SPIRE ENVIRONMENTAL
NOISE, VIBRATION AND AIR QUALITY CONSULTANTS

Ward Recycling

Barking Eurohub

Box Lane, Barking, IG11 0SG

Metal tipping & train loading/unloading operations

R21.1686-1-AG

Noise Impact Assessment

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Notice

EXECUTIVE SUMMARY

Spire Environmental Consultants Limited have been appointed by Ward Recycling to undertake an environmental noise assessment of metal tipping and train loading/unloading operations at Barking Eurohub, Box Lane, Barking.

The existing noise environment is influenced by nearby industrial activities including the loading/unloading of cargo onto trains, aggregate recycling and road traffic noise. The assessment has considered the noise impact of worst-case daytime and night-time operations at the Barking Eurohub site.

Baseline noise noise surveys were undertaken at the closest residential properties to the site in August 2021. Short-term noise measurements of metal tipping and train loading/unloading operations were incorporated in the report and assessed against BS 4142:2014 + A1:2019.

The BS 4142:2014 + A1:2019 assessment indicates that metal tipping and train loading/unloading operations will not exceed the adverse impact threshold of + 5dB at the closest residential properties.

Predicted internal noise levels at the closest residential properties and offices inside the closest industrial premises were within the specified limits in accordance with BS 8233.

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1. INTRODUCTION

Appointment & Background

1.1 Spire Environmental Consultants Limited have been appointed by Ward Recycling to undertake an environmental noise assessment of metal tipping and train loading/unloading activities at the Barking Eurohub site.

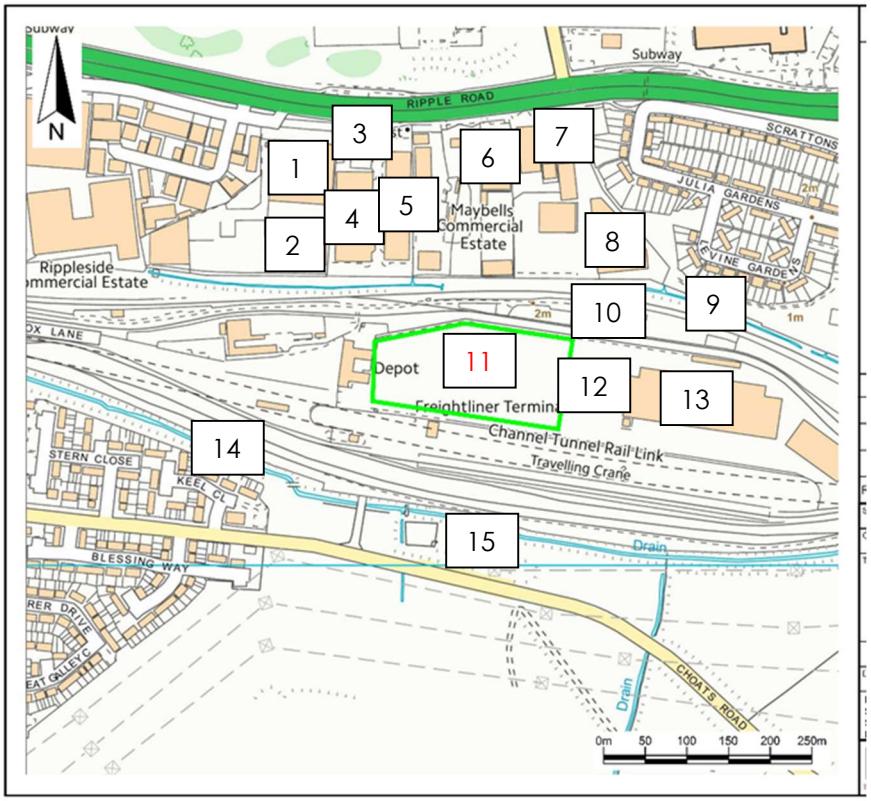
1.2 The proposals include the tipping of light/heavy metal and the loading of light/heavy metal into train wagons. The assessment has utilised short-term noise measurements taken during these specific activities at operational Ward Recycling sites in Burton and Woodville.

1.3 Background noise monitoring was also conducted for a continuous 7-day period in the rear gardens of the closest residential properties to the site.

1.4 This report is necessarily technical in nature, so to assist the reader, a glossary of acoustic terminology can be found in **Appendix A**.

Site Setting

1.5 The Ward Recycling site is shown in Red (number 11) in the centre of Figure 1 (below). Existing noise sources and sensitive receptors are also shown.



Existing Noise Sources and Sensitive Receptors

1.6 The closest existing noise sources and sensitive receptors are shown in **Table 1** (below).

Table 1: Noise Sources and Sensitive Receptors

Number	Description	Grid Co-ordinates		Bearing from site	Levine Gardens distance (m)	Keel Close distance (m)
		Easting	Northing			
1	Gima Foods	547346	183497	NW	410	412
2	Alba Beds & Furniture Ltd	547339	183379	NW	424	294
3	Texaco petrol station	547415	183518	NW	344	448
4	Amber Bakery	547461	183436	NW	295	389
5	A13 Fabrications	547490	183467	NW	265	430
6	Biffa	547582	183487	N	147	497
7	Screwfix	547659	183519	N	111	571
8	Safe Store	547728	183390	NE	76	537
9	Levine Gardens	547755	183462	NE	-	
10	Aggregate recycling	547779	183288	NE	175	534
11	Ward Recycling	547553	183250	-	292	314
12	Lorry park	547716	183208	E	256	449
13	Titan waste skips	547825	183192	E	278	552
14	Keel Close	547282	183090	SW	-	
15	Tesco container terminal	547415	183060	S	526	136

1.7 The Ward Recycling site is accessed from Box Lane in Barking. It is bounded by a railway line and aggregate recycling yard to the north and industrial receptors to the north, north east and north west. The closest residential properties to the site are on Levine gardens, 292 metres to the north east. To the east of the Ward Recycling site in a lorry park and Titan waste skips. To the south west, the closest residential receptor is Keel Close. A Tesco container terminal is located to the south of the Ward Recycling site.

2. STANDARDS AND GUIDANCE

National Planning Policy Framework (NPPF)

2.1 Published in February 2019, this document sets out the Government's planning policies for England and supersedes the previous NPPF published in 2012. It makes the following reference to noise in the section entitled *Conserving and enhancing the natural environment*:

"170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

[…]

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."

2.2 It also makes the following references to noise in the Section entitled *Ground conditions and pollution*:

"180. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010)."

And

"182. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed."

BS 4142: 2014+A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound

2.3 This standard describes methods for rating and assessing the following:

- Sound from industrial and manufacturing processes.
- Sound from fixed installations which comprise mechanical and electrical plant and equipment.
- Sound from the loading and unloading of goods and materials at industrial and/or commercial premises; and
- Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train movements on or around an industrial and/or commercial site.

2.4 The methods use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident. The Standard advises the purpose of the methodology includes the assessment of sound from any plant and activities associated with existing industrial and/or commercial uses at proposed residential dwellings.

2.5 If appropriate, the specific sound level of the source ($L_{Aeq,T}$) is corrected, by the application of one or more corrections for acoustic features such as tonal qualities and/or distinct impulses, to give a 'rating' level ($L_{Ar,T}$). The Standard effectively compares and rates the difference between the rating level of the specific sound and the typical background sound level ($L_{A90,T}$) in the absence of the specific sound.

2.6 The Standard advises that the time interval ('T') of the background sound measurement should be sufficient to obtain a representative or typical value of the background sound level at the time(s) the source in question operates or is proposed to operate in the future.

2.7 Comparing the rating level with the background sound level, BS 4142 states:

"Typically, the greater this difference, the greater the magnitude of 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.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level,

this is an indication of the specific sound source having a low impact, depending on the context."

2.8 BS 4142 states that where the initial impact needs to be modified due to the context, consideration should be given following.

- Absolute level of sound.
- Character of the residual and specific sound; and,
- Sensitivity of the receptor.

2.9 The overall impact may be modified when the above factors are considered.

BS 8233:2014: Guidance On Sound Insulation And Noise Reduction For Buildings

2.10 This standard provides guidance for the control of noise in and around buildings. The guidance provided within the document is applicable to the design of new buildings, or refurbished buildings undergoing a change of use, but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building.

2.11 The guidance provided includes appropriate internal and external noise level criteria which are applicable to dwellings for steady external noise sources. It is stated that it is desirable that the internal ambient noise level does not exceed the following criteria set out in **Table 2** below:

Table 2: Summary of internal ambient noise levels to be achieved in habitable rooms

Activity	Location	Internal noise level criteria ($L_{Aeq,T}$ dB)	
		Daytime (07:00 –23:00 hrs)	Night-time (23:00 –07:00 hrs)
Resting	Living room	35	-
Dining	Dining room/area	40	-
Sleeping (daytime resting)	Bedroom	35	30

2.12 Whilst BS 8233:2014 recognises that a guideline value may be set in terms of SEL or L_{AFmax} for the assessment of regular individual noise events that can cause sleep disturbance during the night-time, a specific criterion is not stipulated. Accordingly, reference has been made in this assessment to the World Health Organisation (WHO) 1999: *Guidelines for Community Noise*.

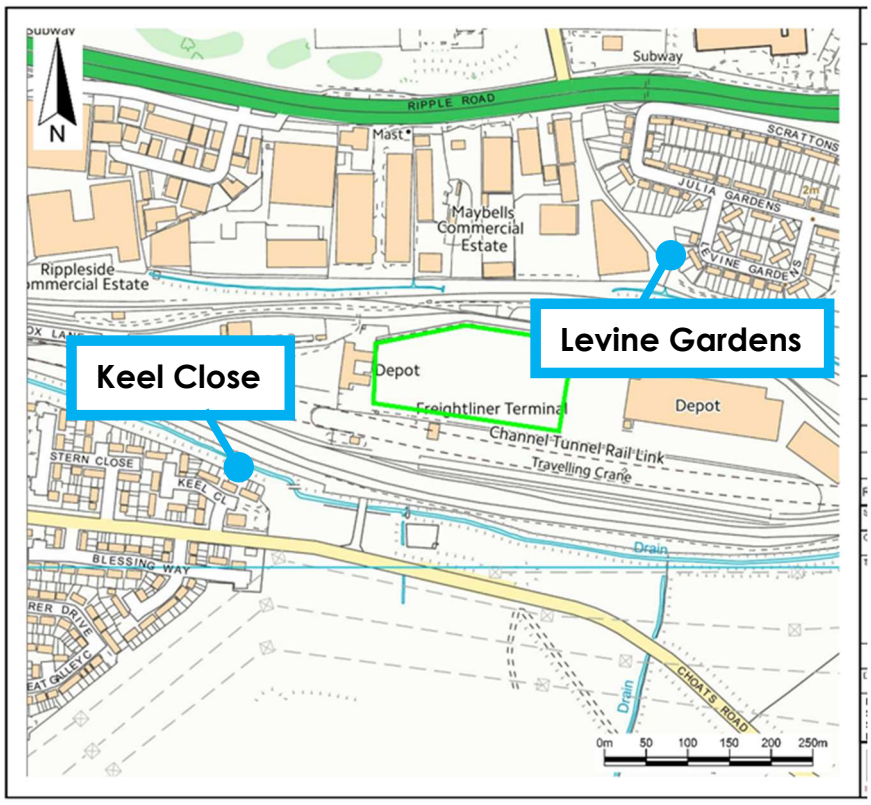
2.13 With respect to external amenity space such as gardens and patios it is stated that it is desirable that the noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. It is then confirmed that higher external noise criteria may be appropriate under certain circumstances such as within city centres urban areas, and locations adjoining the strategic transportation network, where it may be necessary to compromise between elevated noise levels and other factors such as convenience of living, and efficient use of land resource.

3. BASELINE NOISE SURVEY

Baseline Survey Methodology

3.1 Baseline noise surveys have been undertaken to determine the prevailing noise climate at the nearest noise sensitive residential receptors to the Ward Recycling site. During the survey period, monitoring was undertaken in the rear gardens of residential properties at Levine Gardens and Keel Close. The monitoring locations are shown in **Figure 2** below.

Figure 2: Noise Monitoring Locations



3.2 The monitoring was undertaken over a continuous 7- day period commencing at 14:00 hrs on Wednesday 11th August 2021.

3.3 The noise monitors were mounted on a tripod, at a height of 1.2m from the ground, in free-field locations.

Measurement Equipment

3.4 The baseline and mobile plant noise surveys were undertaken using Class 1 sound level meters. A calibration check was undertaken prior to and upon completion of the surveys. No significant calibration drift was found to have occurred. All laboratory calibration (biennial for the sound level meter and annual for the calibrator) was up-to-date at the time. The equipment used for the survey is summarised in **Table 3** below.

Table 3: Noise monitoring equipment

Equipment	Manufacturer	Serial Number	Calibration due Date
Sound Level Meter	Cirrus	G061742	24 Feb 2022
Sound Level Meter		G301768	08 Sep 2022
Sound Level Meter		G056773	16 July 2022
Acoustic Calibrator		64316	26 Nov 2021

Meteorological Conditions

3.5 Representative weather conditions obtained from East Midlands Airport (Burton railhead and Woodville site) and London City Airport (Barking site) for the survey periods are shown in **Table 4** below.

