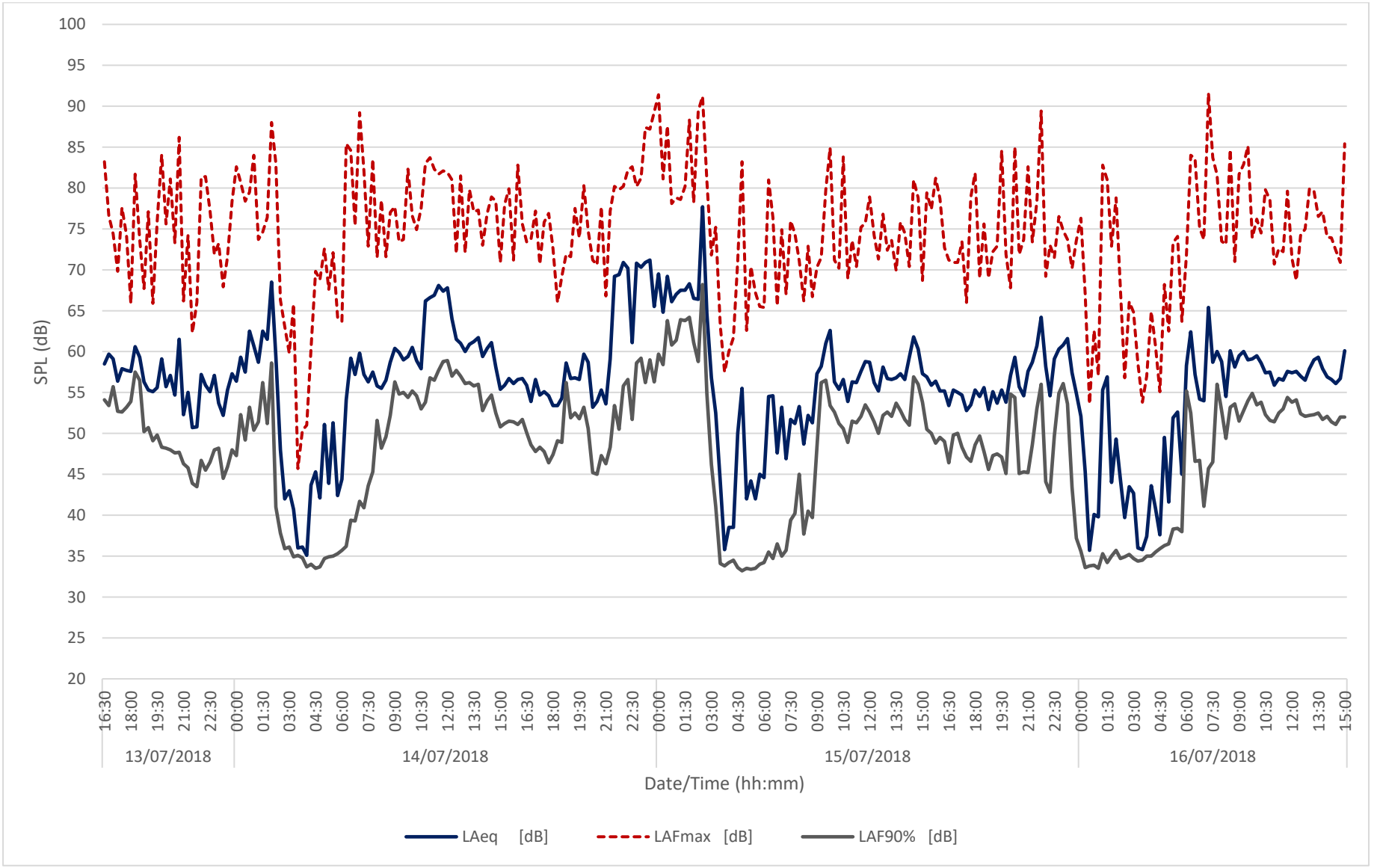


Figure B.3 – Time History at Position B (Friday, 13 July 2018 to Monday, 16 July 2018)

