DOVE VALLEY PARK

Planning Report – Noise Assessment (Plot 10)

Prepared for: Dove Valley Park Ltd and OGM Ltd

Client Ref:13253

SLR Ref: 404.11923.00004_Noise
Version No:2
August 2022

BASIS OF REPORT

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1.0 Introduction

SLR Consulting Limited (SLR) has been appointed to prepare a noise assessment in relation to Plot 10 of the Dove Valley Park site.

The noise assessment is provided in relation to the full planning application for the site, which is to provide:

> *"Full planning application proposing the erection of 2no. employment buildings (Use Class B8, B2 and Ancillary E(g) at Plots 10a and 10b with associated landscaping, drainage, car parking, refuse stores and other infrastructures."*

The assessment is based on the results of a noise survey carried out at locations representative of the nearest Noise Sensitive Receptors (NSR) to the site over representative daytime and night-time periods and is in accordance with the National Planning Policy Framework (NPPF).

The following assessment is presented:

- An assessment undertaken to BS4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound.*

The report is structured as follows:

- Site and Development Description.
- Consultation and Guidance.
- Baseline Noise Survey Results.
- BS41422014+A1:2019 Assessment and Discussion.

Whilst reasonable effort has been made to make this report easily understandable, it is technical in nature; to assist the reader, a glossary of terminology is included in **Appendix 01**.

2.0 Site and Development Description

2.1 Existing Site

The Site is located in part of the Dove Valley Park commercial area, off the A511 as shown in Figure 2-1 below. In summary the site is:

- Bound to the west by the A511.
- Bound to the north by the A52 and commercial premises beyond.
- Bound to the east by a small body of water, with agricultural fields and residential properties beyond.
- Bound to the south by a residential property and agricultural fields beyond.

The nearby noise sensitive receptors (NSR) to the site are also identified on Figure 2-1 as:

- NSR1 – Common House Farm (residential dwelling).
- NSR2 – The Lodge (residential dwelling).
- NSR3 – Residential dwelling along Uttoxeter Road.

Figure 2-1
Site Location

2.2 Proposed Site

The proposed site plan can be seen in **Appendix 02**.

In summary the development would include the following:

- Two buildings for Class B8, B2 and Ancillary E(g) use with associated landscaping, drainage, car parking, refuse stores and other infrastructure, with internal floor areas totalling circa 19,654 sqm.

Access to the site would be from Park Avenue off the A511.

3.0 Guidance

Prior to undertaking the assessment, email correspondence was undertaken between SLR and South Derbyshire Council (SDC).

It was confirmed by SDC on 29th March 2022 that an assessment in accordance with BS4142 with a rating level equal to or below the existing measured background sound would be acceptable, depending upon the context.

Relevant sections of applicable British Standards are detailed below.

3.1 British Standard 4142:2014+A1:2019

British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* (BS4142) is intended to be used to assess the potential adverse impact of sound, of an industrial and/or commercial nature, at nearby noise-sensitive receptor locations within the context of the existing sound environment.

Where the specific sound contains tonality, impulsivity and/or other sound characteristics, penalties should be applied depending on the perceptibility. For tonality a correction of either 0, 2, 4 or 6 dB should be added and for impulsivity a correction of either 0, 3, 6 or 9 dB should be added. If the sound contains specific sound features which are neither tonal nor impulsive, a penalty of 3 dB should be added.

In addition, if the sound contains identifiable operational and non-operational periods, that are readily distinguishable against the existing sound environment, a further penalty of 3 dB may be applied.

The assessment of impact contained in BS4142 is undertaken by comparing the sound rating level, i.e. the specific sound level of the source plus any penalties, to the measured representative background sound level immediately outside the noise-sensitive receptor location. Consideration is then given to the context of the existing sound environment at the noise-sensitive receptor location to assess the potential impact.

Once an initial estimate of the impact is determined, by subtracting the measured background sound level from the rating sound level, BS4142 states that the following should be considered:

- typically, the greater the difference, the greater the magnitude of the impact;
- a difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- a difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context; and
- 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. It is an indication that the specific sound source has a low impact, depending on the context.

BS4142 notes that:

"Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."

BS4142 outlines guidance for the consideration of the context of the potential impact including consideration of the existing residual sound levels, location and/or absolute sound levels.

To account for the acoustic character of proposed sound sources, BS4142 provides the following with respect to the application of penalties to account for *"the subjective prominence of the character of the specific sound at the noise-sensitive locations and the extent to which such acoustically distinguishing characteristics will attract attention".*

- **Tonality** – *"For sound ranging from not tonal to predominantly tonal the Joint Nordic Method gives a correction of between 0 dB and +6 dB for tonality. Subjectively, this can be converted to a penalty of 2 dB for a tone which is just perceptible at the noise receptor, 4 dB where it is clearly perceptible and 6 dB where it is highly perceptible;*
- **Impulsivity** – *A correction of up to +9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3 dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible;*
- **Intermittency** – *When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied; and*
- **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 3 dB can be applied."*

Finally, BS4142 outlines guidance for the consideration of the context of the potential impact including consideration of the existing residual sound levels, location and/or absolute sound levels.

3.2 Design Manual for Roads and Bridges (DMRB) Volume LAN111 – Noise and Vibration

Traffic generated by the proposals may alter noise levels near the affected network. In accordance with the Design Manual for Roads and Bridges Volume (DMRB) LA111 Noise and Vibration, SLR would undertake an assessment to include all roads where it is anticipated that noise from traffic may change.

For each link the Basic Noise Level (BNL) will be established for the “With Scheme” and “Without Scheme” Scenarios for the year that traffic data is provided. The BNL is the $L_{A10,\ T}$ dB noise level at 10 m from the kerb of the road assessed.

The BNL results for each link will be tabulated and the impact will be determined with reference to Table 3-1.

Table 3-1
DMRB LAN 111 Impact Scale

Magnitude	Noise Change $L_{A10,18hr}$ dB
High	5.0+
Medium	3.0 – 4.9
Low	1.0 – 2.9
Negligible	0.1 – 0.9

4.0 Baseline Survey Results

4.1 Survey Date

To determine baseline sound levels in the vicinity of the proposed development, a noise survey was undertaken between Thursday 31st March 2022 and Monday 4th April 2022.

4.2 Weather Conditions

During the survey, weather conditions were generally suitable for noise monitoring with conditions being dry and the wind speeds were generally less than 5m/s. The forecast was as shown on Figure 4-1.

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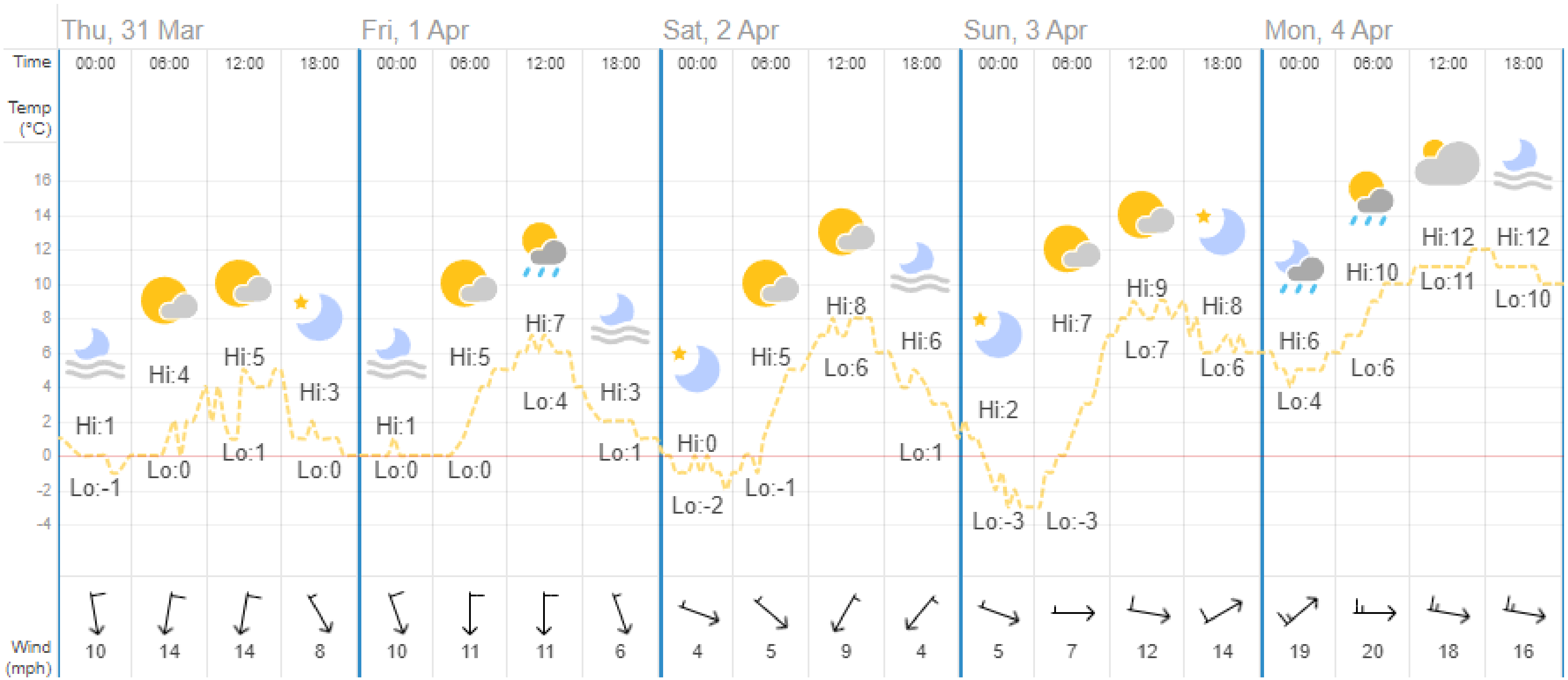
Figure 4-1
Weather Forecast



4.3 Equipment

The noise survey equipment used during the survey is detailed in Table 4-1. All measurement instrumentation was calibrated before and after the measurements. No significant drift was observed. The calibration chain is traceable via the United Kingdom Accreditation Service to National Standards held at the National Physical Laboratory.

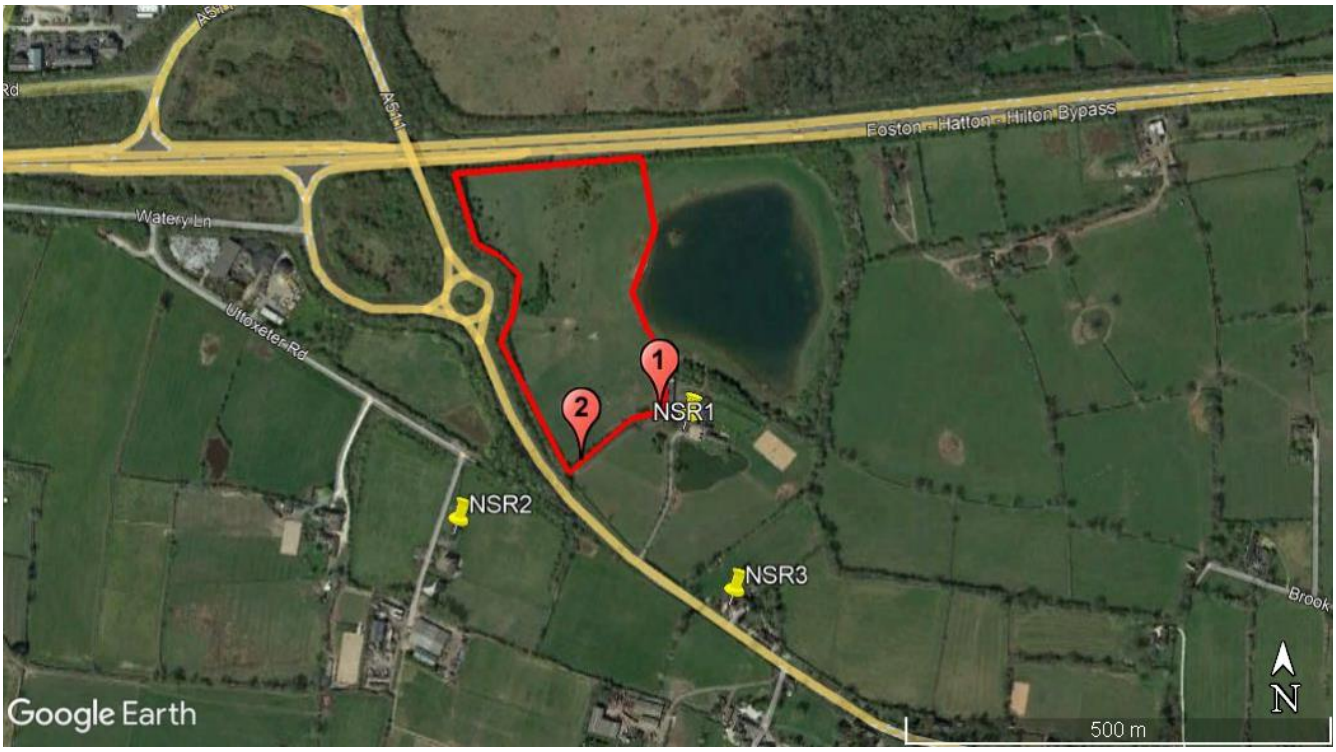
Table 4-1
Survey Equipment

Location	Equipment	Serial Number
Location 1	Cirrus CR:171B Class 1 Sound Level Meter	G301839
	Cirrus CR:515 Acoustic Calibrator	93674
Location 2	Cirrus CR:171B Class 1 Sound Level Meter	G0302667
	Cirrus CR:515 Acoustic Calibrator	94806

4.4 Survey Locations

Sound levels were measured at two locations around the Site as shown on Figure 4-2. Photographs of each monitoring position can be seen in **Appendix 03**.