Date	Temperature °C	Wind speed (m/s)	Wind direction	Precipitation
*Tuesday 6th July	12.2 – 20.0	4.9	SW	Light rain
Wednesday 4th August	13.9 – 21.1	0.4 – 3.1	Variable	None
Thursday 5th August	13.9 – 21.1	1.3 – 6.3	SW	Light rain
Friday 6th August	15.0 – 22.2	3.1 -9.4	SW	Light rain
Saturday 7th August	15.0 – 20.0	1.3 – 6.7	SW	Light rain
Sunday 8th August	13.9 – 20.0	3.1 – 8.9	SW	Light rain
Monday 9th August	13.9 – 21.1	3 – 6.7	SW	Light rain
Tuesday 10th August	15.0 – 22.8	3.1 – 5.4	SW	None
Wednesday 11th August	13.9 – 22.8	3.1 – 6.3	SW	None
#Wednesday 27th October	13.9 – 17.2	6.7	SW	None

* Burton railhead
# Woodville site

Table 4 – Weather conditions during the survey periods

3.6 During the survey periods, the temperature was between 12.2 and 22.8 °C. The wind speed was between 0.4 and 9.4 m/s. The wind direction was predominantly from the south west. There was light drizzle for six days during the survey period.

Site Operations

3.7 The site currently accepts waste metals, which are delivered to the site by road using HGVs. This is then tipped onto the tarmac hardstanding within the site. The deposited metals are stored in stockpiles before being loaded onto train wagons, for onward transfer by rail. The site is operated as a joint venture between DB Cargo and Ward Recycling. DB Cargo wishes to vary the existing Environmental Permit to accept metal waste during the daytime and night-time periods.

Measurement of Specific Noise Levels

3.8 There are limited operations at Ward Recycling Barking Eurohub site, therefore the specific activities of tipping metal into the yard using HGVs and loading and unloading of trains with metal was measured at existing operational Ward Recycling sites. These measurements are shown in **Tables 5 & 6** (below).

Table 5 Ward Recycling Burton Railhead – 6 July 2021

Site activity	Period (mins:secs)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Loading light metal into train using high reach grab @ 10m	01:06	83.1	95.4	86.9	74.2
Loading heavy metal into train using high reach grab @ 10m	02:36	84.4	102.9	88.2	71.5
Tipping light metal onto yard @ 10m	01:22	86.7	102.6	89	74.9

Table 6 Ward Recycling Woodville – 27 October 2021

Site activity	Period (mins:secs)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Tipping heavy metal into yard @ 10m	01:43	92.6	111.8	89.2	62.7

Operational hours

3.9 The Ward Recycling site currently operates 07:00 – 18:00 Monday to Friday. The proposals are for the site to be operating Monday to Friday during the daytime and night-time periods.

3.10 The measured hourly daytime sound levels at the closest residential properties to the site at Levine Gardens and Keel Close are summarised in **Tables 7 & 8** (below). The full results are shown in Appendix B.

Survey Period	dB $L_{Aeq,1h}$	dB $L_{A90,1h}$	*dB $L_{Amax,f,1h}$
Wednesday 4th August	42.0 – 48.8	38.0 – 42.0	61.3 – 82.7
Thursday 5th August	43.6 – 62.1	41.1 – 48.6	62.9 – 86.5
Friday 6th August	47.3 – 59.1	44.5 – 50.9	59.3 – 83.2
Saturday 7th August	46.9 – 59.2	42.7 – 50.0	61.2 – 85.7
Sunday 8th August	44.8 – 53.0	41.7 – 49.5	58.9 – 70.1
Monday 9th August	46.0 – 59.8	44.0 – 50.4	65.1 – 92.2
Tuesday 10th August	44.9 – 53.7	41.3 – 45.8	60.4 – 84.4

*Maximum obtained over survey period

Table 7 Levine Gardens 1-hour daytime summary

Survey Period	dB $L_{Aeq,1h}$	dB $L_{A90,1h}$	*dB $L_{Amax,f,1h}$
Wednesday 4th August	42.7 – 53.0	32.4 – 47.1	60.2 – 79.0
Thursday 5th August	45.7 – 55.3	36.6 – 47.1	61.7 – 80.4
Friday 6th August	46.8 – 59.6	39.3 – 48.5	62.5 – 88.9
Saturday 7th August	47.0 – 62.3	40.4 – 45.1	60.4 – 87.5
Sunday 8th August	42.9 – 55.2	36.9 – 47.2	54.3 – 70.5
Monday 9th August	45.7 – 61.3	38.2 – 48.4	66.7 – 84.7
Tuesday 10th August	43.7 – 54.1	36.0 – 47.1	60.0 – 85.2

*Maximum obtained over survey period

Table 8 Keel Close 1-hour daytime summary

3.11 At Levine gardens, the existing measured daytime ambient noise level was between 42.0 and 62.1 $L_{Aeq,1h}$. The corresponding background sound level was between 38.0 and 50.9 $L_{A90,1h}$. The noise climate was influenced by mobile plant movements, loading/unloading of aggregate and reversing alarms from the aggregate yard. Road traffic noise, railway noise and bird song were also audible.

3.12 The lowest daytime background sound level at Levine Gardens was 38.0 $L_{A90,1h}$, which was recorded on Wednesday 4th August. However, this is not representative of the background sound levels which were measured for the majority of the time. The lowest typical background sound level of 41.1 $L_{A90,1h}$ was measured on Sunday 8th August. This is more representative of the lowest background sound level and will therefore be used in the BS 4142 assessment during the daytime period.

3.13 At Keel Close, the existing daytime measured ambient noise level was between 42.7 and 62.3 $L_{Aeq,1h}$. The corresponding background sound level was between 32.4 and 48.5 $L_{A90,1h}$. The noise climate was dominated by road traffic noise. Reversing alarms and railway noise was also audible at this location.

3.14 The lowest daytime background sound level at Keel Close was 32.4 $L_{A90,1h}$, which was recorded on Wednesday 4th August. However, this is not representative of the background sound levels which were measured for the majority of the time. The lowest typical background sound level of 36.0 $L_{A90,1h}$ was measured on Tuesday 10th August. This is more representative of the lowest background sound level and will therefore be used in the BS 4142 assessment during the daytime period.

3.15 The measured hourly night-time sound levels at the closest residential properties to the site at Levine Gardens and Keel Close are summarised in **Tables 9 & 10** (below). The full results are shown in Appendix B.

Survey Period	dB $L_{Aeq,1h}$	dB $L_{A90,1h}$	*dB $L_{Amax,f,1h}$
Wednesday 4th - Thursday 5th August	39.4 – 46.5	36.4 – 42.1	50.4 – 66.5
Thursday 5th - Friday 6thAugust	41.5 – 46.6	38.6 – 43.5	56.7 – 67.6
Friday 6th - Saturday 7th August	41.2 – 58.7	38.6 – 49.9	51.9 – 80.8
Saturday 7th – Sunday 8th August	44.0 – 49.5	41.3 – 47.2	52.8 – 64.7
Sunday 8th – Monday 9th August	38.7 – 51.8	35.5 – 47.7	48.5 – 74.7
Monday 9th – Tuesday 10th August	44.7 – 48.2	41.3 – 45.4	53.2 – 74.4
Tuesday 10th – Wednesday 11th August	42.3 – 48.2	39.6 – 44.2	51.3 – 76.1

*Maximum obtained over survey period

Table 9 Levine Gardens 1-hour night-time summary

Survey Period	dB $L_{Aeq,1h}$	dB $L_{A90,1h}$	*dB $L_{Amax,f,1h}$
Wednesday 4th - Thursday 5th August	39.7 – 46.0	30.7 – 38.1	59.1 – 73.0
Thursday 5th - Friday 6thAugust	43.0 – 47.2	34.3 – 41.4	57.8 – 68.3
Friday 6th - Saturday 7th August	41.4 – 60.7	34.1 – 52.0	63.3 – 83.4
Saturday 7th – Sunday 8th August	44.2 – 48.6	37.9 – 42.8	57.4 – 62.9
Sunday 8th – Monday 9th August	35.2 – 54.0	29.6 – 48.4	46.8 – 74.4
Monday 9th – Tuesday 10th August	43.8 – 47.8	35.2 – 42.4	59.9 – 78.7
Tuesday 10th – Wednesday 11th August	42.8 – 48.0	31.6 – 38.9	58.2 – 69.3

*Maximum obtained over survey period

Table 10 Keel Close 1-hour night-time summary

3.16 At Levine gardens, the existing measured night-time ambient noise level was between 38.7 and 58.7 $L_{Aeq,1h}$. The corresponding background sound level was between 35.5 and 49.9 $L_{A90,1h}$. The noise climate was influenced by road traffic and railway noise.

3.17 the existing night-time measured ambient noise level at Keel Close was between 35.2 and 60.7 $L_{Aeq,1h}$. The corresponding background sound level was between 29.6 and 52.0 $L_{A90,1h}$. The noise climate was dominated by road traffic noise. Railway noise was also audible at this location.

3.18 The measured 15-minute night-time sound levels at the closest residential properties to the site at Levine Gardens and Keel Close are summarised in **Tables 11 & 12** (below). The full results are shown in Appendix B.

Survey Period	dB $L_{Aeq,15min}$	dB $L_{A90,15min}$	*dB $L_{Amax,f,15min}$
Wednesday 4th - Thursday 5th August	38.4 – 47.1	36.2 – 42.9	44.4 – 64.0
Thursday 5th - Friday 6thAugust	40.1 – 48.5	38.0 – 44.8	44.6 – 65.8
Friday 6th - Saturday 7th August	39.8 – 61.9	38.1 – 53.1	44.0 – 73.1
Saturday 7th – Sunday 8th August	43.4 – 49.7	41.1 – 47.5	50.7 – 61.6
Sunday 8th – Monday 9th August	37.7 – 53.1	35.0 – 49.4	43.0 – 71.5
Monday 9th – Tuesday 10th August	43.6 – 50.2	40.8 – 46.7	48.4 – 67.2
Tuesday 10th – Wednesday 11th August	41.4 – 52.6	39.2 – 45.2	46.2 - 70.4

*Maximum obtained over survey period

Table 11 Levine Gardens 15-minute night-time summary

Survey Period	dB $L_{Aeq,15min}$	dB $L_{A90,15min}$	*dB $L_{Amax,f,15min}$
Wednesday 4th - Thursday 5th August	32.7 – 50.7	30.5 – 39.3	41.8 – 72.3
Thursday 5th - Friday 6thAugust	41.1 – 50.1	33.5 – 43.3	47.7 – 67.5
Friday 6th - Saturday 7th August	38.3 – 62.8	32.8 – 56.3	47.3 – 74.5
Saturday 7th – Sunday 8th August	42.6 – 49.9	36.8 – 43.3	51.7 – 61.0
Sunday 8th – Monday 9th August	33.6 – 56.5	29.0 – 50.0	43.1 – 70.4
Monday 9th – Tuesday 10th August	38.3 – 50.5	34.8 – 42.7	44.8 – 69.8
Tuesday 10th – Wednesday 11th August	34.0 – 50.0	31.0 – 41.0	41.9 – 67.9

*Maximum obtained over survey period

Table 12 Keel Close 15-minute night-time summary

3.19 At Levine gardens, the existing measured night-time ambient noise level was between 37.7 and 61.9 $L_{Aeq,15min}$. The corresponding background sound level was between 35.0 and 53.1 $L_{A90,15min}$. The noise climate was influenced by road traffic and railway noise.

3.20 The lowest night-time background sound level at Levine Gardens was 35.0 $L_{A90,15min}$, which was recorded on Monday 9th August. However, this is not representative of the background sound levels which were measured for the majority of the time. The lowest typical background sound level of 38.0 $L_{A90,15min}$ was measured on Friday 6th August. This is more representative of the lowest background sound level and will therefore be used in the BS 4142 assessment during the night-time period.

3.21 The existing night-time measured ambient noise level at Keel Close was between 32.7 and 62.8 $L_{Aeq,15min}$. The corresponding background sound level was between 29.0 and 56.3 $L_{A90,15min}$. The noise climate was dominated by road traffic noise. Railway noise was also audible at this location.

3.22 The lowest night-time background sound level at Keel Close was 29.0 $L_{A90,15min}$, which was recorded on Monday 9th August. However, this is not representative of the background sound levels which were measured for the majority of the time. The lowest typical background sound level of 33.5 $L_{A90,1h}$ was measured on Friday 6th August. This is more representative of the lowest background sound level as it was not exceeded for 3 days of the survey period and will therefore be used in the BS 4142 assessment during the night-time period.

4. NOISE ASSESSMENT

4.1 The proposals are for the tipping and loading/unloading of metal into trains to take place at the Ward Recycling site during the daytime and night-time periods.

4.2 Short-term noise measurements were undertaken during tipping of light and heavy metals and loading/unloading of light and heavy metals into trains. These were measured at existing operational Ward Recycling sites. These are shown in Appendix B.

4.3 A BS 4142 assessment has been conducted at Levine Gardens and Keel Close, which are the closest residential receptors to the Ward Recycling site. A 10 dB barrier correction has been applied at both receptors as they do not have line of sight to the Ward Recycling site. At Levine Gardens, there are aggregate stockpiles from an aggregate processing yard, and at Keel Close there are existing buildings from a cargo loading site between this receptor and the Ward Recycling site. These are shown in Appendix B.

