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MLB AUTOSPARES LIMITED

KILNHURST RD, KILNHURST, RAWMARSH, MEXBOROUGH

NOISE IMPACT ASSESSMENT

TECHNICAL REPORT: RFE-0593-24-01-03

DATE: DECEMBER 2025

PROJECT TITLE: KILNHURST RD, KILNHURST, RAWMARSH, MEXBOROUGH

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KILNHURST RD, KILNHURST, RAWMARSH, MEXBOROUGH
NOISE IMPACT ASSESSMENT

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1 INTRODUCTION

RF Environmental Ltd (RFE) was commissioned by MLB Autospares Limited in September 2024 to provide an acoustic report to accompany an application to vary an existing permit from the Environmental Agency (EA) to increase the total quantity of waste that can be accepted at a site from 2,500 tonnes to 50,000 tonnes (tpa) per annum at the MLB Autospares site located at Kilnhurst Road, Kilnhurst, Rawmarsh, Mexborough, South Yorkshire.

Sound surveys comprised of sample source term measurements of existing plant and activities and unattended and attended baseline sound measurements of the existing ambient acoustic environment. The results of these surveys have been used to assess the sound levels from the site operations at the nearest residential receptors in accordance with the principles of British Standard (BS) 4142:2014+A1:2019.

The site and details of the existing and proposed operations are described in the following section of this report. Legislation and criteria used for the assessment are included within Section 3. Details of the sound surveys are presented in Section 4, whilst the sound assessment for the site operations at the proposed premises is addressed in Section 5. Mitigation options are presented in Section 6 and finally, the conclusions of this study are summarised in Section 7. Figures and Tables referred to in the report are presented in Appendix A and B, respectively. A description of useful acoustic terms can be found in Appendix C.

The baseline and sample source-term sound measurements were obtained by Jamie Pearson (MIOA) who also undertook the calculations and authored the report. Richard Fenton (MIOA) checked the calculations and reviewed the report.

Jamie and Richard are qualified and experienced in the production of noise impact assessments and have produced a significant number of noise assessments in consultancy and local authority roles.

2 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 Site Description

The site is located at Kilnhurst Road, Kilnhurst, Rawmarsh, Mexborough, South Yorkshire. National Grid reference for the site is 445779, 396973.

The site is situated within a mixed area with industrial and residential uses and open fields and farmland. A railway line runs along the eastern site boundary.

A plan of the immediate area is presented in Figure A1 of Appendix A.

The ambient noise climate in the immediate vicinity of the site is influenced by road traffic, occasional high speed train passes and industrial noise from the site and wider industrial estate.

2.2 Site Plant and Activities

The site operates as a vehicle depollution, dismantling and storage facility of waste motor vehicles.

The business operates between the following hours:

- 08:00 hrs to 18:00 hrs Monday to Friday; and
- 08:00 hrs to 12:00 hrs on Saturdays.

Waste motor vehicles are delivered to site via lorries and are unloaded by a forklift truck and held in open bays and storage areas.

Hazardous materials are removed from the waste motor vehicles, prior to being dismantled for parts that can be recycled. The removal of waste and dismantling of the vehicles all take place inside industrial site buildings.

The vehicles are then held in open bays and storage areas prior to being loaded into a bailer to compress the car body.

The destroyed vehicles are then stacked in open storage areas.

A site plan showing the location of the main operating areas are presented in Figure A2 of Appendix A.

The current noise generating plant on site consists of:

- 1 no. bailer;
- 1 no. 22T excavator;
- 1 no. scrap sorter;

- Forklifts;
- Lorry movements (1 per hour); and
- Powered and non-powered hand tools within 4 no. on site industrial buildings.

2.3 Site Proposals

It is understood that the purpose of the permit application is to vary the existing permit to include the following:

- Total tonnage to be increased to 50,000 tpa.

It has been advised that the above changes are not expected to lead to an increase in the site operating times or typical plant operations during a 1-hour period.

2.4 Noise Sensitive Receptors

The closest noise sensitive receptors are presented in Table 2.1 below and shown in Figure A1 of Appendix A.

