

# SUNDERLAND UTR FACILITY ENVIRONMENTAL PERMIT APPLICATION

**Noise Assessment**  
Prepared for: Wastefront AS  
Client Ref:11075

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## 1.0 Introduction

Wastefront AS has appointed SLR Consulting Ltd. (SLR) to undertake a noise assessment for a permitted Tyre Processing Facility (Site) in Sunderland in support of the planning permission. The same noise assessment is submitted in support of the application for an Environmental Permit.

SLR completed an assessment for the Site previously in 2021. This new assessment has been completed to consider updates to the Site layout and the resulting reorientation of operational plant.

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 updated 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.
- BS4142:2014+A1:2019 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 permitted Site is to be situated on a parcel of land, separated from the mainland by a dock to the west side, located in Sunderland. The Site is currently a disused area, which is part of a wider collection of industrial businesses.

The site is bounded:

- To the north-west by the residential properties of Prospect Row, 680m away.
- To the south-west by the residential properties of Old Mill Road, 600m away, and Commercial Road, 760m away.
- To the west, by Seafarers Way (residential care home), 550m away, and the residential properties of The Quadrant, 600m away.

The location of the Site is shown in Figure 2-1.

**Figure 2-1**  
**Site Location**



## 2.2 Permitted Site

The permitted Site is facility for the treatment of waste tyres to recover saleable products in the form of steel, recovered black carbon (rCB) and liquid hydrocarbons (in the form of synthetic fuels).

The facility will be capable of treating approximately 73000 tonnes of tyre waste a year.

The proposed facility is to comprise of a number of areas and processes, some of which are noise producing. The noise producing elements are as follows:

- Tyre shredding building, which houses 2x raspers
- Pyrolysis building, which houses 4x reactors
- Palletizer building, which houses 1x palletizer
- Two external generators
- Various external fixed plant items
- Moving external plant, including HGV's and forklift trucks

The proposed layout of the Site can be seen in the drawing included in Appendix 02.

## 3.0 Guidance

In accordance with the requirements of Condition 10 of the Planning Decision, the following methodology shall be undertaken:

- Updated noise modelling (utilising the existing model produced for the planning application), to include available sound level data relating to internal and external plant that would be in operation at the site;
- An updated assessment to determine the impact of predicted operational noise upon noise-sensitive receptors. The assessment would be completed in accordance with 'BS4142:2014+A1:2009 Methods for rating and assessing commercial sound', with a rating level of 5dB(A) above background being acceptable depending upon the context. Baseline noise survey data from the previous assessment to be used; and
- The local authority was contacted by email with a proposed scope for the original assessment in November 2020, but no response was received.

In the absence of specific feedback from the council on the proposed scope, the assessment shall be completed to address the requirements of Condition 10 of the planning permission, as detailed in Section 1.0.

The standard referenced in condition 10 is BS4142 and this document is summarised below.

### 3.1 British Standard 4142:2014+A1:2019

British Standard 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound* 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 6dB should be added and for impulsivity a correction of either 0, 3, 6 or 9dB should be added. If the sound contains specific sound features which are neither tonal nor impulsive, a penalty of 3dB 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 3dB may be applied.

The assessment of impact contained in BS4142:2014+A1:2019 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, BS4142:2014+A1:2019 states that the following should be considered:

- typically, the greater the difference, the greater the magnitude of the impact;
- a difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- a difference of around +5dB 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.



BS4142:2014+A1:2019 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.”*

BS4142:2014+A1:2019 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, BS4142:2014+A1:2019 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 0dB and +6dB for tonality. Subjectively, this can be converted to 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 correction of up to +9dB 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 3dB for impulsivity which is just perceptible at the noise receptor, 6dB where it is clearly perceptible, and 9dB 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 3dB 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 3dB can be applied.”*

Finally, BS4142:2014+A1:2019 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.

## 4.0 Baseline Survey Results

### 4.1 Survey Date

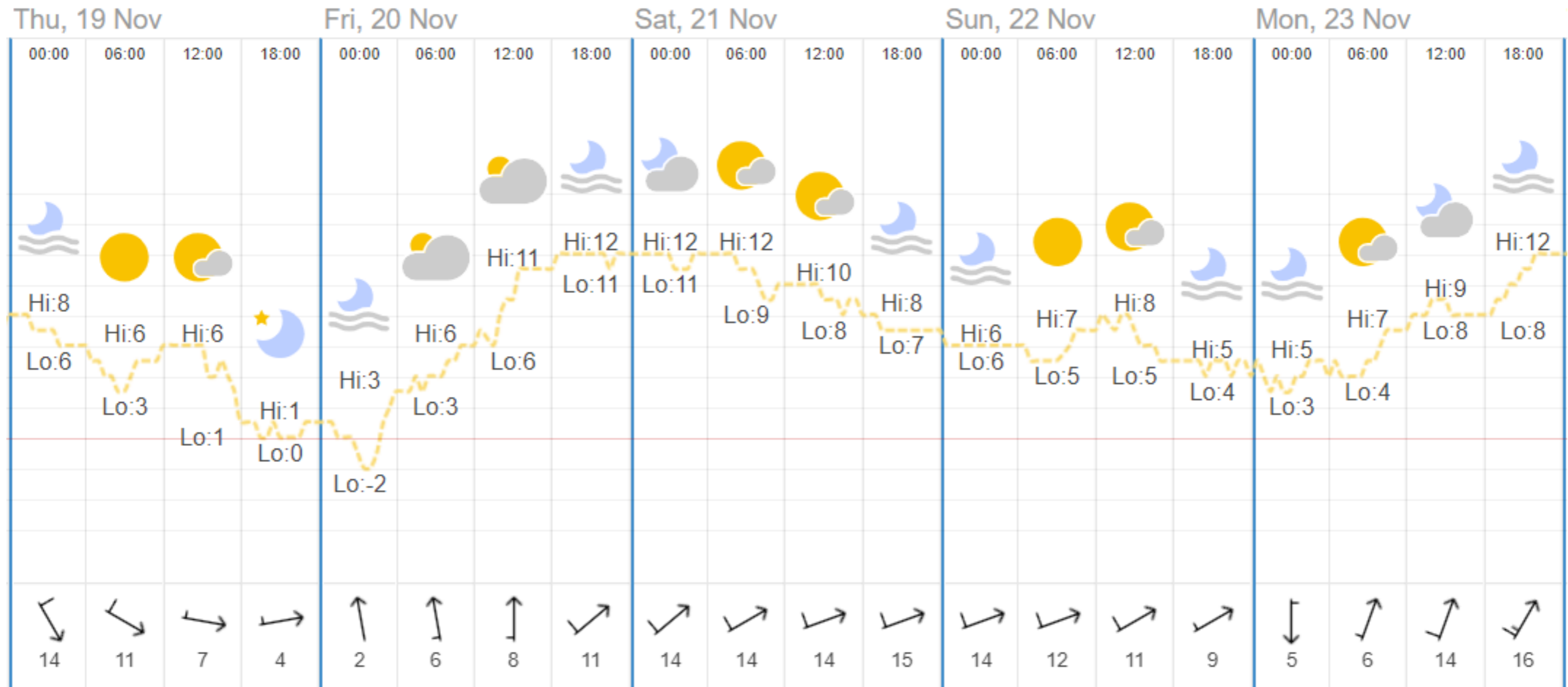
To determine baseline sound levels in the vicinity of the proposed development, a noise survey was undertaken between Thursday 19<sup>th</sup> November and Monday 23<sup>rd</sup> November 2020.

### 4.2 Weather Conditions

During the survey, weather conditions were conducive for noise monitoring, being dry with wind speeds below 5m/s during the survey period, except for during Friday (21<sup>st</sup> November) night-time and Saturday (22<sup>nd</sup> November) daytime and night-time, when the windspeed was above 5m/s at times.

The forecast was as shown on Figure 4-1.

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 – Seafarers Way	Cirrus CR:831B Type 1 Sound Level Meter	C17175FF
	Cirrus CR:511E Acoustic Calibrator	036342
Location 2 - Business Park	Cirrus CR:171B Type 1 Sound Level Meter	G061094
	Cirrus CR:515 Acoustic Calibrator	72210

## 4.4 Survey Locations

Sound levels were measured at two locations, considered to be representative of the nearby receptors, as shown on Figure 4-2.

**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

The baseline sound level results are given below. The wind speeds were found to have been slightly elevated during Saturday evening, but without any adverse effect on the measurement data, so the data has been retained in the assessment.

A summary of the survey results at Location One is shown in Table 4-2. The full survey results are in Appendix 03.

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

Date	Period	L <sub>Aeq,T</sub>	Median L <sub>A90</sub>	Median L <sub>A10</sub>	L <sub>Amax</sub>
Thursday 19 <sup>th</sup> November 2020	Daytime (1230-2300)	46.5	41.3	48.3	79.1
	Night-Time	43.2	40.3	43.7	72.2
Friday 20 <sup>th</sup> November 2020	Daytime	50.4	43.6	49.2	78.8
	Night-Time	40.9	37.9	41.7	66.4
Saturday 21 <sup>st</sup> November 2020	Daytime	45.5	38.5	47.1	78.4
	Night-Time	35.3	30.9	34.3	67.6
Sunday 22 <sup>nd</sup> November 2020	Daytime	44.2	36.6	45.5	76.5
	Night-Time	39.6	33.0	36.0	70.0
Monday 23 <sup>rd</sup> November 2020	Daytime (0700-1220)	49.3	46.1	50.8	69.8
	Night-Time	-	-	-	-

A summary of the survey results at Location Two is shown in Table 4-3. The full survey results are in Appendix 03.

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

Date	Period	L <sub>Aeq,T</sub>	Median L <sub>A90</sub>	Median L <sub>A10</sub>	L <sub>Amax</sub>
Thursday 19 <sup>th</sup> November 2020	Daytime (1319-2300)	52.7	47.5	54.8	86.4
	Night-Time	44.8	36.3	45.4	70.7
Friday 20 <sup>th</sup> November 2020	Daytime	53.3	49.6	55.5	80.8
	Night-Time	46.8	39.9	49.9	69.6
Saturday 21 <sup>st</sup> November 2020	Daytime	53.4	47.8	55.4	80.3
	Night-Time	44.2	33.7	45.6	74.2
Sunday 22 <sup>nd</sup> November 2020	Daytime	52.0	46.0	54.7	76.9
	Night-Time	45.5	34.7	45.1	70.0
Monday 23 <sup>rd</sup> November 2020	Daytime (0700-1249)	54.2	49.6	56.0	83.5
	Night-Time	-	-	-	-

## 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 04.

From a review of the data plotted in the histograms, as provided in Appendix 04, the following baseline background sound levels will be used in the BS4142:2014+A1:2019 assessment for each location.

**Table 4-4**  
**Baseline Background Sound Levels for Assessment**

Monitoring Location	NSR	Period	L <sub>A90</sub> Range	L <sub>A90</sub> Selected
Location 1	Seafarers Way	Daytime	33 - 47	34
		Night-Time	28 - 46	30
	The Quadrant	Daytime	33 - 47	34
		Night-Time	28 - 46	30
	Prospect Row	Daytime	33 - 47	34
		Night-Time	28 - 46	30
Location 2	Old Mill Road	Daytime	39 - 53	40
		Night-Time	30 - 47	32
	Commercial Road	Daytime	39 - 53	40
		Night-Time	30 - 47	32

In accordance with BS4142:2014+A1:2019 assessment the uncertainty associated with measured baseline sound levels requires discussion. 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 BS4142:2014+A1:2019.



## 5.0 BS4142:2014+A1:2019 Assessment

This section of the Report determines the impact of the permitted development 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 0.25.
- A reflection factor of 2.
- A daytime receiver height of 1.5m.
- A night-time receiver height of 4m.