Table 13 – BS 4142 Assessment

Description	Daytime Levine Gardens	Daytime Keel Close	Night-time Levine Gardens	Night-time Keel Close
Worst case operation	39 $L_{Aeq,1h}$	39 $L_{Aeq,1h}$	39 $L_{Aeq,15min}$	39 $L_{Aeq,15min}$
Acoustic correction	0	0	0	0
Rating Level	39	39	39	39
Background sound level	41 $L_{A90,1h}$	36 $L_{A90,1h}$	38 $L_{A90,15m}$	34 $L_{A90,15m}$
Excess over background	- 2	+ 3	+ 1	+ 5
BS 4142 impact	**Below adverse impact**	**Below adverse impact**	**Below adverse impact**	**Not exceeding adverse impact**

4.4 The BS 4142 assessment shown in **Table 13** (above) shows the worst-case noise impact of site operations during the daytime and night-time periods. Due to health and safety considerations, metal tipping and train/unloading operations would not be conducted simultaneously. The noise calculations are shown in Appendix B.

4.5 The worst-case operation during the daytime and night-time periods is the loading of a train with heavy metal. This is predicted to be 39 dB at Levine Gardens and Keel Close.

4.6 An acoustic correction has not been applied as the noise sources will not be out of character with the existing noise climate. Metal clanging and banging was audible from the aggregate recycling yard during loading and unloading of aggregate from HGVs, during container loading operations and during skip loading and unloading operations at Titan skips.

4.7 The BS 4142 assessment is above the existing background sound level. However, it does not exceed the adverse impact level of + 5 dB above background.

4.8 At the closest residential receptors, the predicted noise external level is 39dB $L_{Areq,T}$ The internal rating level would be 23 dB $L_{Aeq,T}$ assuming a partially open window. This is 7dB below the internal residual sound level in bedroom areas with windows partially open in accordance with BS 8233.

4.9 The closest industrial receptor to the Ward Recycling site is Safe Store. The worst-case predicted external noise level is 42dB $L_{Areq,1h}$ The internal rating level would be 27 dB $L_{Aeq,1h}$ assuming a partially open window. This is 8dB below the internal residual sound level in office areas with windows partially open in accordance with BS 8233.

4.10 The maximum noise levels ($L_{Amax,f}$) of each activity were measured during the short-term measurements undertaken at the Burton and Woodville sites. These have been predicted to the closest noise sensitive receptors, taking into account the likely periods when these events are likely to occur. These are predicted to be between 39.4 and 52.4 $L_{Amax,f}$. These maximum levels are in line with existing maximum levels recorded at the existing noise sensitive receptors.

5. MEASUREMENT UNCERTAINTY

5.1 As part of this updated noise assessment, we have considered the potential uncertainties in the noise measurements undertaken. These are discussed below.

Background Noise Assessment

5.2 Background noise levels were taken for a continuous 7-day period. The noise survey was conducted during the school holiday period; therefore, road traffic noise levels would be significantly reduced. Background sound levels could therefore be increased by between 1 and 3 dB.

5.3 The lowest typical background noise level has been used in this assessment. The lowest The background sound levels used in the assessment were up to 5 dB higher than the lowest recorded levels.

Fixed Plant Noise Levels

5.4 Short-term noise measurements were taken during specific operations. These were taken during the worst-case periods when empty trains were loaded with metal, therefore increasing the maximum measured levels. The fixed plant noise levels could therefore be increased by 1 to 3 dB.

Uncertainty Conclusions

5.5 When taking all of the factors into consideration, the background noise levels could be increased by 3 dB overall However, the fixed plant noise levels could be decreased by around 3 dB. Therefore, when measurement uncertainty is taken into account, there is no overall increase or decrease in the noise levels used in this assessment.

6. CONCLUSIONS

6.1 Spire Environmental Consultants Limited has been appointed Ward Recycling to undertake an environmental noise assessment of metal tipping and loading and unloading of trains with metal at the Barking Eurohub site.

6.2 Short-term noise measurements of specific activities was conducted at existing Ward Recycling operational sites at Burton and Woodville.

6.3 Baseline noise monitoring was undertaken in the rear garden areas of the closest residential properties to the site. The surveys, and subsequent assessment work, have been undertaken in accordance with current standards and guidance.

6.4 A detailed noise assessment has been undertaken to determine the likely impact of the metal tipping and loading/unloading of trains on the closest residential properties and office premises at the closest industrial receptor to the site. The noise assessment indicates that noise from the specified mobile plant operations is above the existing background noise level, but will not be above adverse impact level during the daytime and night-time periods in accordance with in BS 4142. The predicted internal noise levels will meet the BS 8233 internal noise criteria.

6.5 When considering the measurement uncertainty, there would be no overall increase or decrease in the outcome of the assessment.

APPENDICES

APPENDIX A: Glossary of Terms

Noise

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq}, L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

Acoustic Terminology

Term	Description
dB (decibel)	The scale on which sound pressure level is expressed. Sound pressure level is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10-5Pa).
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.
$L_{Aeq,T}$	L_{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
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.
L_{10} and 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 Ln 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 the L_{90} is the level exceeded for 90% of the time.
Free-field Level	A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally, as measured outside and away from buildings.
Façade Level	A sound field determined at a distance of 1m in front of a large sound reflecting object such as a building façade.

APPENDIX B: Measured Noise Levels

Table B1: Hourly Results from Le Vine Gardens

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
04/08/2021 14:00:00	1-hour	48.8	70.8	46.6	42.0
04/08/2021 15:00:00	1-hour	48.6	82.7	46.3	41.8
04/08/2021 16:00:00	1-hour	45.5	76.2	44.3	39.6
04/08/2021 17:00:00	1-hour	43.7	68.5	42.6	38.0
04/08/2021 18:00:00	1-hour	48.2	76.1	45.4	39.6
04/08/2021 19:00:00	1-hour	44.1	64.0	44.1	40.5
04/08/2021 20:00:00	1-hour	45.3	62.8	45.4	41.4
04/08/2021 21:00:00	1-hour	43.5	61.3	44.1	40.6
04/08/2021 22:00:00	1-hour	42.0	63.3	43.1	38.0
04/08/2021 23:00:00	1-hour	48.8	70.8	46.6	42.0
Over survey period		**46.2**	**82.7**	**44.7**	**40.2**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
04/08/2021 23:00:00	1-hour	40.6	56.2	42.0	38.1
05/08/2021 00:00:00	1-hour	41.3	64.7	41.6	37.1
05/08/2021 01:00:00	1-hour	41.5	62.1	41.0	36.4
05/08/2021 02:00:00	1-hour	40.9	58.9	42.3	37.1
05/08/2021 03:00:00	1-hour	39.4	50.4	41.4	36.8
05/08/2021 04:00:00	1-hour	41.3	55.0	43.2	37.7
05/08/2021 05:00:00	1-hour	44.9	63.8	46.5	41.1
05/08/2021 06:00:00	1-hour	46.5	66.5	47.0	42.1
Over survey period		**42.7**	**66.5**	**43.1**	**38.3**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
05/08/2021 07:00:00	1-hour	45.2	62.9	47.0	41.1
05/08/2021 08:00:00	1-hour	48.1	71.0	50.0	41.1
05/08/2021 09:00:00	1-hour	46.4	72.3	48.0	42.4
05/08/2021 10:00:00	1-hour	49.0	72.3	50.6	44.4
05/08/2021 11:00:00	1-hour	51.0	74.2	52.4	46.3
05/08/2021 12:00:00	1-hour	51.2	72.8	52.2	46.7
05/08/2021 13:00:00	1-hour	51.7	74.4	52.7	47.9
05/08/2021 14:00:00	1-hour	52.1	76.2	52.8	47.9
05/08/2021 15:00:00	1-hour	51.8	76.8	52.5	46.6
05/08/2021 16:00:00	1-hour	51.3	74.6	52.7	46.5
05/08/2021 17:00:00	1-hour	62.1	86.5	62.8	48.6
05/08/2021 18:00:00	1-hour	51.0	70.9	53.0	47.8
05/08/2021 19:00:00	1-hour	49.7	70.2	50.7	47.0
05/08/2021 20:00:00	1-hour	48.5	74.8	48.1	43.4
05/08/2021 21:00:00	1-hour	46.1	67.6	46.1	42.7
05/08/2021 22:00:00	1-hour	43.6	59.0	44.9	41.7
Over survey period		**52.8**	**86.5**	**51.0**	**45.1**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
05/08/2021 23:00:00	1-hour	42.3	56.8	43.4	40.6
06/08/2021 00:00:00	1-hour	42.5	62.7	43.4	39.8
06/08/2021 01:00:00	1-hour	41.5	58.9	42.5	38.6
06/08/2021 02:00:00	1-hour	44.0	67.6	44.9	39.3
06/08/2021 03:00:00	1-hour	42.0	56.7	43.3	38.8
06/08/2021 04:00:00	1-hour	44.7	63.9	44.4	39.4
06/08/2021 05:00:00	1-hour	46.0	66.5	46.7	42.0
06/08/2021 06:00:00	1-hour	46.6	62.6	48.2	43.5
Over survey period		**44.1**	**67.6**	**44.6**	**40.3**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
06/08/2021 07:00:00	1-hour	48.6	69.7	50.7	45.2
06/08/2021 08:00:00	1-hour	51.4	73.2	53.3	48.1
06/08/2021 09:00:00	1-hour	52.9	72.5	54.7	50.2
06/08/2021 10:00:00	1-hour	53.7	71.1	55.5	50.0
06/08/2021 11:00:00	1-hour	54.0	72.8	55.9	50.9
06/08/2021 12:00:00	1-hour	54.7	74.5	56.7	50.6
06/08/2021 13:00:00	1-hour	53.3	76.6	55.4	50.2
06/08/2021 14:00:00	1-hour	53.9	74.6	56.1	50.4
06/08/2021 15:00:00	1-hour	59.1	83.2	60.1	48.7
06/08/2021 16:00:00	1-hour	56.6	80.1	57.1	48.5
06/08/2021 17:00:00	1-hour	55.3	77.5	57.8	47.6
06/08/2021 18:00:00	1-hour	48.4	64.2	50.5	44.8
06/08/2021 19:00:00	1-hour	49.7	64.6	52.0	44.5
06/08/2021 20:00:00	1-hour	49.7	65.9	50.9	46.7
06/08/2021 21:00:00	1-hour	48.4	61.2	50.3	45.3
06/08/2021 22:00:00	1-hour	47.3	59.3	49.1	44.9
Over survey period		**53.6**	**83.2**	**54.1**	**47.9**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
06/08/2021 23:00:00	1-hour	46.6	59.6	48.0	44.4
07/08/2021 00:00:00	1-hour	45.7	64.1	47.1	42.8
07/08/2021 01:00:00	1-hour	45.8	70.4	44.4	40.5
07/08/2021 02:00:00	1-hour	44.1	68.2	42.3	38.6
07/08/2021 03:00:00	1-hour	41.2	51.9	42.6	39.2
07/08/2021 04:00:00	1-hour	43.5	66.9	46.1	39.0
07/08/2021 05:00:00	1-hour	56.1	80.0	59.5	41.8
07/08/2021 06:00:00	1-hour	58.7	80.8	61.9	49.9
Over survey period		**52.2**	**80.8**	**49.0**	**42.0**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
07/08/2021 07:00:00	1-hour	55.9	80.0	58.5	44.5
07/08/2021 08:00:00	1-hour	54.8	79.2	58.1	42.8
07/08/2021 09:00:00	1-hour	46.9	71.1	47.7	43.1
07/08/2021 10:00:00	1-hour	50.0	75.8	50.4	44.4
07/08/2021 11:00:00	1-hour	58.8	84.6	61.6	43.8
07/08/2021 12:00:00	1-hour	47.3	65.0	48.7	43.4
07/08/2021 13:00:00	1-hour	58.7	85.7	50.9	43.6
07/08/2021 14:00:00	1-hour	48.2	76.8	48.8	43.0
07/08/2021 15:00:00	1-hour	47.6	60.2	49.4	45.1
07/08/2021 16:00:00	1-hour	47.1	71.2	47.8	42.7
07/08/2021 17:00:00	1-hour	46.9	61.5	48.3	44.2
07/08/2021 18:00:00	1-hour	50.6	68.1	53.9	45.5
07/08/2021 19:00:00	1-hour	59.2	84.0	59.4	47.6
07/08/2021 20:00:00	1-hour	52.6	65.9	54.3	50.0
07/08/2021 21:00:00	1-hour	52.0	61.5	53.8	49.7
07/08/2021 22:00:00	1-hour	50.5	61.2	52.3	47.9
Over survey period		**54.0**	**85.7**	**52.7**	**45.1**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
07/08/2021 23:00:00	1-hour	49.5	62.3	51.3	47.2
08/08/2021 00:00:00	1-hour	48.1	60.7	50.0	45.1
08/08/2021 01:00:00	1-hour	48.1	57.8	50.1	45.1
08/08/2021 02:00:00	1-hour	47.8	58.0	49.9	44.5
08/08/2021 03:00:00	1-hour	46.0	52.8	48.1	43.0
08/08/2021 04:00:00	1-hour	44.0	55.8	46.0	41.3
08/08/2021 05:00:00	1-hour	46.6	64.7	49.0	42.4
08/08/2021 06:00:00	1-hour	46.6	61.7	48.1	43.9
Over survey period		**47.4**	**64.7**	**49.1**	**44.1**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
08/08/2021 07:00:00	1-hour	47.7	61.8	50.0	43.9
08/08/2021 08:00:00	1-hour	51.4	67.0	54.4	46.7
08/08/2021 09:00:00	1-hour	51.8	68.0	54.1	48.1
08/08/2021 10:00:00	1-hour	51.3	67.8	53.5	48.0
08/08/2021 11:00:00	1-hour	51.3	66.3	53.6	47.8
08/08/2021 12:00:00	1-hour	50.7	65.6	52.3	47.7
08/08/2021 13:00:00	1-hour	51.4	61.3	53.6	47.9
08/08/2021 14:00:00	1-hour	53.0	65.8	55.3	49.5
08/08/2021 15:00:00	1-hour	52.6	66.0	55.5	48.3
08/08/2021 16:00:00	1-hour	51.8	63.2	54.3	48.2
08/08/2021 17:00:00	1-hour	51.9	67.1	54.9	47.9
08/08/2021 18:00:00	1-hour	51.2	69.2	52.9	47.9
08/08/2021 19:00:00	1-hour	49.5	70.1	51.4	46.1
08/08/2021 20:00:00	1-hour	47.7	64.5	48.8	44.6
08/08/2021 21:00:00	1-hour	44.8	60.7	46.4	41.7
08/08/2021 22:00:00	1-hour	44.8	58.9	46.1	42.8
Over survey period		**50.7**	**70.1**	**52.3**	**46.7**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
08/08/2021 23:00:00	1-hour	44.7	60.5	46.5	42.4
09/08/2021 00:00:00	1-hour	41.8	52.4	43.7	39.5
09/08/2021 01:00:00	1-hour	40.8	59.0	42.2	38.2
09/08/2021 02:00:00	1-hour	38.7	48.5	40.2	36.5
09/08/2021 03:00:00	1-hour	43.2	74.7	40.9	35.5
09/08/2021 04:00:00	1-hour	45.2	66.1	48.3	37.7
09/08/2021 05:00:00	1-hour	48.1	69.7	50.4	42.4
09/08/2021 06:00:00	1-hour	51.8	74.3	53.7	47.7
Over survey period		**46.2**	**74.7**	**45.7**	**40.0**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
09/08/2021 07:00:00	1-hour	47.6	66.1	49.2	44.7
09/08/2021 08:00:00	1-hour	53.2	76.8	55.5	45.2
09/08/2021 09:00:00	1-hour	50.6	71.6	52.2	47.9
09/08/2021 10:00:00	1-hour	52.1	74.7	53.1	47.7
09/08/2021 11:00:00	1-hour	51.7	71.3	53.4	48.6
09/08/2021 12:00:00	1-hour	50.9	74.4	52.8	47.9
09/08/2021 13:00:00	1-hour	51.9	74.6	52.9	48.3
09/08/2021 14:00:00	1-hour	52.1	72.1	55.2	47.6
09/08/2021 15:00:00	1-hour	51.1	67.1	53.1	47.6
09/08/2021 16:00:00	1-hour	52.3	81.7	53.9	48.9
09/08/2021 17:00:00	1-hour	59.8	81.3	63.3	50.4
09/08/2021 18:00:00	1-hour	51.7	77.3	53.1	46.6
09/08/2021 19:00:00	1-hour	57.2	92.2	51.4	46.5
09/08/2021 20:00:00	1-hour	50.7	84.8	48.7	45.2
09/08/2021 21:00:00	1-hour	46.0	65.1	47.0	44.0
09/08/2021 22:00:00	1-hour	49.8	73.2	51.3	45.4
Over survey period		**53.2**	**92.2**	**52.9**	**47.0**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
09/08/2021 23:00:00	1-hour	46.2	61.7	47.6	44.2
10/08/2021 00:00:00	1-hour	46.6	74.4	47.4	42.6
10/08/2021 01:00:00	1-hour	45.3	60.1	46.9	42.0
10/08/2021 02:00:00	1-hour	44.7	62.4	46.3	41.3
10/08/2021 03:00:00	1-hour	45.5	53.2	47.4	43.0
10/08/2021 04:00:00	1-hour	47.6	65.9	49.0	43.9
10/08/2021 05:00:00	1-hour	48.1	62.7	49.0	45.4
10/08/2021 06:00:00	1-hour	48.2	69.2	49.1	44.8
Over survey period		**46.7**	**74.4**	**47.8**	**43.4**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
10/08/2021 07:00:00	1-hour	48.2	69.1	49.7	45.3
10/08/2021 08:00:00	1-hour	48.1	65.2	49.2	45.1
10/08/2021 09:00:00	1-hour	46.9	65.9	48.5	43.9
10/08/2021 10:00:00	1-hour	47.5	70.4	48.6	44.2
10/08/2021 11:00:00	1-hour	48.6	73.1	50.0	44.3
10/08/2021 12:00:00	1-hour	50.3	71.8	51.3	44.5
10/08/2021 13:00:00	1-hour	51.1	84.4	50.1	45.8
10/08/2021 14:00:00	1-hour	53.7	87.1	53.6	43.2
10/08/2021 15:00:00	1-hour	44.9	60.4	46.9	42.2
10/08/2021 16:00:00	1-hour	46.1	62.5	47.7	42.5
10/08/2021 17:00:00	1-hour	45.5	63.3	46.8	41.4
10/08/2021 18:00:00	1-hour	48.5	76.7	49.4	41.3
10/08/2021 19:00:00	1-hour	48.3	76.9	48.2	42.2
10/08/2021 20:00:00	1-hour	48.0	71.2	46.9	43.1
10/08/2021 21:00:00	1-hour	45.5	56.1	46.9	43.4
10/08/2021 22:00:00	1-hour	45.4	69.7	47.0	42.3
Over survey period		**48.6**	**87.1**	**48.8**	**43.4**