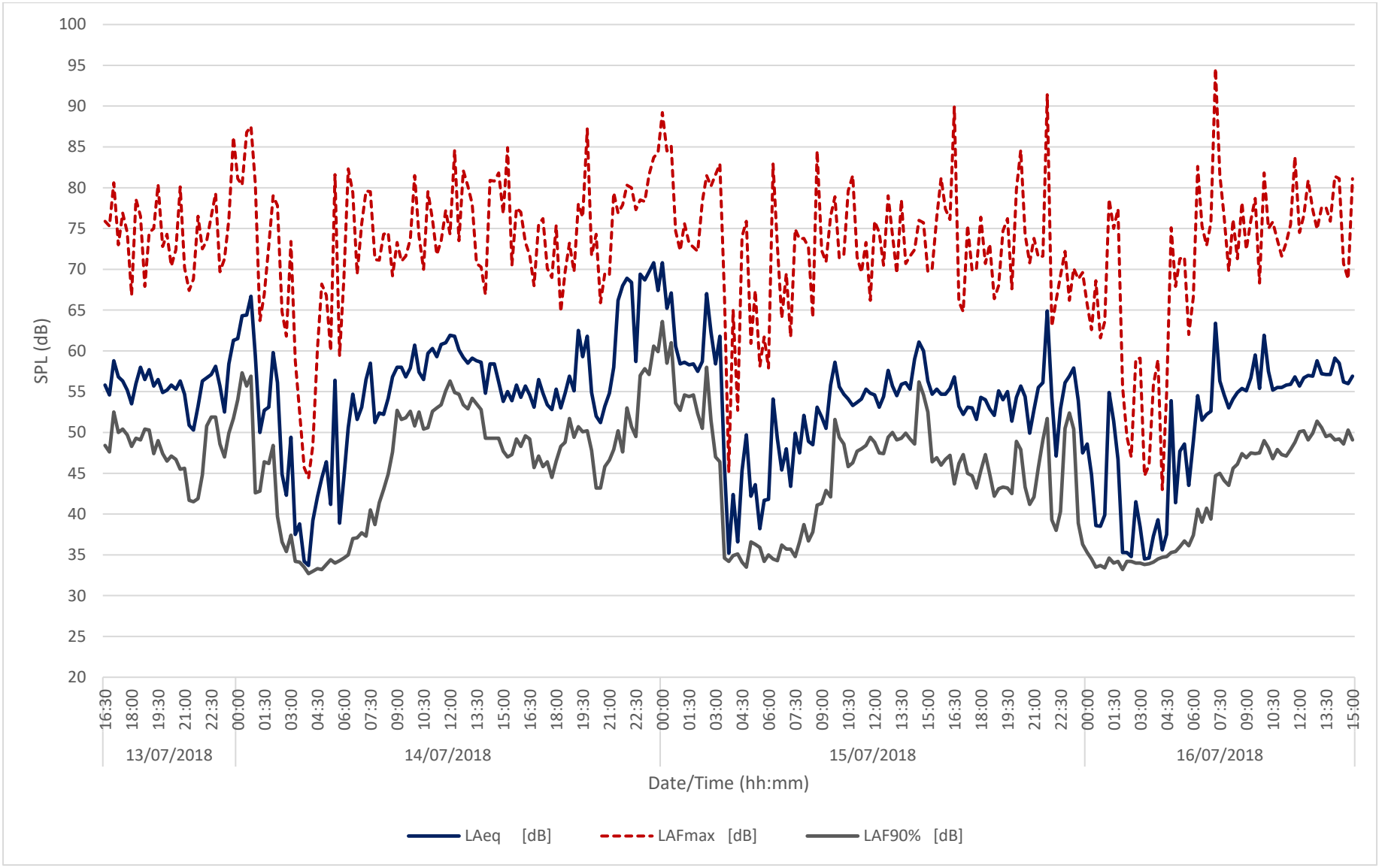


Figure B.4 – Statistical Analysis of Background Sound Levels Measured at Position A

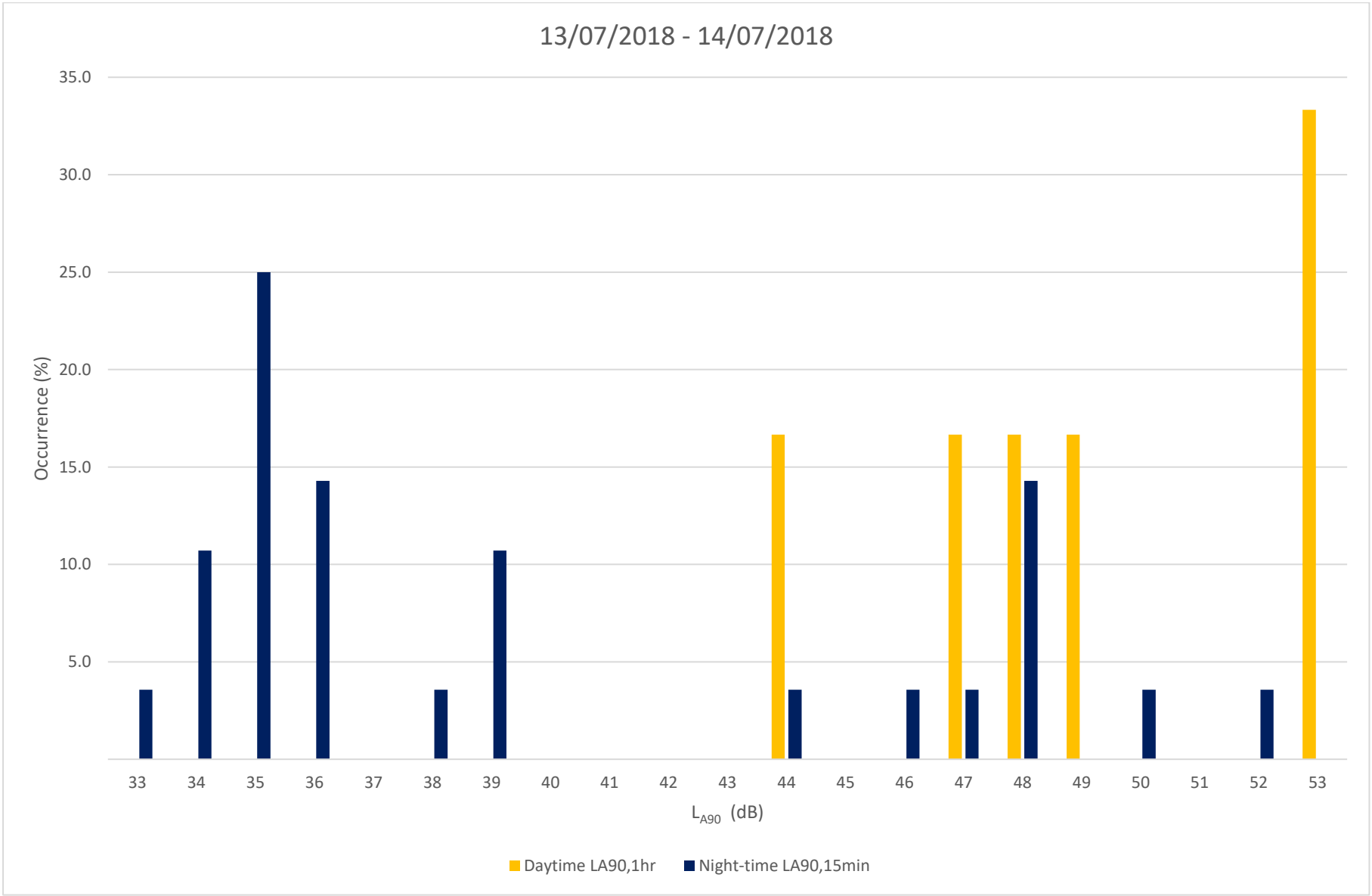


Figure B.5 – Statistical Analysis of Background Sound Levels Measured at Position A