Figure 4-2
Monitoring and Sensitive Receptor Locations



At the survey locations, the microphone was placed 1.5m above the local ground level in free-field conditions, i.e. at least 3.5m from the nearest vertical, reflecting surface. The following noise level indices were recorded:

- $L_{Aeq,T}$: The A-weighted equivalent continuous noise level over the measurement period.
- L_{A90}: The A-weighted noise level exceeded for 90% of the measurement period. This parameter is often used to describe background noise.
- L_{A10}: The A-weighted noise level exceeded for 10% of the measurement period. This parameter is often used to describe road traffic noise.
- L_{Amax}: The maximum A-weighted noise level during the measurement period.

4.5 Baseline Sound Level Results

A summary of the survey results at Location 1 is shown in Table 4-2. The full survey results are in **Appendix 04**.

Table 4-2
Location 1 - Summary of Measured Sound Levels, free-field, dB

Date	Time Period	L_{Aeq}	L_{AMax}	L_{A10}	Median $L_{A90,15min}$
Monday 4th April 2022	Night-Time (01:00 - 07:00)	58.5	75.8	56.5	48
	Daytime (07:00 - 15:00)	81.2	114.1	66.0	62

A summary of the survey results at Location 2 is shown in Table 4-3. The full survey results are in **Appendix 04**.

Table 4-3
Location 2 - Summary of Measured Sound Levels, free-field, dB

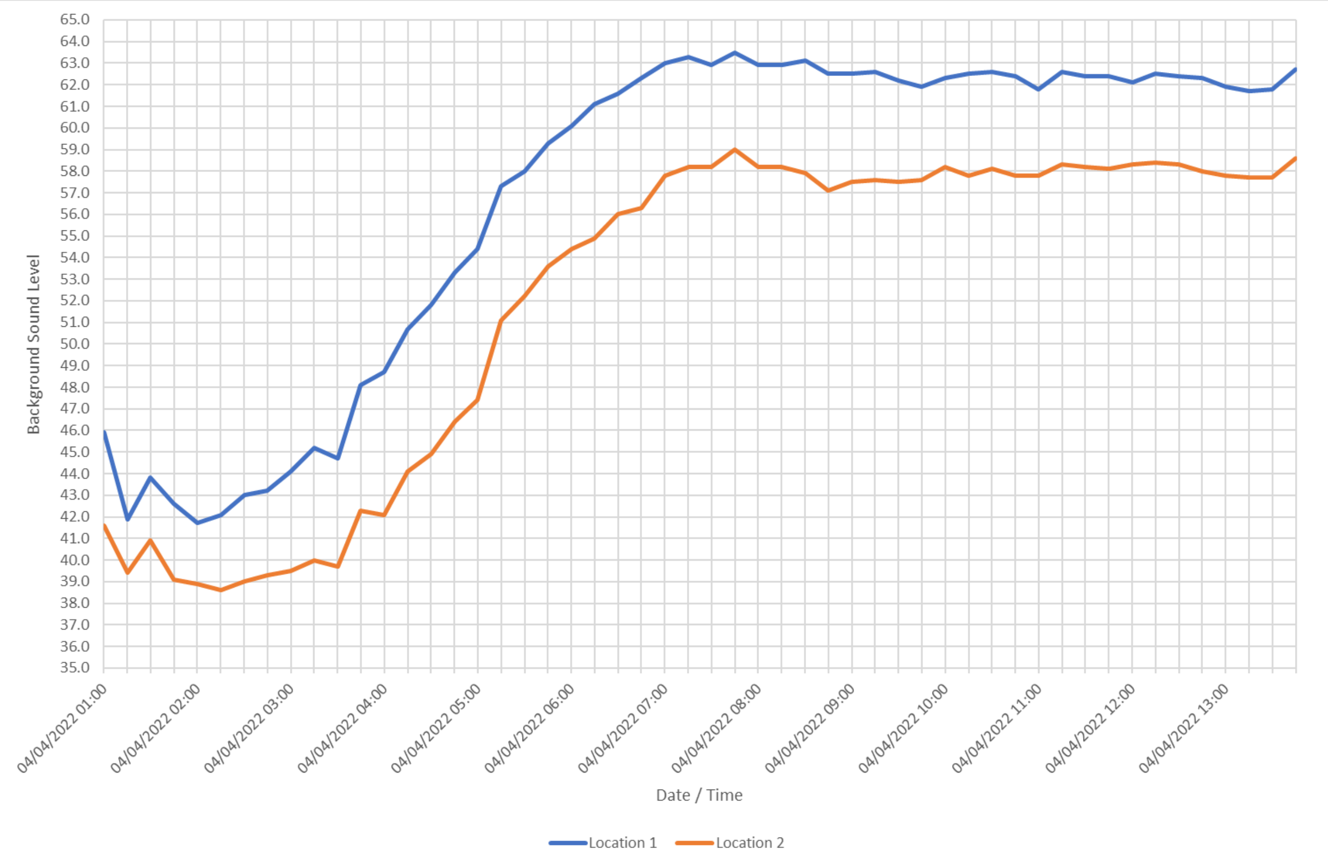
Date	Time Period, *T*	$L_{Aeq,T}$	L_{AMax}	$L_{A10,T}$	Median $L_{A90,15min}$
Thursday 31st March 2022	Daytime (13:00 - 23:00)	61.7	82.8	65.0	57
	Night-Time (23:00 - 07:00)	58.5	77.2	57.0	50
Friday 1st April 2022	Daytime (07:00 - 23:00)	61.6	90.1	64.0	58
	Night-Time (23:00 - 07:00)	55.3	75.6	56.0	47
Saturday 2nd April 2022	Daytime (07:00 - 23:00)	57.8	78.8	62.0	51
	Night-Time (23:00 - 07:00)	54.0	75.9	55.0	44
Sunday 3rd April 2022	Daytime (07:00 - 23:00)	57.9	87.5	61.5	52
	Night-Time (23:00 - 07:00)	56.4	75.5	50.0	42
Monday 4th April 2022	Daytime (07:00 - 23:00)	62.5	85.0	65.0	58

4.5.1 Discussion

Unfortunately, the sound level meter at monitoring location 1 did not record measurements over the whole survey period due to a meter fault. being no suitable place to leave equipment unattended. As such, measurements were undertaken at this position between 01:00 and 15:00 on Monday 4th April 2022.

SLR has compared the measured L_{A90} data during this timeframe with that obtained at Location 2 during the same period. The comparison can be seen in Figure 4-3.

Figure 4-3
Comparison of Measured Baseline Background Sound Levels



It can be seen from Figure 4-3 that the pattern of the measured baseline background sound level at Location 1 and Location 2 is similar with measured noise levels lower at Location 2. The average difference between the background sound levels measured at Location 1 and Location 2 over this period was 4.8 dB(A).

Therefore, SLR has adjusted the measured L_{A90} data at Location 2 by +4.8 dB(A) and presented the amended data in the results for Location 1. A correction has only been applied to the L_{A90} data as this is the parameter that will be used in the BS4142:2014+A1:2019 assessment. The results are shown in Table 4-3.

Table 4-4
Location 1 – Predicted Background Sound Levels, free-field, dB

Date	Time Period, *T*	Median $L_{A90,15min}$
Thursday 31st March 2022	Daytime	57
	Night-Time	50
Friday 1st April 2022	Daytime	58
	Night-Time	47
Saturday 2nd April 2022	Daytime	51
	Night-Time	44
Sunday 3rd April 2022	Daytime	52
	Night-Time	42
Monday 4th April 2022	Daytime	58

4.6 Baseline Background Sound Levels to use in the Assessment

Histograms of the daytime and night-time baseline background sound levels can be seen in **Appendix 05**.

From a review of the data the following baseline background sound levels will be used in the BS4142 assessment for each location.

Table 4-5 presents a summary of the baseline background sound levels measured / predicted at each of the monitoring locations, and the representative background sound level considered to apply to each location.

Table 4-5
Baseline Background Sound Levels for Assessment

Monitoring Location	NSR	Period	L_{A90} Range	L_{A90} Selected
1	NSR1	Daytime	50-63	55
		Night-Time	42-63	47
2	NSR2, NSR3	Daytime	43-61	50
		Night-Time	43-59	42

In accordance with BS4142, it is necessary to discuss the uncertainty associated with measured baseline sound levels. Baseline sound level measurement uncertainty was minimised using the following steps:

- Measurement locations were representative of the nearest noise-sensitive receptors to the site.
- Measurements were undertaken using a suitable logging period considered to provide representative background sound levels.
- The sound measurements included an extended period.
- Measurements were rounded to the nearest one decimal place before the final calculations.

- Instrumentation was appropriate and in accordance with Section 5 of BS4142.

4.6.1 Wind Speed and Background Noise Levels Comparison

Figure 4-5 and Figure 4-6 below, shows a comparison between the wind speed, and the measured background noise levels at location 1 and location 2 respectively.

Figure 4-4 – Wind Speed / LA90 Graph – Location 1

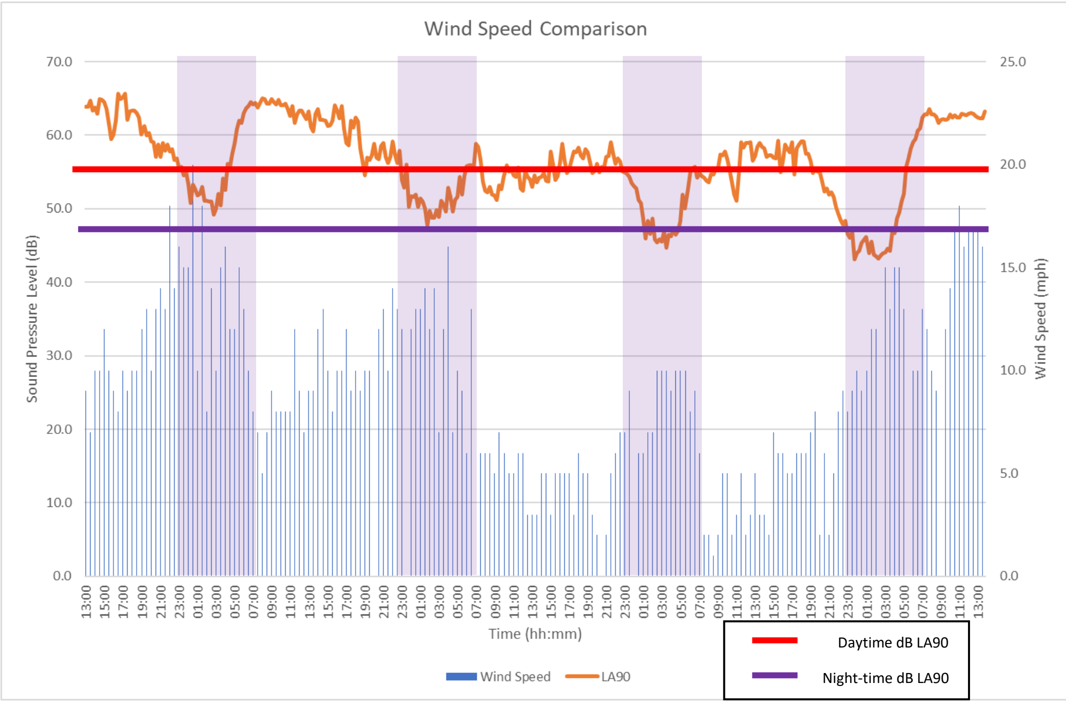
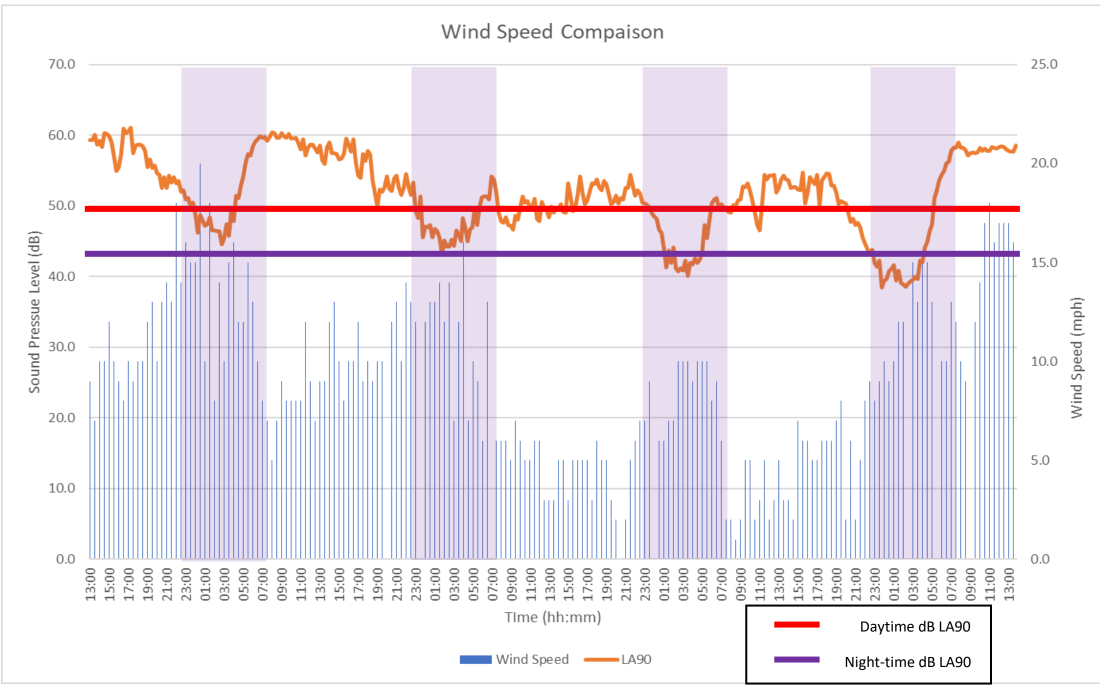


Figure 4-5 – Wind Speed / LA90 Graph – Location 2



In the figures above, the red line and the purple line represent the selected daytime and night-time background noise levels (LA90) respectively. The selected background noise levels are the lowest median for both the daytime and the night-time periods of the noise survey.