Table B1 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
10/08/2021 23:00:00	1-hour	47.0	76.1	48.4	44.2
11/08/2021 00:00:00	1-hour	46.8	62.4	46.5	42.2
11/08/2021 01:00:00	1-hour	48.2	67.5	46.1	40.8
11/08/2021 02:00:00	1-hour	42.4	51.3	44.3	39.8
11/08/2021 03:00:00	1-hour	42.3	62.0	43.5	39.6
11/08/2021 04:00:00	1-hour	43.1	57.4	44.4	40.2
11/08/2021 05:00:00	1-hour	44.9	62.2	46.0	42.1
11/08/2021 06:00:00	1-hour	46.5	69.6	47.1	41.8
Over survey period		**45.7**	**76.1**	**45.8**	**41.3**

Table B2: Hourly Results from 42 Keel Close

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
04/08/2021 14:00:00	1-hour	53.0	79.0	54.3	47.1
04/08/2021 15:00:00	1-hour	51.8	73.9	53.8	43.8
04/08/2021 16:00:00	1-hour	50.7	69.3	52.3	45.9
04/08/2021 17:00:00	1-hour	44.0	69.2	45.4	36.4
04/08/2021 18:00:00	1-hour	46.1	71.4	45.6	36.3
04/08/2021 19:00:00	1-hour	45.0	70.0	44.4	35.5
04/08/2021 20:00:00	1-hour	44.9	64.1	45.7	35.1
04/08/2021 21:00:00	1-hour	42.7	60.2	43.0	33.5
04/08/2021 22:00:00	1-hour	44.9	60.6	45.0	32.4
04/08/2021 23:00:00	1-hour	53.0	79.0	54.3	47.1
Over survey period		**48.6**	**79.0**	**47.7**	**38.4**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
04/08/2021 23:00:00	1-hour	42.3	59.1	42.5	32.5
05/08/2021 00:00:00	1-hour	44.8	62.3	41.6	32.5
05/08/2021 01:00:00	1-hour	39.7	64.6	37.9	31.4
05/08/2021 02:00:00	1-hour	46.0	73.0	38.3	31.6
05/08/2021 03:00:00	1-hour	40.6	62.4	36.6	30.7
05/08/2021 04:00:00	1-hour	41.9	59.8	41.0	30.9
05/08/2021 05:00:00	1-hour	45.7	64.8	46.9	34.0
05/08/2021 06:00:00	1-hour	45.7	67.4	47.8	38.1
Over survey period		**43.9**	**73.0**	**41.6**	**32.7**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
05/08/2021 07:00:00	1-hour	48.6	77.5	50.4	40.7
05/08/2021 08:00:00	1-hour	50.9	71.2	53.6	43.0
05/08/2021 09:00:00	1-hour	49.8	69.1	51.6	45.7
05/08/2021 10:00:00	1-hour	50.0	72.0	52.3	44.1
05/08/2021 11:00:00	1-hour	52.0	68.8	54.7	45.9
05/08/2021 12:00:00	1-hour	52.0	77.0	53.2	46.0
05/08/2021 13:00:00	1-hour	51.2	77.4	52.5	43.7
05/08/2021 14:00:00	1-hour	51.9	72.4	54.2	46.6
05/08/2021 15:00:00	1-hour	51.5	71.3	53.7	46.0
05/08/2021 16:00:00	1-hour	52.1	78.4	52.3	44.4
05/08/2021 17:00:00	1-hour	55.3	80.4	55.8	47.1
05/08/2021 18:00:00	1-hour	50.7	68.5	52.7	46.7
05/08/2021 19:00:00	1-hour	50.3	73.3	51.3	45.3
05/08/2021 20:00:00	1-hour	48.1	72.7	49.2	42.3
05/08/2021 21:00:00	1-hour	45.7	61.7	48.0	39.6
05/08/2021 22:00:00	1-hour	47.1	64.4	48.0	36.6
Over survey period		**51.0**	**80.4**	**52.1**	**44.0**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
05/08/2021 23:00:00	1-hour	44.3	66.3	46.8	38.4
06/08/2021 00:00:00	1-hour	44.5	57.8	46.3	39.6
06/08/2021 01:00:00	1-hour	44.3	58.1	47.3	39.4
06/08/2021 02:00:00	1-hour	46.3	68.3	47.5	36.0
06/08/2021 03:00:00	1-hour	46.3	65.3	50.3	34.8
06/08/2021 04:00:00	1-hour	43.0	58.8	46.7	34.3
06/08/2021 05:00:00	1-hour	47.1	67.7	48.7	38.5
06/08/2021 06:00:00	1-hour	47.2	61.2	50.0	41.4
Over survey period		**45.6**	**68.3**	**47.95**	**37.8**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
06/08/2021 07:00:00	1-hour	49.0	63.2	52.2	43.3
06/08/2021 08:00:00	1-hour	52.4	65.4	55.6	46.2
06/08/2021 09:00:00	1-hour	52.5	66.1	55.6	47.1
06/08/2021 10:00:00	1-hour	54.7	88.9	56.9	46.5
06/08/2021 11:00:00	1-hour	54.2	68.4	57.2	48.1
06/08/2021 12:00:00	1-hour	54.2	71.1	57.6	47.0
06/08/2021 13:00:00	1-hour	54.7	71.7	57.5	48.0
06/08/2021 14:00:00	1-hour	55.0	67.1	58.4	48.3
06/08/2021 15:00:00	1-hour	59.6	81.6	61.0	48.5
06/08/2021 16:00:00	1-hour	58.7	84.3	59.3	46.8
06/08/2021 17:00:00	1-hour	55.8	78.3	58.9	46.3
06/08/2021 18:00:00	1-hour	47.8	69.3	48.8	42.1
06/08/2021 19:00:00	1-hour	49.5	63.3	52.4	42.0
06/08/2021 20:00:00	1-hour	49.5	66.2	52.2	43.1
06/08/2021 21:00:00	1-hour	48.0	67.1	50.4	41.1
06/08/2021 22:00:00	1-hour	46.8	62.5	47.6	39.3
Over survey period		**54.2**	**88.9**	**55.1**	**45.2**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
06/08/2021 23:00:00	1-hour	46.4	63.4	48.3	41.2
07/08/2021 00:00:00	1-hour	47.3	76.1	47.3	37.5
07/08/2021 01:00:00	1-hour	47.6	73.7	45.9	35.9
07/08/2021 02:00:00	1-hour	41.8	63.3	44.3	34.3
07/08/2021 03:00:00	1-hour	41.4	54.0	44.5	34.6
07/08/2021 04:00:00	1-hour	46.2	74.8	48.3	34.1
07/08/2021 05:00:00	1-hour	57.3	82.8	61.2	39.8
07/08/2021 06:00:00	1-hour	60.7	83.4	63.9	52.0
Over survey period		**53.8**	**83.4**	**50.5**	**38.7**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
07/08/2021 07:00:00	1-hour	57.8	83.5	60.5	43.7
07/08/2021 08:00:00	1-hour	57.8	82.0	61.5	45.1
07/08/2021 09:00:00	1-hour	50.1	67.1	52.1	44.0
07/08/2021 10:00:00	1-hour	55.1	78.3	58.4	45.2
07/08/2021 11:00:00	1-hour	61.8	84.9	63.8	44.5
07/08/2021 12:00:00	1-hour	53.3	75.8	55.7	42.4
07/08/2021 13:00:00	1-hour	62.3	87.5	54.3	43.4
07/08/2021 14:00:00	1-hour	50.3	79.4	51.8	41.9
07/08/2021 15:00:00	1-hour	49.9	64.7	53.1	43.5
07/08/2021 16:00:00	1-hour	49.1	70.4	51.2	41.0
07/08/2021 17:00:00	1-hour	47.0	61.8	50.5	40.4
07/08/2021 18:00:00	1-hour	51.8	72.5	56.2	40.7
07/08/2021 19:00:00	1-hour	62.9	87.0	65.3	44.7
07/08/2021 20:00:00	1-hour	48.9	60.4	51.5	45.1
07/08/2021 21:00:00	1-hour	50.1	72.2	53.0	45.1
07/08/2021 22:00:00	1-hour	49.1	62.3	52.5	43.5
Over survey period		**56.9**	**87.5**	**55.7**	**43.4**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
07/08/2021 23:00:00	1-hour	48.6	60.3	51.7	42.8
08/08/2021 00:00:00	1-hour	47.6	60.9	50.8	41.2
08/08/2021 01:00:00	1-hour	47.8	59.3	51.3	41.3
08/08/2021 02:00:00	1-hour	48.4	60.0	51.8	41.6
08/08/2021 03:00:00	1-hour	48.2	59.7	51.6	40.4
08/08/2021 04:00:00	1-hour	44.2	57.4	47.4	37.9
08/08/2021 05:00:00	1-hour	47.1	61.6	50.7	38.6
08/08/2021 06:00:00	1-hour	47.2	62.9	50.8	40.0
Over survey period		**47.5**	**62.9**	**50.8**	**40.5**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
08/08/2021 07:00:00	1-hour	49.2	69.0	53.2	40.9
08/08/2021 08:00:00	1-hour	53.5	65.2	57.4	44.0
08/08/2021 09:00:00	1-hour	52.7	70.5	56.0	45.0
08/08/2021 10:00:00	1-hour	52.1	69.7	55.5	44.6
08/08/2021 11:00:00	1-hour	50.5	67.7	53.2	44.0
08/08/2021 12:00:00	1-hour	51.7	64.9	54.9	44.3
08/08/2021 13:00:00	1-hour	52.0	64.5	55.4	44.5
08/08/2021 14:00:00	1-hour	55.2	67.0	58.7	47.2
08/08/2021 15:00:00	1-hour	53.2	67.4	56.9	45.2
08/08/2021 16:00:00	1-hour	53.6	64.5	57.1	45.9
08/08/2021 17:00:00	1-hour	53.3	64.9	57.2	44.5
08/08/2021 18:00:00	1-hour	51.6	69.7	54.9	44.4
08/08/2021 19:00:00	1-hour	48.7	67.0	52.2	42.2
08/08/2021 20:00:00	1-hour	45.8	64.8	48.0	39.6
08/08/2021 21:00:00	1-hour	42.9	61.7	45.3	36.9
08/08/2021 22:00:00	1-hour	43.2	54.3	46.4	37.1
Over survey period		**51.7**	**70.5**	**53.9**	**43.1**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
08/08/2021 23:00:00	1-hour	43.2	56.5	46.5	37.1
09/08/2021 00:00:00	1-hour	38.9	53.0	41.6	34.1
09/08/2021 01:00:00	1-hour	39.7	55.9	42.8	33.6
09/08/2021 02:00:00	1-hour	35.2	46.8	38.3	30.7
09/08/2021 03:00:00	1-hour	43.8	70.2	40.2	29.6
09/08/2021 04:00:00	1-hour	46.5	69.6	50.2	30.4
09/08/2021 05:00:00	1-hour	49.3	71.7	52.6	37.4
09/08/2021 06:00:00	1-hour	54.0	74.4	55.4	48.4
Over survey period		**47.5**	**74.4**	**46.0**	**35.2**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
09/08/2021 07:00:00	1-hour	49.1	68.4	50.9	45.7
09/08/2021 08:00:00	1-hour	54.7	77.1	57.6	47.0
09/08/2021 09:00:00	1-hour	53.0	80.0	53.0	47.0
09/08/2021 10:00:00	1-hour	54.7	78.5	55.1	44.7
09/08/2021 11:00:00	1-hour	53.8	79.4	55.2	46.9
09/08/2021 12:00:00	1-hour	51.2	73.2	54.3	45.4
09/08/2021 13:00:00	1-hour	51.8	71.4	54.0	45.3
09/08/2021 14:00:00	1-hour	54.2	72.7	57.7	47.3
09/08/2021 15:00:00	1-hour	54.0	72.9	57.0	47.3
09/08/2021 16:00:00	1-hour	53.0	72.9	56.1	46.2
09/08/2021 17:00:00	1-hour	61.3	84.7	64.9	48.4
09/08/2021 18:00:00	1-hour	53.0	78.4	55.5	44.0
09/08/2021 19:00:00	1-hour	47.7	66.7	49.0	41.7
09/08/2021 20:00:00	1-hour	47.4	70.9	47.6	39.1
09/08/2021 21:00:00	1-hour	45.7	69.8	46.5	38.2
09/08/2021 22:00:00	1-hour	49.3	72.4	52.0	40.8
Over survey period		**53.9**	**84.7**	**54.2**	**44.7**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
09/08/2021 23:00:00	1-hour	45.1	59.9	47.0	42.4
10/08/2021 00:00:00	1-hour	45.1	78.7	46.5	36.7
10/08/2021 01:00:00	1-hour	43.8	68.2	43.8	36.5
10/08/2021 02:00:00	1-hour	44.0	69.4	42.0	35.2
10/08/2021 03:00:00	1-hour	46.9	67.7	47.9	37.3
10/08/2021 04:00:00	1-hour	46.5	63.4	48.0	38.3
10/08/2021 05:00:00	1-hour	46.7	67.3	47.6	39.1
10/08/2021 06:00:00	1-hour	47.8	70.2	49.0	41.2
Over survey period		**45.9**	**78.7**	**46.5**	**38.3**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Daytime					
10/08/2021 07:00:00	1-hour	47.6	66.8	49.2	43.8
10/08/2021 08:00:00	1-hour	52.2	71.9	54.6	47.1
10/08/2021 09:00:00	1-hour	53.5	73.8	56.5	45.5
10/08/2021 10:00:00	1-hour	54.1	79.0	55.4	44.1
10/08/2021 11:00:00	1-hour	51.7	74.5	54.8	44.9
10/08/2021 12:00:00	1-hour	50.9	73.8	52.8	43.3
10/08/2021 13:00:00	1-hour	50.7	85.2	51.0	42.8
10/08/2021 14:00:00	1-hour	48.2	66.8	50.1	43.6
10/08/2021 15:00:00	1-hour	50.0	67.7	52.4	44.9
10/08/2021 16:00:00	1-hour	48.8	72.1	51.1	42.3
10/08/2021 17:00:00	1-hour	44.6	69.9	46.4	39.5
10/08/2021 18:00:00	1-hour	47.2	70.7	48.7	39.2
10/08/2021 19:00:00	1-hour	45.0	65.7	46.1	40.8
10/08/2021 20:00:00	1-hour	45.6	67.0	46.2	40.1
10/08/2021 21:00:00	1-hour	43.7	60.0	45.9	37.7
10/08/2021 22:00:00	1-hour	44.2	60.2	44.7	36.0
Over survey period		**49.8**	**85.2**	**50.4**	**42.2**