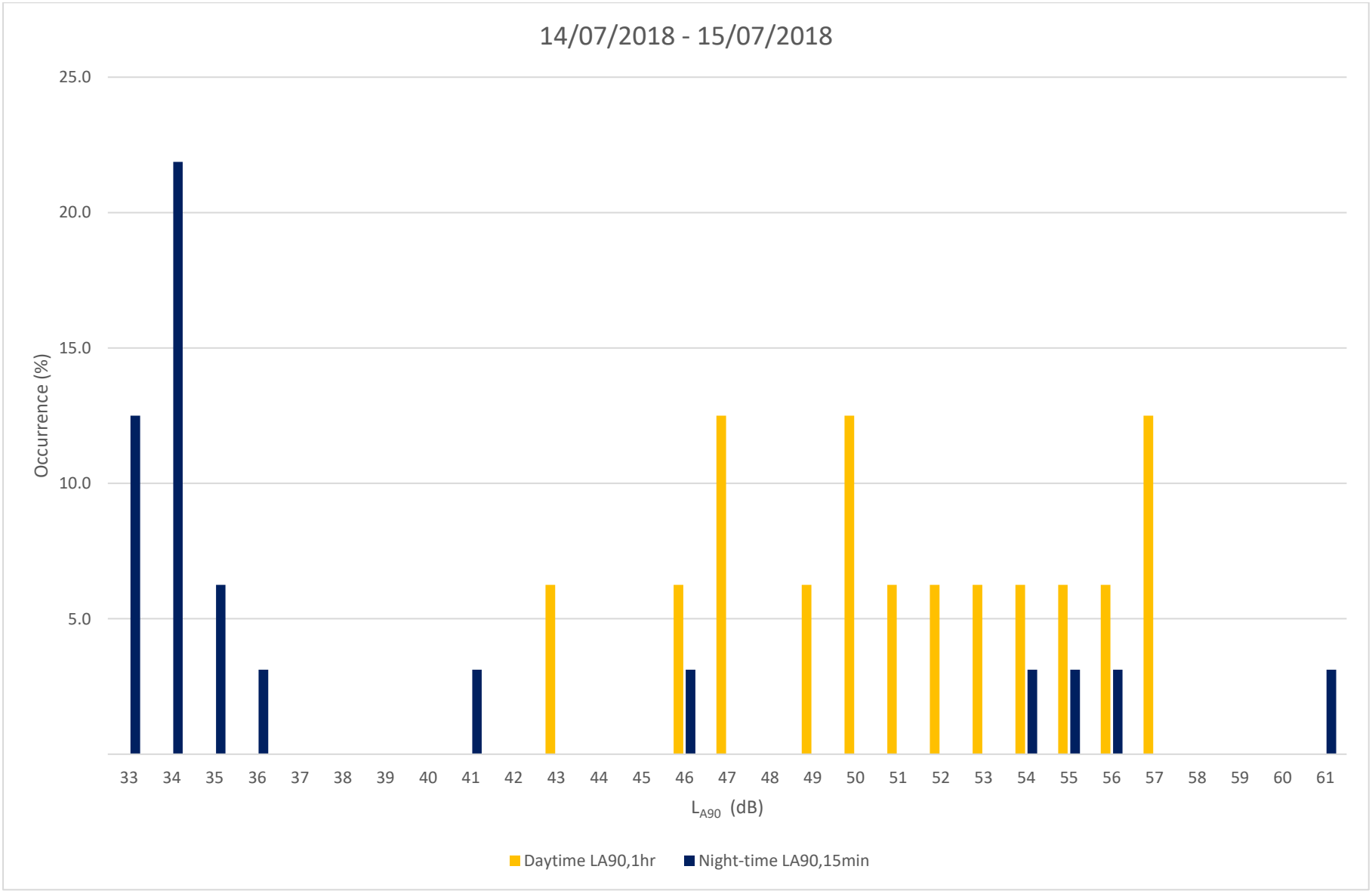


Figure B.6 – Statistical Analysis of Background Sound Levels Measured at Position A