Figures 4-5 and 4-6 demonstrate that the selected background noise levels compared were measured during times where the windspeed was below 11mph (5m/s).

5.0 BS4142:2014+A1:2019 Assessment

This section of the Report determines the impact of the proposals upon the noise environment at the nearest NSRs to the Site.

5.1 Noise Model Assumptions

The sound predictions in this assessment have been undertaken using a proprietary software-based noise model, CadnaA, which implements the full range of UK calculation methods. The calculation algorithms set out in ISO 9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2 General method of calculation* have been used and the model assumes:

- A ground absorption factor of 0.5.
- A reflection factor of 2.
- A daytime receiver height of 1.5m.
- A night-time receiver height of 4m.
- Operations and noise sources have been used for both daytime and night-time

5.2 Noise Sources

The noise sources associated with the development are listed in Table 5-1.

It is noted that two specific noise levels are presented for HGVs: equivalent continuous noise levels, and maxima. These sources have been modelled separately i.e. a model to represent the equivalent continuous noise levels, and a separate model to represent the maxima.

Table 5-1
Noise Sources Plot 10

Area / Plant	Number / Attribute	Location	Time Period	Noise Level	Sound Power Level, L_W (dB), at Octave Band Centre Frequency								
					31.5Hz	63Hz	125Hz	250Hz	500Hz	1KHz	2KHz	4KHz	8KHz
Warehouse	1 per unit /Vertical and Area Sources	Warehouse / Industrial Building	Day time and Night-time	80.0 dBA[1]	-								
HGV Arrival / Departure[2]	19[3] per hour / Moving Point Source	Access Road to Docking/Parking Bays	Day time and Night-time	93.7 dB L_{WA}	98.9	89.1	89.5	92.0	91.2	88.9	86.5	80.3	71.1
HGV Arrival / Departure (Maxima)[4]	Moving Point Source ~15km/h	Access Road to Docking/Parking Bays	Daytime and Night-time	100.2 dB L_{WA}	-								
Car Arrival / Departure[5]	204[6] per hour / Moving Point Source	Access Road to Car Park	Day time and Night-time	80.2 dB L_{WA}	88.5	91.0	82.4	77.2	74.9	74.6	74.5	67.7	60.6
HGV Reversing with Beeper[7]	Number of bays 19 / Point Source[8]	Reversing in Bays	Day time and Night-time	80.5 dB L_{WA}	79.7	75.9	70.0	72.9	72.7	73.1	71.9	76.8	56.6
Oxidiser	1	Plot 10A, External	Day time and Night-time	80 dBA at 1m	-								

1 80 dBA as an internal reverberant sound pressure level within the warehouse. The walls and roof of the warehouse are assumed to be of sandwich panel constructions which would typically achieve a laboratory sound insulation performance of 25 dB R_w
2 Measured by SLR
3 2 per hour at unit 10A and 17 per hour at unit 10B
4 Measured by SLR
5 Measured by SLR
6 60 per hour at unit 10A and 144 per hour at unit 10B
7 Measured by SLR
8 1 minute on time over reference period

5.3 Specific Sound Level

The predicted sound levels of the noise sources associated with the proposals are shown in Table 5-2 below.

Daytime sound levels have been predicted at 1.5m above local ground level, which is the approximate height of a ground floor window. Night-Time sound levels have been predicted at 4m above local ground level, which is the approximate height of a first-floor window.

It is noted that only the predicted sound levels in terms of the equivalent A-weighted continuous level ($L_{Aeq,T}$) will be used to inform the BS4142 assessment presented in Section 5.5. A discussion in relation to the maximum noise levels is presented in Section

Table 5-2
Predicted Specific Sound Levels

Location	Period	Predicted Sound Level, $L_{Aeq,T}$	Predicted Sound Level from HGV Maxima, L_{Afmax}
NSR1	Daytime	40.5	53.0
	Night-Time	42.8	56.9
NSR2	Daytime	34.4	53.6
	Night-Time	36.8	53.2
NSR3	Daytime	32.9	46.6
	Night-Time	35.1	48.3

Graphical images of the predicted specific sound levels during daytime and night-time can be seen in Figure 5-1 through to Figure 5-4.

Figure 5-1
Daytime $L_{Aeq,T}$ Specific Sound Level at a Grid Height of 1.5m – dB(A)

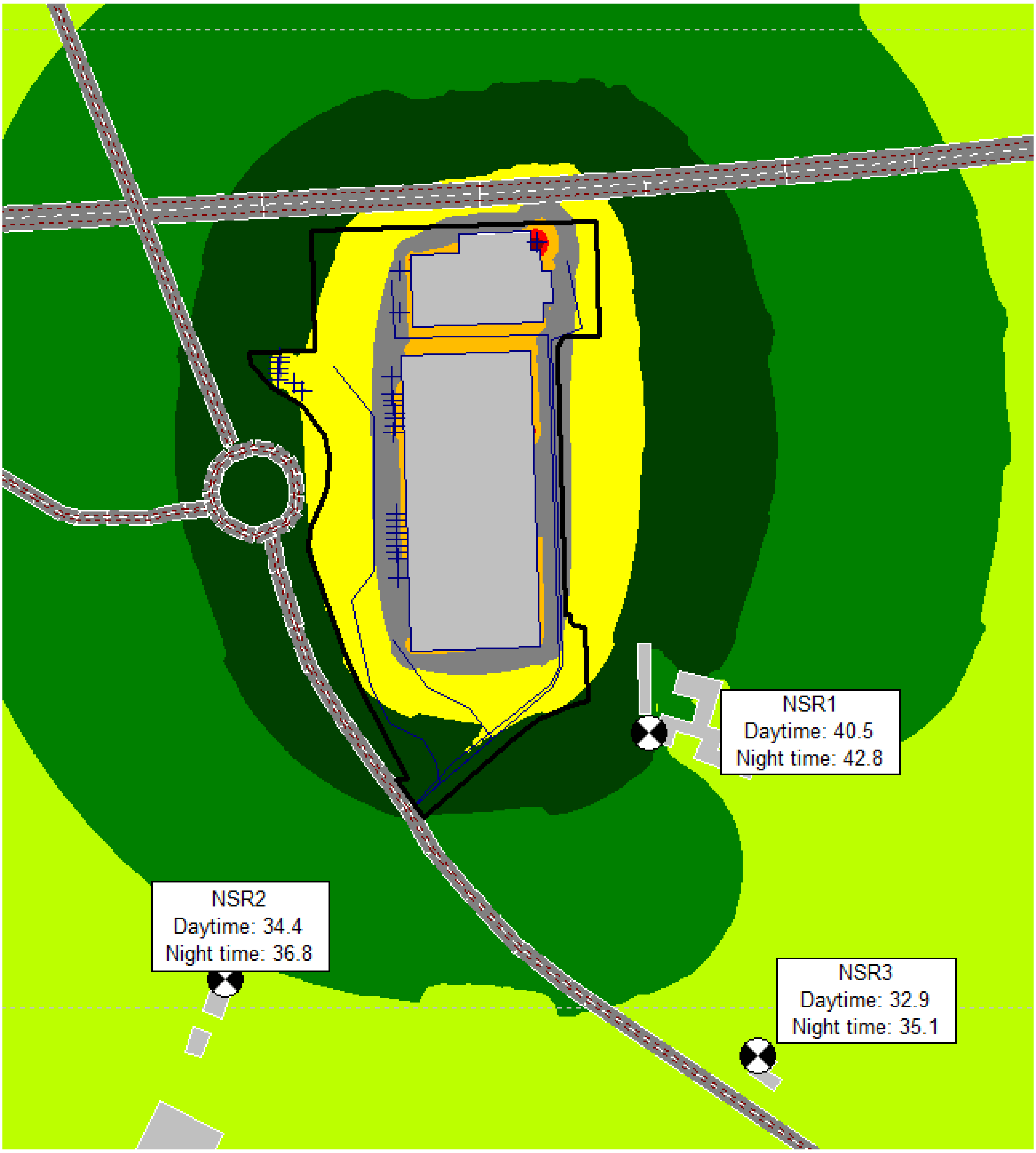


Figure 5-2
Night-Time $L_{Aeq,T}$ Specific Sound Level at a Height of 4m – dB(A)

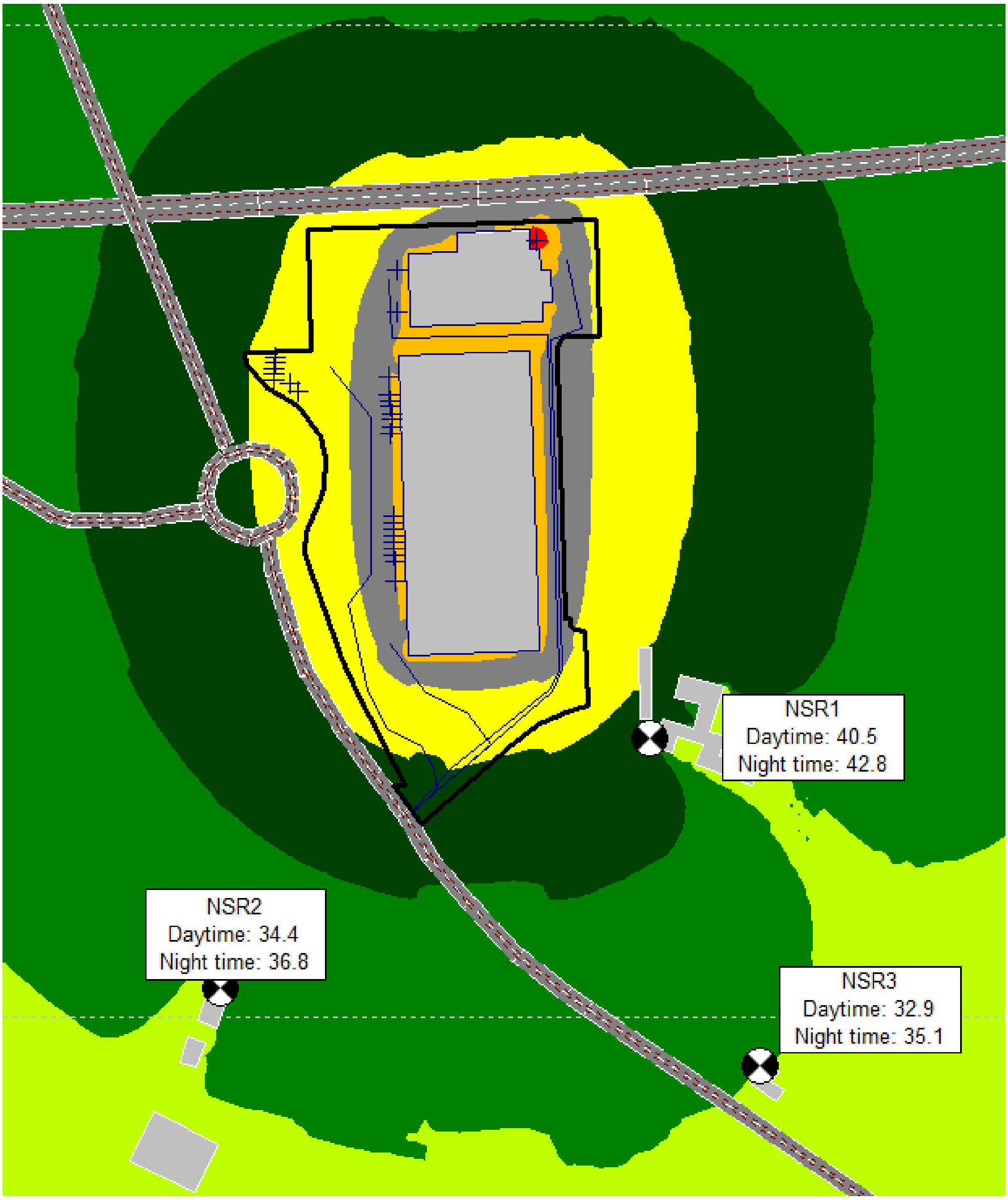


Figure 5-3
Daytime L_{Afmax} Level at a Grid Height of 1.5m – dB(A)