## 5.2 Noise Sources

Table 5-1 provides the source data used in the noise model, for internal noise sources.

**Table 5-1  
 Internal Noise Sources**

Sound Source	Internal Reverberant Noise Level dB(A)	Source Type / Description	Source Height (m)
Tyre Shredding Building	81.6	Modelled as reverberant building with two Raspers, each with a sound power level of 101.5dB(A), surface volume of 7792m <sup>2</sup> , abs coefficient of 0.1, and building fabric SRI of 24dB(A). 100% on-time. Assumed indoor reverberant level	14m
Pyrolysis Area Building	77.0	Modelled as reverberant building with four Reactors, each with a sound power level of 93.0dB(A), surface volume of 6370m <sup>2</sup> , abs coefficient of 0.1, and building fabric SRI of 24dB(A). 100% on-time. Assumed indoor reverberant level	14m
Paletizer Area	71.2	Modelled as reverberant building with one Paletizer, with a sound power level of 88.0dB(A), surface volume of 6370m <sup>2</sup> , abs coefficient of 0.1, and building fabric SRI of 24dB(A). 100% on-time. Assumed indoor reverberant level	14m

Table 5-1 provides the source data used in the noise model, for external noise sources.

**Table 5-2  
 External Noise Sources**

Sound Source	Frequency Hz									dB(A)	Source Type	Source Height (m)	Description
	31.5	63	125	250	500	1000	2000	4000	8000				
Engine Generators – Container (side and top)	94.1	100.8	92.7	84.1	78.7	75.1	72.8	71.0	67.7	83.5	Vertical and Area	2.9m	100% on-time <sup>1</sup>
Engine Generators – Container (end)	92.5	92.0	84.6	76.8	74.0	73.7	69.7	69.2	71.3	79.4	Vertical	2.9m	100% on-time <sup>2</sup>
Engine Generators – Cooing Fan	83.2	77.6	78.2	70.2	70.1	67.6	64.0	58.4	49.9	72.6	Point	4.5m	100% on-time <sup>3</sup>
Engine Generators – Stack	102.6	112.4	105.0	93.5	95.7	84.9	85.7	85.7	81.0	96.7	Point	7m	100% on-time <sup>4</sup>
Pumps	-	-	-	-	-	-	-	-	-	93.0	Point	1m	Pumps area, water pump. 100% on-time <sup>5</sup> . Assumed
Stack Exhaust	-	66.0	76.0	84.0	85.0	84.0	78.0	73.0	68.0	89.8	Point	30m	100% on-time. Assumed

<sup>1</sup> Based on SLR measured data for similar plant.

<sup>2</sup> Based on SLR measured data for similar plant.

<sup>3</sup> Based on SLR measured data for similar plant.

<sup>4</sup> Based on SLR measured data for similar plant.

<sup>5</sup> Exception pump at tanker bay. Daytime only and on-time 50% in hour (when filling tanker). Height at 2m for this pump.

Sound Source	Frequency Hz									dB(A)	Source Type	Source Height (m)	Description
	31.5	63	125	250	500	1000	2000	4000	8000				
Stack Fan	93.5	92.9	90.8	82.3	79.3	74.3	73.5	68.7	55.5	82.2	Point	2.5m	100% on-time <sup>6</sup>
Air cooled condensers	-	-	-	-	-	-	-	-	-	85.0	Point	3m	Cooling water area. 100% on-time <sup>7</sup>
Scrubber	-	-	-	-	-	-	-	-	-	78.0	Point	3m	100% on-time <sup>8</sup>
HGV	-	95.4	91.8	89.5	88.1	88.4	86.9	81.3	70.0	97.9	Moving point	1.5m	2 per hour <sup>9</sup>
Diesel Forklift	84.7	80.6	81.8	77.1	78.5	72.5	71.5	68.1	59.0	79.5	Moving point	1m	60 movements per hour. Tyre storage and shredding areas <sup>10</sup>

<sup>6</sup> Based on manufacturer's data used within previous SLR assessment for pyrolysis plant.

<sup>7</sup> Based on manufacturer's data.

<sup>8</sup> Based on SLR measured data for similar plant.

<sup>9</sup> Based on SLR measured data. Movements taken from Planning Statement. Four movements an hour, 2 in, 2 out. No movements at night.

<sup>10</sup> Based on SLR measured data.

### 5.3 Specific Sound Level

The predicted sound levels of the noise sources associated with the proposals are shown in Table 5-3 below.

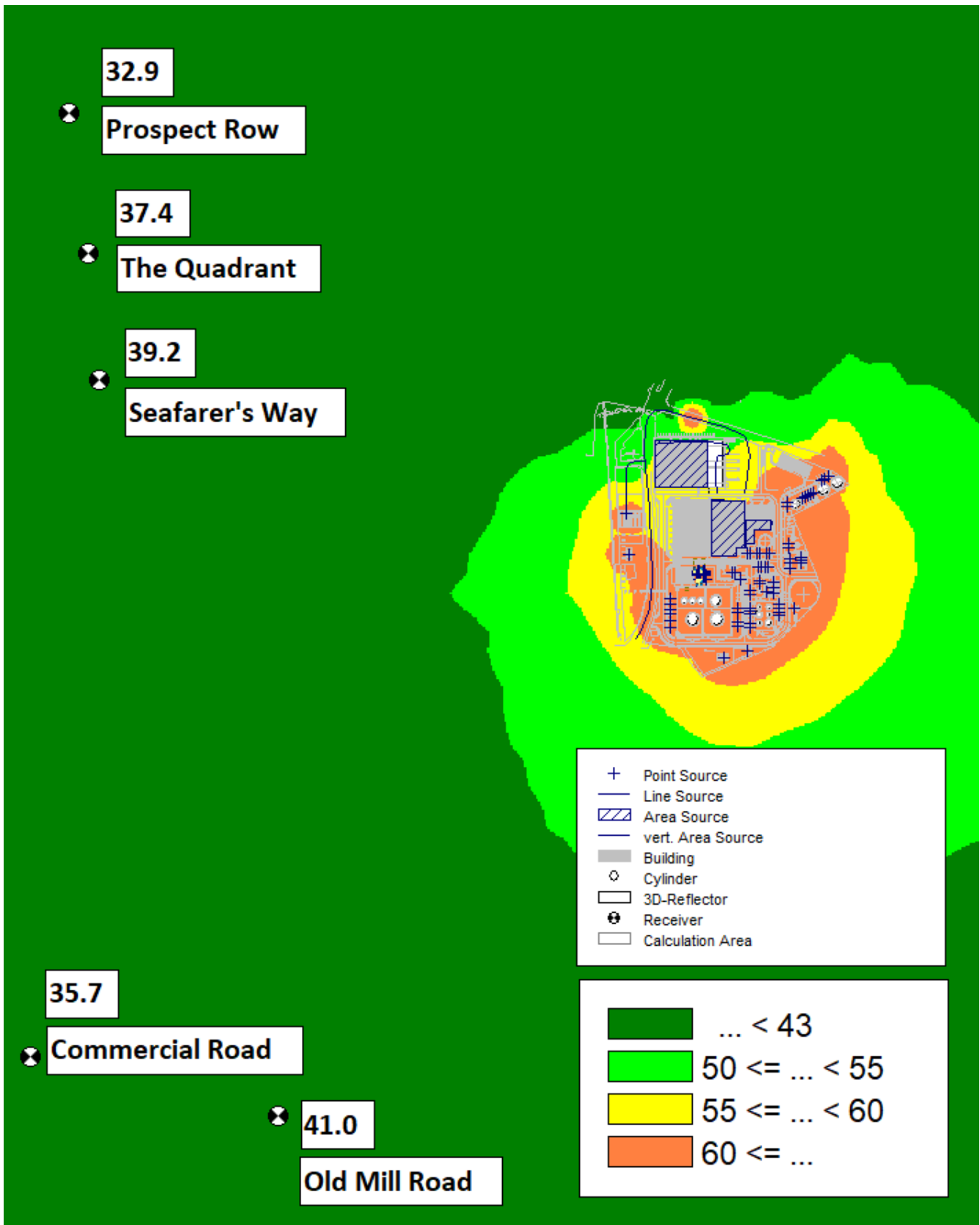
Daytime sound levels have been predicted at 1.5m above local ground level, which is the approximate height of a ground floor window. Night-Time sound levels have been predicted at 4m above local ground level, which is the approximate height of a first-floor window.

**Table 5-3**  
**Predicted Specific Sound Levels, free-field, dB**

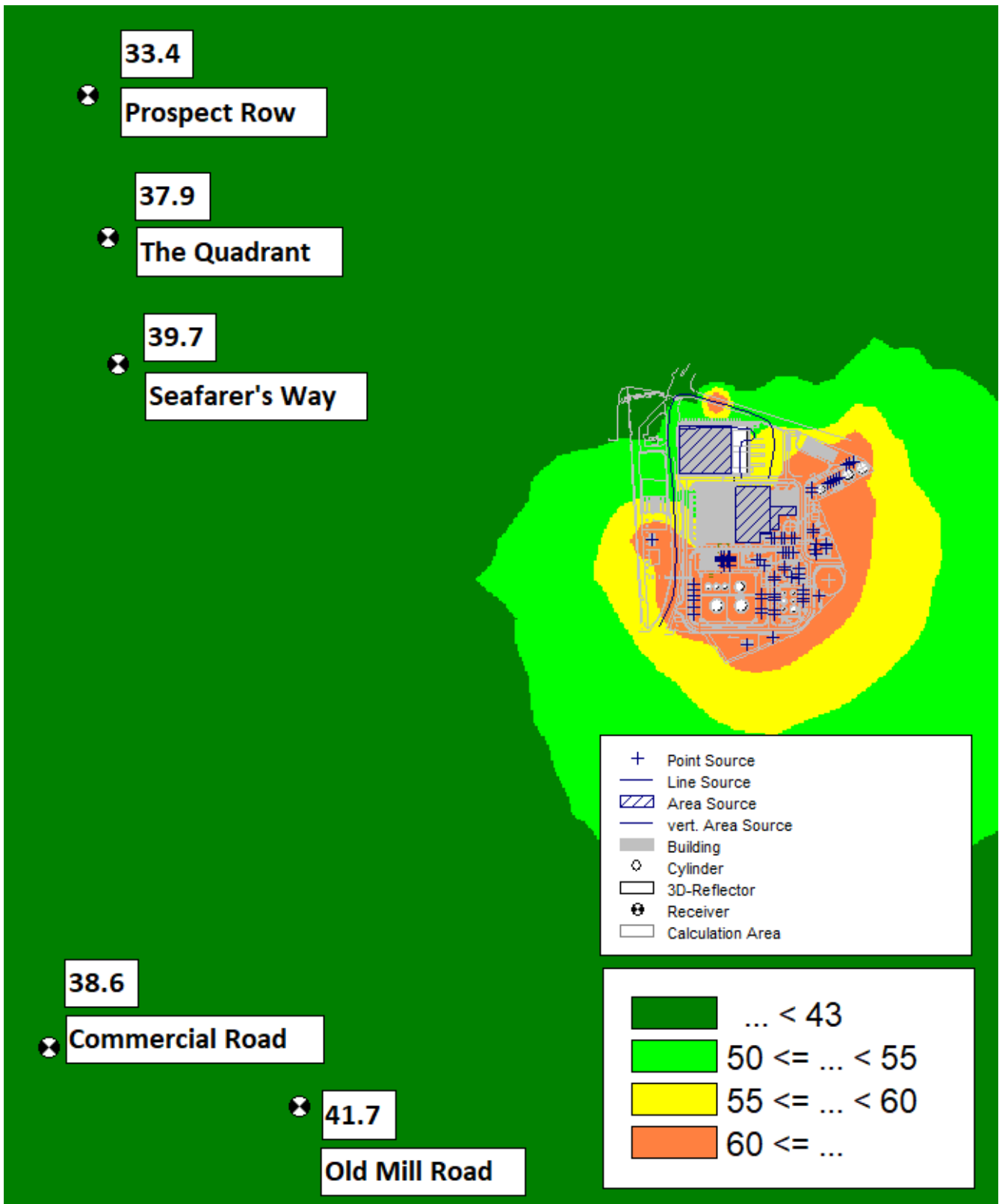
Location	Period	Predicted Sound Level, $L_{Aeq,T}$
Seafarers Way	Daytime	39.2
	Night-Time	39.7
The Quadrant	Daytime	37.4
	Night-Time	38.0
Prospect Row	Daytime	32.9
	Night-Time	33.4
Old Mill Road	Daytime	41.0
	Night-Time	41.7
Commercial Road	Daytime	35.7
	Night-Time	38.6

A graphical image of the predicted specific sound level during the daytime can be seen in Figure 5-1. A graphical image of the predicted specific sound level during the night-time can be seen in Figure 5-2.