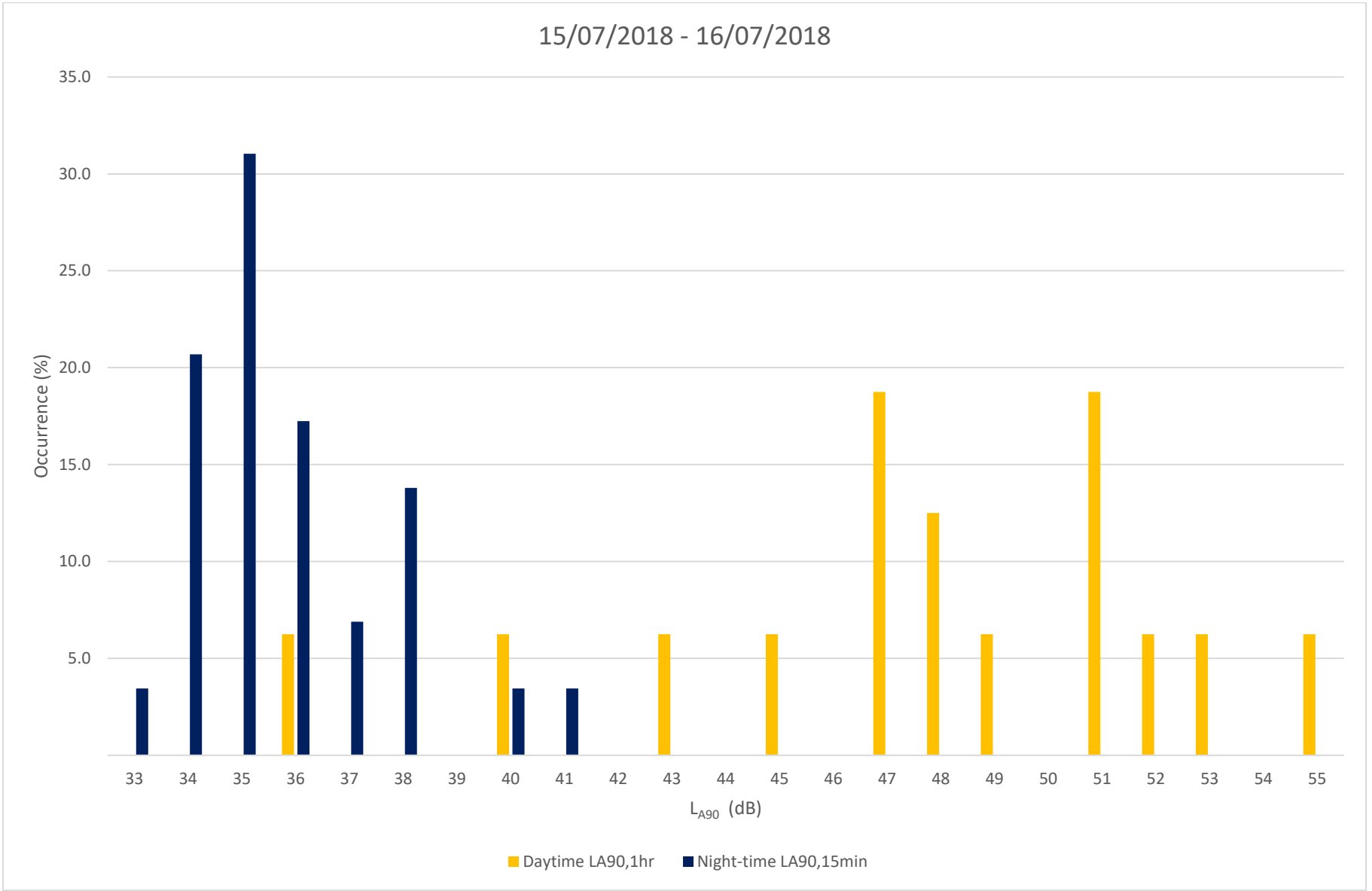


Figure B.7 – Statistical Analysis of Background Sound Levels Measured at Position A

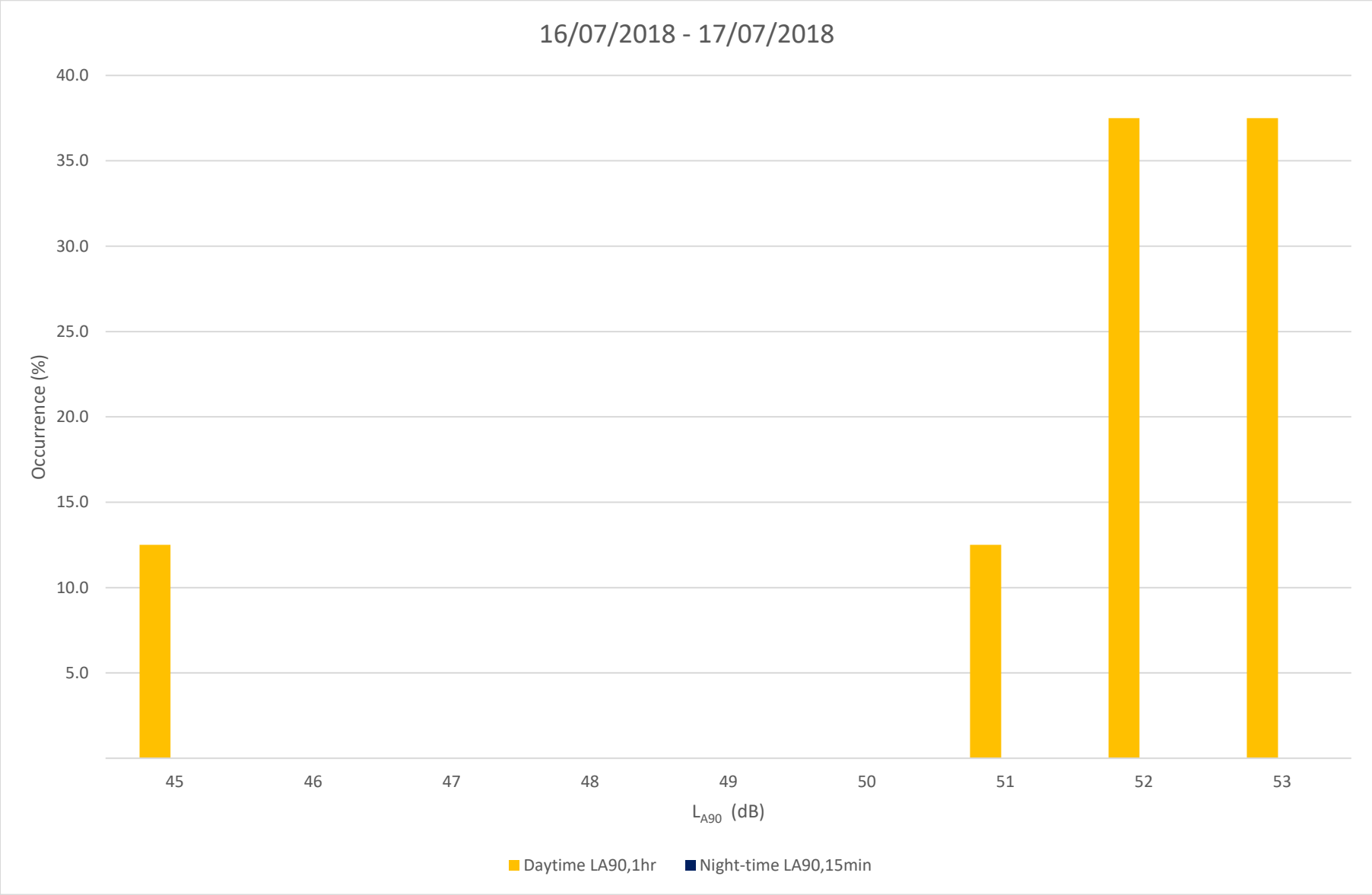


Figure B.8 – Statistical Analysis of Background Sound Levels Measured at Position B