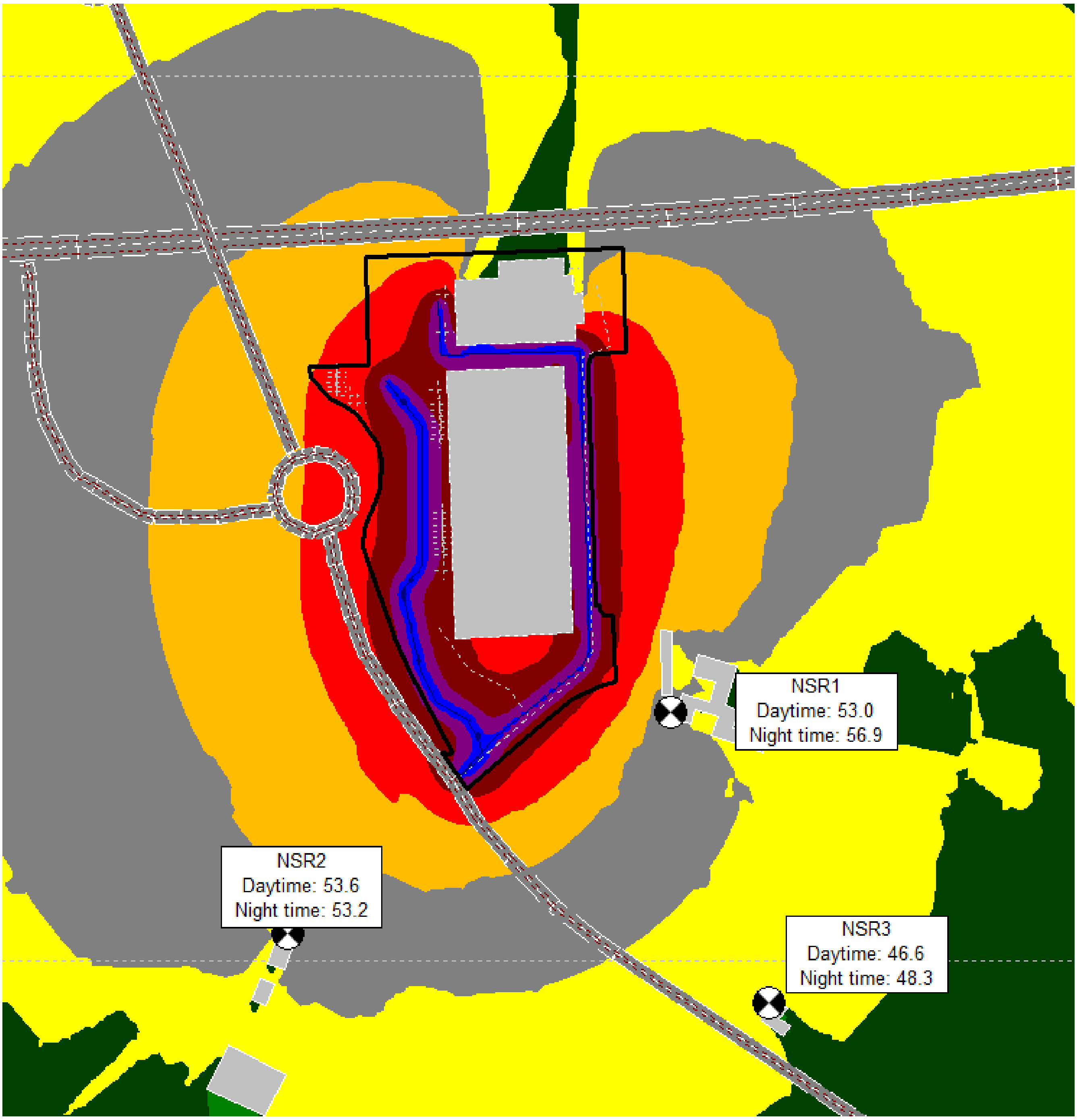
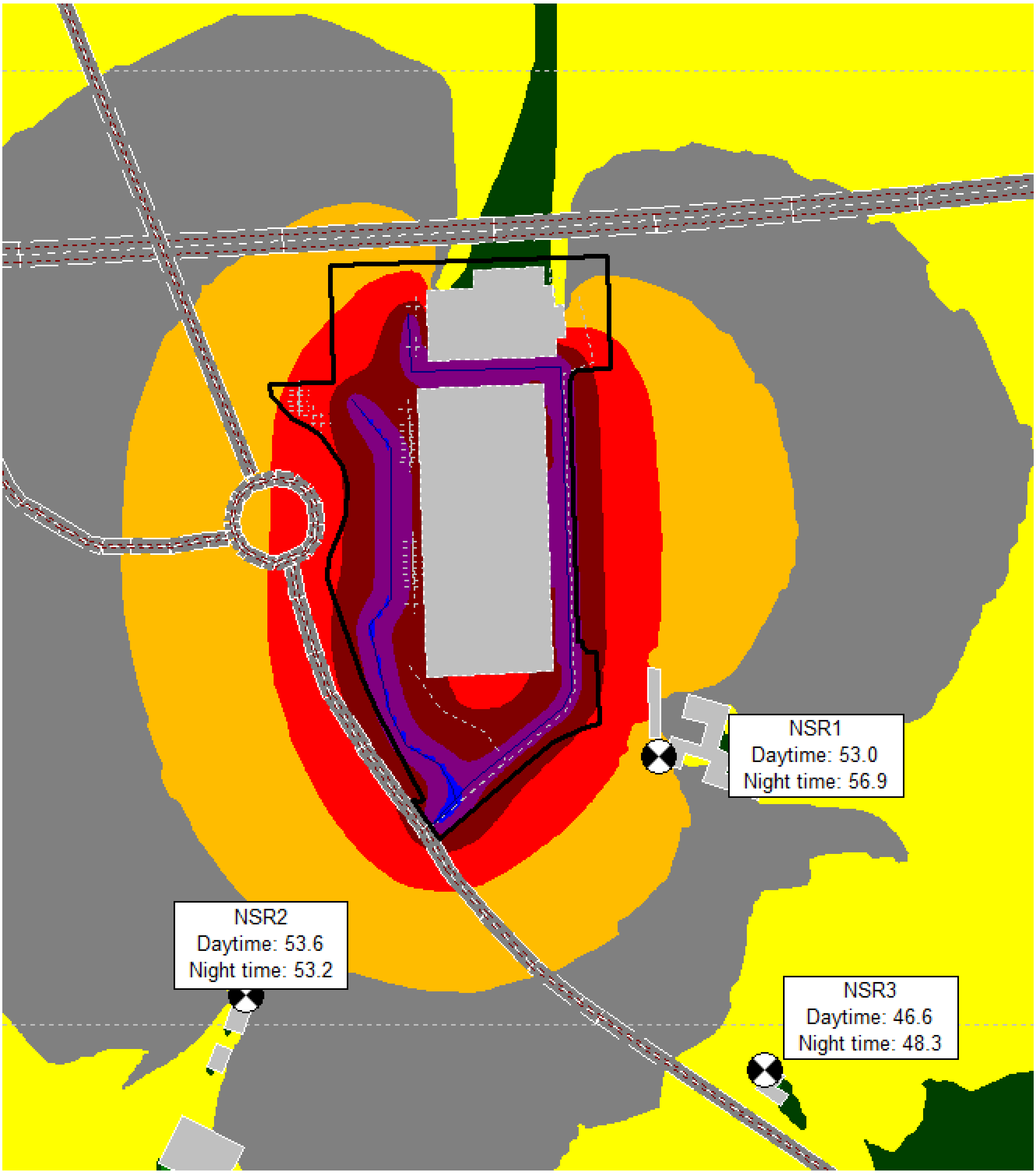


Figure 5-4
Night-Time L_{Afmax} Level at a Height of 4m – dB(A)



5.4 Character Correction

The character of each noise source, and the correction that will be applied in the BS4142 assessment are as follows:

- Tonality: SLR has not undertaken the BS4142 Objective method for assessing the audibility of tones in south. However, it is not expected that any sound from the Site would be tonal. Therefore, no tonal correction is required.
- Impulsivity: It is not anticipated that any of the noise sources would be impulsive provided it is well maintained.
- Other sound characteristics: It is not anticipated that the identified noise sources would have any other identifiable sound characteristics that differ to those associated within the surrounding area, for example road traffic and commercial and industrial sound.
- Intermittentness: As noise sources at the site would be intermittent a 3 dB correction will be included in the assessment.

In total a 3 dB character correction will be added to the calculated specific sound level at each receptor.

5.5 Assessment

The character corrections described in Section 5.4, have been added to the predicted sound levels shown in Table 5-2 ($L_{Aeq,T}$ results only – Maxima discussed in Section 5.3) to derive the rating levels at each of the nearest noise-sensitive receptors.

The results of the BS4142 assessment are shown in Table 5-3. In accordance with the standard, the rating levels and the representative background sound levels have been rounded to the nearest decibel.

Based on the accuracy of the prediction methodology, i.e. ISO9613-2, the uncertainty of the CadnaA model accuracy, i.e. barrier corrections for buildings, etc., it is considered that the results of the assessment are as accurate as reasonably practicable and considered to be within +/-3 dB.

Table 5-3
BS4142:2014+A1:2019 Assessment

Receptor	Assessment	Predicted Specific Sound Level, $L_{Aeq,T}$	Predicted Rating Level, $L_{Ar,T}$	Derived Background Sound Level L_{A90}	Difference between Background Sound Level and Rating Level
NSR1	Daytime (07:00 – 23:00)	41	44	55	- 11
	Night-Time (23:00 – 07:00)	43	46	47	- 1
NSR2	Daytime (07:00 – 23:00)	34	37	50	- 13
	Night-Time (23:00 – 07:00)	37	40	42	- 2
NSR3	Daytime (07:00 – 23:00)	33	36	50	- 14
	Night-Time (23:00 – 07:00)	35	38	42	- 4

It can be seen from Table 5-3 that, at all receptors, the predicted rating levels are no greater than the derived background sound levels resulting from the proposed operation of the site. Therefore, the SDC requirements are predicted to be achieved during normal operations from the site.

6.0 Night-Time Maximum Assessment

With regards to maximum levels from HGV arrival/departure events, it is prudent to consider the internal noise levels that will be realised internally within the habitable rooms of the NSRs.

Guidance is provided in relation to maximum noise level events within new residential dwellings in ProPG Planning and Noise: '*New Residential Developments*'. Although the NSRs concerned are not new dwellings, the guidance set out in ProPG is widely adopted across the UK. With regard to individual noise levels, ProPG 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_{AFmax}, depending on the character and number of events per night. Sporadic noise events could require separate values. In most circumstances in noise sensitive rooms at night (e.g. bedrooms) good acoustic design can be used so that individual noise events do not normally exceed 45 dB L_{AFmax} more than 10 times a night*.'

However, ProPG also advises that:

'It normally requires noise levels higher than 45 dB L_{AFmax} before significant adverse effects such as behavioural awakenings, difficulty getting to sleep, premature awakening or difficulty getting back to sleep generally occur (and the latest field research on rail and aircraft noise suggest that it requires internal L_{AFmax} noise levels of around 65 dB before noise induced awakenings become distinguishable from spontaneous awakenings).'

As such, for robustness, consideration of the internal maximum noise levels is made with reference to the 45 dB L_{AFmax} criterion in Table 6-1. For this assessment, a reduction via a partially open window is considered. This is widely accepted to be between 10 and 15 dB. To represent a reasonably worst-case scenario, given that worst case maxima noise levels have already been considered, a reduction of 13 dB is applied.

Table 6-1
BS4142:2014+A1:2019 Assessment

Receptor	Assessment Period	Predicted Maximum External Sound Level, L_{AFmax} (dB)	Reduction via a partially open window	Predicted Internal Noise Level from Maxima Event L_{AFmax} (dB)	Difference to 45 dB L_{AFmax} Criterion
NSR1	Night-Time (23:00 – 07:00)	57	-13	44	-1
NSR2	Night-Time (23:00 – 07:00)	53	-13	40	-5
NSR3	Night-Time (23:00 – 07:00)	48	-13	35	-4

It can be seen that in all cases, the 45 dB L_{AFmax} criterion is achieved. This would indicate that maxima from individual noise events such as HGVs arriving and departing from the site during the night-time would not be significant in terms of noise impacts on the NSRs.

SLR considers a barrier unnecessary as the noise limits are met at the nearest noise sensitive receptors. In addition to the criteria being met, when looking at the partial level of the receivers, the highest noise contributor at the receptors is from the roof of the development. Therefore, a barrier would not make a difference to the overall noise level due to the height of the roof in comparison with the barrier height.

7.0 Off-Site Traffic Assessment

The proposals are likely to alter noise levels near the affected network. In accordance with the Design Manual for Roads and Bridges Volume (DMRB) LAN 111 Noise and Vibration, SLR has undertaken an assessment to include the A511.

For this link the Basic Noise Level (BNL) has been established for the “With Scheme” and “Without Scheme” Scenarios for the assessment year. The BNL is the $L_{A10,T}$ dB noise level at 10m from the kerb of the road assessed.

The BNL results for the A511 has been tabulated for the AM and PM peak. A worst-case assessment is presented as the with scheme figures include traffic data from all plots. The data provided did not include percentage HGVs, therefore it is assumed that in the base flows the percentage HGV is 5%, and that the additional '*With Scheme'* traffic is 75% HGV traffic (this is a reasonable case as the Scheme traffic will include cars). Similarly, no traffic speed data has been provided so 20mph speed has been used.

The results of each assessment are provided in Table 7-1 and Table 7-2.

Table 7-1
AM Peak Hour DMRB LAN 111 Assessment

Link	Without Scheme				With Scheme				Change in BNL	Impact
	AM Peak hour traffic flow	% HGV	Average Speed km/h	BNL	AM Peak hour traffic flow	% HGV	Average Speed km/h	BNL		
A511	631	5	32	68	707	12.5	32	70.7	2.7	Low

Table 7-2
PM Peak Hour DMRB LAN 111 Assessment

Link	Without Scheme				With Scheme				Change in BNL	Impact
	PM Peak hour traffic flow	% HGV	Average Speed km/h	BNL	PM Peak hour traffic flow	% HGV	Average Speed km/h	BNL		
A511	582	5	32	67.7	658	13	32	70.5	2.8	Low

It is concluded from Tables 6-1 and 6-2 that the additional traffic associated with Plot 10 is calculated to have a Low Impact which is not considered to be significant.

8.0 Conclusion

Dove Valley Park Ltd. has appointed SLR Consulting Limited (SLR) to prepare a noise assessment for the proposed redevelopment of land next to the existing Dove Valley Park commercial area, close to Foston, Derbyshire.