Receptor I.D.	Address	Receptor Type	Approx. Distance from Centre of Site (m)	Direction from Site	Grid Reference	
					X (Easting)	Y (Northing)
R1	Rawmarsh Sandhill Primary School	Educational	463	W	445282	396913
R2	20 Russell Road	Residential	390	NE	445799	397559
R3	19 Wentworth Road	Residential	589	N	446116	397161
R4	Brookhouse	Residential	208	NE	445898	397127
R5	Beechwood House	Residential	115	W	445630	396961

TABLE 2.1: NOISE SENSITIVE RECEPTORS AND APPROXIMATE DISTANCES FROM SITE

3 ASSESSMENT CRITERIA

3.1 Noise Policy Statement for England (NPSE)

The Noise Policy Statement for England (March 2010)[1], sets out the long-term vision of Government noise policy.

The vision of the NPSE is to 'Promote good health and a good quality of life through the effective management and control of noise within the context of Government policy on sustainable development.' This vision is supported by three key aims:

- avoid significant adverse impacts on health and quality of life;
- mitigate and reduce to a minimum other adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life.

The NPSE should apply to all forms of noise including environmental noise, neighbour noise and neighbourhood noise but does not apply to noise in the workplace (occupational noise).

The NPSE had adopted the following concepts, to help consider whether noise is likely to have 'significant adverse' or 'adverse' effects on health and quality of life:

NOEL – No Observed Effect Level

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on health and quality of life due to noise.

LOAEL – Lowest Observed Adverse Effect Level

This is the level above which adverse effects on health and quality of life can be detected.

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

However the NPSE goes on to state that:

'it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available.'

[1] Department for Environment, Food and Rural Affairs (DEFRA). Noise Policy Statement for England (NPSE), 2010.

3.2 The Environmental Permitting (England and Wales) Regulations 2016

The new Environmental Permitting Regulations (England and Wales) Regulations (EPR) 2016 came into force in January 2017. These new Regulations revoke the 2007 and 2010 Regulations and amend some other Acts including the Control of Pollution Act 1974.

The EPR implement the Integrated Pollution Prevention and Control (IPPC) Directive (EC/61/96) in England and Wales. Facilities covered by this legislation are known as part A(1) installations and require a permit to operate, issued by the Environment Agency.

The purpose of the IPPC is to apply an integrated approach to the regulation of some industrial activities, which means that emissions to air, water and land, plus other environmental effects must be considered together. The EA, as regulator, will set permit conditions to achieve a high level of protection for the environment as a whole.

When considering the impact of noise from an A(1) installation, the Environmental Permitting Guidance for Part A(1) Installations and Part A(1) Mobile Plant states that:

'The aim should be to achieve the underpinning of good practice, the prevention of creeping ambient noise levels, and the prevention of reasonable cause for annoyance to persons in the vicinity. The assessment of reasonable cause for annoyance is dependent on many factors including the type of noise, the time of day or night, the nature of the area, the existing noise climate and the contribution made by the noise source under consideration.'

3.3 British Standard BS4142:2014+A1:2019

Guidance on the rating and assessing of sound of an industrial and/or commercial nature is contained in British Standard (BS) 4142: 2014+A1:2019 'Methods for rating and assessing industrial and commercial sound'[2]

The standard states that:

This standard is applicable to the determination of the following levels at outdoor locations

a) rating levels for sources of sound of an industrial and/or commercial nature; and

b) ambient, background and residual sound levels

for the purposes of:

1. *investigating complaints;*
2. *assessing sound from proposed, new, modified or additional source(s) of sound of an industrial nature and/or commercial nature; and*
3. *assessing sound at proposed new dwellings or premises used for residential purposes.*

[2] British Standard BS4142:2014: Methods for rating and assessing industrial and commercial sound.

The determination of noise amounting to a nuisance is beyond the scope of this British Standard.

The significance of sound of an industrial and/or commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs.

Typically, the greater the difference between rating level and background noise level, the greater the magnitude of the impact:

- a difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context;
- a difference of around +5 dB is likely to be an indication of an adverse impact depending on context; and
- the lower the rating level is relative to the measured background sound level, the less likely it is that the specific 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.