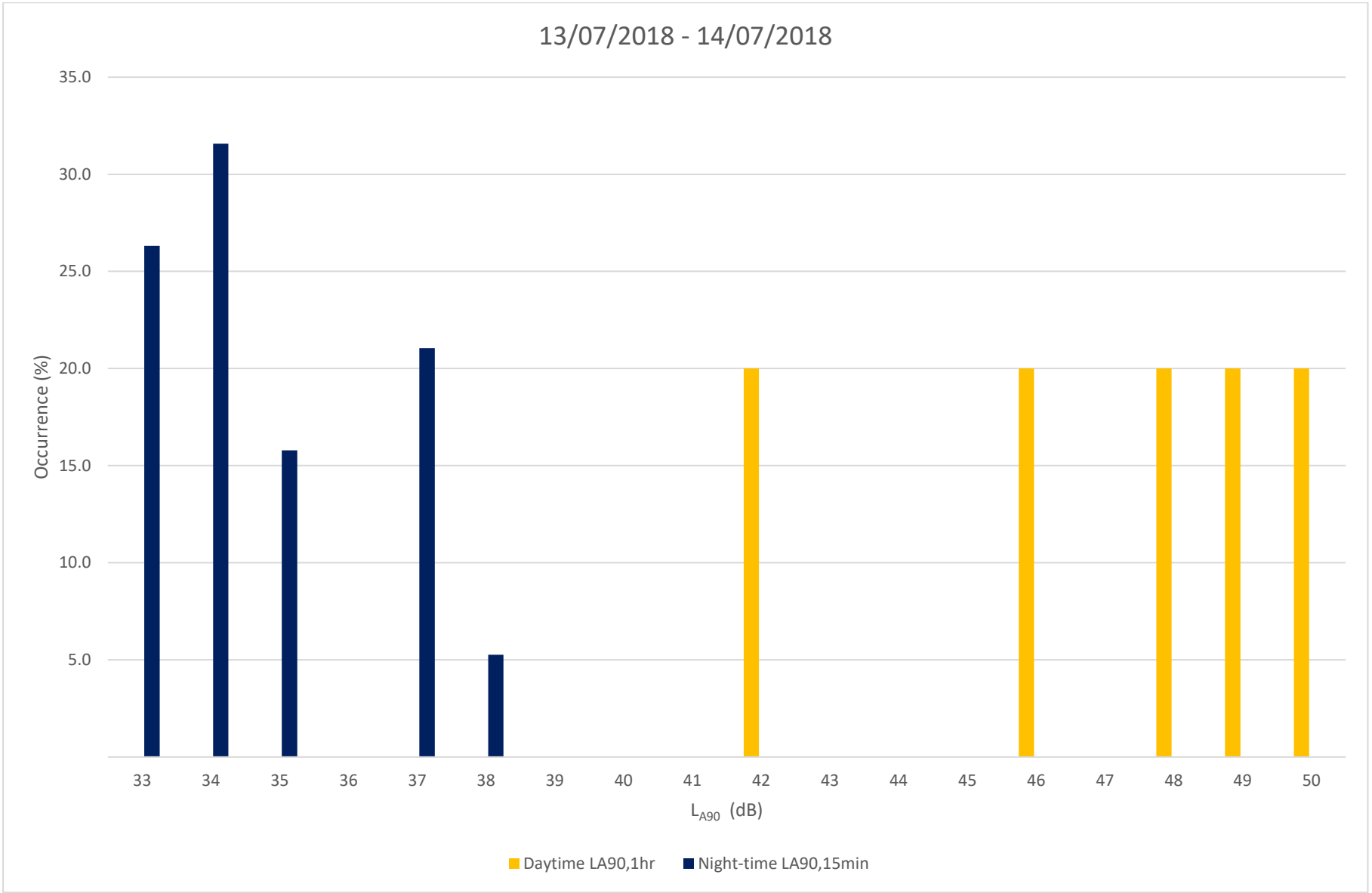


Figure B.9 – Statistical Analysis of Background Sound Levels Measured at Position B