Table B2 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
Night-time					
10/08/2021 23:00:00	1-hour	43.0	58.2	44.9	38.9
11/08/2021 00:00:00	1-hour	46.5	65.3	45.8	35.9
11/08/2021 01:00:00	1-hour	45.2	69.3	42.8	34.8
11/08/2021 02:00:00	1-hour	44.6	66.8	40.5	32.4
11/08/2021 03:00:00	1-hour	42.8	60.7	40.2	31.6
11/08/2021 04:00:00	1-hour	44.4	68.3	44.6	33.1
11/08/2021 05:00:00	1-hour	45.3	65.8	43.8	36.2
11/08/2021 06:00:00	1-hour	48.0	63.7	50.6	38.7
Over survey period		45.3	69.3	44.15	35.2

Table B3: 15-Minute Night-time noise monitoring results from Le Vine Gardens

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
04/08/2021 23:00:00	15-minute	40.6	48.3	42.0	38.9
04/08/2021 23:15:00	15-minute	40.6	44.4	41.9	37.4
04/08/2021 23:30:00	15-minute	39.7	46.5	41.4	37.6
04/08/2021 23:45:00	15-minute	41.2	55.1	42.3	38.6
05/08/2021 00:00:00	15-minute	40.1	50.6	41.5	37.8
05/08/2021 00:15:00	15-minute	39.8	51.4	41.4	37.0
05/08/2021 00:30:00	15-minute	43.9	63.5	42.4	37.2
05/08/2021 00:45:00	15-minute	39.7	49.0	41.5	36.9
05/08/2021 01:00:00	15-minute	38.9	47.2	40.6	36.7
05/08/2021 01:15:00	15-minute	38.7	47.2	40.3	36.5
05/08/2021 01:30:00	15-minute	38.4	44.6	40.3	36.4
05/08/2021 01:45:00	15-minute	45.4	61.6	44.3	36.2
05/08/2021 02:00:00	15-minute	39.5	44.6	41.3	37.2
05/08/2021 02:15:00	15-minute	41.4	50.4	43.8	37.7
05/08/2021 02:30:00	15-minute	39.9	45.5	41.5	37.5
05/08/2021 02:45:00	15-minute	42.2	57.2	43.4	36.7
05/08/2021 03:00:00	15-minute	39.5	49.2	41.4	36.6
05/08/2021 03:15:00	15-minute	40.0	45.8	42.3	37.0
05/08/2021 03:30:00	15-minute	39.0	45.5	40.8	36.7
05/08/2021 03:45:00	15-minute	39.0	45.1	40.7	37.1
05/08/2021 04:00:00	15-minute	39.7	47.5	41.2	37.7
05/08/2021 04:15:00	15-minute	41.2	51.4	43.4	37.5
05/08/2021 04:30:00	15-minute	42.4	52.5	44.4	38.1
05/08/2021 04:45:00	15-minute	41.6	49.5	43.9	38.2
05/08/2021 05:00:00	15-minute	44.3	56.5	45.4	39.9
05/08/2021 05:15:00	15-minute	46.1	61.8	49.0	41.5
05/08/2021 05:30:00	15-minute	44.6	58.7	45.6	42.6
05/08/2021 05:45:00	15-minute	44.3	52.2	45.1	42.9
05/08/2021 06:00:00	15-minute	46.8	64.0	45.9	42.3
05/08/2021 06:15:00	15-minute	47.1	64.0	46.7	41.7
05/08/2021 06:30:00	15-minute	47.0	61.5	47.4	42.6
05/08/2021 06:45:00	15-minute	44.7	56.8	47.5	42.0

Table B3 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
05/08/2021 23:00:00	15-minute	42.3	50.7	43.2	40.9
05/08/2021 23:15:00	15-minute	42.4	45.8	43.6	41.0
05/08/2021 23:30:00	15-minute	42.3	53.6	43.1	40.8
05/08/2021 23:45:00	15-minute	42.2	54.6	43.6	40.0
06/08/2021 00:00:00	15-minute	42.5	53.3	43.1	40.4
06/08/2021 00:15:00	15-minute	41.4	45.0	43.0	39.5
06/08/2021 00:30:00	15-minute	44.4	60.8	44.7	40.3
06/08/2021 00:45:00	15-minute	41.1	46.0	42.5	39.5
06/08/2021 01:00:00	15-minute	41.7	46.1	43.1	39.8
06/08/2021 01:15:00	15-minute	40.1	46.3	41.7	38.3
06/08/2021 01:30:00	15-minute	40.3	44.6	42.0	38.5
06/08/2021 01:45:00	15-minute	43.1	58.0	42.9	38.6
06/08/2021 02:00:00	15-minute	41.9	50.6	43.7	39.4
06/08/2021 02:15:00	15-minute	44.2	59.5	46.1	40.1
06/08/2021 02:30:00	15-minute	42.9	52.2	45.6	39.3
06/08/2021 02:45:00	15-minute	46.0	65.8	43.7	38.9
06/08/2021 03:00:00	15-minute	40.8	50.8	42.6	38.0
06/08/2021 03:15:00	15-minute	42.0	47.0	43.6	39.3
06/08/2021 03:30:00	15-minute	41.8	45.8	43.2	40.1
06/08/2021 03:45:00	15-minute	43.2	56.0	43.3	39.6
06/08/2021 04:00:00	15-minute	41.5	46.2	43.3	39.5
06/08/2021 04:15:00	15-minute	42.7	54.9	43.0	39.3
06/08/2021 04:30:00	15-minute	48.5	62.8	49.6	40.5
06/08/2021 04:45:00	15-minute	41.9	53.4	43.4	39.2
06/08/2021 05:00:00	15-minute	46.0	64.9	45.4	41.1
06/08/2021 05:15:00	15-minute	47.3	63.4	48.9	42.3
06/08/2021 05:30:00	15-minute	45.5	55.3	47.1	43.3
06/08/2021 05:45:00	15-minute	44.6	50.9	45.8	43.0
06/08/2021 06:00:00	15-minute	46.4	59.7	47.5	43.2
06/08/2021 06:15:00	15-minute	46.0	54.5	48.7	43.4
06/08/2021 06:30:00	15-minute	47.0	60.8	48.0	44.8
06/08/2021 06:45:00	15-minute	46.9	55.4	48.5	44.7