The assessment is based on the results of a noise survey carried out at locations representative of the nearest Noise Sensitive Receptors (NSR) to the site over representative daytime and night-time periods and is in accordance with the National Planning Policy Framework (NPPF).

The following assessment has been presented:

- An assessment undertaken to BS4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound.*

The report has found:

- At all receptors, the predicted rating levels from the proposed operation of the site are no greater than the derived background sound levels resulting from the proposed operation of the site. Therefore, the SDC requirements are predicted to be achieved during normal operations from the site.
- The maximum noise levels from individual noise events such as HGVs arriving and departing from the site during the night-time is considered not significant in terms of noise impacts on the NSRs.
- A barrier is not required around the perimeter of the development.
- The additional traffic associated with Plot 10 is calculated to have a Low Impact which is not considered to be significant.

To conclude it is considered that the Plot 10 proposals would have a low noise impact at the nearest NSR’s to the Site.

APPENDIX 01

Glossary of Terminology

In order to assist the understanding of acoustic terminology and the relative change in noise, the following background information is provided.

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 01-1
Sound Levels Commonly Found in the Environment

Sound Level	Location
0 dB(A)	Threshold of hearing
20 to 30 dB(A)	Quiet bedroom at night
30 to 40 dB(A)	Living room during the day
40 to 50 dB(A)	Typical office
50 to 60 dB(A)	Inside a car
60 to 70 dB(A)	Typical high street
70 to 90 dB(A)	Inside factory
100 to 110 dB(A)	Burglar alarm at 1m away
110 to 130 dB(A)	Jet aircraft on take off
140 dB(A)	Threshold of Pain

Acoustic Terminology

dB (decibel) — The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure ($2x10^{-5}$Pa).

dB(A) — A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

L_{Aeq} — L_{Aeq} is defined as the notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.

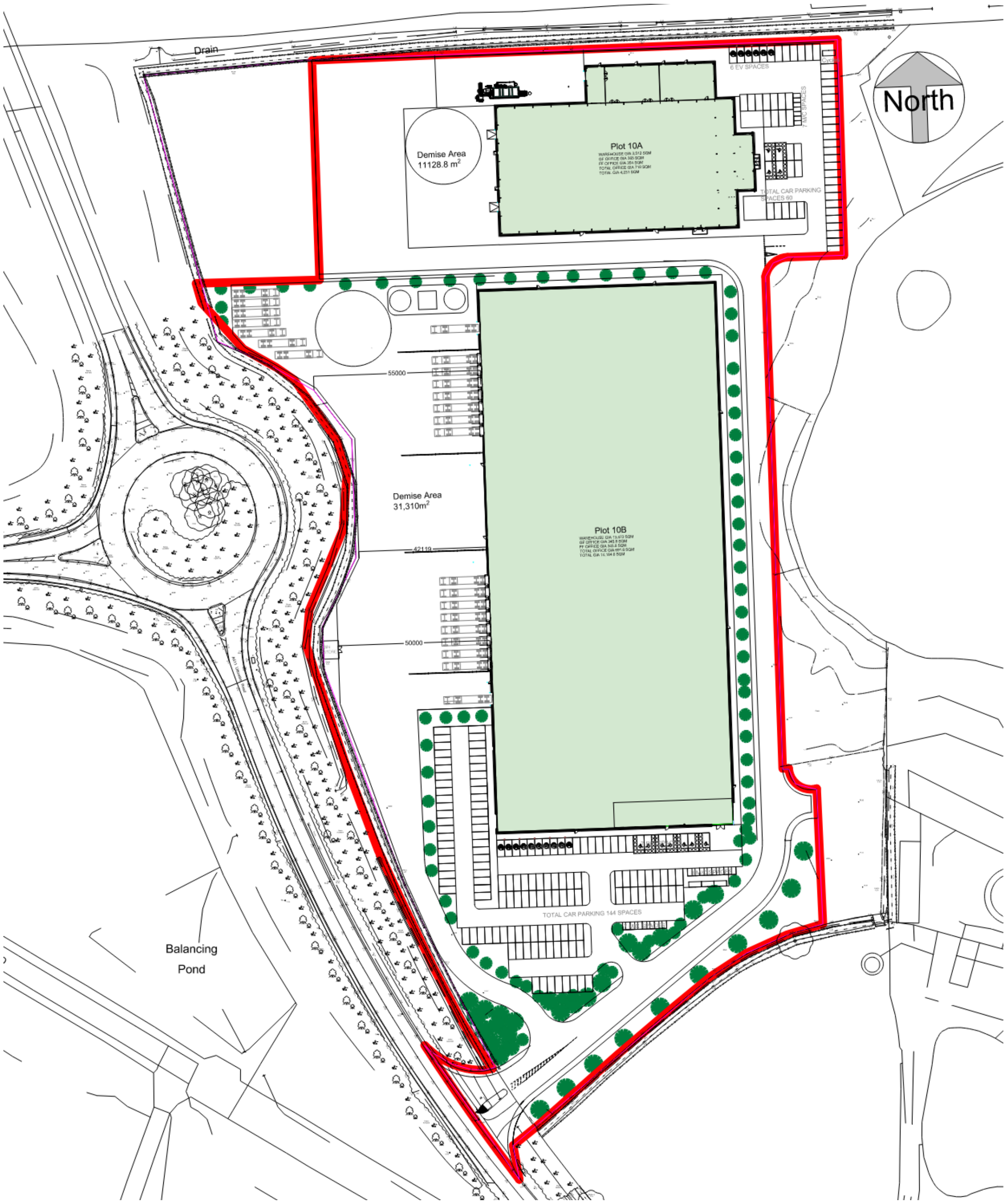
L_{10} & L_{90} — If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L_{10} index to describe traffic noise.

L_{Amax} — L_{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

APPENDIX 02

Site Plan

Table 01-1
Sound Levels Commonly Found in the Environment



APPENDIX 03

Meter Pictures

Figure 03-01
Location One

Figure 03-02
Location Two

APPENDIX 04

Survey Results

Figure 04-01
Location One Survey Results

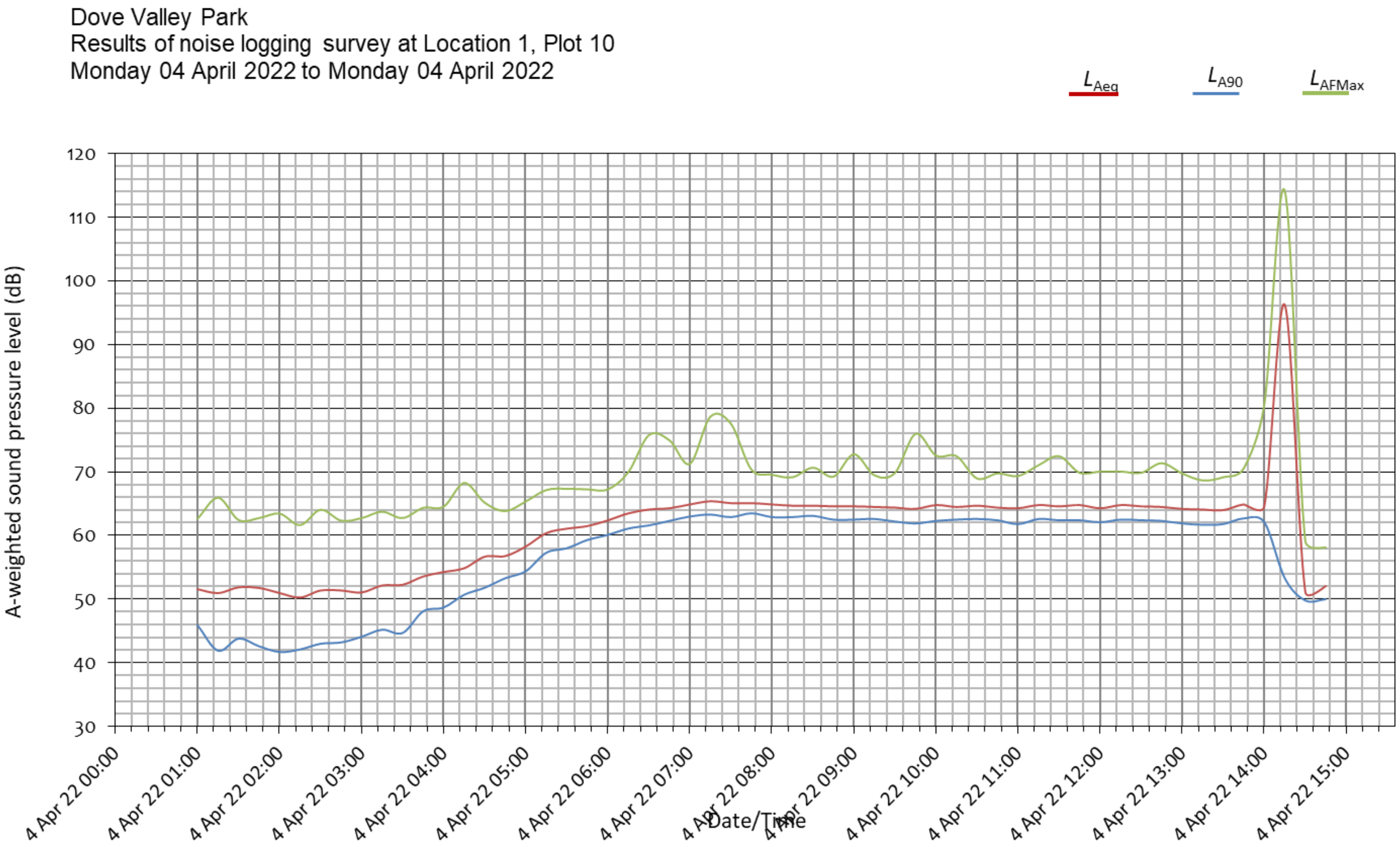


Table 04-01
Location One Survey Results

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
04/04/2022 01:00	51.6	62.7	45.9
04/04/2022 01:15	51.0	66.0	41.9
04/04/2022 01:30	51.9	62.5	43.8
04/04/2022 01:45	51.8	62.8	42.6
04/04/2022 02:00	51.0	63.5	41.7
04/04/2022 02:15	50.3	61.7	42.1
04/04/2022 02:30	51.4	64.1	43.0
04/04/2022 02:45	51.4	62.4	43.2
04/04/2022 03:00	51.1	62.8	44.1
04/04/2022 03:15	52.2	63.8	45.2
04/04/2022 03:30	52.3	62.8	44.7
04/04/2022 03:45	53.6	64.4	48.1
04/04/2022 04:00	54.3	64.6	48.7
04/04/2022 04:15	54.9	68.3	50.7
04/04/2022 04:30	56.7	65.2	51.8
04/04/2022 04:45	56.8	63.9	53.3
04/04/2022 05:00	58.3	65.4	54.4
04/04/2022 05:15	60.4	67.2	57.3
04/04/2022 05:30	61.1	67.4	58.0
04/04/2022 05:45	61.5	67.3	59.3
04/04/2022 06:00	62.4	67.3	60.1
04/04/2022 06:15	63.5	70.0	61.1
04/04/2022 06:30	64.1	75.8	61.6
04/04/2022 06:45	64.3	75.0	62.3
04/04/2022 07:00	64.9	71.3	63.0
04/04/2022 07:15	65.4	78.7	63.3
04/04/2022 07:30	65.1	77.6	62.9
04/04/2022 07:45	65.1	70.4	63.5
04/04/2022 08:00	64.9	69.6	62.9
04/04/2022 08:15	64.7	69.2	62.9
04/04/2022 08:30	64.7	70.7	63.1

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
04/04/2022 08:45	64.6	69.3	62.5
04/04/2022 09:00	64.6	72.8	62.5
04/04/2022 09:15	64.5	69.5	62.6
04/04/2022 09:30	64.4	69.9	62.2
04/04/2022 09:45	64.2	76.0	61.9
04/04/2022 10:00	64.8	72.6	62.3
04/04/2022 10:15	64.5	72.5	62.5
04/04/2022 10:30	64.7	69.0	62.6
04/04/2022 10:45	64.4	69.8	62.4
04/04/2022 11:00	64.3	69.4	61.8
04/04/2022 11:15	64.8	71.1	62.6
04/04/2022 11:30	64.6	72.5	62.4
04/04/2022 11:45	64.8	69.9	62.4
04/04/2022 12:00	64.3	70.1	62.1
04/04/2022 12:15	64.8	70.1	62.5
04/04/2022 12:30	64.6	69.9	62.4
04/04/2022 12:45	64.5	71.4	62.3
04/04/2022 13:00	64.2	69.8	61.9
04/04/2022 13:15	64.1	68.7	61.7
04/04/2022 13:30	64.0	69.2	61.8
04/04/2022 13:45	64.9	70.6	62.7
04/04/2022 14:00	64.6	80.6	62.1
04/04/2022 14:15	96.2	114.1	53.3
04/04/2022 14:30	51.2	59.2	49.8
04/04/2022 14:45	52.1	58.2	50.0