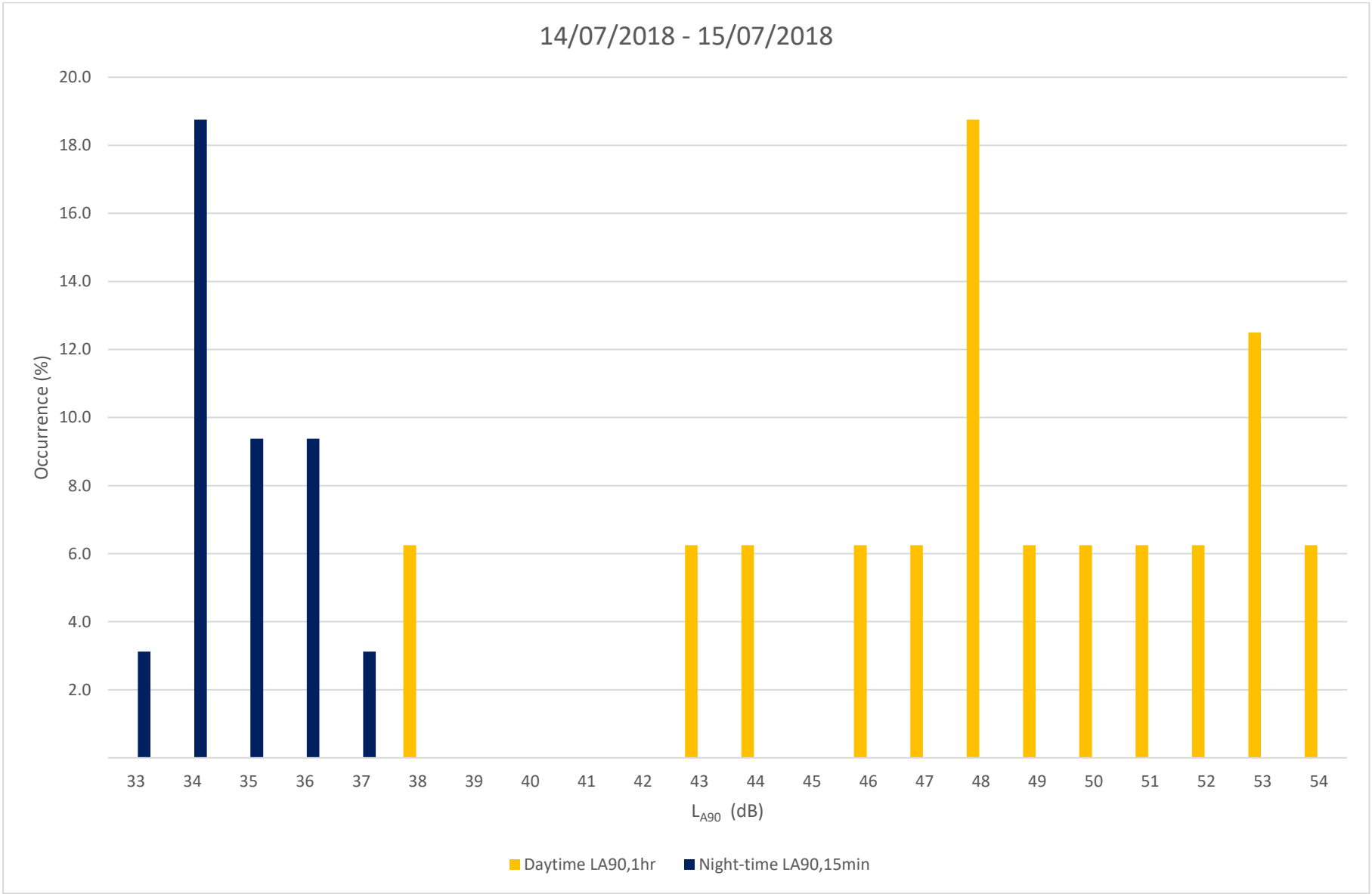


Figure B.10 – Statistical Analysis of Background Sound Levels Measured at Position B

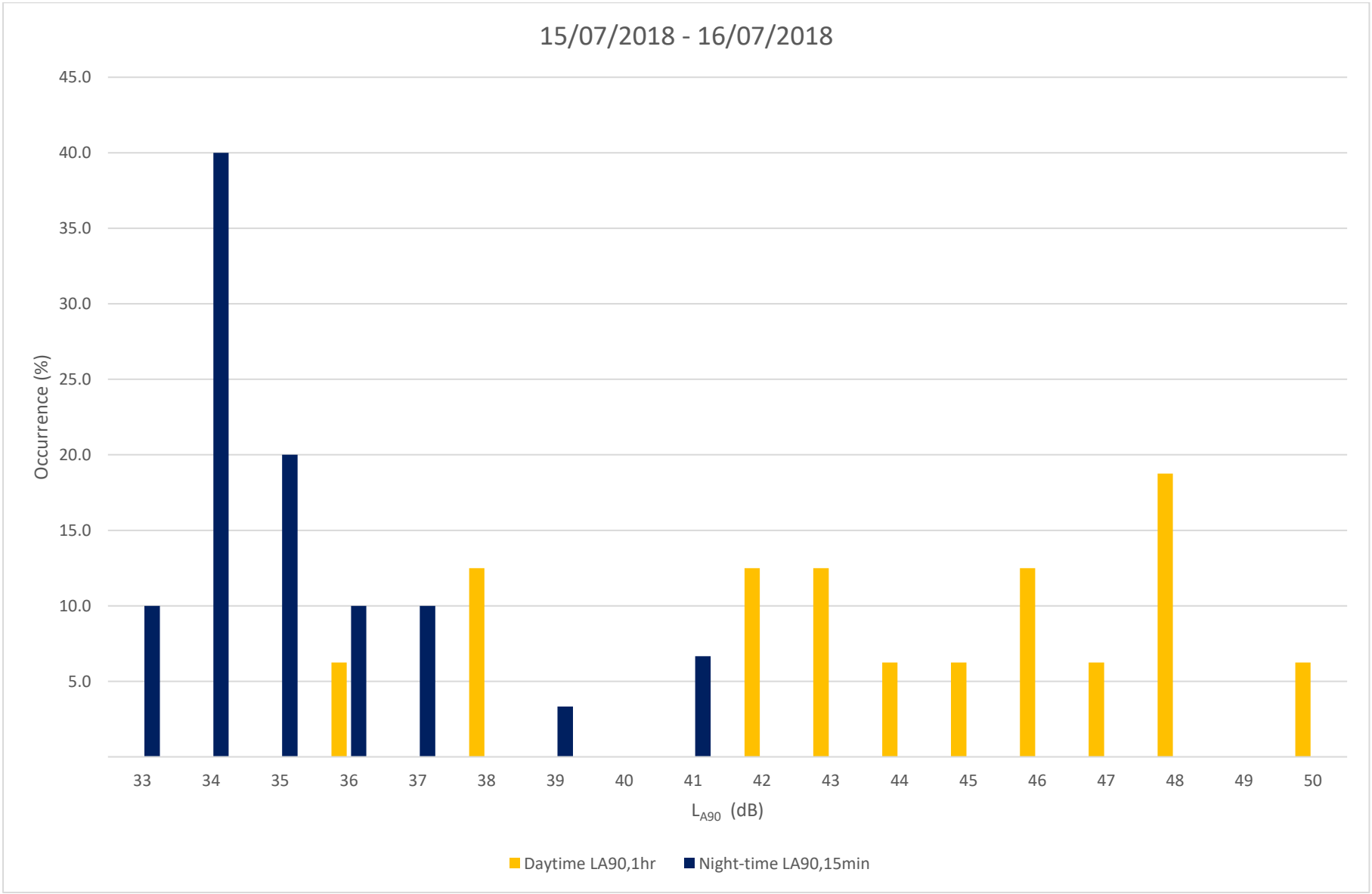


Figure B.11 – Statistical Analysis of Background Sound Levels Measured at Position B