**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)**



## 5.4 Character Correction

The character of each noise source, and the correction that will be applied in the BS4142:2014+A1:2019 assessment are as follows:

- **Tonality:** SLR has not undertaken the BS4142:2014+A1:2019 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 3dB correction will be included in the assessment.

In total a 3dB 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 5-3 to derive the rating levels at each of the nearest noise-sensitive receptors.

The results of the BS4142:2014 +A1:2019 assessment are shown in



Table 5-4. 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 +/-3dB.

**Table 5-4**  
**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
Seafarers Way	Daytime (07:00 – 23:00)	39	42	34	+ 8
	Night-Time (23:00 – 07:00)	40	43	30	+ 13
The Quadrant	Daytime (07:00 – 23:00)	37	40	34	+ 6
	Night-Time (23:00 – 07:00)	38	41	30	+ 11
Prospect Row	Daytime (07:00 – 23:00)	33	36	34	+ 2
	Night-Time (23:00 – 07:00)	33	36	30	+ 6
Old Mill Road	Daytime (07:00 – 23:00)	41	44	40	+ 4
	Night-Time (23:00 – 07:00)	42	45	32	+ 13
Commercial Road	Daytime (07:00 – 23:00)	36	39	40	- 1
	Night-Time (23:00 – 07:00)	39	42	32	+ 10

It can be seen from

Table 5-4 that:

- During the daytime, the predicted rating level at the receptors is between 1dB below and 8dB above the corresponding background sound level. Mitigation will be required and will be discussed in the Noise Management Plan.
- During the night-time, the predicted rating level at the receptors is between 6dB and 13dB above the corresponding background sound level. Mitigation will be required and will be discussed in the Noise Management Plan.

## 6.0 Conclusion

Wastefront AS has appointed SLR Consulting Ltd (SLR) to undertake a noise assessment for a proposed Tyre Processing Facility (Site) in Sunderland. The noise assessment is provided to discharge the condition relating to noise issued in response to the planning application.

Condition 10, relating to noise, is as follows:

*“Prior to the installation of any fixed external mechanical plant, including any production-related equipment serving ventilation and emissions to air, a noise assessment shall be submitted for the agreement of the LPA. The assessment shall rate noise levels arising from such plant in accordance with BS4142:2014 at the nearest noise-sensitive receiver. Where the rated noise for the plant being assessed exceeds the existing daytime or night-time background levels, recommended mitigation measures must be proposed and implemented prior to the operation of the plant.”*

SLR completed an assessment for the Site previously in 2021, which formed part of a wider Environmental Statement. This new assessment has been completed to consider updates to the Site layout and the resulting reorientation of operational plant.

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:

- During the daytime, the predicted rating level at the receptors is between 1dB below and 8dB above the corresponding background sound level.
- During the night-time, the predicted rating level at the receptors is between 6dB and 13dB above the corresponding background sound level.
- Mitigation is required and will be discussed in the Noise Management Plan.

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

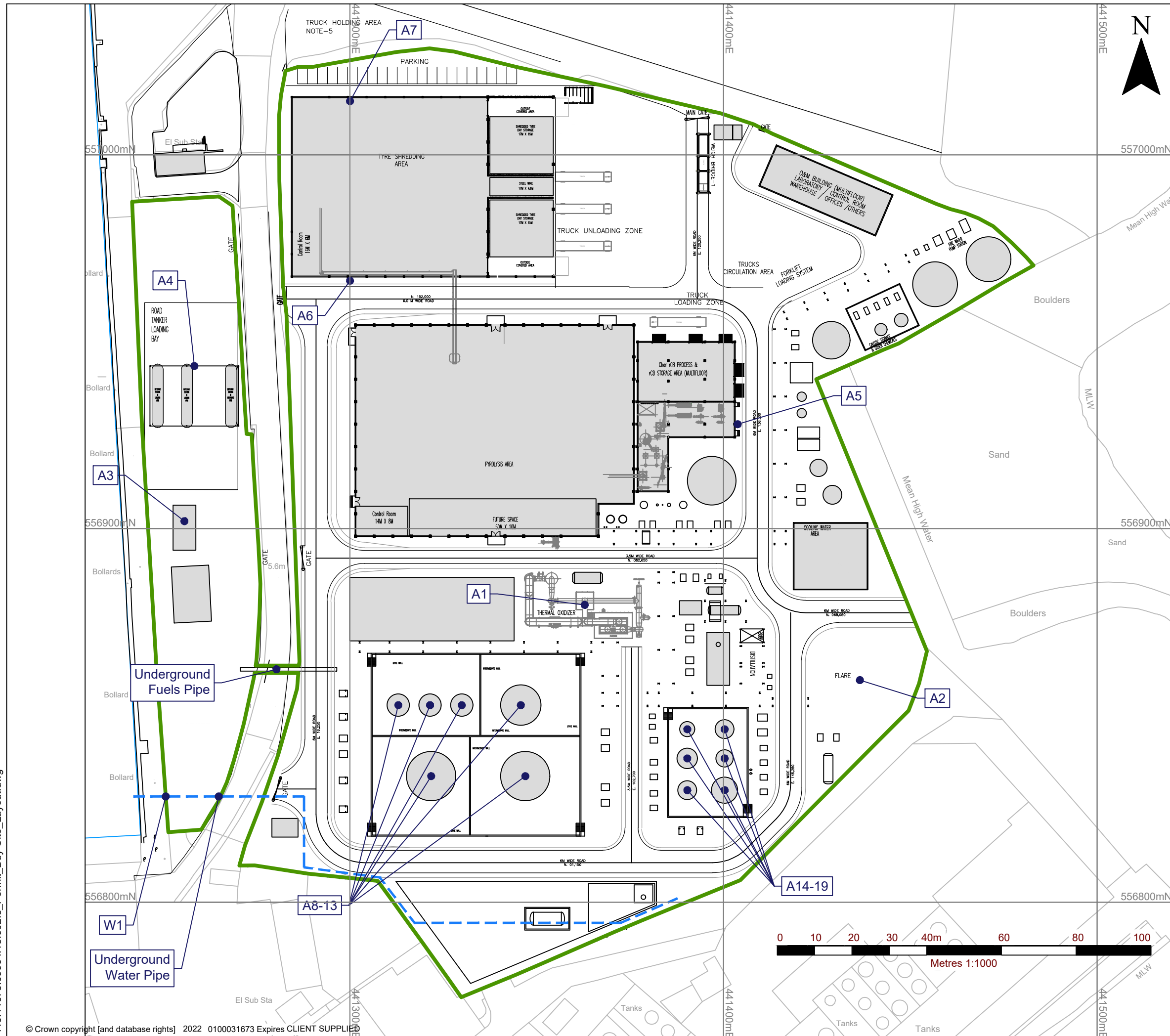
### Acoustic Terminology

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 ( $2 \times 10^{-5} \text{Pa}$ ).
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

416.11075.00004.13.002.3\_Permit\_Bdy\_Site\_Layout.dwg



**NOTES**

1. DRAWING IS BASED ON CASTELLUM CONSULTING PERMIT SITE PLAN, DRAWING REF: W4-01-21-08v2, DATED 15th OCTOBER 2022.

**LEGEND**

ENVIRONMENTAL PERMIT BOUNDARY



**SLR**

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**ENVIRONMENTAL PERMIT APPLICATION**

**PERMIT BOUNDARY AND SITE LAYOUT**

**DRAWING 02**

Scale 1:1000 @ A3 Date JANUARY 2023



## APPENDIX 03

### Survey Results

**Table 04-01**  
**Location One Survey Results**

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
19/11/2020	12:30	53.1	42.8	53.4	79.1
19/11/2020	12:45	46.8	42.6	50.0	62.3
19/11/2020	13:00	46.8	42.6	49.7	61.6
19/11/2020	13:15	47.4	42.7	50.5	66.0
19/11/2020	13:30	52.2	43.2	53.6	74.6
19/11/2020	13:45	46.6	43.3	48.7	62.6
19/11/2020	14:00	47.7	43.8	50.3	61.5
19/11/2020	14:15	47.9	44.3	50.6	60.3
19/11/2020	14:30	47.7	43.1	50.2	67.0
19/11/2020	14:45	49.6	42.9	51.8	68.2
19/11/2020	15:00	47.8	42.4	50.2	67.3
19/11/2020	15:15	46.8	42.2	49.3	66.0
19/11/2020	15:30	47.4	39.9	51.2	65.4
19/11/2020	15:45	49.6	40.8	50.9	70.6
19/11/2020	16:00	45.0	39.0	48.5	59.3
19/11/2020	16:15	44.1	39.4	47.6	58.6
19/11/2020	16:30	46.1	39.4	49.0	63.8
19/11/2020	16:45	44.7	39.1	48.3	61.8
19/11/2020	17:00	45.9	40.2	49.5	59.5
19/11/2020	17:15	47.0	41.1	50.1	69.9
19/11/2020	17:30	45.8	41.8	48.3	60.0
19/11/2020	17:45	44.8	42.1	45.2	58.5
19/11/2020	18:00	45.7	42.4	48.2	61.6
19/11/2020	18:15	45.7	42.2	47.5	60.8
19/11/2020	18:30	45.9	40.3	49.8	62.3
19/11/2020	18:45	44.4	40.9	45.2	60.3
19/11/2020	19:00	44.3	40.9	47.5	57.5
19/11/2020	19:15	44.5	41.6	46.0	61.0
19/11/2020	19:30	44.5	41.6	44.9	63.3
19/11/2020	19:45	46.3	41.7	48.2	61.9
19/11/2020	20:00	45.1	42.1	47.9	57.8

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
19/11/2020	20:15	42.5	40.4	43.2	52.7
19/11/2020	20:30	44.0	41.3	44.8	57.4
19/11/2020	20:45	43.3	40.0	43.7	58.0
19/11/2020	21:00	42.5	40.3	43.0	58.8
19/11/2020	21:15	43.2	39.7	42.6	67.8
19/11/2020	21:30	42.8	40.5	43.8	54.1
19/11/2020	21:45	42.3	39.6	42.9	55.8
19/11/2020	22:00	41.4	39.6	42.2	54.4
19/11/2020	22:15	42.3	40.6	43.3	56.4
19/11/2020	22:30	41.7	39.8	43.2	45.6
19/11/2020	22:45	40.7	39.4	41.9	45.1
19/11/2020	23:00	42.7	40.4	43.9	55.6
19/11/2020	23:15	42.6	40.5	43.9	57.6
19/11/2020	23:30	39.4	36.1	41.7	51.9
19/11/2020	23:45	37.9	36.4	38.8	48.1
20/11/2020	00:00	39.0	37.0	39.3	57.1
20/11/2020	00:15	38.9	37.8	40.0	45.5
20/11/2020	00:30	38.0	36.8	39.1	43.5
20/11/2020	00:45	39.5	37.9	40.6	53.9
20/11/2020	01:00	40.6	39.0	41.9	49.7
20/11/2020	01:15	40.4	38.9	41.7	48.6
20/11/2020	01:30	41.4	39.4	43.0	46.1
20/11/2020	01:45	41.8	39.9	43.4	46.8
20/11/2020	02:00	41.6	40.1	42.9	48.3
20/11/2020	02:15	39.7	38.2	41.1	44.0
20/11/2020	02:30	41.3	39.9	42.6	47.6
20/11/2020	02:45	42.1	39.9	43.0	55.0
20/11/2020	03:00	42.1	40.2	43.8	49.6
20/11/2020	03:15	42.6	40.4	43.6	60.1
20/11/2020	03:30	42.8	40.1	43.8	58.1
20/11/2020	03:45	42.2	40.6	43.7	48.2
20/11/2020	04:00	42.0	40.5	43.3	48.1