Figure 04-02
Location Two Survey Results

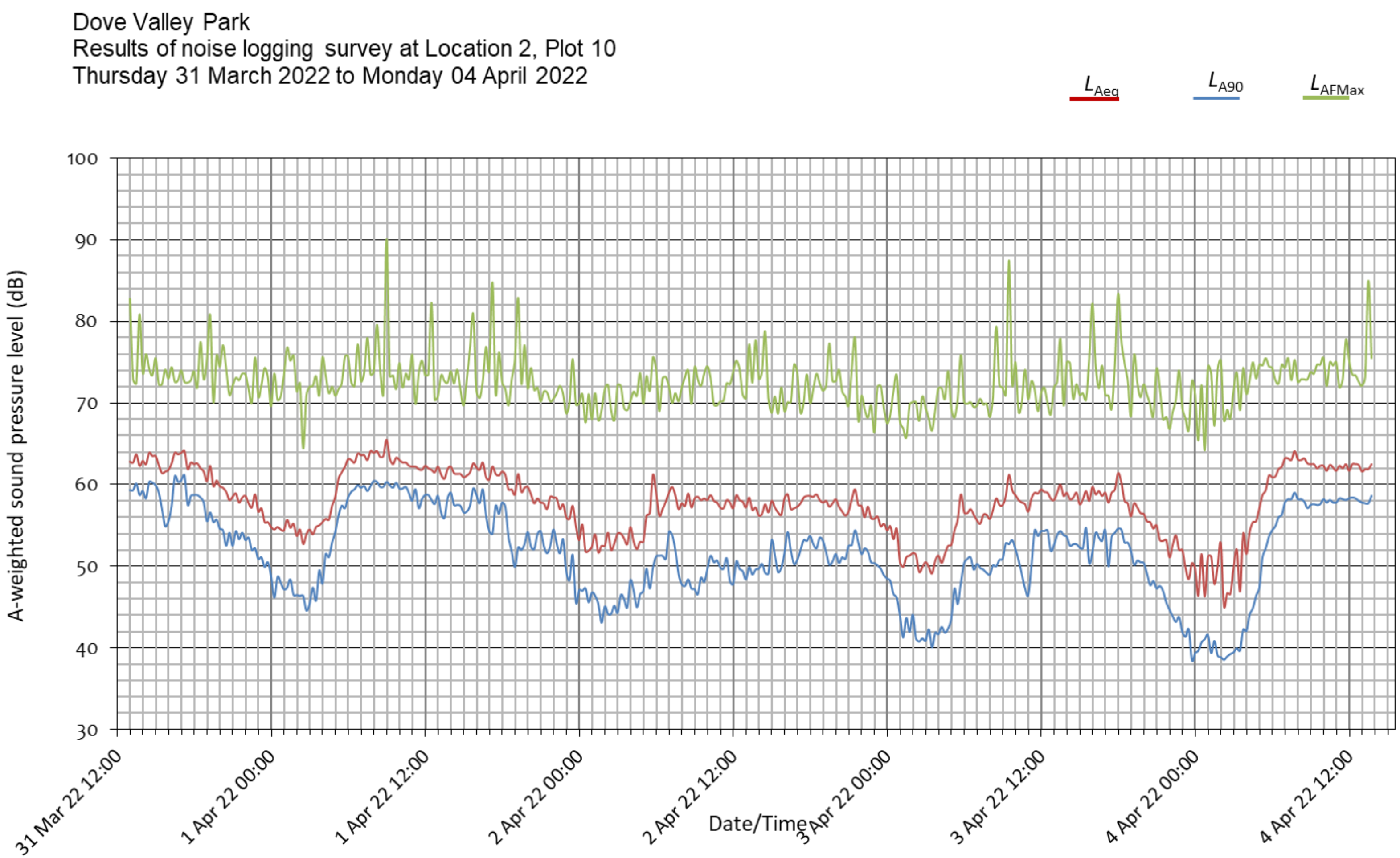


Table 04-02
Location Two Survey Results

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
31/03/2022 13:00	62.8	82.8	59.3
31/03/2022 13:15	62.7	72.9	59.3
31/03/2022 13:30	63.7	72.4	60.1
31/03/2022 13:45	62.3	80.9	58.7
31/03/2022 14:00	62.9	73.7	59.2
31/03/2022 14:15	62.5	76.0	58.3
31/03/2022 14:30	63.9	74.2	60.3
31/03/2022 14:45	63.5	73.4	60.2
31/03/2022 15:00	63.5	75.5	59.9
31/03/2022 15:15	62.4	72.3	59.0
31/03/2022 15:30	61.4	72.3	57.0
31/03/2022 15:45	61.6	74.1	54.9
31/03/2022 16:00	61.8	73.0	55.5
31/03/2022 16:15	62.6	74.4	57.4
31/03/2022 16:30	63.9	72.6	61.0
31/03/2022 16:45	63.7	72.8	60.3
31/03/2022 17:00	63.9	74.0	60.5
31/03/2022 17:15	64.1	72.6	61.1
31/03/2022 17:30	61.9	72.5	57.5
31/03/2022 17:45	62.7	72.8	58.6
31/03/2022 18:00	62.5	73.9	58.7
31/03/2022 18:15	62.6	71.9	58.7
31/03/2022 18:30	62.0	77.5	58.4
31/03/2022 18:45	61.6	72.9	57.8
31/03/2022 19:00	60.4	75.4	55.5
31/03/2022 19:15	62.3	80.8	56.6
31/03/2022 19:30	59.8	70.1	55.4
31/03/2022 19:45	60.5	75.8	55.7
31/03/2022 20:00	59.8	74.5	54.6
31/03/2022 20:15	59.6	77.1	54.4
31/03/2022 20:30	59.1	74.2	52.5

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
31/03/2022 20:45	58.1	71.0	54.1
31/03/2022 21:00	58.5	72.1	52.5
31/03/2022 21:15	58.9	73.1	54.3
31/03/2022 21:30	57.8	72.8	53.3
31/03/2022 21:45	58.4	73.6	54.1
31/03/2022 22:00	58.6	73.5	53.2
31/03/2022 22:15	57.7	71.7	53.5
31/03/2022 22:30	57.2	70.1	52.0
31/03/2022 22:45	58.8	75.6	52.2
31/03/2022 23:00	56.7	70.8	50.9
31/03/2022 23:15	57.1	72.2	51.1
31/03/2022 23:30	55.4	74.3	49.9
31/03/2022 23:45	55.4	73.1	50.5
01/04/2022 00:00	54.8	69.6	48.8
01/04/2022 00:15	54.5	73.6	46.2
01/04/2022 00:30	54.8	70.4	48.7
01/04/2022 00:45	54.5	70.8	48.0
01/04/2022 01:00	54.4	73.4	47.2
01/04/2022 01:15	55.7	76.8	47.4
01/04/2022 01:30	54.7	75.2	48.4
01/04/2022 01:45	55.2	75.8	46.5
01/04/2022 02:00	53.7	71.4	46.5
01/04/2022 02:15	54.5	72.4	46.4
01/04/2022 02:30	52.7	64.4	46.4
01/04/2022 02:45	53.9	70.9	44.6
01/04/2022 03:00	54.5	72.0	45.4
01/04/2022 03:15	53.9	72.1	47.4
01/04/2022 03:30	54.8	73.3	45.8
01/04/2022 03:45	55.0	70.9	49.5
01/04/2022 04:00	55.4	75.6	47.9
01/04/2022 04:15	55.8	73.4	51.5
01/04/2022 04:30	55.7	71.2	51.1

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
01/04/2022 04:45	57.4	72.0	52.9
01/04/2022 05:00	58.5	70.9	54.2
01/04/2022 05:15	60.7	71.7	56.2
01/04/2022 05:30	61.5	72.4	57.4
01/04/2022 05:45	62.2	75.7	57.1
01/04/2022 06:00	63.1	75.7	58.4
01/04/2022 06:15	63.0	72.5	59.1
01/04/2022 06:30	62.7	72.1	59.4
01/04/2022 06:45	63.8	77.2	59.9
01/04/2022 07:00	63.6	72.7	59.6
01/04/2022 07:15	63.6	73.7	59.8
01/04/2022 07:30	63.0	78.0	59.2
01/04/2022 07:45	64.1	73.5	59.8
01/04/2022 08:00	63.9	73.8	60.4
01/04/2022 08:15	64.1	79.6	60.3
01/04/2022 08:30	63.4	74.1	59.7
01/04/2022 08:45	63.5	71.2	59.7
01/04/2022 09:00	65.5	90.1	60.3
01/04/2022 09:15	63.2	73.3	59.9
01/04/2022 09:30	62.5	73.4	59.6
01/04/2022 09:45	63.3	71.7	60.2
01/04/2022 10:00	63.0	74.9	59.5
01/04/2022 10:15	62.7	71.9	59.5
01/04/2022 10:30	62.7	73.6	59.7
01/04/2022 10:45	62.3	72.9	58.9
01/04/2022 11:00	62.2	75.9	58.0
01/04/2022 11:15	62.2	69.9	59.4
01/04/2022 11:30	61.9	73.6	57.1
01/04/2022 11:45	61.8	75.2	58.2
01/04/2022 12:00	62.3	73.4	58.7
01/04/2022 12:15	62.0	73.5	58.7
01/04/2022 12:30	61.8	82.3	58.1

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
01/04/2022 12:45	61.5	70.4	57.6
01/04/2022 13:00	62.2	70.8	58.6
01/04/2022 13:15	61.2	73.4	56.5
01/04/2022 13:30	60.7	72.7	55.9
01/04/2022 13:45	61.9	72.5	58.3
01/04/2022 14:00	62.2	73.9	59.0
01/04/2022 14:15	61.4	72.4	57.5
01/04/2022 14:30	61.3	74.1	57.5
01/04/2022 14:45	61.3	71.7	57.4
01/04/2022 15:00	60.9	69.7	56.6
01/04/2022 15:15	61.1	72.9	56.7
01/04/2022 15:30	61.5	76.8	57.4
01/04/2022 15:45	62.6	80.9	59.5
01/04/2022 16:00	62.1	71.4	58.7
01/04/2022 16:15	61.8	70.6	57.7
01/04/2022 16:30	62.7	72.7	59.4
01/04/2022 16:45	60.9	76.9	56.2
01/04/2022 17:00	60.6	74.0	54.3
01/04/2022 17:15	62.2	84.8	54.0
01/04/2022 17:30	61.3	71.1	57.4
01/04/2022 17:45	61.1	76.2	56.4
01/04/2022 18:00	61.6	72.6	57.8
01/04/2022 18:15	61.2	71.7	57.3
01/04/2022 18:30	59.4	69.7	53.6
01/04/2022 18:45	59.4	72.9	51.8
01/04/2022 19:00	58.8	75.4	49.9
01/04/2022 19:15	61.3	82.9	52.3
01/04/2022 19:30	59.1	72.4	52.0
01/04/2022 19:45	59.6	77.1	52.7
01/04/2022 20:00	59.7	71.8	54.2
01/04/2022 20:15	58.8	74.3	52.4
01/04/2022 20:30	57.7	71.6	52.1

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
01/04/2022 20:45	58.3	71.9	53.9
01/04/2022 21:00	57.8	70.2	54.3
01/04/2022 21:15	57.7	71.4	52.5
01/04/2022 21:30	57.0	71.3	51.6
01/04/2022 21:45	58.5	70.2	52.5
01/04/2022 22:00	58.4	70.5	54.5
01/04/2022 22:15	58.3	71.2	52.8
01/04/2022 22:30	57.0	72.1	51.6
01/04/2022 22:45	57.6	71.1	53.3
01/04/2022 23:00	56.0	68.7	49.3
01/04/2022 23:15	55.8	70.0	48.3
01/04/2022 23:30	57.4	75.4	51.4
01/04/2022 23:45	54.9	69.8	45.6
02/04/2022 00:00	53.2	69.9	47.1
02/04/2022 00:15	55.1	71.1	47.0
02/04/2022 00:30	51.8	67.6	47.3
02/04/2022 00:45	51.9	71.1	45.6
02/04/2022 01:00	52.4	68.0	46.8
02/04/2022 01:15	53.9	71.2	46.4
02/04/2022 01:30	51.7	67.9	45.4
02/04/2022 01:45	52.5	69.1	43.1
02/04/2022 02:00	52.5	71.7	45.1
02/04/2022 02:15	54.1	72.2	44.2
02/04/2022 02:30	52.0	69.1	44.2
02/04/2022 02:45	52.8	67.9	45.2
02/04/2022 03:00	54.0	72.2	44.3
02/04/2022 03:15	54.0	72.1	46.5
02/04/2022 03:30	53.4	69.4	46.0
02/04/2022 03:45	52.7	69.1	45.0
02/04/2022 04:00	54.8	70.2	48.3
02/04/2022 04:15	53.0	71.4	47.0
02/04/2022 04:30	52.1	70.9	45.0

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
02/04/2022 04:45	53.0	73.7	46.6
02/04/2022 05:00	53.0	69.9	47.0
02/04/2022 05:15	56.2	73.3	49.7
02/04/2022 05:30	56.5	71.5	47.3
02/04/2022 05:45	61.2	75.6	49.8
02/04/2022 06:00	59.0	74.1	51.2
02/04/2022 06:15	56.2	69.0	51.3
02/04/2022 06:30	57.0	73.0	51.3
02/04/2022 06:45	57.9	73.2	50.9
02/04/2022 07:00	59.0	72.0	54.2
02/04/2022 07:15	59.7	70.0	53.8
02/04/2022 07:30	58.7	71.2	52.0
02/04/2022 07:45	57.0	70.2	49.1
02/04/2022 08:00	57.7	71.9	47.8
02/04/2022 08:15	57.4	73.2	47.6
02/04/2022 08:30	58.9	74.0	48.4
02/04/2022 08:45	57.2	69.9	47.3
02/04/2022 09:00	58.3	74.4	47.2
02/04/2022 09:15	58.5	72.9	46.6
02/04/2022 09:30	58.1	72.1	48.6
02/04/2022 09:45	58.3	73.6	48.1
02/04/2022 10:00	58.1	74.5	49.7
02/04/2022 10:15	58.7	73.0	51.3
02/04/2022 10:30	58.0	69.8	50.5
02/04/2022 10:45	57.8	69.7	50.7
02/04/2022 11:00	57.2	70.2	49.9
02/04/2022 11:15	57.1	70.3	49.7
02/04/2022 11:30	58.1	72.4	51.0
02/04/2022 11:45	57.8	72.3	48.2
02/04/2022 12:00	57.1	73.8	47.8
02/04/2022 12:15	58.7	75.2	50.6
02/04/2022 12:30	58.1	74.2	49.7