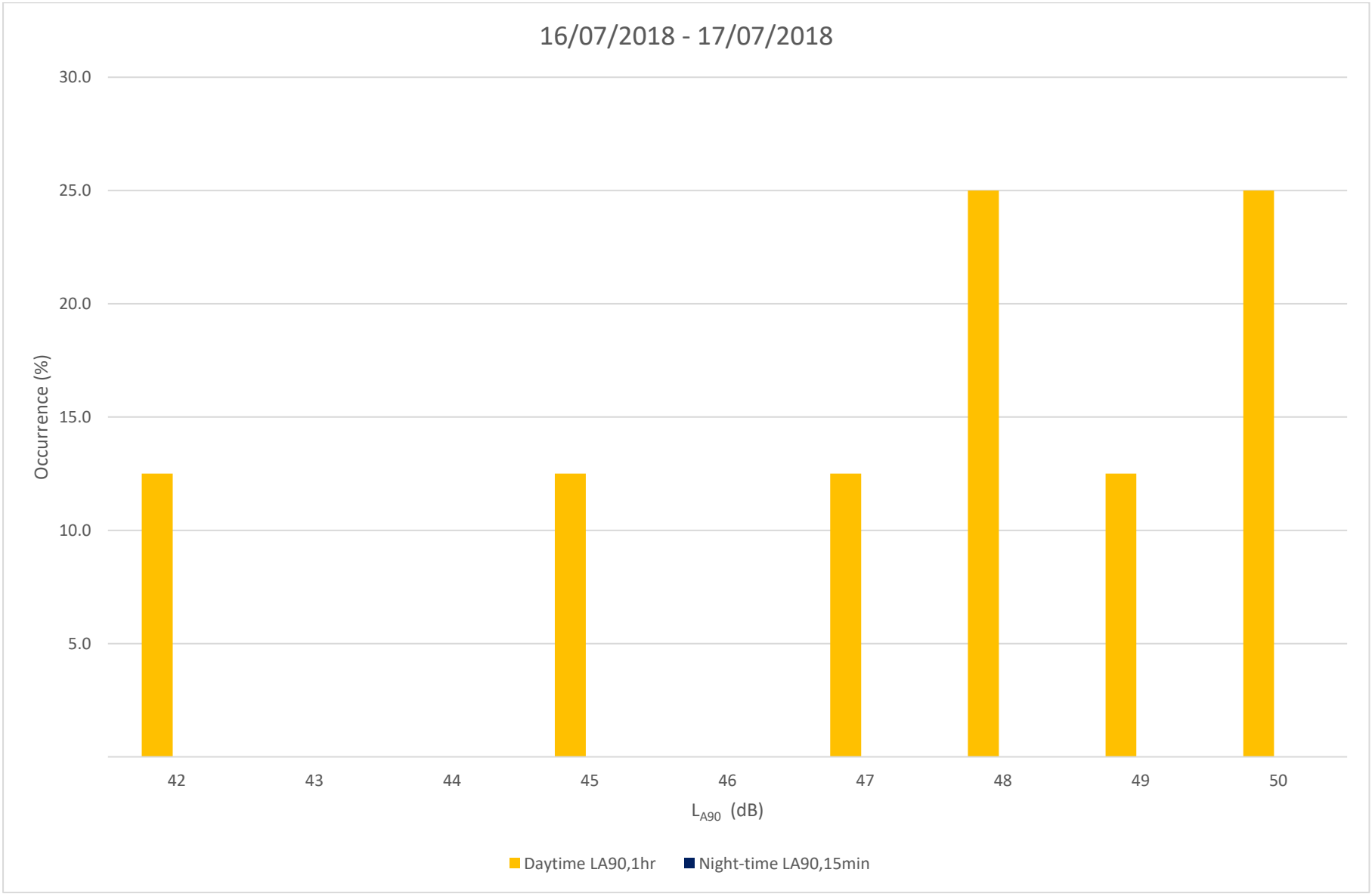


Table B.1 – BS 4142:2014 Assessment of Delivery Activity Daytime Hours (Weekday)

Results		Relevant Clause	Commentary
Hunter Acoustics Delivery Noise Data	$L_{Aeq,1hr}$ = 57dB	7.3.2	Measured @ 5m time corrected to 1hr
Residual sound level	L_{Aeq} = N/A	7.3.3	No correction for residual sound level is applied as we are working from a source delivery sound level measured at 5m distance
Background sound level (daytime)	$L_{A90(0730\text{-}2200hrs)}$ = 52dB	8.1.1 8.1.3 8.3	Typical background sound level measured at Position A
Assessment made during the daytime so the reference time interval is 1hr.		7.2	
Specific sound level calculated by correcting the ambient sound level to remove the contribution of the residual sound level.	$L_{Aeq,1hr}$ = 57dB	7.3.4	
Acoustic feature correction	3dB	9.2	Estimated penalty for impulsivity with noise management procedures in place
Distance Correction	0dB		No Distance correction to 1st floor apartments
Rating Level	(57 + 3) = 60dB		
Background sound level (daytime)	$L_{A90(0730\text{-}2000hrs)}$ = 52dB	8.3	
Excess of rating over background sound level	(60 - 52) dB = 8dB	11	
		11	At 8dB above background BS 4142:2014 advises an adverse impact dependant on context. Context is discussed in Section 4.1
Uncertainty of assessment		10	Uncertainty in background noise measurements is considered low.