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
20/11/2020	04:15	42.7	40.9	44.2	54.1
20/11/2020	04:30	42.8	41.1	44.2	49.0
20/11/2020	04:45	44.1	42.2	45.4	52.3
20/11/2020	05:00	44.4	43.0	45.6	52.5
20/11/2020	05:15	44.6	43.1	45.7	55.6
20/11/2020	05:30	45.1	43.7	46.3	55.7
20/11/2020	05:45	45.9	44.6	46.9	55.3
20/11/2020	06:00	46.1	44.7	47.4	53.0
20/11/2020	06:15	46.8	45.4	48.1	54.8
20/11/2020	06:30	47.2	45.8	48.5	63.0
20/11/2020	06:45	48.3	46.4	49.6	72.2
20/11/2020	07:00	58.9	46.2	61.2	75.8
20/11/2020	07:15	50.4	46.4	52.1	66.3
20/11/2020	07:30	51.7	46.5	51.5	75.2
20/11/2020	07:45	50.1	47.0	50.9	71.2
20/11/2020	08:00	49.1	46.4	51.1	61.0
20/11/2020	08:15	50.0	46.8	51.5	70.9
20/11/2020	08:30	50.6	46.7	52.5	64.5
20/11/2020	08:45	48.7	46.4	50.3	63.9
20/11/2020	09:00	49.0	46.2	51.3	61.1
20/11/2020	09:15	64.3	45.2	70.3	78.7
20/11/2020	09:30	51.5	47.3	54.3	62.9
20/11/2020	09:45	48.2	45.7	50.3	59.5
20/11/2020	10:00	51.7	45.8	50.2	78.8
20/11/2020	10:15	50.6	46.7	51.7	74.0
20/11/2020	10:30	51.7	48.5	54.1	63.0
20/11/2020	10:45	49.7	46.2	51.1	70.5
20/11/2020	11:00	48.4	45.3	50.9	59.0
20/11/2020	11:15	48.0	44.8	49.9	63.1
20/11/2020	11:30	50.7	45.8	52.8	65.7
20/11/2020	11:45	47.1	44.1	49.1	61.6
20/11/2020	12:00	50.2	43.4	49.4	76.3

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
20/11/2020	12:15	46.4	42.7	48.2	63.1
20/11/2020	12:30	44.9	42.0	47.3	58.7
20/11/2020	12:45	46.2	43.3	48.7	58.3
20/11/2020	13:00	46.8	43.3	49.6	62.3
20/11/2020	13:15	47.0	43.7	49.3	61.4
20/11/2020	13:30	47.6	43.8	49.9	71.1
20/11/2020	13:45	46.5	43.8	49.1	57.1
20/11/2020	14:00	47.4	43.2	49.3	65.4
20/11/2020	14:15	48.1	44.2	50.6	68.0
20/11/2020	14:30	48.5	43.7	51.3	65.1
20/11/2020	14:45	47.6	44.2	49.9	62.4
20/11/2020	15:00	47.5	44.5	49.9	60.2
20/11/2020	15:15	51.0	45.4	52.3	73.3
20/11/2020	15:30	51.1	45.8	53.7	68.1
20/11/2020	15:45	48.8	45.1	51.1	62.7
20/11/2020	16:00	48.2	44.6	50.7	65.7
20/11/2020	16:15	46.7	43.8	49.1	59.4
20/11/2020	16:30	46.5	43.5	48.9	59.9
20/11/2020	16:45	45.4	42.7	48.1	56.3
20/11/2020	17:00	46.5	43.0	49.0	66.2
20/11/2020	17:15	45.5	42.1	47.7	65.6
20/11/2020	17:30	44.7	41.3	47.7	64.7
20/11/2020	17:45	44.0	41.2	46.8	56.4
20/11/2020	18:00	44.5	42.1	46.6	60.5
20/11/2020	18:15	44.8	42.1	46.9	58.0
20/11/2020	18:30	43.9	41.3	46.6	56.0
20/11/2020	18:45	43.9	40.4	46.4	58.6
20/11/2020	19:00	43.2	39.3	46.6	55.1
20/11/2020	19:15	43.0	39.0	46.4	54.6
20/11/2020	19:30	42.1	38.8	45.4	54.7
20/11/2020	19:45	41.4	38.8	42.4	56.8
20/11/2020	20:00	42.3	39.6	43.6	55.7

Date	Time	LAeq	LA90	LA10	LAmx
20/11/2020	20:15	42.1	39.2	44.1	61.0
20/11/2020	20:30	41.3	38.7	42.9	53.9
20/11/2020	20:45	41.5	37.3	43.5	60.0
20/11/2020	21:00	40.2	36.8	41.7	53.0
20/11/2020	21:15	40.4	37.3	40.5	54.1
20/11/2020	21:30	41.9	38.3	43.5	54.5
20/11/2020	21:45	41.9	38.2	44.6	54.9
20/11/2020	22:00	38.3	36.7	39.7	45.9
20/11/2020	22:15	37.8	36.2	39.1	45.1
20/11/2020	22:30	38.6	36.9	39.7	49.8
20/11/2020	22:45	38.0	36.5	39.0	51.8
20/11/2020	23:00	39.8	37.9	41.0	50.0
20/11/2020	23:15	40.4	37.6	41.3	56.0
20/11/2020	23:30	39.2	37.8	40.6	45.5
20/11/2020	23:45	41.8	38.7	43.5	53.9
21/11/2020	00:00	40.0	37.3	40.7	56.5
21/11/2020	00:15	37.5	34.8	38.9	58.2
21/11/2020	00:30	36.9	35.2	38.5	50.3
21/11/2020	00:45	37.6	35.4	39.2	50.1
21/11/2020	01:00	36.6	34.9	38.1	43.1
21/11/2020	01:15	38.7	36.7	40.3	48.7
21/11/2020	01:30	39.5	37.7	41.1	49.4
21/11/2020	01:45	39.8	37.0	41.8	52.5
21/11/2020	02:00	41.6	37.3	44.0	54.3
21/11/2020	02:15	41.4	38.6	43.8	51.4
21/11/2020	02:30	42.5	39.2	44.5	54.4
21/11/2020	02:45	42.5	39.8	44.9	52.4
21/11/2020	03:00	42.4	38.6	44.1	58.9
21/11/2020	03:15	41.8	39.2	44.0	52.5
21/11/2020	03:30	43.0	40.4	45.2	52.1
21/11/2020	03:45	42.2	40.0	44.0	50.0
21/11/2020	04:00	41.5	39.0	43.4	50.6

Date	Time	LAeq	LA90	LA10	LAmx
21/11/2020	04:15	42.1	39.5	44.3	49.9
21/11/2020	04:30	40.7	38.5	42.7	49.0
21/11/2020	04:45	40.1	38.3	41.6	48.5
21/11/2020	05:00	39.0	37.3	40.5	50.0
21/11/2020	05:15	38.7	36.7	39.6	54.3
21/11/2020	05:30	38.6	36.8	40.0	47.6
21/11/2020	05:45	39.1	36.7	40.3	58.1
21/11/2020	06:00	39.3	36.5	40.5	63.2
21/11/2020	06:15	42.5	38.2	43.8	65.6
21/11/2020	06:30	43.6	39.2	46.4	66.4
21/11/2020	06:45	44.4	38.5	46.8	64.0
21/11/2020	07:00	49.5	40.9	52.7	69.3
21/11/2020	07:15	47.0	39.0	48.0	65.3
21/11/2020	07:30	47.1	38.7	49.6	70.3
21/11/2020	07:45	47.1	39.9	50.4	62.8
21/11/2020	08:00	44.6	38.6	46.8	65.2
21/11/2020	08:15	48.4	39.0	46.0	73.3
21/11/2020	08:30	48.4	38.7	47.6	73.2
21/11/2020	08:45	45.0	39.2	46.7	71.7
21/11/2020	09:00	51.4	39.2	49.0	75.5
21/11/2020	09:15	45.0	39.1	48.3	65.0
21/11/2020	09:30	44.9	38.9	48.2	64.4
21/11/2020	09:45	42.8	38.3	46.3	56.7
21/11/2020	10:00	45.1	38.5	48.8	61.9
21/11/2020	10:15	45.9	40.2	48.5	58.8
21/11/2020	10:30	47.5	41.0	49.1	69.6
21/11/2020	10:45	45.0	39.1	47.5	59.9
21/11/2020	11:00	45.6	39.2	49.1	66.3
21/11/2020	11:15	44.8	38.5	49.1	57.1
21/11/2020	11:30	47.0	38.5	47.4	69.0
21/11/2020	11:45	50.3	39.0	49.0	71.9
21/11/2020	12:00	44.0	38.5	46.6	64.4

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
21/11/2020	12:15	46.2	38.7	50.0	59.5
21/11/2020	12:30	45.7	39.8	49.8	60.6
21/11/2020	12:45	50.1	40.7	49.9	78.4
21/11/2020	13:00	47.7	41.7	50.4	68.6
21/11/2020	13:15	46.7	40.4	47.2	69.7
21/11/2020	13:30	45.4	40.0	48.2	60.5
21/11/2020	13:45	49.8	39.4	50.3	72.8
21/11/2020	14:00	45.3	39.7	48.0	64.8
21/11/2020	14:15	47.2	40.9	50.8	60.2
21/11/2020	14:30	46.6	40.3	47.7	69.4
21/11/2020	14:45	46.8	40.6	48.2	70.5
21/11/2020	15:00	46.0	39.1	48.6	68.3
21/11/2020	15:15	42.8	38.7	45.5	58.8
21/11/2020	15:30	45.3	38.3	47.2	70.4
21/11/2020	15:45	44.1	38.0	46.9	60.5
21/11/2020	16:00	43.0	38.1	46.6	61.0
21/11/2020	16:15	45.9	37.8	48.4	64.0
21/11/2020	16:30	43.7	37.7	46.7	64.7
21/11/2020	16:45	43.0	37.0	45.5	60.8
21/11/2020	17:00	43.4	37.0	47.5	58.0
21/11/2020	17:15	43.9	36.8	46.0	67.3
21/11/2020	17:30	43.5	37.4	47.0	59.9
21/11/2020	17:45	44.0	36.9	47.0	62.7
21/11/2020	18:00	43.5	37.9	46.8	59.7
21/11/2020	18:15	43.7	38.2	47.1	58.0
21/11/2020	18:30	42.1	37.7	43.4	58.9
21/11/2020	18:45	43.2	37.0	46.8	59.2
21/11/2020	19:00	43.5	36.3	45.5	63.2
21/11/2020	19:15	41.4	36.3	44.4	59.4
21/11/2020	19:30	42.7	36.1	46.6	57.8
21/11/2020	19:45	41.4	35.4	44.2	58.7
21/11/2020	20:00	41.6	35.8	42.3	59.4



Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
21/11/2020	20:15	38.1	35.4	39.3	54.0
21/11/2020	20:30	39.0	35.5	39.4	53.9
21/11/2020	20:45	40.8	35.6	42.4	61.5
21/11/2020	21:00	41.4	35.4	43.6	57.3
21/11/2020	21:15	41.9	35.4	43.6	64.5
21/11/2020	21:30	39.9	35.0	40.1	56.1
21/11/2020	21:45	38.4	35.2	39.2	54.3
21/11/2020	22:00	39.0	34.4	38.0	56.3
21/11/2020	22:15	39.4	34.3	41.6	57.5
21/11/2020	22:30	35.5	34.1	36.8	44.8
21/11/2020	22:45	39.3	33.6	38.8	56.1
21/11/2020	23:00	39.7	33.5	38.5	60.0
21/11/2020	23:15	37.7	33.6	38.0	52.9
21/11/2020	23:30	37.9	32.9	37.3	57.8
21/11/2020	23:45	33.6	32.0	35.3	48.8
22/11/2020	00:00	34.7	31.9	34.5	53.1
22/11/2020	00:15	35.4	31.2	34.0	56.0
22/11/2020	00:30	34.0	31.0	35.0	53.6
22/11/2020	00:45	35.8	32.3	36.0	51.9
22/11/2020	01:00	33.5	31.4	34.7	46.3
22/11/2020	01:15	33.6	30.7	34.5	47.2
22/11/2020	01:30	32.0	30.5	33.6	38.0
22/11/2020	01:45	33.4	31.1	34.9	50.6
22/11/2020	02:00	31.7	30.4	33.0	43.8
22/11/2020	02:15	32.7	29.5	32.7	54.0
22/11/2020	02:30	30.4	29.3	31.8	40.6
22/11/2020	02:45	29.7	28.3	31.3	37.1
22/11/2020	03:00	31.9	29.8	33.8	43.0
22/11/2020	03:15	33.1	30.9	34.9	45.9
22/11/2020	03:30	34.4	32.0	35.5	48.0
22/11/2020	03:45	32.5	30.8	34.0	42.1
22/11/2020	04:00	31.3	29.6	32.8	44.8

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
22/11/2020	04:15	31.7	30.5	33.0	38.6
22/11/2020	04:30	31.4	30.2	32.7	37.0
22/11/2020	04:45	31.8	30.5	33.2	39.3
22/11/2020	05:00	33.0	29.7	32.3	52.9
22/11/2020	05:15	35.5	30.6	33.6	55.5
22/11/2020	05:30	35.2	30.6	33.5	55.8
22/11/2020	05:45	33.7	30.5	32.8	55.1
22/11/2020	06:00	34.2	31.3	34.6	54.8
22/11/2020	06:15	33.5	31.9	34.5	46.9
22/11/2020	06:30	41.0	33.2	39.4	67.6
22/11/2020	06:45	41.8	34.9	45.2	60.5
22/11/2020	07:00	48.2	35.5	52.4	67.6
22/11/2020	07:15	47.1	35.8	48.8	68.5
22/11/2020	07:30	42.9	36.3	44.7	63.3
22/11/2020	07:45	45.5	37.6	47.9	65.0
22/11/2020	08:00	40.4	34.2	40.9	65.8
22/11/2020	08:15	38.6	34.7	40.1	55.4
22/11/2020	08:30	40.4	35.2	43.0	54.5
22/11/2020	08:45	42.8	36.1	43.7	60.7
22/11/2020	09:00	42.2	36.9	45.0	59.5
22/11/2020	09:15	43.7	37.9	47.0	62.2
22/11/2020	09:30	45.2	40.4	47.7	62.4
22/11/2020	09:45	43.4	39.5	45.5	61.4
22/11/2020	10:00	45.5	37.9	48.6	64.2
22/11/2020	10:15	46.4	39.4	49.1	66.0
22/11/2020	10:30	45.3	39.4	48.3	65.3
22/11/2020	10:45	44.3	38.4	47.6	59.1
22/11/2020	11:00	45.0	38.8	48.1	63.0
22/11/2020	11:15	43.6	38.1	46.8	59.1
22/11/2020	11:30	42.3	37.8	44.9	57.1
22/11/2020	11:45	48.9	38.0	47.2	73.4
22/11/2020	12:00	46.0	40.8	49.3	59.8

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
22/11/2020	12:15	47.9	39.8	50.1	71.8
22/11/2020	12:30	44.7	38.2	47.7	60.8
22/11/2020	12:45	48.9	40.0	50.8	65.9
22/11/2020	13:00	46.2	39.3	49.7	61.9
22/11/2020	13:15	46.0	39.0	49.5	60.1
22/11/2020	13:30	48.0	39.5	49.8	76.5
22/11/2020	13:45	49.5	39.7	51.8	70.9
22/11/2020	14:00	49.0	38.6	50.8	72.9
22/11/2020	14:15	46.0	39.3	49.0	61.8
22/11/2020	14:30	45.9	38.3	49.4	61.5
22/11/2020	14:45	44.5	37.1	48.3	59.2
22/11/2020	15:00	45.0	38.1	48.3	65.2
22/11/2020	15:15	44.2	37.9	47.2	61.3
22/11/2020	15:30	46.3	38.2	49.6	66.2
22/11/2020	15:45	43.2	36.9	46.9	64.2
22/11/2020	16:00	44.1	37.7	48.1	58.9
22/11/2020	16:15	43.0	36.1	46.8	59.9
22/11/2020	16:30	42.0	36.4	45.5	56.7
22/11/2020	16:45	44.2	36.7	47.3	67.6
22/11/2020	17:00	41.6	36.3	44.3	59.0
22/11/2020	17:15	41.2	36.7	42.7	55.3
22/11/2020	17:30	41.6	35.9	45.3	57.1
22/11/2020	17:45	41.7	36.3	45.0	62.4
22/11/2020	18:00	40.3	35.6	41.9	59.8
22/11/2020	18:15	40.7	36.5	43.7	55.8
22/11/2020	18:30	39.3	35.9	39.2	56.9
22/11/2020	18:45	40.3	35.4	39.9	59.5
22/11/2020	19:00	41.8	35.7	44.3	60.5
22/11/2020	19:15	41.0	36.0	40.4	58.5
22/11/2020	19:30	41.4	35.8	44.4	60.4
22/11/2020	19:45	42.0	35.5	41.2	61.8
22/11/2020	20:00	41.2	35.3	44.1	59.3

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
22/11/2020	20:15	38.7	35.3	40.1	52.0
22/11/2020	20:30	39.7	35.1	40.7	53.8
22/11/2020	20:45	40.1	35.1	42.5	53.5
22/11/2020	21:00	38.9	34.4	41.7	54.4
22/11/2020	21:15	37.9	33.9	37.1	56.3
22/11/2020	21:30	41.1	33.5	42.5	56.5
22/11/2020	21:45	37.4	33.2	37.4	54.4
22/11/2020	22:00	39.1	33.2	39.9	55.5
22/11/2020	22:15	40.1	33.0	41.6	57.6
22/11/2020	22:30	37.1	33.5	36.8	54.4
22/11/2020	22:45	37.8	32.9	39.2	53.6
22/11/2020	23:00	34.0	32.0	34.5	46.9
22/11/2020	23:15	34.3	32.5	34.7	48.3
22/11/2020	23:30	34.2	32.0	35.1	50.6
22/11/2020	23:45	36.0	32.4	35.7	52.9
23/11/2020	00:00	33.6	32.3	34.9	45.5
23/11/2020	00:15	32.7	31.5	33.8	44.7
23/11/2020	00:30	34.4	32.5	35.4	49.4
23/11/2020	00:45	36.0	32.0	35.2	52.1
23/11/2020	01:00	37.2	32.5	38.6	52.6
23/11/2020	01:15	33.4	32.3	34.6	45.9
23/11/2020	01:30	34.3	33.1	35.5	43.2
23/11/2020	01:45	36.1	34.3	37.7	46.0
23/11/2020	02:00	34.4	32.7	36.1	46.9
23/11/2020	02:15	34.4	33.0	35.7	43.9
23/11/2020	02:30	32.9	31.7	34.0	46.1
23/11/2020	02:45	33.1	32.1	34.2	45.9
23/11/2020	03:00	36.7	33.6	36.2	53.6
23/11/2020	03:15	35.2	33.9	36.3	41.3
23/11/2020	03:30	33.9	32.7	35.3	47.2
23/11/2020	03:45	34.6	33.2	35.9	46.0
23/11/2020	04:00	35.9	31.8	35.3	55.9

Date	Time	LAeq	LA90	LA10	LAmx
23/11/2020	04:15	34.8	33.0	36.3	45.7
23/11/2020	04:30	36.3	33.9	36.6	52.0
23/11/2020	04:45	39.4	34.3	38.5	58.9
23/11/2020	05:00	38.1	34.9	38.1	54.6
23/11/2020	05:15	37.4	35.8	38.1	48.9
23/11/2020	05:30	41.9	37.5	43.6	67.2
23/11/2020	05:45	42.9	39.9	44.6	54.9
23/11/2020	06:00	41.8	38.7	43.2	55.4
23/11/2020	06:15	45.0	41.6	47.0	60.3
23/11/2020	06:30	48.5	43.1	47.7	70.0
23/11/2020	06:45	46.8	43.4	48.8	59.6
23/11/2020	07:00	48.5	43.9	50.7	66.6
23/11/2020	07:15	51.5	46.5	54.1	66.5
23/11/2020	07:30	50.5	47.4	52.3	67.0
23/11/2020	07:45	50.4	47.0	51.7	67.1
23/11/2020	08:00	51.0	47.3	53.1	67.5
23/11/2020	08:15	51.5	48.4	52.9	67.1
23/11/2020	08:30	48.8	45.5	51.0	65.3
23/11/2020	08:45	50.0	46.7	52.3	63.2
23/11/2020	09:00	50.1	45.7	52.0	67.3
23/11/2020	09:15	46.9	43.6	49.1	65.9
23/11/2020	09:30	48.5	46.4	50.3	61.1
23/11/2020	09:45	48.7	46.2	50.5	59.9
23/11/2020	10:00	49.0	46.6	50.8	62.7
23/11/2020	10:15	48.9	46.4	50.7	62.0
23/11/2020	10:30	49.4	46.6	51.6	59.7
23/11/2020	10:45	48.9	45.8	50.7	63.2
23/11/2020	11:00	49.4	46.0	51.7	67.4
23/11/2020	11:15	47.6	44.1	49.5	66.5
23/11/2020	11:30	46.9	43.9	49.3	59.1
23/11/2020	11:45	47.1	44.1	49.1	62.6
23/11/2020	12:00	47.6	43.5	49.1	66.3

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
23/11/2020	12:15	48.2	44.0	50.2	69.8

**Table 04-02**  
**Location Two Survey Results**

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
19/11/2020	13:30	54.9	51.5	56.6	68.9
19/11/2020	13:45	55.6	52.0	57.3	71.9
19/11/2020	14:00	55.0	51.1	57.0	68.8
19/11/2020	14:15	54.2	50.5	56.1	67.6
19/11/2020	14:30	54.2	49.7	56.5	68.7
19/11/2020	14:45	53.1	49.4	55.2	63.5
19/11/2020	15:00	54.1	50.0	55.8	71.0
19/11/2020	15:15	57.1	49.9	56.0	78.2
19/11/2020	15:30	54.8	51.5	56.6	68.8
19/11/2020	15:45	54.1	50.7	55.9	70.8
19/11/2020	16:00	53.5	49.6	55.4	67.0
19/11/2020	16:15	55.6	49.8	55.5	86.4
19/11/2020	16:30	54.0	50.6	56.0	66.9
19/11/2020	16:45	53.7	49.7	56.0	63.2
19/11/2020	17:00	54.5	51.2	56.5	61.5
19/11/2020	17:15	53.7	50.6	55.5	64.1
19/11/2020	17:30	53.3	49.2	55.5	66.3
19/11/2020	17:45	52.3	47.4	54.8	62.8
19/11/2020	18:00	52.2	47.6	54.8	62.6
19/11/2020	18:15	51.6	47.5	54.3	61.7
19/11/2020	18:30	51.4	45.6	54.3	61.4
19/11/2020	18:45	50.5	46.1	53.5	62.8
19/11/2020	19:00	50.8	45.6	53.6	58.8
19/11/2020	19:15	50.8	45.5	53.7	62.7
19/11/2020	19:30	51.5	47.1	54.1	65.4
19/11/2020	19:45	51.3	44.7	53.9	67.0