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
02/04/2022 12:45	57.9	71.0	49.4
02/04/2022 13:00	57.2	70.6	48.4
02/04/2022 13:15	58.4	77.2	49.9
02/04/2022 13:30	56.9	72.5	49.0
02/04/2022 13:45	57.2	77.7	49.6
02/04/2022 14:00	56.2	73.0	49.7
02/04/2022 14:15	56.4	73.8	50.3
02/04/2022 14:30	57.6	78.8	49.2
02/04/2022 14:45	56.6	70.6	49.1
02/04/2022 15:00	58.0	68.8	53.2
02/04/2022 15:15	57.2	70.8	51.4
02/04/2022 15:30	56.6	68.7	49.3
02/04/2022 15:45	56.3	71.9	49.8
02/04/2022 16:00	58.3	69.0	51.6
02/04/2022 16:15	58.8	70.1	54.2
02/04/2022 16:30	57.0	70.1	51.9
02/04/2022 16:45	57.1	74.7	50.3
02/04/2022 17:00	57.3	73.7	50.8
02/04/2022 17:15	57.7	68.8	52.0
02/04/2022 17:30	58.4	70.1	53.2
02/04/2022 17:45	58.6	73.5	53.1
02/04/2022 18:00	58.6	70.0	53.7
02/04/2022 18:15	58.5	71.7	52.7
02/04/2022 18:30	58.8	73.6	52.2
02/04/2022 18:45	58.1	72.4	53.5
02/04/2022 19:00	57.8	71.5	53.1
02/04/2022 19:15	58.0	72.1	51.7
02/04/2022 19:30	57.3	77.3	50.2
02/04/2022 19:45	57.7	72.7	50.6
02/04/2022 20:00	58.2	72.7	51.5
02/04/2022 20:15	57.3	74.1	50.4
02/04/2022 20:30	56.7	71.4	51.1

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
02/04/2022 20:45	56.2	70.8	50.9
02/04/2022 21:00	56.7	69.7	52.5
02/04/2022 21:15	58.2	74.1	52.6
02/04/2022 21:30	59.4	77.9	54.4
02/04/2022 21:45	57.5	67.9	52.9
02/04/2022 22:00	57.4	70.9	51.5
02/04/2022 22:15	56.0	69.2	52.2
02/04/2022 22:30	57.3	68.2	51.8
02/04/2022 22:45	55.9	69.7	50.5
02/04/2022 23:00	55.8	66.4	50.4
02/04/2022 23:15	56.1	72.0	50.1
02/04/2022 23:30	54.9	72.1	49.7
02/04/2022 23:45	55.2	69.3	48.9
03/04/2022 00:00	54.4	67.5	48.5
03/04/2022 00:15	54.9	68.6	48.2
03/04/2022 00:30	53.3	71.5	46.6
03/04/2022 00:45	54.6	73.4	46.2
03/04/2022 01:00	50.5	67.7	44.0
03/04/2022 01:15	49.9	66.9	41.3
03/04/2022 01:30	51.1	65.8	43.7
03/04/2022 01:45	51.3	69.8	42.0
03/04/2022 02:00	51.6	70.1	44.1
03/04/2022 02:15	51.4	70.1	41.2
03/04/2022 02:30	49.3	67.8	40.8
03/04/2022 02:45	49.9	70.8	41.2
03/04/2022 03:00	50.5	69.4	40.9
03/04/2022 03:15	49.9	68.1	42.3
03/04/2022 03:30	49.1	66.6	40.1
03/04/2022 03:45	50.7	69.2	41.9
03/04/2022 04:00	51.3	71.8	41.7
03/04/2022 04:15	50.4	71.8	42.6
03/04/2022 04:30	51.5	70.5	41.9

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
03/04/2022 04:45	52.5	73.9	42.4
03/04/2022 05:00	52.6	69.3	43.6
03/04/2022 05:15	54.4	68.2	47.3
03/04/2022 05:30	55.7	70.5	45.4
03/04/2022 05:45	58.8	75.9	48.0
03/04/2022 06:00	56.6	70.1	50.4
03/04/2022 06:15	56.5	69.9	50.9
03/04/2022 06:30	57.0	70.1	51.1
03/04/2022 06:45	56.3	69.5	49.6
03/04/2022 07:00	55.6	69.7	50.3
03/04/2022 07:15	55.2	70.5	49.8
03/04/2022 07:30	56.3	69.8	49.6
03/04/2022 07:45	56.3	69.9	49.2
03/04/2022 08:00	55.8	68.3	49.0
03/04/2022 08:15	56.9	70.7	50.1
03/04/2022 08:30	58.3	79.4	50.0
03/04/2022 08:45	57.5	72.2	50.8
03/04/2022 09:00	57.5	71.9	50.9
03/04/2022 09:15	58.6	71.0	52.8
03/04/2022 09:30	61.2	87.5	52.7
03/04/2022 09:45	59.3	72.3	53.2
03/04/2022 10:00	58.7	75.0	52.1
03/04/2022 10:15	58.1	68.9	50.7
03/04/2022 10:30	57.8	70.1	49.0
03/04/2022 10:45	57.6	74.1	47.3
03/04/2022 11:00	56.7	70.5	46.5
03/04/2022 11:15	58.3	72.7	50.1
03/04/2022 11:30	59.0	71.6	54.4
03/04/2022 11:45	58.9	69.0	53.7
03/04/2022 12:00	59.4	71.2	54.3
03/04/2022 12:15	59.1	71.9	54.3
03/04/2022 12:30	59.0	70.0	54.4

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
03/04/2022 12:45	58.3	68.6	51.9
03/04/2022 13:00	58.1	71.9	52.6
03/04/2022 13:15	59.0	72.6	53.8
03/04/2022 13:30	60.0	77.9	54.3
03/04/2022 13:45	58.6	69.7	53.8
03/04/2022 14:00	59.0	75.0	53.6
03/04/2022 14:15	58.2	74.9	52.5
03/04/2022 14:30	58.4	70.5	52.7
03/04/2022 14:45	59.0	72.3	52.7
03/04/2022 15:00	57.6	71.0	52.3
03/04/2022 15:15	58.2	71.2	52.2
03/04/2022 15:30	59.2	70.4	54.7
03/04/2022 15:45	58.0	75.4	50.4
03/04/2022 16:00	59.7	82.2	51.8
03/04/2022 16:15	58.8	74.6	54.1
03/04/2022 16:30	59.2	71.8	53.5
03/04/2022 16:45	58.6	74.6	53.1
03/04/2022 17:00	59.0	71.0	54.4
03/04/2022 17:15	57.8	70.9	50.0
03/04/2022 17:30	59.0	69.3	53.6
03/04/2022 17:45	59.4	74.8	54.1
03/04/2022 18:00	61.4	83.4	54.6
03/04/2022 18:15	60.3	77.7	54.5
03/04/2022 18:30	58.0	74.9	52.9
03/04/2022 18:45	57.7	72.7	52.9
03/04/2022 19:00	56.1	68.4	51.9
03/04/2022 19:15	57.7	75.9	50.2
03/04/2022 19:30	57.2	72.5	50.7
03/04/2022 19:45	56.5	70.7	50.5
03/04/2022 20:00	56.4	72.3	50.4
03/04/2022 20:15	55.5	71.0	49.1
03/04/2022 20:30	55.4	69.8	47.7

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
03/04/2022 20:45	54.6	68.4	48.2
03/04/2022 21:00	55.0	74.2	47.3
03/04/2022 21:15	53.2	71.8	47.6
03/04/2022 21:30	53.1	68.0	47.0
03/04/2022 21:45	53.2	68.3	45.6
03/04/2022 22:00	51.1	66.8	44.7
03/04/2022 22:15	52.6	68.9	43.9
03/04/2022 22:30	53.8	70.4	43.2
03/04/2022 22:45	52.0	74.0	43.8
03/04/2022 23:00	52.0	69.4	42.0
03/04/2022 23:15	49.8	68.1	41.4
03/04/2022 23:30	48.4	66.7	42.3
03/04/2022 23:45	50.4	72.7	38.5
04/04/2022 00:00	49.7	71.0	39.4
04/04/2022 00:15	46.4	65.4	39.7
04/04/2022 00:30	51.5	72.2	40.7
04/04/2022 00:45	46.3	64.2	41.1
04/04/2022 01:00	51.2	74.5	41.6
04/04/2022 01:15	51.2	73.6	39.4
04/04/2022 01:30	47.8	67.2	40.9
04/04/2022 01:45	50.0	74.1	39.1
04/04/2022 02:00	52.8	75.2	38.9
04/04/2022 02:15	45.1	67.9	38.6
04/04/2022 02:30	46.7	69.2	39.0
04/04/2022 02:45	46.6	68.1	39.3
04/04/2022 03:00	49.9	71.6	39.5
04/04/2022 03:15	52.0	73.7	40.0
04/04/2022 03:30	46.9	69.1	39.7
04/04/2022 03:45	54.0	74.3	42.3
04/04/2022 04:00	51.5	71.1	42.1
04/04/2022 04:15	54.2	72.8	44.1
04/04/2022 04:30	55.4	75.0	44.9

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
04/04/2022 04:45	55.5	73.0	46.4
04/04/2022 05:00	57.1	74.7	47.4
04/04/2022 05:15	58.7	74.6	51.1
04/04/2022 05:30	59.3	75.5	52.2
04/04/2022 05:45	61.1	74.5	53.6
04/04/2022 06:00	60.9	74.3	54.4
04/04/2022 06:15	61.0	72.8	54.9
04/04/2022 06:30	61.9	72.4	56.0
04/04/2022 06:45	62.2	74.7	56.3
04/04/2022 07:00	63.2	74.3	57.8
04/04/2022 07:15	63.2	75.5	58.2
04/04/2022 07:30	63.0	72.8	58.2
04/04/2022 07:45	64.1	75.3	59.0
04/04/2022 08:00	63.1	72.6	58.2
04/04/2022 08:15	63.0	72.9	58.2
04/04/2022 08:30	63.2	72.9	57.9
04/04/2022 08:45	62.6	72.9	57.1
04/04/2022 09:00	62.5	73.8	57.5
04/04/2022 09:15	62.5	73.6	57.6
04/04/2022 09:30	62.0	74.7	57.5
04/04/2022 09:45	62.3	74.7	57.6
04/04/2022 10:00	62.3	75.5	58.2
04/04/2022 10:15	61.7	72.1	57.8
04/04/2022 10:30	62.4	75.0	58.1
04/04/2022 10:45	62.1	74.6	57.8
04/04/2022 11:00	61.7	75.0	57.8
04/04/2022 11:15	62.3	71.9	58.3
04/04/2022 11:30	62.0	72.9	58.2
04/04/2022 11:45	62.5	77.8	58.1
04/04/2022 12:00	61.7	75.2	58.3
04/04/2022 12:15	62.5	73.5	58.4
04/04/2022 12:30	62.5	73.4	58.3

Start Date / Time	$L_{Aeq,15min}$ (dB)	L_{AFmax} (dB)	$L_{A90,15min}$ (dB)
04/04/2022 12:45	62.4	72.6	58.0
04/04/2022 13:00	61.6	72.1	57.8
04/04/2022 13:15	61.9	73.2	57.7
04/04/2022 13:30	61.9	85.0	57.7
04/04/2022 13:45	62.5	75.5	58.6