Table B3 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
06/08/2021 23:00:00	15-minute	46.5	58.5	47.7	44.2
06/08/2021 23:15:00	15-minute	46.4	50.5	47.8	44.7
06/08/2021 23:30:00	15-minute	47.2	55.8	48.8	44.9
06/08/2021 23:45:00	15-minute	46.1	50.8	47.7	44.3
07/08/2021 00:00:00	15-minute	46.4	55.3	48.2	43.8
07/08/2021 00:15:00	15-minute	46.5	62.5	47.6	43.2
07/08/2021 00:30:00	15-minute	45.3	54.4	46.9	42.8
07/08/2021 00:45:00	15-minute	44.3	53.0	45.9	42.3
07/08/2021 01:00:00	15-minute	43.3	47.9	44.4	41.8
07/08/2021 01:15:00	15-minute	42.9	48.7	44.2	41.0
07/08/2021 01:30:00	15-minute	43.0	54.1	44.1	40.8
07/08/2021 01:45:00	15-minute	49.7	68.7	45.2	39.8
07/08/2021 02:00:00	15-minute	48.3	66.0	43.8	39.3
07/08/2021 02:15:00	15-minute	41.1	46.4	42.5	39.3
07/08/2021 02:30:00	15-minute	39.8	44.7	41.3	38.1
07/08/2021 02:45:00	15-minute	40.4	45.6	41.7	38.7
07/08/2021 03:00:00	15-minute	41.5	45.1	42.8	39.6
07/08/2021 03:15:00	15-minute	41.8	50.3	43.4	39.6
07/08/2021 03:30:00	15-minute	40.9	44.0	42.0	39.4
07/08/2021 03:45:00	15-minute	40.4	46.2	41.9	38.7
07/08/2021 04:00:00	15-minute	40.1	45.8	41.3	38.4
07/08/2021 04:15:00	15-minute	41.9	52.7	44.2	39.0
07/08/2021 04:30:00	15-minute	43.8	59.0	45.5	39.5
07/08/2021 04:45:00	15-minute	45.9	58.4	48.2	40.4
07/08/2021 05:00:00	15-minute	47.3	61.8	50.9	40.9
07/08/2021 05:15:00	15-minute	43.4	48.2	44.7	41.8
07/08/2021 05:30:00	15-minute	44.7	53.7	46.2	42.8
07/08/2021 05:45:00	15-minute	61.9	73.1	66.1	46.8
07/08/2021 06:00:00	15-minute	59.5	70.8	63.7	48.7
07/08/2021 06:15:00	15-minute	59.6	72.6	63.5	51.2
07/08/2021 06:30:00	15-minute	56.2	68.9	59.2	50.2
07/08/2021 06:45:00	15-minute	58.8	70.4	61.8	53.1

Table B3 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
07/08/2021 23:00:00	15-minute	49.7	55.2	51.4	47.5
07/08/2021 23:15:00	15-minute	49.6	60.0	51.6	47.2
07/08/2021 23:30:00	15-minute	49.5	55.6	51.4	47.2
07/08/2021 23:45:00	15-minute	49.3	55.1	50.7	47.1
08/08/2021 00:00:00	15-minute	49.3	59.0	50.8	46.3
08/08/2021 00:15:00	15-minute	48.2	57.5	49.8	45.4
08/08/2021 00:30:00	15-minute	46.5	50.7	48.0	44.4
08/08/2021 00:45:00	15-minute	48.1	56.0	50.1	45.3
08/08/2021 01:00:00	15-minute	48.1	54.1	49.9	45.9
08/08/2021 01:15:00	15-minute	48.9	54.6	51.0	45.7
08/08/2021 01:30:00	15-minute	47.7	55.4	49.5	44.7
08/08/2021 01:45:00	15-minute	47.7	56.1	49.8	44.8
08/08/2021 02:00:00	15-minute	47.7	56.0	49.7	45.0
08/08/2021 02:15:00	15-minute	47.4	53.0	49.2	45.0
08/08/2021 02:30:00	15-minute	48.1	54.6	50.6	44.5
08/08/2021 02:45:00	15-minute	47.7	54.4	50.3	43.9
08/08/2021 03:00:00	15-minute	46.3	51.4	48.1	43.8
08/08/2021 03:15:00	15-minute	46.5	52.1	48.8	43.4
08/08/2021 03:30:00	15-minute	45.5	50.8	47.5	43.0
08/08/2021 03:45:00	15-minute	45.6	50.9	48.0	42.6
08/08/2021 04:00:00	15-minute	43.9	51.3	46.1	41.5
08/08/2021 04:15:00	15-minute	43.8	51.2	45.4	41.6
08/08/2021 04:30:00	15-minute	43.4	53.4	44.9	41.1
08/08/2021 04:45:00	15-minute	44.8	52.9	47.2	41.4
08/08/2021 05:00:00	15-minute	43.7	51.1	45.3	41.6
08/08/2021 05:15:00	15-minute	47.3	61.6	49.7	42.6
08/08/2021 05:30:00	15-minute	46.7	52.1	48.6	44.4
08/08/2021 05:45:00	15-minute	47.7	54.2	50.4	44.4
08/08/2021 06:00:00	15-minute	47.1	56.7	48.8	44.2
08/08/2021 06:15:00	15-minute	45.8	51.8	47.5	43.6
08/08/2021 06:30:00	15-minute	47.0	59.5	49.0	44.1
08/08/2021 06:45:00	15-minute	46.4	52.5	48.1	43.9

Table B3 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
08/08/2021 23:00:00	15-minute	46.3	52.6	47.7	44.1
08/08/2021 23:15:00	15-minute	44.5	54.0	45.7	42.9
08/08/2021 23:30:00	15-minute	44.0	47.8	45.2	42.5
08/08/2021 23:45:00	15-minute	43.5	53.7	44.9	41.5
09/08/2021 00:00:00	15-minute	43.2	49.2	45.1	40.5
09/08/2021 00:15:00	15-minute	41.7	49.7	42.9	39.8
09/08/2021 00:30:00	15-minute	41.1	45.2	42.6	39.2
09/08/2021 00:45:00	15-minute	41.0	46.5	42.4	39.5
09/08/2021 01:00:00	15-minute	41.3	47.1	42.7	39.3
09/08/2021 01:15:00	15-minute	41.7	55.7	42.7	39.1
09/08/2021 01:30:00	15-minute	39.8	50.5	41.2	37.8
09/08/2021 01:45:00	15-minute	39.9	44.7	41.4	37.8
09/08/2021 02:00:00	15-minute	39.2	44.3	40.6	37.5
09/08/2021 02:15:00	15-minute	38.9	45.6	40.2	37.5
09/08/2021 02:30:00	15-minute	38.2	45.3	39.8	36.0
09/08/2021 02:45:00	15-minute	38.2	42.2	39.8	36.3
09/08/2021 03:00:00	15-minute	47.5	71.5	41.0	36.0
09/08/2021 03:15:00	15-minute	37.7	43.2	39.6	35.3
09/08/2021 03:30:00	15-minute	39.5	50.8	42.1	35.0
09/08/2021 03:45:00	15-minute	40.7	54.7	42.3	35.8
09/08/2021 04:00:00	15-minute	38.9	43.0	40.4	37.2
09/08/2021 04:15:00	15-minute	45.5	63.1	42.3	37.8
09/08/2021 04:30:00	15-minute	45.4	64.7	45.9	38.2
09/08/2021 04:45:00	15-minute	47.4	57.5	50.0	40.3
09/08/2021 05:00:00	15-minute	48.2	59.6	50.4	43.6
09/08/2021 05:15:00	15-minute	44.6	54.4	46.0	42.1
09/08/2021 05:30:00	15-minute	46.3	60.7	49.8	42.0
09/08/2021 05:45:00	15-minute	50.8	61.2	52.6	47.7
09/08/2021 06:00:00	15-minute	52.1	62.1	54.4	49.2
09/08/2021 06:15:00	15-minute	53.1	65.5	55.5	49.4
09/08/2021 06:30:00	15-minute	52.1	61.2	54.6	48.8
09/08/2021 06:45:00	15-minute	49.0	58.1	50.6	47.0

Table B3 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
09/08/2021 23:00:00	15-minute	46.5	58.7	48.0	44.0
09/08/2021 23:15:00	15-minute	46.0	50.1	47.4	44.5
09/08/2021 23:30:00	15-minute	45.7	53.5	46.9	43.9
09/08/2021 23:45:00	15-minute	46.4	50.2	47.9	44.7
10/08/2021 00:00:00	15-minute	49.0	65.7	51.0	44.3
10/08/2021 00:15:00	15-minute	46.6	57.5	47.6	43.7
10/08/2021 00:30:00	15-minute	45.1	55.3	46.4	42.9
10/08/2021 00:45:00	15-minute	43.9	48.9	45.7	41.6
10/08/2021 01:00:00	15-minute	43.7	50.5	45.4	41.7
10/08/2021 01:15:00	15-minute	45.3	50.8	47.1	42.5
10/08/2021 01:30:00	15-minute	44.8	50.6	46.6	42.2
10/08/2021 01:45:00	15-minute	46.7	59.2	48.1	42.1
10/08/2021 02:00:00	15-minute	43.7	48.7	45.8	40.8
10/08/2021 02:15:00	15-minute	43.6	49.0	45.5	41.2
10/08/2021 02:30:00	15-minute	44.4	48.4	46.3	41.6
10/08/2021 02:45:00	15-minute	46.5	60.9	47.5	42.0
10/08/2021 03:00:00	15-minute	44.9	50.2	46.9	42.5
10/08/2021 03:15:00	15-minute	45.2	50.0	46.9	43.1
10/08/2021 03:30:00	15-minute	45.2	49.4	47.0	43.1
10/08/2021 03:45:00	15-minute	46.5	52.2	48.5	43.7
10/08/2021 04:00:00	15-minute	48.6	65.2	48.5	44.0
10/08/2021 04:15:00	15-minute	47.6	51.6	49.5	44.5
10/08/2021 04:30:00	15-minute	47.1	54.1	48.9	44.3
10/08/2021 04:45:00	15-minute	46.9	57.3	48.3	43.4
10/08/2021 05:00:00	15-minute	47.9	57.8	49.9	44.6
10/08/2021 05:15:00	15-minute	48.7	61.6	49.2	45.4
10/08/2021 05:30:00	15-minute	47.5	52.6	48.6	45.9
10/08/2021 05:45:00	15-minute	47.9	54.5	48.9	46.7
10/08/2021 06:00:00	15-minute	47.1	54.8	48.4	45.2
10/08/2021 06:15:00	15-minute	47.5	55.7	49.9	45.0
10/08/2021 06:30:00	15-minute	50.2	67.2	50.7	44.7
10/08/2021 06:45:00	15-minute	47.0	56.0	48.5	44.5

Table B3 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
10/08/2021 23:00:00	15-minute	47.8	58.5	49.3	45.2
10/08/2021 23:15:00	15-minute	46.6	50.8	48.2	44.6
10/08/2021 23:30:00	15-minute	46.9	61.3	48.3	44.7
10/08/2021 23:45:00	15-minute	46.5	70.4	46.2	43.2
11/08/2021 00:00:00	15-minute	44.4	53.6	45.9	42.3
11/08/2021 00:15:00	15-minute	44.6	51.2	45.9	42.8
11/08/2021 00:30:00	15-minute	44.4	55.2	45.9	42.1
11/08/2021 00:45:00	15-minute	50.2	61.6	53.6	41.6
11/08/2021 01:00:00	15-minute	52.6	66.9	56.5	41.3
11/08/2021 01:15:00	15-minute	42.4	50.4	43.6	40.8
11/08/2021 01:30:00	15-minute	42.9	49.6	44.9	40.5
11/08/2021 01:45:00	15-minute	46.6	62.5	46.0	41.1
11/08/2021 02:00:00	15-minute	43.1	47.5	44.6	41.2
11/08/2021 02:15:00	15-minute	42.7	49.3	44.4	40.1
11/08/2021 02:30:00	15-minute	42.0	46.7	43.8	39.8
11/08/2021 02:45:00	15-minute	41.9	48.5	44.1	39.2
11/08/2021 03:00:00	15-minute	43.5	59.3	44.2	40.1
11/08/2021 03:15:00	15-minute	41.4	48.2	43.0	39.6
11/08/2021 03:30:00	15-minute	41.4	46.2	42.9	39.8
11/08/2021 03:45:00	15-minute	42.7	56.9	43.4	39.5
11/08/2021 04:00:00	15-minute	41.7	46.8	43.4	39.8
11/08/2021 04:15:00	15-minute	43.7	56.4	44.3	40.1
11/08/2021 04:30:00	15-minute	43.8	54.5	46.7	40.6
11/08/2021 04:45:00	15-minute	42.9	51.6	44.3	40.5
11/08/2021 05:00:00	15-minute	43.4	50.9	44.9	41.5
11/08/2021 05:15:00	15-minute	45.5	59.9	46.8	42.5
11/08/2021 05:30:00	15-minute	45.7	58.6	46.6	43.8
11/08/2021 05:45:00	15-minute	44.7	49.1	45.8	43.5
11/08/2021 06:00:00	15-minute	46.8	65.8	47.8	42.4
11/08/2021 06:15:00	15-minute	43.7	54.6	44.5	41.9
11/08/2021 06:30:00	15-minute	47.5	61.8	49.5	41.9
11/08/2021 06:45:00	15-minute	47.1	60.4	48.4	41.3