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
19/11/2020	20:00	50.8	45.5	53.5	61.9
19/11/2020	20:15	50.1	43.7	52.5	65.4
19/11/2020	20:30	50.1	44.6	53.5	61.2
19/11/2020	20:45	49.4	43.9	52.5	62.7
19/11/2020	21:00	48.8	43.6	52.3	61.7
19/11/2020	21:15	48.8	42.6	52.2	60.3
19/11/2020	21:30	48.2	42.5	51.4	59.9
19/11/2020	21:45	47.1	41.8	50.4	62.0
19/11/2020	22:00	47.5	42.0	51.0	60.0
19/11/2020	22:15	46.4	41.9	49.6	56.8
19/11/2020	22:30	47.0	42.0	50.4	58.5
19/11/2020	22:45	47.9	42.0	50.8	65.7
19/11/2020	23:00	46.8	43.0	49.4	57.5
19/11/2020	23:15	45.7	41.7	48.8	58.0
19/11/2020	23:30	44.8	38.3	48.2	56.9
19/11/2020	23:45	42.8	37.1	45.9	55.9
20/11/2020	00:00	41.5	36.5	43.0	55.0
20/11/2020	00:15	44.7	36.5	49.2	57.3
20/11/2020	00:30	43.4	36.4	47.0	56.6
20/11/2020	00:45	42.5	36.3	45.4	60.1
20/11/2020	01:00	42.5	35.8	43.4	62.8
20/11/2020	01:15	40.6	35.5	40.7	58.0
20/11/2020	01:30	40.9	34.5	41.2	59.6
20/11/2020	01:45	38.2	34.5	39.9	51.4
20/11/2020	02:00	41.4	34.5	44.8	57.7
20/11/2020	02:15	39.4	34.2	39.0	60.1
20/11/2020	02:30	40.5	35.0	40.1	59.4
20/11/2020	02:45	38.3	34.0	39.1	55.2
20/11/2020	03:00	36.4	34.1	37.5	49.0
20/11/2020	03:15	41.9	34.9	41.5	58.5
20/11/2020	03:30	42.4	35.0	45.4	60.5
20/11/2020	03:45	38.7	34.9	39.0	53.8

Date	Time	LAeq	LA90	LA10	LAmx
20/11/2020	04:00	39.6	34.3	41.3	54.3
20/11/2020	04:15	42.1	35.2	44.5	63.2
20/11/2020	04:30	41.2	35.3	44.4	57.7
20/11/2020	04:45	44.2	36.3	48.7	56.3
20/11/2020	05:00	44.1	36.8	47.9	57.9
20/11/2020	05:15	43.7	38.3	47.6	54.2
20/11/2020	05:30	46.3	39.5	50.3	57.6
20/11/2020	05:45	46.0	40.4	49.2	60.4
20/11/2020	06:00	48.7	42.1	51.9	62.7
20/11/2020	06:15	49.8	43.9	52.7	65.4
20/11/2020	06:30	49.5	44.0	52.4	68.6
20/11/2020	06:45	52.0	47.3	54.2	70.7
20/11/2020	07:00	52.3	47.9	54.3	73.1
20/11/2020	07:15	51.5	47.6	54.1	68.9
20/11/2020	07:30	52.8	49.2	54.8	64.1
20/11/2020	07:45	53.6	50.3	55.6	70.3
20/11/2020	08:00	55.4	51.1	57.8	74.3
20/11/2020	08:15	54.1	49.5	56.7	67.6
20/11/2020	08:30	53.1	49.1	55.0	65.6
20/11/2020	08:45	53.7	50.0	55.6	67.7
20/11/2020	09:00	54.2	50.1	55.9	78.0
20/11/2020	09:15	54.9	50.2	58.2	65.3
20/11/2020	09:30	54.4	50.2	56.2	79.0
20/11/2020	09:45	54.1	50.1	56.1	69.5
20/11/2020	10:00	54.6	50.3	57.1	68.8
20/11/2020	10:15	55.2	51.5	57.2	66.7
20/11/2020	10:30	55.3	50.4	57.3	74.5
20/11/2020	10:45	53.1	49.7	54.9	67.3
20/11/2020	11:00	53.5	49.2	55.9	66.2
20/11/2020	11:15	55.0	49.0	56.9	73.8
20/11/2020	11:30	52.3	47.5	54.4	66.5
20/11/2020	11:45	53.0	49.6	55.0	67.7



Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
20/11/2020	12:00	52.8	49.6	54.8	65.1
20/11/2020	12:15	55.3	50.2	56.8	75.3
20/11/2020	12:30	55.1	51.2	56.1	76.5
20/11/2020	12:45	52.1	49.1	54.1	59.5
20/11/2020	13:00	53.1	49.4	55.0	62.2
20/11/2020	13:15	54.0	51.0	55.7	66.8
20/11/2020	13:30	54.7	51.1	56.5	68.7
20/11/2020	13:45	54.1	50.1	56.2	67.4
20/11/2020	14:00	54.4	50.3	55.9	80.8
20/11/2020	14:15	54.1	50.1	56.2	67.3
20/11/2020	14:30	54.6	50.8	56.6	70.2
20/11/2020	14:45	54.1	50.5	56.0	67.4
20/11/2020	15:00	53.8	50.1	55.7	71.0
20/11/2020	15:15	54.2	51.2	56.1	65.7
20/11/2020	15:30	55.0	51.9	56.8	63.4
20/11/2020	15:45	55.2	52.2	56.9	69.3
20/11/2020	16:00	53.9	50.7	55.8	67.3
20/11/2020	16:15	54.7	50.8	56.6	74.4
20/11/2020	16:30	54.8	51.4	56.7	66.5
20/11/2020	16:45	55.4	51.6	57.3	73.3
20/11/2020	17:00	55.3	51.4	57.2	70.6
20/11/2020	17:15	53.9	50.0	56.2	59.3
20/11/2020	17:30	53.1	48.2	55.4	67.3
20/11/2020	17:45	52.1	47.5	54.7	63.6
20/11/2020	18:00	52.4	47.8	54.8	60.9
20/11/2020	18:15	52.4	46.8	54.9	66.2
20/11/2020	18:30	52.2	46.1	54.9	65.9
20/11/2020	18:45	51.5	46.1	54.4	65.6
20/11/2020	19:00	51.4	45.1	54.5	58.6
20/11/2020	19:15	51.4	45.9	54.7	59.9
20/11/2020	19:30	52.0	46.0	54.9	63.4
20/11/2020	19:45	51.7	44.9	54.7	65.6

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
20/11/2020	20:00	51.3	44.7	54.2	59.6
20/11/2020	20:15	49.8	43.0	53.3	58.9
20/11/2020	20:30	50.7	43.5	54.1	58.9
20/11/2020	20:45	50.0	42.5	53.4	61.4
20/11/2020	21:00	50.3	42.4	54.0	63.3
20/11/2020	21:15	49.9	43.9	53.0	61.2
20/11/2020	21:30	49.7	42.4	53.2	63.8
20/11/2020	21:45	49.3	42.5	52.8	62.1
20/11/2020	22:00	47.8	40.8	51.3	59.5
20/11/2020	22:15	46.7	37.8	50.5	58.7
20/11/2020	22:30	46.7	38.5	51.1	56.5
20/11/2020	22:45	47.8	40.0	51.4	61.8
20/11/2020	23:00	48.0	40.0	52.2	58.9
20/11/2020	23:15	48.1	38.5	52.5	62.4
20/11/2020	23:30	47.4	38.8	50.9	62.4
20/11/2020	23:45	47.5	41.2	51.0	60.0
21/11/2020	00:00	46.4	39.8	49.5	60.6
21/11/2020	00:15	44.2	34.4	48.7	57.7
21/11/2020	00:30	42.5	34.5	46.7	56.4
21/11/2020	00:45	42.7	34.3	46.6	55.5
21/11/2020	01:00	42.7	34.8	46.3	57.5
21/11/2020	01:15	43.3	36.2	45.9	56.3
21/11/2020	01:30	44.5	37.1	48.1	58.3
21/11/2020	01:45	41.2	35.8	44.5	52.8
21/11/2020	02:00	45.2	39.3	48.2	56.3
21/11/2020	02:15	45.1	40.2	48.2	61.5
21/11/2020	02:30	45.4	40.5	48.0	57.3
21/11/2020	02:45	47.5	41.3	50.2	62.3
21/11/2020	03:00	46.8	40.1	50.5	60.7
21/11/2020	03:15	47.0	40.3	50.2	60.8
21/11/2020	03:30	47.9	42.6	50.8	57.9
21/11/2020	03:45	47.4	41.4	50.4	61.4

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
21/11/2020	04:00	45.9	40.1	48.6	59.3
21/11/2020	04:15	45.1	39.2	48.3	57.8
21/11/2020	04:30	44.2	38.4	47.4	56.9
21/11/2020	04:45	44.5	39.1	47.4	58.8
21/11/2020	05:00	46.4	40.3	49.5	62.0
21/11/2020	05:15	47.3	40.1	51.1	58.8
21/11/2020	05:30	47.9	39.0	51.7	61.2
21/11/2020	05:45	47.4	39.4	51.3	62.2
21/11/2020	06:00	48.4	41.0	52.2	60.5
21/11/2020	06:15	49.1	41.8	52.4	62.3
21/11/2020	06:30	51.6	45.7	54.8	65.8
21/11/2020	06:45	50.2	43.7	53.7	69.6
21/11/2020	07:00	51.6	45.5	54.6	66.1
21/11/2020	07:15	51.3	45.6	54.5	61.7
21/11/2020	07:30	50.7	44.2	54.1	64.9
21/11/2020	07:45	51.7	45.1	54.8	66.1
21/11/2020	08:00	51.2	45.2	54.1	63.2
21/11/2020	08:15	51.4	45.2	54.0	71.9
21/11/2020	08:30	52.0	46.3	54.8	65.5
21/11/2020	08:45	52.3	46.8	55.0	63.5
21/11/2020	09:00	52.1	46.0	54.9	66.9
21/11/2020	09:15	51.9	46.0	54.4	69.1
21/11/2020	09:30	51.8	46.3	54.4	65.0
21/11/2020	09:45	52.6	47.5	55.1	70.9
21/11/2020	10:00	53.2	48.2	55.5	64.7
21/11/2020	10:15	55.0	50.9	56.9	80.3
21/11/2020	10:30	54.2	50.8	56.2	65.6
21/11/2020	10:45	53.7	50.1	55.8	66.2
21/11/2020	11:00	53.6	50.3	55.5	66.0
21/11/2020	11:15	53.8	49.1	56.0	65.6
21/11/2020	11:30	53.2	48.4	55.7	61.6
21/11/2020	11:45	55.6	51.8	57.5	69.5