APPENDIX 05

Histograms

Figure 05-01
Location One Daytime LA90 Histogram

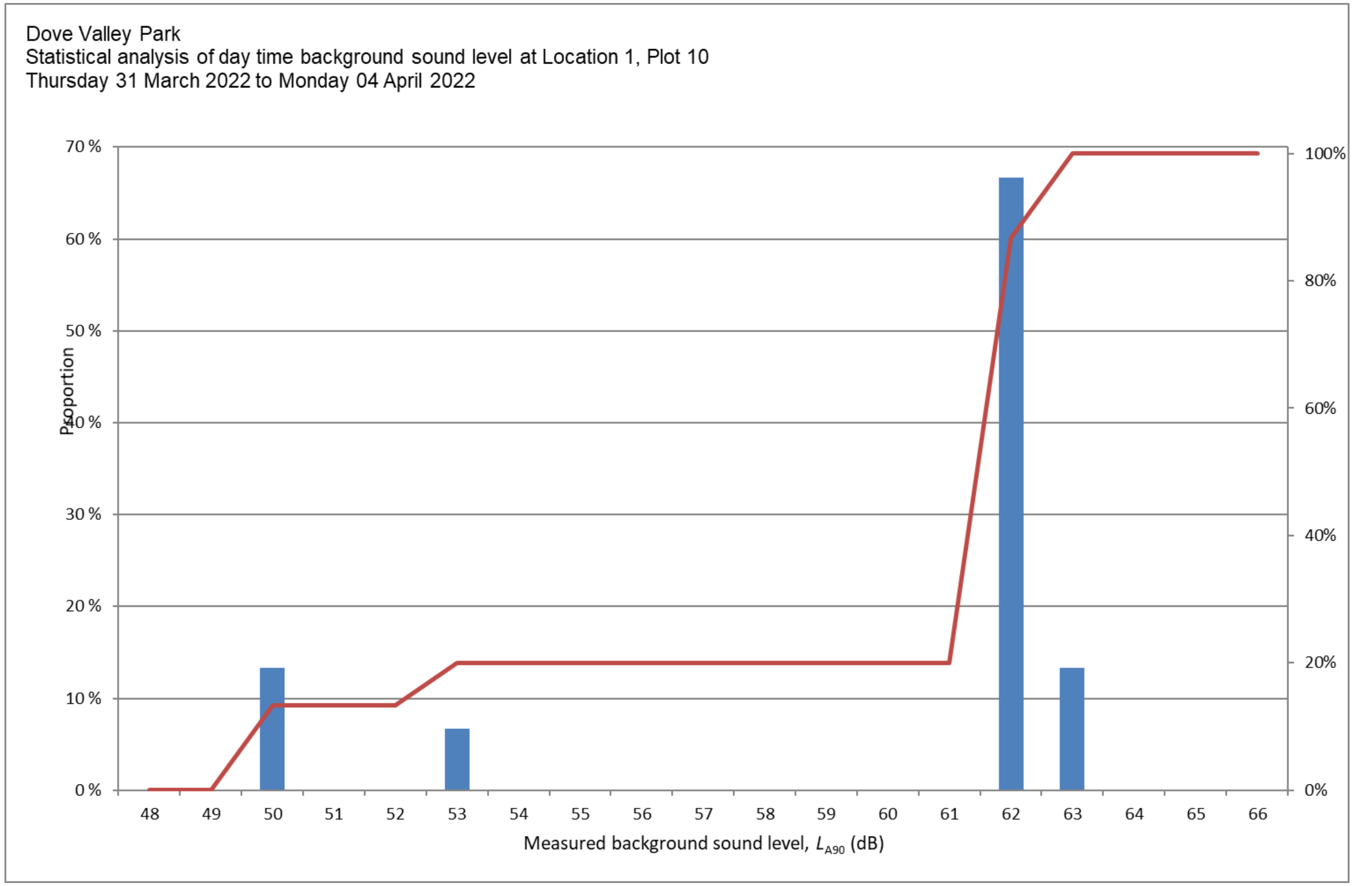


Figure 05-02
Location One Night-time LA90 Histogram

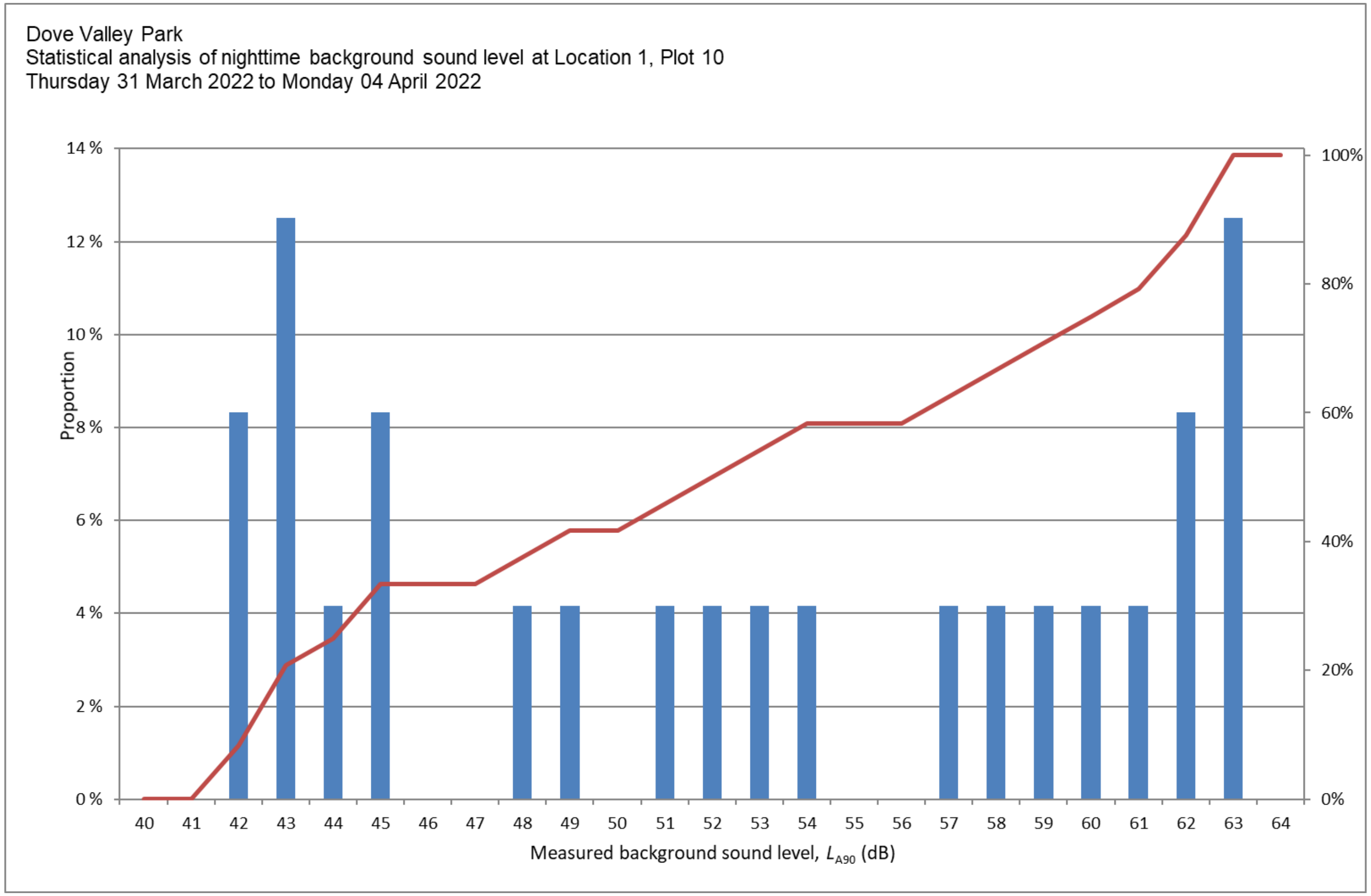


Figure 05-03
Location Two Daytime LA90 Histogram

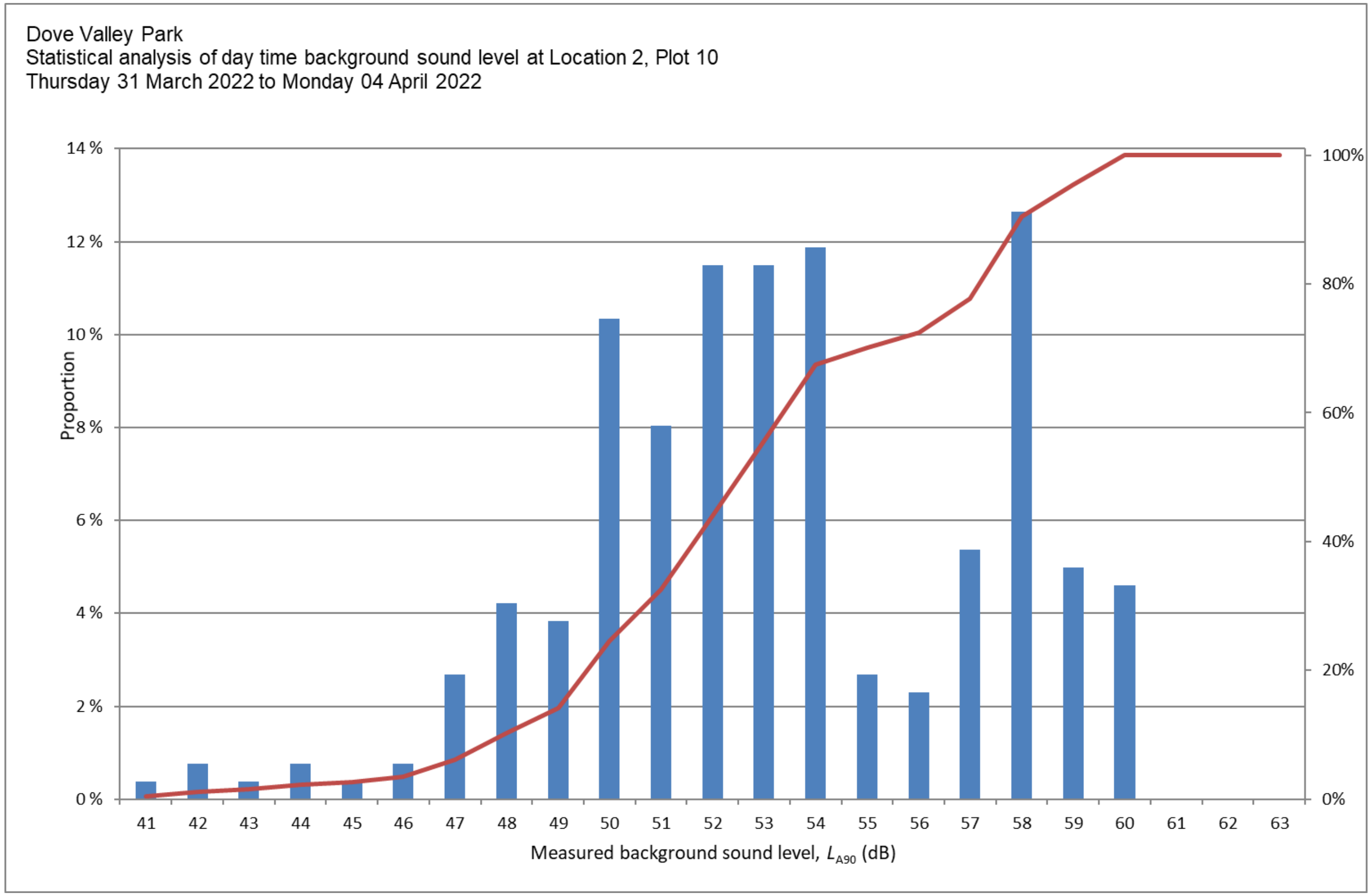
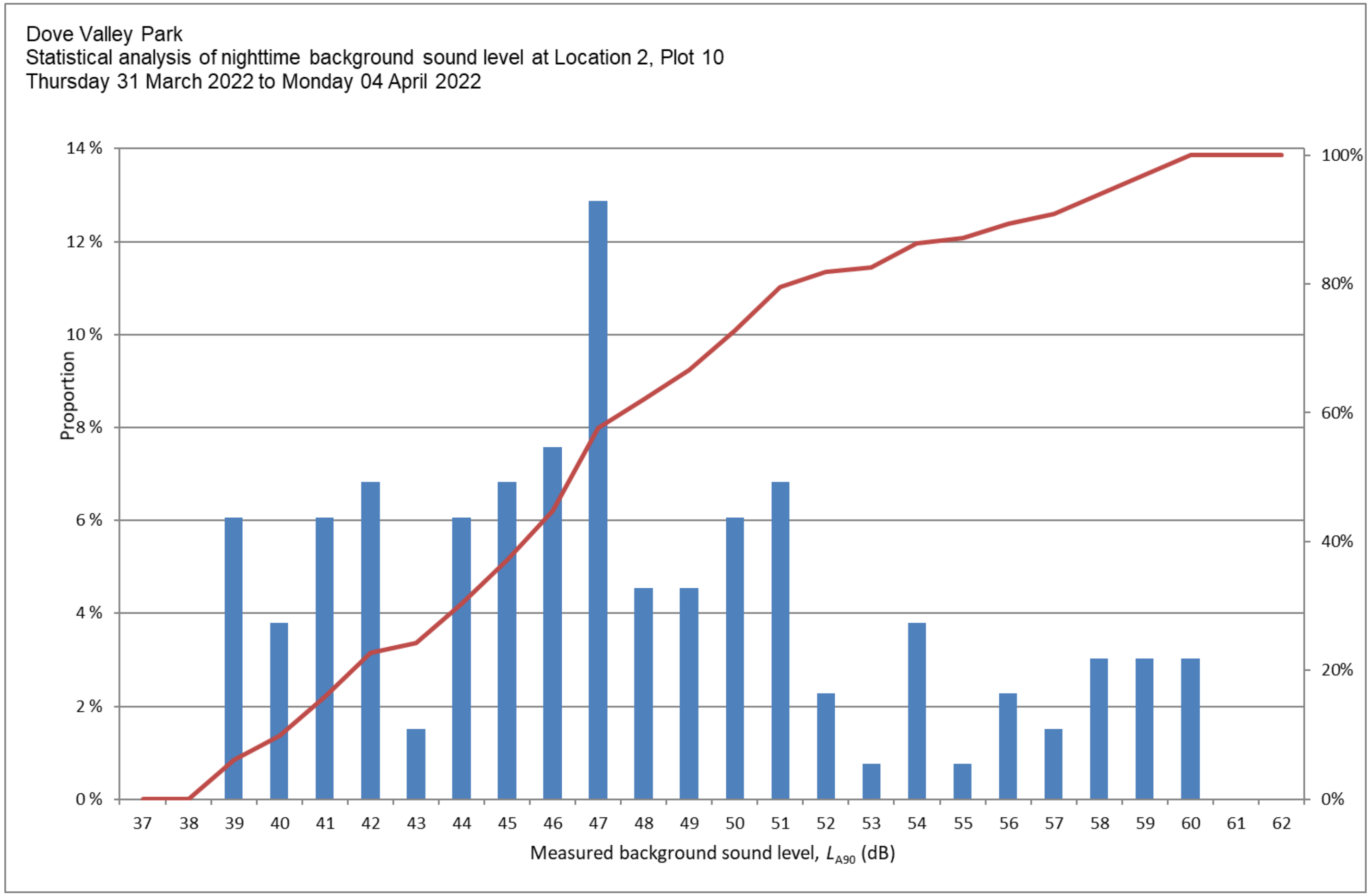


Figure 05-04
Location Two Night-time LA90 Histogram



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