Table B.2 – BS 4142:2014 Assessment of Delivery Activity Daytime Hours (Weekend)

Results		Relevant Clause	Commentary
Hunter Acoustics Delivery Noise Data	$L_{Aeq,1hr}$ = 57dB	7.3.2	Measured @ 5m time corrected to 1hr
Residual sound level	L_{Aeq} = N/A	7.3.3	No correction for residual sound level is applied as we are working from a source delivery sound level measured at 5m distance
Background sound level (daytime)	$L_{A90(0730\text{-}0800hrs)}$ = 47dB	8.1.1 8.1.3 8.3	Typical background sound level measured at Position A
Assessment made during the daytime so the reference time interval is 1hr.		7.2	
Specific sound level calculated by correcting the ambient sound level to remove the contribution of the residual sound level.	$L_{Aeq,1hr}$ = 57dB	7.3.4	
Acoustic feature correction	3dB	9.2	Estimated penalty for impulsivity with noise management procedures in place
Distance Correction	0dB		No Distance correction to 1st floor apartments
Rating Level	(57 + 3) = 60dB		
Background sound level (daytime)	$L_{A90(0730\text{-}0800hrs)}$ = 47dB	8.3	
Excess of rating over background sound level	(60 - 47) dB = 13dB	11	
		11	At 13dB above background BS 4142:2014 advises a likely indication of a significant adverse impact dependant on context. Context is discussed in Section 4.1
Uncertainty of assessment		10	Uncertainty in background noise measurements is considered low.

APPENDIX C – DELIVERY GOOD PRACTICE GUIDE

The following is taken from The Department of Transport's Good Practice Guidance – Key Principals and Processes for Freight operators (April 2014):

How to introduce a Quiet Deliveries Scheme
Menu of Measures for Retailers and Freight Operators
(based on Transport for London's code of practice for quieter out-of-hours deliveries)

General guidance – activities mainly within your control

- Think about the potential noise impact of any out-of-hours activity on local residents, and review the likely sources and consider how to address these by:
- Using newer and quieter delivery vehicles and equipment, where possible
- Making sure all equipment – both on the vehicle and at the delivery point – is in good working order and maintained or modernised to minimise noise when in operation
- Ensuring all staff involved in delivery activity are briefed and trained appropriately, in accordance with the code of practice
- Ensuring all suppliers and carriers receive copies of the code and are aware of its importance

General guidance – activities that you will need to collaborate on

- Liaising with your local Borough/District Council and contacting the Environmental Health Officer (responsible for noise issues) to explain the plans to manage night-time delivery and servicing activity. This needs to happen in partnership with your key customer/retailer.
- Liaising with your local Borough/District Council and contacting the Planning Department to identify and help address any variations to planning conditions required and the process for carrying this out. This needs to happen in partnership with your key customer/retailer.
- Liaising with clients, colleagues, other local businesses, suppliers and carriers to minimise the likelihood of more than one vehicle arriving at the same time

Ensure all drivers/deliveries/loading/unloading personnel follow the guidance below:

The delivery point

- Ensure delivery bay doors, gates and shutters are well maintained to minimise noise when opening and closing
- Switch off any external tannoy systems
- Avoid using external bells at delivery points
- Switch off the radio when delivery point doors are open
- Ensure the delivery point and surrounding areas are clear of obstructions so vehicles can manoeuvre easily
- Keep doors other than the delivery point closed to ensure noise does not escape
- Where possible, prepare all empty handling units, salvage and returns behind closed doors. Check they are in the correct condition and position and at the

right height before taking them out. This will minimise outdoor activity and unnecessary noise
- Think about how to minimise contact between hard surfaces, particularly metal on metal, during the unloading/loading processes. For example, use rubber matting and buffering material on doors
- Service any delivery equipment in advance to minimise noise
- Make sure the delivery point is ready for the vehicle before it arrives – gates and doors should be open to avoid the vehicle idling
- Make sure the driver knows the precise location of your delivery point and is aware of any local access issues
- Ensure staff do not shout or whistle to get the attention of the driver

The driver

- Plan ahead to ensure you know the location of the delivery point and the appropriate access route
- Adjust or restrict routings for evening/night-time deliveries to avoid housing areas
- If early for your delivery slot, do not wait near residential property and switch off the engine
- As you approach the site and manoeuvre your vehicle into position, remain aware of the effect noise levels can have on local residents
- Do not sound your horn
- Reversing alarms should be switched off or modified for white noise, if not subject to health and safety requirements or localised risk assessment issues (e.g. proximity to a cycle route). Use a qualified banksman instead, if available
- Engines should be switched off immediately when not manoeuvring, however, try to minimise start-ups and avoid over-revving
- Refrigeration equipment should be switched off in advance of arrival at premises
- If the radio is on, ensure the cab windows are closed and switch the radio off before opening the door
- Minimise the frequency of opening and closing vehicle doors, and do so quietly
- Allow extra time if needed to unload as quietly as possible. Take particular care to minimise rattle from metal-on-metal contact when moving roll cages
- Where practical, notify staff at the delivery point in advance of arrival to ensure they are ready for you
- Be aware of how far your voice can carry when talking outside at night
- If opening a gate/cellar flap/roller shutter door to gain access, do so gently and as little as possible
- Lower flaps on tail-lifts carefully and quietly
- Do not whistle or shout to get the attention of store employees
- When moving gates, locks and load restraint bars ensure they are placed gently in their resting position/stowage point – do not drop or drag them on the ground
- When safe to do so, use sidelights rather than headlights while off-road and manoeuvring, to minimise light intrusion
- Minimise excessive air brake noise

APPENDIX D - DRAWING LISTS

The following Easy Living drawings and documents have been used in our assessment:

Table D.1 – Drawing List

Drawing Title	Drawing Number	Rev	Date
Proposed Ground Floor Plan	Apr 2024	1047 – 02	L
Proposed First Floor Plan	Apr 2024	1047 – Draft	-
Proposed Second Floor Plan	Apr 2024	1047 – 04	L
Proposed Third Floor Plan	Apr 2024	1047 – 05	K
Proposed Fourth Floor Plan	Apr 2024	1047 – 06	I
Proposed Roof Plan	Apr 2024	1047 – 07	E
Proposed Section A-A	Nov 2023	1047 – 08	B
Proposed Section B-B	Mar 2024	1047 – 09	D
Proposed Section C-C	Mar 2023	1047 – 10	D
Proposed Elevations	Sep 2023	1047 – 12	D
Proposed Elevations	Oct 2023	1047 – 13	D