Date	Time	LAeq	LA90	LA10	LAmx
21/11/2020	12:00	55.1	51.7	57.0	63.9
21/11/2020	12:15	56.3	52.2	58.6	62.3
21/11/2020	12:30	55.9	51.4	58.0	70.4
21/11/2020	12:45	56.3	51.6	58.2	76.3
21/11/2020	13:00	56.3	53.1	58.2	64.0
21/11/2020	13:15	56.5	53.3	58.4	65.2
21/11/2020	13:30	56.4	53.4	58.4	62.9
21/11/2020	13:45	55.8	51.7	57.7	71.6
21/11/2020	14:00	57.2	53.9	58.9	70.9
21/11/2020	14:15	55.9	52.5	58.1	63.7
21/11/2020	14:30	56.2	53.0	58.2	64.8
21/11/2020	14:45	56.0	52.0	58.1	68.6
21/11/2020	15:00	54.5	50.3	56.9	65.1
21/11/2020	15:15	55.2	51.0	57.5	65.8
21/11/2020	15:30	54.6	50.6	56.9	63.7
21/11/2020	15:45	54.3	50.1	56.5	65.2
21/11/2020	16:00	53.8	49.9	56.0	61.7
21/11/2020	16:15	53.7	49.0	56.2	61.2
21/11/2020	16:30	54.6	49.5	56.3	73.5
21/11/2020	16:45	52.6	47.8	55.1	60.0
21/11/2020	17:00	52.9	48.3	55.4	59.6
21/11/2020	17:15	52.2	46.9	55.0	60.0
21/11/2020	17:30	52.9	47.4	55.5	65.7
21/11/2020	17:45	52.9	47.8	55.7	61.6
21/11/2020	18:00	53.1	48.8	55.7	59.7
21/11/2020	18:15	52.9	48.2	55.4	65.7
21/11/2020	18:30	53.3	47.9	56.0	65.3
21/11/2020	18:45	52.0	46.4	54.9	61.1
21/11/2020	19:00	51.3	45.2	54.2	64.6
21/11/2020	19:15	50.1	43.6	53.5	58.4
21/11/2020	19:30	51.1	45.0	54.2	59.7
21/11/2020	19:45	50.3	43.5	53.4	64.4

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
21/11/2020	20:00	50.3	43.7	53.8	59.2
21/11/2020	20:15	50.0	43.7	53.5	59.7
21/11/2020	20:30	49.6	42.8	53.2	60.1
21/11/2020	20:45	50.4	43.6	54.0	60.4
21/11/2020	21:00	51.1	42.8	54.3	69.2
21/11/2020	21:15	50.2	44.2	53.4	61.4
21/11/2020	21:30	48.9	42.7	52.0	63.1
21/11/2020	21:45	52.7	43.0	53.6	77.5
21/11/2020	22:00	48.3	41.5	52.1	61.5
21/11/2020	22:15	47.3	39.9	51.0	59.4
21/11/2020	22:30	47.9	40.9	51.6	59.8
21/11/2020	22:45	47.2	40.4	50.5	59.6
21/11/2020	23:00	48.1	39.6	51.8	64.8
21/11/2020	23:15	46.6	39.0	50.2	60.3
21/11/2020	23:30	46.3	37.9	50.3	58.6
21/11/2020	23:45	45.6	37.2	49.6	61.9
22/11/2020	00:00	43.4	36.1	47.2	56.5
22/11/2020	00:15	44.0	34.7	47.6	60.6
22/11/2020	00:30	42.6	33.7	45.6	59.8
22/11/2020	00:45	46.0	34.4	49.2	64.3
22/11/2020	01:00	43.5	33.5	48.0	58.2
22/11/2020	01:15	42.1	32.7	45.1	60.3
22/11/2020	01:30	43.5	32.1	42.9	69.9
22/11/2020	01:45	40.0	32.2	42.3	55.6
22/11/2020	02:00	41.9	32.8	45.8	55.9
22/11/2020	02:15	40.1	31.6	43.1	58.8
22/11/2020	02:30	39.8	30.3	40.9	58.6
22/11/2020	02:45	37.9	30.4	35.7	58.1
22/11/2020	03:00	41.2	30.8	43.5	59.5
22/11/2020	03:15	40.8	33.3	43.1	59.0
22/11/2020	03:30	40.4	32.7	43.1	57.2
22/11/2020	03:45	41.1	32.3	44.5	58.2

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
22/11/2020	04:00	39.2	31.7	41.5	55.7
22/11/2020	04:15	41.8	34.5	45.1	56.2
22/11/2020	04:30	38.6	33.5	40.6	52.7
22/11/2020	04:45	42.0	33.3	45.4	58.7
22/11/2020	05:00	41.3	34.2	43.9	57.4
22/11/2020	05:15	41.8	34.1	45.6	55.5
22/11/2020	05:30	43.1	34.7	47.4	56.6
22/11/2020	05:45	44.4	36.1	48.1	59.1
22/11/2020	06:00	46.5	36.3	50.9	59.8
22/11/2020	06:15	43.5	36.8	46.9	55.8
22/11/2020	06:30	46.1	38.2	50.4	59.2
22/11/2020	06:45	52.0	39.0	52.4	74.2
22/11/2020	07:00	49.8	42.0	52.6	71.6
22/11/2020	07:15	49.1	41.8	52.7	63.5
22/11/2020	07:30	48.8	41.4	52.8	63.4
22/11/2020	07:45	47.8	40.5	51.9	58.5
22/11/2020	08:00	49.1	40.2	52.8	68.3
22/11/2020	08:15	49.4	42.3	52.6	63.0
22/11/2020	08:30	49.4	42.2	52.8	70.3
22/11/2020	08:45	50.1	43.1	53.1	69.6
22/11/2020	09:00	50.6	44.2	53.9	65.0
22/11/2020	09:15	50.8	44.8	54.0	62.3
22/11/2020	09:30	51.8	46.0	54.8	63.0
22/11/2020	09:45	51.5	45.0	54.7	65.7
22/11/2020	10:00	52.1	45.5	55.0	70.4
22/11/2020	10:15	52.2	46.0	55.2	62.1
22/11/2020	10:30	53.6	48.0	56.3	65.3
22/11/2020	10:45	53.0	47.6	55.8	66.3
22/11/2020	11:00	54.4	50.3	56.7	63.8
22/11/2020	11:15	53.9	49.0	56.2	63.0
22/11/2020	11:30	53.7	48.6	56.2	65.9
22/11/2020	11:45	54.3	49.2	55.8	76.9

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
22/11/2020	12:00	54.3	49.8	56.7	60.8
22/11/2020	12:15	53.9	48.9	56.7	60.8
22/11/2020	12:30	53.8	48.8	56.5	61.5
22/11/2020	12:45	55.3	51.3	57.6	64.9
22/11/2020	13:00	55.4	51.3	57.4	70.9
22/11/2020	13:15	55.3	51.2	57.1	73.6
22/11/2020	13:30	53.8	48.9	56.0	69.1
22/11/2020	13:45	54.2	49.8	56.6	62.8
22/11/2020	14:00	54.2	49.7	56.5	64.3
22/11/2020	14:15	54.2	49.8	56.7	64.5
22/11/2020	14:30	53.4	48.4	55.7	64.8
22/11/2020	14:45	52.8	47.5	55.4	63.5
22/11/2020	15:00	54.0	49.8	56.3	61.2
22/11/2020	15:15	53.5	49.4	55.7	65.9
22/11/2020	15:30	53.0	48.7	55.4	59.3
22/11/2020	15:45	52.6	48.1	55.1	61.0
22/11/2020	16:00	53.3	48.5	55.9	63.0
22/11/2020	16:15	51.6	46.5	54.1	61.2
22/11/2020	16:30	52.5	47.4	55.4	61.8
22/11/2020	16:45	52.5	47.6	55.1	60.9
22/11/2020	17:00	51.7	46.1	54.5	61.0
22/11/2020	17:15	52.3	46.9	55.2	60.6
22/11/2020	17:30	51.1	45.9	54.2	60.2
22/11/2020	17:45	51.1	45.3	54.1	61.2
22/11/2020	18:00	51.5	45.2	54.7	62.4
22/11/2020	18:15	51.6	46.2	54.7	61.2
22/11/2020	18:30	51.6	46.4	54.3	62.0
22/11/2020	18:45	51.5	45.6	54.9	60.1
22/11/2020	19:00	50.6	44.4	54.0	62.0
22/11/2020	19:15	51.1	44.9	54.1	63.0
22/11/2020	19:30	50.5	44.3	53.7	62.4
22/11/2020	19:45	51.5	45.2	54.7	62.1

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
22/11/2020	20:00	50.3	43.3	54.0	62.0
22/11/2020	20:15	49.8	43.1	53.1	62.0
22/11/2020	20:30	49.4	43.3	53.0	57.8
22/11/2020	20:45	49.0	42.8	52.5	59.7
22/11/2020	21:00	48.3	41.8	51.9	61.2
22/11/2020	21:15	47.6	41.7	51.4	58.5
22/11/2020	21:30	47.2	40.9	50.8	57.8
22/11/2020	21:45	47.7	39.5	51.0	66.3
22/11/2020	22:00	47.8	41.3	51.2	61.6
22/11/2020	22:15	46.8	40.6	50.6	59.0
22/11/2020	22:30	46.8	40.2	50.3	62.9
22/11/2020	22:45	48.1	40.4	51.9	60.8
22/11/2020	23:00	46.7	38.7	49.6	65.5
22/11/2020	23:15	45.0	38.2	48.2	67.3
22/11/2020	23:30	42.7	37.2	45.6	57.7
22/11/2020	23:45	46.1	38.3	50.3	60.0
23/11/2020	00:00	45.7	36.9	49.8	58.7
23/11/2020	00:15	40.0	35.2	40.4	59.7
23/11/2020	00:30	44.0	35.3	47.7	58.7
23/11/2020	00:45	41.7	34.1	44.7	57.2
23/11/2020	01:00	46.6	34.2	44.1	68.8
23/11/2020	01:15	37.4	32.9	38.3	54.0
23/11/2020	01:30	41.5	33.3	43.0	60.8
23/11/2020	01:45	43.0	33.5	45.1	61.2
23/11/2020	02:00	38.6	32.9	39.5	56.8
23/11/2020	02:15	40.3	33.6	39.3	60.4
23/11/2020	02:30	37.1	32.0	38.2	50.5
23/11/2020	02:45	37.5	32.7	38.9	52.7
23/11/2020	03:00	39.8	32.8	41.0	57.9
23/11/2020	03:15	35.7	32.0	35.1	54.0
23/11/2020	03:30	35.5	31.9	35.5	52.4
23/11/2020	03:45	39.6	32.3	40.2	61.5



Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
23/11/2020	04:00	40.7	33.8	43.7	56.8
23/11/2020	04:15	41.1	33.6	44.0	58.3
23/11/2020	04:30	42.3	34.2	45.0	59.8
23/11/2020	04:45	44.9	35.5	48.9	60.5
23/11/2020	05:00	45.9	35.9	50.2	61.5
23/11/2020	05:15	45.3	36.2	50.0	58.7
23/11/2020	05:30	46.2	38.3	50.5	57.2
23/11/2020	05:45	48.2	40.4	51.9	70.0
23/11/2020	06:00	50.1	42.4	53.9	62.1
23/11/2020	06:15	50.7	46.1	53.6	67.0
23/11/2020	06:30	51.5	44.6	54.2	65.8
23/11/2020	06:45	52.1	46.6	54.9	67.4
23/11/2020	07:00	55.8	49.2	58.4	71.6
23/11/2020	07:15	57.1	51.8	60.4	73.6
23/11/2020	07:30	53.9	49.8	55.8	72.4
23/11/2020	07:45	55.2	51.0	56.7	83.5
23/11/2020	08:00	54.3	50.4	55.8	79.2
23/11/2020	08:15	54.5	51.2	56.2	72.7
23/11/2020	08:30	54.4	51.2	56.2	68.3
23/11/2020	08:45	55.2	50.2	56.2	81.8
23/11/2020	09:00	54.2	51.1	56.1	68.7
23/11/2020	09:15	55.1	50.7	57.0	74.7
23/11/2020	09:30	53.5	48.7	55.9	69.2
23/11/2020	09:45	53.6	49.9	55.7	70.3
23/11/2020	10:00	53.5	48.4	56.3	67.8
23/11/2020	10:15	53.3	48.3	54.3	79.1
23/11/2020	10:30	55.3	49.1	55.9	75.1
23/11/2020	10:45	53.9	49.9	56.2	64.6
23/11/2020	11:00	52.4	48.3	54.5	70.3
23/11/2020	11:15	51.7	47.5	54.1	69.2
23/11/2020	11:30	52.1	48.4	54.3	62.8
23/11/2020	11:45	52.3	47.9	54.5	67.4