Table B4: 15-Minute Night-time noise monitoring results from 42 Keel Close

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
04/08/2021 23:00:00	15-minute	43.0	55.7	42.7	32.8
04/08/2021 23:15:00	15-minute	40.2	55.8	42.6	34.0
04/08/2021 23:30:00	15-minute	44.7	58.3	45.4	32.1
04/08/2021 23:45:00	15-minute	38.6	57.2	39.6	32.2
05/08/2021 00:00:00	15-minute	40.7	57.6	43.1	31.6
05/08/2021 00:15:00	15-minute	35.4	45.2	37.3	32.7
05/08/2021 00:30:00	15-minute	50.1	60.5	56.9	33.3
05/08/2021 00:45:00	15-minute	35.6	47.6	38.1	32.5
05/08/2021 01:00:00	15-minute	34.6	47.9	36.3	31.7
05/08/2021 01:15:00	15-minute	36.6	55.2	37.6	31.6
05/08/2021 01:30:00	15-minute	33.7	45.3	34.3	31.0
05/08/2021 01:45:00	15-minute	44.5	63.7	44.2	31.8
05/08/2021 02:00:00	15-minute	34.9	46.7	36.0	32.4
05/08/2021 02:15:00	15-minute	50.7	72.3	41.3	33.0
05/08/2021 02:30:00	15-minute	37.9	52.8	38.4	32.8
05/08/2021 02:45:00	15-minute	44.8	64.8	36.7	30.5
05/08/2021 03:00:00	15-minute	34.6	48.9	36.9	30.6
05/08/2021 03:15:00	15-minute	45.9	61.6	43.5	31.9
05/08/2021 03:30:00	15-minute	33.2	41.9	35.4	30.5
05/08/2021 03:45:00	15-minute	32.9	41.8	33.9	31.1
05/08/2021 04:00:00	15-minute	32.7	41.9	33.9	30.5
05/08/2021 04:15:00	15-minute	46.5	58.1	51.8	30.8
05/08/2021 04:30:00	15-minute	38.8	53.0	39.8	31.4
05/08/2021 04:45:00	15-minute	38.4	49.9	40.2	32.6
05/08/2021 05:00:00	15-minute	48.9	60.7	54.9	32.9
05/08/2021 05:15:00	15-minute	45.5	63.7	47.7	34.3
05/08/2021 05:30:00	15-minute	42.1	57.9	43.9	35.2
05/08/2021 05:45:00	15-minute	42.6	51.7	45.6	36.4
05/08/2021 06:00:00	15-minute	44.8	58.1	47.4	36.9
05/08/2021 06:15:00	15-minute	47.2	64.2	48.4	38.6
05/08/2021 06:30:00	15-minute	45.4	57.6	48.1	38.1
05/08/2021 06:45:00	15-minute	44.9	56.0	48.5	39.3

Table B4 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
05/08/2021 23:00:00	15-minute	41.2	49.2	44.3	35.2
05/08/2021 23:15:00	15-minute	44.1	55.9	46.8	40.2
05/08/2021 23:30:00	15-minute	43.9	51.9	46.1	40.5
05/08/2021 23:45:00	15-minute	46.6	63.6	50.2	40.3
06/08/2021 00:00:00	15-minute	43.1	56.4	45.5	39.5
06/08/2021 00:15:00	15-minute	42.6	49.2	45.0	39.6
06/08/2021 00:30:00	15-minute	47.4	56.5	53.1	40.2
06/08/2021 00:45:00	15-minute	42.8	49.3	45.3	39.6
06/08/2021 01:00:00	15-minute	45.4	57.5	48.2	40.5
06/08/2021 01:15:00	15-minute	41.8	47.7	44.1	39.3
06/08/2021 01:30:00	15-minute	44.6	54.7	48.3	38.8
06/08/2021 01:45:00	15-minute	44.4	51.4	47.4	39.5
06/08/2021 02:00:00	15-minute	47.6	64.5	49.7	40.2
06/08/2021 02:15:00	15-minute	48.7	67.5	47.8	35.7
06/08/2021 02:30:00	15-minute	43.3	52.0	46.5	36.7
06/08/2021 02:45:00	15-minute	42.0	50.4	45.9	34.0
06/08/2021 03:00:00	15-minute	45.4	64.3	43.8	33.5
06/08/2021 03:15:00	15-minute	47.4	57.9	52.8	35.6
06/08/2021 03:30:00	15-minute	43.9	52.3	47.0	37.2
06/08/2021 03:45:00	15-minute	47.6	57.0	53.0	36.0
06/08/2021 04:00:00	15-minute	42.2	50.8	45.6	34.7
06/08/2021 04:15:00	15-minute	43.7	56.1	47.4	33.5
06/08/2021 04:30:00	15-minute	44.4	51.7	48.0	36.5
06/08/2021 04:45:00	15-minute	41.1	52.1	44.5	33.8
06/08/2021 05:00:00	15-minute	50.1	61.7	55.5	36.4
06/08/2021 05:15:00	15-minute	45.3	58.8	47.8	38.7
06/08/2021 05:30:00	15-minute	44.7	57.0	47.6	38.4
06/08/2021 05:45:00	15-minute	46.1	63.6	47.6	39.9
06/08/2021 06:00:00	15-minute	45.8	59.0	48.2	40.3
06/08/2021 06:15:00	15-minute	47.5	57.2	50.0	42.4
06/08/2021 06:30:00	15-minute	47.8	57.2	50.4	41.2
06/08/2021 06:45:00	15-minute	47.4	56.3	50.0	43.3

Table B4 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
06/08/2021 23:00:00	15-minute	44.8	54.9	47.0	40.4
06/08/2021 23:15:00	15-minute	45.0	56.4	47.4	40.7
06/08/2021 23:30:00	15-minute	47.2	57.9	50.0	42.3
06/08/2021 23:45:00	15-minute	47.8	59.7	49.3	43.4
07/08/2021 00:00:00	15-minute	49.4	67.2	51.5	39.9
07/08/2021 00:15:00	15-minute	49.5	73.5	46.4	37.6
07/08/2021 00:30:00	15-minute	44.3	58.0	46.5	38.4
07/08/2021 00:45:00	15-minute	40.7	48.2	43.5	36.5
07/08/2021 01:00:00	15-minute	42.6	61.0	45.1	37.1
07/08/2021 01:15:00	15-minute	41.5	56.3	43.3	35.8
07/08/2021 01:30:00	15-minute	49.3	66.9	53.7	36.4
07/08/2021 01:45:00	15-minute	50.4	70.0	43.8	35.1
07/08/2021 02:00:00	15-minute	44.7	60.2	46.6	35.2
07/08/2021 02:15:00	15-minute	41.9	50.6	44.9	36.6
07/08/2021 02:30:00	15-minute	38.3	47.3	42.2	33.4
07/08/2021 02:45:00	15-minute	39.4	47.5	42.7	34.2
07/08/2021 03:00:00	15-minute	44.2	53.4	48.1	36.0
07/08/2021 03:15:00	15-minute	40.2	48.0	43.0	35.4
07/08/2021 03:30:00	15-minute	40.7	50.8	44.3	34.4
07/08/2021 03:45:00	15-minute	38.6	49.2	41.3	33.9
07/08/2021 04:00:00	15-minute	38.4	47.8	41.6	32.8
07/08/2021 04:15:00	15-minute	42.7	49.5	45.9	35.5
07/08/2021 04:30:00	15-minute	45.8	62.7	48.8	35.8
07/08/2021 04:45:00	15-minute	50.2	66.1	53.0	38.5
07/08/2021 05:00:00	15-minute	51.4	72.3	54.8	38.3
07/08/2021 05:15:00	15-minute	44.8	53.1	47.7	39.1
07/08/2021 05:30:00	15-minute	47.2	61.3	49.9	41.2
07/08/2021 05:45:00	15-minute	62.8	73.9	67.0	49.1
07/08/2021 06:00:00	15-minute	61.2	72.6	65.9	51.4
07/08/2021 06:15:00	15-minute	61.2	73.6	65.3	52.7
07/08/2021 06:30:00	15-minute	58.3	74.5	60.9	52.2
07/08/2021 06:45:00	15-minute	61.6	73.4	64.6	56.3

Table B4 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
07/08/2021 23:00:00	15-minute	48.3	58.6	51.4	42.5
07/08/2021 23:15:00	15-minute	49.1	59.8	52.5	43.2
07/08/2021 23:30:00	15-minute	48.9	57.8	51.8	43.2
07/08/2021 23:45:00	15-minute	48.1	55.1	51.5	42.5
08/08/2021 00:00:00	15-minute	48.3	58.0	51.2	42.9
08/08/2021 00:15:00	15-minute	47.0	60.5	49.6	41.4
08/08/2021 00:30:00	15-minute	44.6	52.9	47.4	40.0
08/08/2021 00:45:00	15-minute	49.2	56.5	52.5	43.2
08/08/2021 01:00:00	15-minute	48.8	58.8	52.1	42.1
08/08/2021 01:15:00	15-minute	48.6	57.5	52.0	41.5
08/08/2021 01:30:00	15-minute	47.1	55.7	50.8	41.1
08/08/2021 01:45:00	15-minute	46.0	54.6	48.7	40.8
08/08/2021 02:00:00	15-minute	46.3	53.7	49.3	41.9
08/08/2021 02:15:00	15-minute	46.6	57.7	49.9	40.3
08/08/2021 02:30:00	15-minute	49.7	56.4	53.4	42.6
08/08/2021 02:45:00	15-minute	49.9	59.5	52.9	43.3
08/08/2021 03:00:00	15-minute	48.5	58.5	51.5	40.4
08/08/2021 03:15:00	15-minute	48.4	56.4	52.3	41.5
08/08/2021 03:30:00	15-minute	48.6	59.2	52.7	40.8
08/08/2021 03:45:00	15-minute	47.0	58.1	50.0	38.8
08/08/2021 04:00:00	15-minute	43.2	51.7	46.5	38.1
08/08/2021 04:15:00	15-minute	46.5	55.9	50.5	38.1
08/08/2021 04:30:00	15-minute	42.6	52.5	45.7	37.8
08/08/2021 04:45:00	15-minute	43.1	53.1	46.0	37.8
08/08/2021 05:00:00	15-minute	44.9	57.6	47.8	36.8
08/08/2021 05:15:00	15-minute	46.5	58.7	50.7	38.4
08/08/2021 05:30:00	15-minute	48.5	60.2	51.6	40.9
08/08/2021 05:45:00	15-minute	47.7	59.8	51.5	41.3
08/08/2021 06:00:00	15-minute	48.3	56.2	51.8	41.3
08/08/2021 06:15:00	15-minute	47.2	54.6	51.5	40.2
08/08/2021 06:30:00	15-minute	47.8	61.0	50.3	40.2
08/08/2021 06:45:00	15-minute	45.0	53.3	48.4	39.2

Table B4 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
08/08/2021 23:00:00	15-minute	45.6	55.8	48.8	39.3
08/08/2021 23:15:00	15-minute	42.1	51.3	44.8	37.8
08/08/2021 23:30:00	15-minute	43.6	52.6	46.9	36.9
08/08/2021 23:45:00	15-minute	39.8	50.9	42.6	36.3
09/08/2021 00:00:00	15-minute	41.1	52.1	43.9	35.7
09/08/2021 00:15:00	15-minute	37.0	46.1	39.3	34.1
09/08/2021 00:30:00	15-minute	37.3	47.0	39.8	34.0
09/08/2021 00:45:00	15-minute	38.9	46.7	42.1	33.7
09/08/2021 01:00:00	15-minute	39.8	48.1	42.9	35.5
09/08/2021 01:15:00	15-minute	41.3	54.0	44.0	35.8
09/08/2021 01:30:00	15-minute	39.0	49.5	42.5	33.1
09/08/2021 01:45:00	15-minute	37.8	46.9	41.0	32.5
09/08/2021 02:00:00	15-minute	37.3	45.4	40.6	32.2
09/08/2021 02:15:00	15-minute	34.9	43.1	38.0	31.2
09/08/2021 02:30:00	15-minute	33.8	46.2	35.3	30.4
09/08/2021 02:45:00	15-minute	33.6	44.8	35.8	30.7
09/08/2021 03:00:00	15-minute	46.8	67.0	41.2	30.6
09/08/2021 03:15:00	15-minute	33.9	48.9	36.2	29.6
09/08/2021 03:30:00	15-minute	45.7	65.7	41.1	29.0
09/08/2021 03:45:00	15-minute	38.3	53.9	41.6	30.7
09/08/2021 04:00:00	15-minute	34.5	49.2	37.1	30.3
09/08/2021 04:15:00	15-minute	38.1	49.9	41.5	29.4
09/08/2021 04:30:00	15-minute	47.7	66.0	43.4	33.7
09/08/2021 04:45:00	15-minute	50.5	61.5	52.7	39.6
09/08/2021 05:00:00	15-minute	50.0	63.4	54.0	40.7
09/08/2021 05:15:00	15-minute	43.1	54.0	46.9	36.8
09/08/2021 05:30:00	15-minute	49.2	60.3	53.9	36.6
09/08/2021 05:45:00	15-minute	51.3	63.3	53.2	47.8
09/08/2021 06:00:00	15-minute	53.4	64.3	55.7	50.0
09/08/2021 06:15:00	15-minute	56.5	70.4	57.9	50.0
09/08/2021 06:30:00	15-minute	53.7	63.7	56.4	48.6
09/08/2021 06:45:00	15-minute	50.2	58.7	51.7	47.7