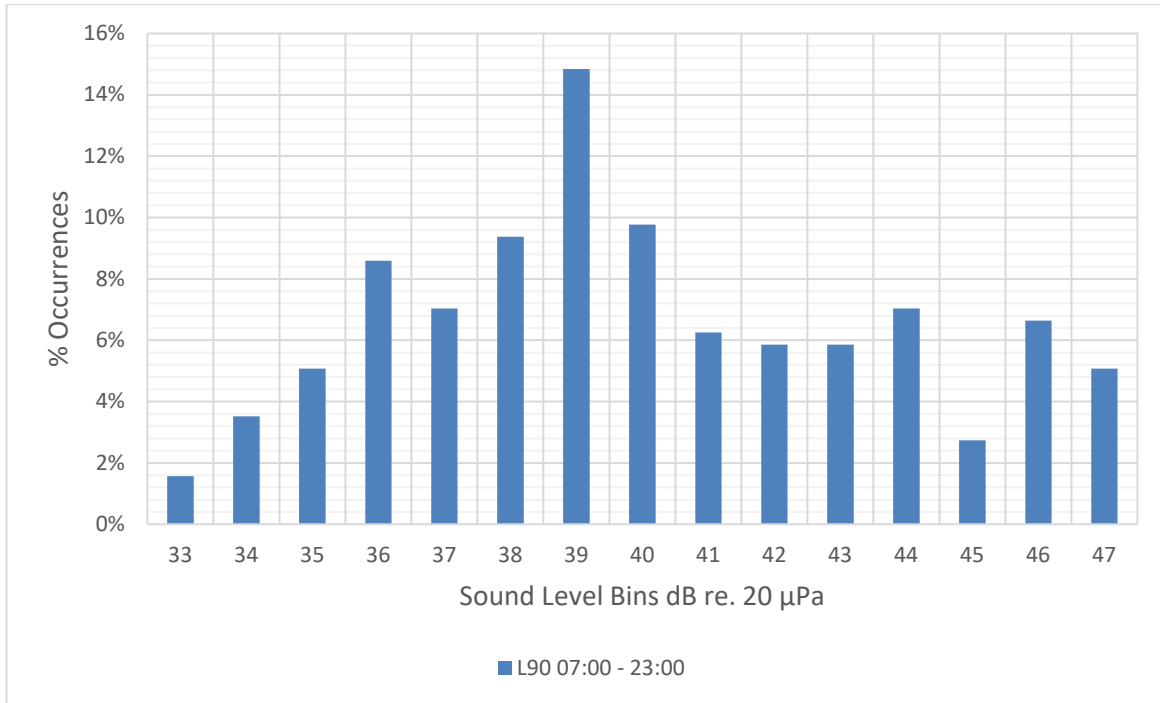
---

Date	Time	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A10</sub>	L <sub>Amax</sub>
23/11/2020	12:00	53.7	49.2	56.1	70.2
23/11/2020	12:15	54.3	50.1	56.4	70.4
23/11/2020	12:30	53.5	49.3	55.1	72.9
19/11/2020	13:30	54.9	51.5	56.6	68.9
19/11/2020	13:45	55.6	52.0	57.3	71.9
19/11/2020	14:00	55.0	51.1	57.0	68.8

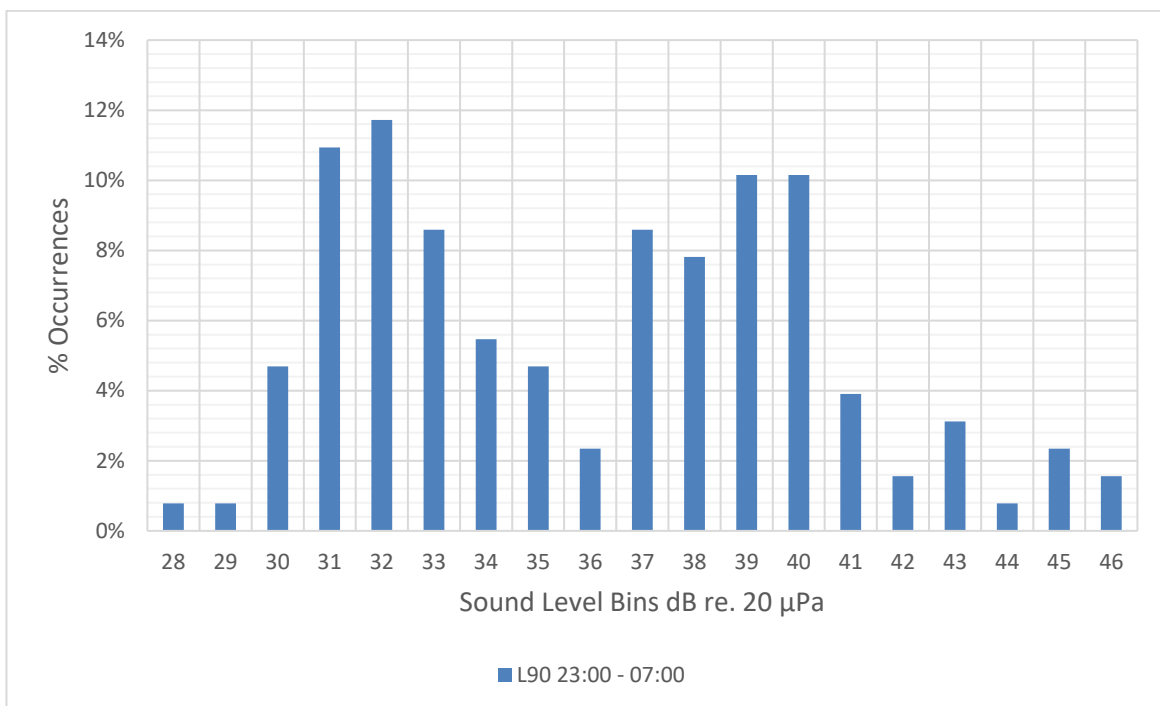
## APPENDIX 04

### Histograms

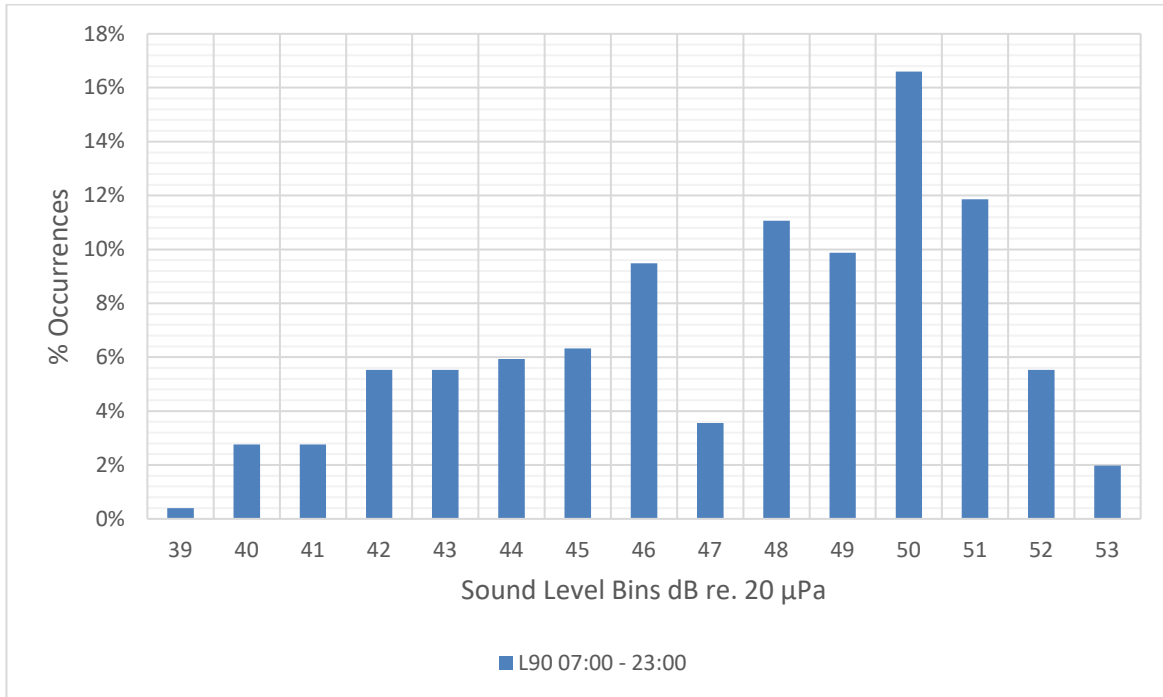
**Figure 05-01**  
**Location One Daytime LA90 Histogram**



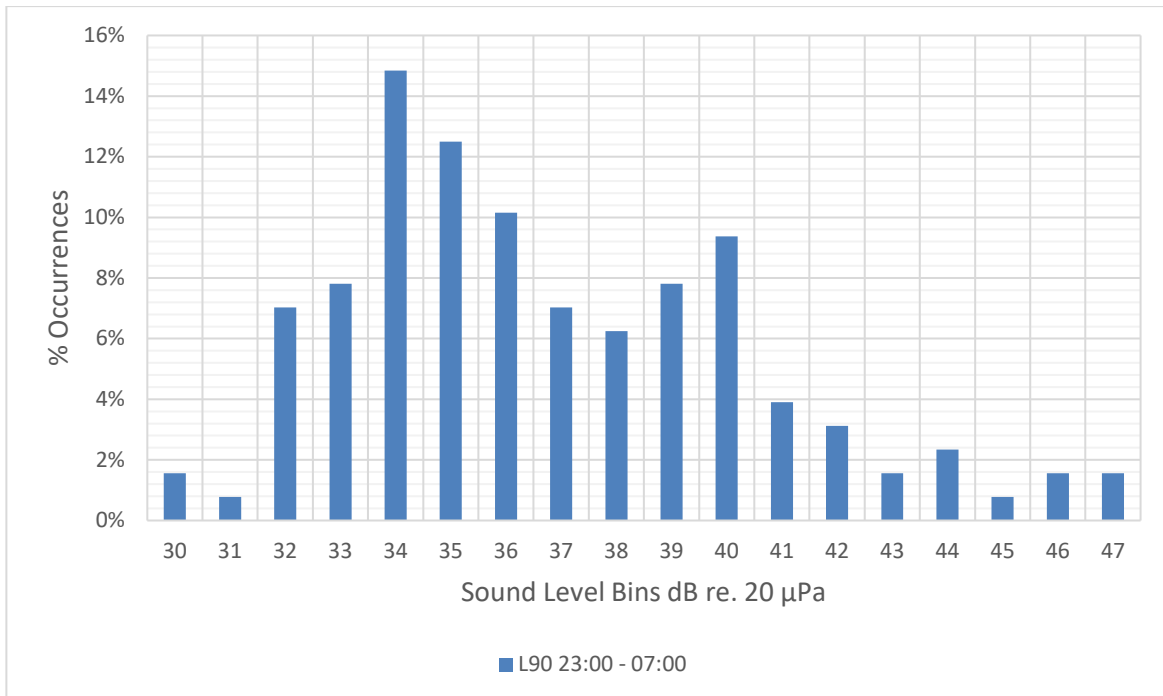
**Figure 05-02**  
**Location One Night-time LA90 Histogram**



**Figure 05-03**  
**Location Two Daytime LA90 Histogram**



**Figure 05-04**  
**Location Two Night-time LA90 Histogram**







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