Table B4 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
09/08/2021 23:00:00	15-minute	44.5	55.6	46.2	42.4
09/08/2021 23:15:00	15-minute	44.7	55.4	46.5	42.7
09/08/2021 23:30:00	15-minute	44.7	54.9	46.5	42.6
09/08/2021 23:45:00	15-minute	46.3	55.1	49.2	40.9
10/08/2021 00:00:00	15-minute	48.7	69.8	51.2	38.7
10/08/2021 00:15:00	15-minute	44.9	60.6	47.9	37.8
10/08/2021 00:30:00	15-minute	41.9	58.6	43.8	36.9
10/08/2021 00:45:00	15-minute	39.7	48.3	42.8	35.9
10/08/2021 01:00:00	15-minute	43.2	58.1	44.2	36.3
10/08/2021 01:15:00	15-minute	41.3	49.3	44.3	37.1
10/08/2021 01:30:00	15-minute	39.4	48.2	41.2	36.6
10/08/2021 01:45:00	15-minute	47.1	66.6	46.2	36.4
10/08/2021 02:00:00	15-minute	38.3	44.8	40.9	34.8
10/08/2021 02:15:00	15-minute	48.6	67.2	42.9	35.1
10/08/2021 02:30:00	15-minute	39.1	46.8	41.1	36.0
10/08/2021 02:45:00	15-minute	41.2	53.0	44.2	36.1
10/08/2021 03:00:00	15-minute	47.6	66.9	44.0	36.8
10/08/2021 03:15:00	15-minute	48.1	58.8	54.3	37.6
10/08/2021 03:30:00	15-minute	47.1	61.8	52.6	37.5
10/08/2021 03:45:00	15-minute	43.2	50.4	46.7	37.8
10/08/2021 04:00:00	15-minute	47.4	57.0	51.5	40.7
10/08/2021 04:15:00	15-minute	44.0	54.9	46.9	39.3
10/08/2021 04:30:00	15-minute	40.2	48.9	42.1	37.8
10/08/2021 04:45:00	15-minute	49.5	61.3	54.4	37.6
10/08/2021 05:00:00	15-minute	48.8	66.6	48.1	39.2
10/08/2021 05:15:00	15-minute	46.8	60.1	48.5	38.4
10/08/2021 05:30:00	15-minute	45.6	57.9	49.4	39.2
10/08/2021 05:45:00	15-minute	44.0	51.2	46.5	40.3
10/08/2021 06:00:00	15-minute	45.3	57.8	47.7	41.0
10/08/2021 06:15:00	15-minute	46.9	57.7	50.0	41.2
10/08/2021 06:30:00	15-minute	50.5	68.6	50.0	42.1
10/08/2021 06:45:00	15-minute	46.4	57.5	48.3	41.2

Table B4 (Continued)

Start time & date	Period (T)	dB $L_{Aeq,T}$	dB L_{AFmax}	dB $L_{A10,T}$	dB $L_{A90,T}$
10/08/2021 23:00:00	15-minute	42.7	55.1	44.9	38.7
10/08/2021 23:15:00	15-minute	43.7	53.9	46.1	38.9
10/08/2021 23:30:00	15-minute	42.5	52.7	43.8	41.0
10/08/2021 23:45:00	15-minute	42.8	53.0	45.1	37.6
11/08/2021 00:00:00	15-minute	41.9	57.8	41.7	36.4
11/08/2021 00:15:00	15-minute	39.6	54.3	40.9	36.5
11/08/2021 00:30:00	15-minute	47.1	59.9	49.7	35.6
11/08/2021 00:45:00	15-minute	50.0	63.1	55.7	35.2
11/08/2021 01:00:00	15-minute	48.0	64.0	48.3	35.2
11/08/2021 01:15:00	15-minute	39.9	58.0	39.2	34.9
11/08/2021 01:30:00	15-minute	46.9	67.9	43.6	34.9
11/08/2021 01:45:00	15-minute	40.2	52.2	41.5	34.2
11/08/2021 02:00:00	15-minute	36.8	43.3	38.9	34.0
11/08/2021 02:15:00	15-minute	48.7	66.1	39.3	33.7
11/08/2021 02:30:00	15-minute	40.2	50.2	45.5	33.0
11/08/2021 02:45:00	15-minute	44.2	61.8	36.9	31.6
11/08/2021 03:00:00	15-minute	48.3	60.0	55.1	31.8
11/08/2021 03:15:00	15-minute	34.0	45.0	35.7	31.0
11/08/2021 03:30:00	15-minute	34.3	41.9	35.8	32.0
11/08/2021 03:45:00	15-minute	35.9	51.1	35.7	31.9
11/08/2021 04:00:00	15-minute	34.6	42.4	36.3	32.4
11/08/2021 04:15:00	15-minute	49.6	66.7	54.2	33.4
11/08/2021 04:30:00	15-minute	40.1	55.4	43.4	33.5
11/08/2021 04:45:00	15-minute	36.8	49.4	38.4	33.8
11/08/2021 05:00:00	15-minute	48.8	59.2	56.6	35.1
11/08/2021 05:15:00	15-minute	40.2	49.7	42.6	36.0
11/08/2021 05:30:00	15-minute	42.3	58.5	43.2	37.6
11/08/2021 05:45:00	15-minute	45.2	64.7	43.4	37.3
11/08/2021 06:00:00	15-minute	45.0	57.9	46.0	37.7
11/08/2021 06:15:00	15-minute	48.4	62.0	50.6	39.1
11/08/2021 06:30:00	15-minute	48.4	62.9	49.3	39.5
11/08/2021 06:45:00	15-minute	49.2	60.4	54.9	40.6

Table B5: Sound exposure level calculations

Table B5.1: Loading train with light metal ambient noise level (daytime period)

	Sound exposure level calculations $dBL_{Aeq,1h}$		
	Levine Gardens	**Keel Close**	**Safe Store**
Loading train with light metal using high reach grab @ 10m	83.1	83.1	83.1
On-time	50%	50%	50%
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 1h reference period – dB(A)	-6	-6	-6
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Aeq,1h}$	**38.1**	**37.4**	**40.5**

Table B5.2: Loading train with light metal maximum noise level

	Sound exposure level calculations $dBL_{Amax,f}$		
	Levine Gardens	**Keel Close**	**Safe Store**
Loading train with light metal using high reach grab @ 10m	95.4	95.4	95.4
On-time	20%	20%	20%
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 1h reference period – dB(A)	-13.9	-13.9	-13.9
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Amax,f}$	**42.5**	**41.8**	**44.9**

Table B5.3: Loading train with light metal ambient noise level (night-time period)

	Sound exposure level calculations $dBL_{Aeq,15min}$		
	Levine Gardens	Keel Close	Safe Store
Loading train with light metal using high reach grab @ 10m	83.1	83.1	83.1
On-time	50%	50%	50%
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 15min reference period – dB(A)	-6	-6	-6
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Aeq,15min}$	**38.1**	**37.4**	**40.5**

Table B5.4: Loading train with heavy metal ambient noise level (daytime period)

	Sound exposure level calculations $dBL_{Aeq,1h}$		
	Levine Gardens	Keel Close	Safe Store
Loading train with heavy metal using high reach grab @ 10m	84.4	84.4	84.4
On-time	50%	50%	50%
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 1h reference period – dB(A)	-6	-6	-6
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Aeq,1h}$	**39.4**	**38.7**	**41.8**

Table B5.5: Loading train with heavy metal maximum noise level

	Sound exposure level calculations $dBL_{Amax,f}$		
	Levine Gardens	Keel Close	Safe Store
Loading train with heavy metal using high reach grab @ 10m	102.9	102.9	102.9
On-time	20%	20%	20%
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 1h reference period – dB(A)	-13.9	-13.9	-13.9
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Amax,f}$	**50.0**	**49.3**	**52.4**

Table B5.6: Loading train with heavy metal ambient noise level (night-time period)

	Sound exposure level calculations $dBL_{Aeq,15min}$		
	Levine Gardens	Keel Close	Safe Store
Loading train with heavy metal using high reach grab @ 10m	84.4	84.4	84.4
On-time	50%	50%	50%
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 15min reference period – dB(A)	-6	-6	-6
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Aeq,1h}$	**39.4**	**38.7**	**41.8**

Table B5.7: Tipping light metal ambient noise level (daytime period)

	Sound exposure level calculations $dBL_{Aeq,1h}$		
	Levine Gardens	Keel Close	Safe Store
Tipping light metal in yard @ 10m	86.7	86.7	86.7
Cycle duration	2 minutes	2 minutes	2 minutes
Number of cycles	2 cycles	2 cycles	2 cycles
Correction for 1h reference period – dB(A)	-23.5	-23.5	-23.5
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Aeq,1h}$	**24.2**	**23.5**	**26.6**

Table B5.8: Tipping light metal maximum noise level (daytime period)

	Sound exposure level calculations $dBL_{Amax,f}$		
	Levine Gardens	Keel Close	Safe Store
Tipping light metal in yard @ 10m	102.6	102.6	102.6
Cycle duration	2 minutes	2 minutes	2 minutes
Number of cycles	2 cycles	2 cycles	2 cycles
Correction for 1h reference period – dB(A)	-23.5	-23.5	-23.5
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Amax,f}$	**40.1**	**39.4**	**42.5**

Table B5.9: Tipping light metal maximum noise level (night-time period)

	Sound exposure level calculations $dBL_{Amax,f}$		
	Levine Gardens	Keel Close	Safe Store
Tipping light metal in yard @ 10m	102.6	102.6	102.6
Cycle duration	2 minutes	2 minutes	2 minutes
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 15 min reference period – dB(A)	-17.5	-17.5	-17.5
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Amax,f}$	**46.1**	**45.4**	**48.5**

Table B5.10: Tipping light metal ambient noise level (night-time period)

	Sound exposure level calculations $dBL_{Aeq,15min}$		
	Levine Gardens	Keel Close	Safe Store
Tipping light metal in yard @ 10m	86.7	86.7	86.7
Cycle duration	2 minutes	2 minutes	2 minutes
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 15min reference period – dB(A)	-17.5	-17.5	-17.5
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Aeq,15min}$	**30.2**	**29.5**	**32.6**

Table B5.11: Tipping heavy metal ambient noise level (daytime period)

	Sound exposure level calculations $dBL_{Aeq,1h}$		
	Levine Gardens	Keel Close	Safe Store
Leaving train with light metal using high reach grab @ 10m	92.6	92.6	92.6
Cycle duration	2 minutes	2 minutes	2 minutes
Number of cycles	2 cycles	2 cycles	2 cycles
Correction for 1h reference period – dB(A)	-23.5	-23.5	-23.5
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Aeq,1h}$	**30.1**	**29.4**	**32.5**

Table B5.12: Tipping heavy metal maximum noise level (daytime period)

	Sound exposure level calculations $dBL_{Amax,f}$		
	Levine Gardens	Keel Close	Safe Store
Leaving train with light metal using high reach grab @ 10m	111.8	111.8	111.8
Cycle duration	2 minutes	2 minutes	2 minutes
Number of cycles	2 cycles	2 cycles	2 cycles
Correction for 1h reference period – dB(A)	-23.5	-23.5	-23.5
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Amax,f}$	**49.3**	**48.6**	**51.7**

Table B5.13: Tipping heavy metal maximum noise level (night-time period)

	Sound exposure level calculations $dBL_{Amax,f}$		
	Levine Gardens	Keel Close	Safe Store
Leaving train with light metal using high reach grab @ 10m	111.8	111.8	111.8
Cycle duration	2 minutes	2 minutes	2 minutes
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 15 min reference period – dB(A)	-17.5	-17.5	-17.5
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Amax,f}$	**55.3**	**54.6**	**57.7**

Table B5.14: Tipping heavy metal ambient noise level (night-time period)

	Sound exposure level calculations $dBL_{Aeq,15min}$		
	Levine Gardens	Keel Close	Safe Store
Leaving train with light metal using high reach grab @ 10m	92.6	92.6	92.6
Cycle duration	2 minutes	2 minutes	2 minutes
Number of cycles	1 cycle	1 cycle	1 cycle
Correction for 15min reference period – dB(A)	-17.5	-17.5	-17.5
Distance, source to receiver (m)	292	314	224
Distance correction dB(A)	-29.0	-29.7	-26.6
Barrier correction	-10	-10	-10
Sound exposure level $dBL_{Aeq,15min}$	**36.1**	**35.4**	**38.5**

APPENDIX C: Noise Management Plan

Noise Management Plan

Vehicle movements

- 5 mph speed limit
- Vehicle movements will be minimised
- Engines of stationary vehicles should be switched off if they are likely to be stationary for more than 2 minutes.
- White noise reversing alarms are to be used
- The yard shall be maintained in a good state of repair to prevent unnecessary banging of vehicles on uneven ground
- Revving of engines is not permitted on site

Vehicle unloading

- Vehicle movements should be minimised
- Metal unloading shall only take place in a designated area
- Unloading shall only take place in a controlled manner (Max 5 mph)
- Tailgate shall be secured prior to movement of tail lift to prevent impact noise on HGV body
- Vehicles shall be well maintained and fitted with silencers and moving parts regularly lubricated
- Revving of engines is not permitted on site

Complaints log

- Following receipt of a complaint regarding noise, all noisy operations should cease.
- The complaints log should include the date, time, description of complaint, weather conditions, site operational log and contact details of complainant.
- The nature of the complaint must be fully investigated.
- Once the noise source(s) have been identified and mitigated, operations can resume.
- The complaints log must be made available to the local authority if requested.

Staff training

- Training will be provided to site personnel on noise mitigation measures.
- The training will include the emergency procedures, therefore enabling them to react quickly if a noise event were to occur.
- The staff training details must be made available to the local authority if requested.

Communication

- The maintenance of good communication with nearby noise sensitive receptors is essential in order to ensure that any potential noise issues from the site are rectified at the earliest opportunity.
- Representatives from DB Cargo and Ward Recycling should provide contact information to the closest residential receptors on Levine Gardens and Keel Close
- The contact details of the person(s) responsible for site noise levels should be displayed on the site entrance gate.

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