Certain acoustic features can increase the significance of the impact of a specific sound source. These features include tonality and impulsivity, as well as additional characteristics and intermittency of the sound.

Where appropriate, a rating penalty for sound based on a subjective assessment of its characteristics should be established. In other circumstances an objective appraisal of tonal and/or impulsive characteristics may be appropriate.

It is also stated in the Standard that *'where a new noise sensitive receptor is introduced and there is extant industrial and/or commercial sound, it ought to be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise sensitive receptor and the extent of required mitigation'.*

3.4 Criteria Summary for the Noise Impact Assessment

There is no target criterion specified in the Environmental Permitting Regulations, however, based on experience of similar facilities, the EA typically expect a rating level to be no more than +5dB above the background sound assessment level. As such, considering the standard and guideline criteria discussed above, the noise impact assessment at residential receivers is to be undertaken in accordance with BS 4142:2014+A1:2019, to achieve a rating level of no more than +5dB above the background sound assessment level.

4 ENVIRONMENTAL SOUND SURVEY

4.1 Unattended Baseline Sound Survey

Unattended continuous monitoring of existing sound levels was undertaken at the proposed site, at the monitoring location shown as LT1 on Figure A1 of Appendix A. The equipment used during the survey is presented in Table 4.1 below.

Manufacturer	Model No.	Description	Serial No.	Calibration Due Date
Larson Davis	LxT	Sound Level Meter	0006489	January 2026
Larson Davis	CAL200	Acoustic Calibrator	12981	April 2025

TABLE 4.1: SOUND MONITORING EQUIPMENT – UNATTENDED

The sound level meter was powered by dry cell batteries and stored inside a weatherproof security box.

Measurements were obtained using the 'F' time weighting and A-weighting frequency network. The equipment was calibrated before and after the survey to generate a calibration level of 114.0 dB at 1 kHz.

15-minute measurements of $L_{Amax,F}$, $L_{Aeq,15min}$ and $L_{A90,15min}$ sound levels were obtained at this monitoring location between 12:00hrs Friday 27th September 2024 and 07:00hrs Thursday 3rd October 2024. The unattended sound monitoring equipment was positioned inside the garden area of the Beechwood House dwelling to the west of site, in free-field conditions.

4.2 Attended Baseline Sound Measurements

Attended short-term baseline sound measurements were obtained at various locations, representative of sensitive receptors surrounding the site.

Short-term attended sound measurements were obtained on Friday 4th October 2024 between 07:20 hrs and 11:50 hrs to understand the variation in baseline sound levels at the closest sensitive receptors.

Measurements were taken at four monitoring locations, representative of nearest noise sensitive receptors, labelled as ST1, ST2, ST3 and ST4 on Figure A1 of Appendix A.

The attended sound measurements were made using the equipment presented below in Table 4.2.

Manufacturer	Model No.	Description	Serial No.	Calibration Due Date
Norsonic	NOR-140	Sound Level Meter	140326	January 2026
Larson Davis	CAL200	Calibrator	12981	April 2025

TABLE 4.2: SOUND MONITORING EQUIPMENT – ATTENDED SURVEY ON FRIDAY 4TH OCTOBER 2024

The sound level meter was fitted with a windshield and mounted on a tripod to elevate the microphone 1.5 m above local ground. All attended baseline sound measurements were obtained in free-field conditions.

The sound level meter was configured to measure broadband A-weighted sound indices, which included $L_{Amax,F}$, $L_{Aeq,5min}$ and $L_{A90,5min}$ levels.

During the attended short-term baseline sound measurements, all of the main noise generating plant and activities were stopped.

The clocks on the unattended and attended sound level meters were synchronised to enable simultaneous measurements.

4.3 Attended Source Term Sound Measurements

Sample near and far field sound measurements of plant and activities were obtained on -site between 10:09 hrs and 11:59 hrs on Friday 27th September 2024 and between 11:35hrs and 11:50 hrs on Friday 4th October 2024.

The sample sound measurements were undertaken using the equipment presented above in Table 4.2.

Measurements were obtained using the 'F' time weighting and A-weighting frequency network.

Near Field Source Term Sound Measurements

The microphone was approximately 1.5 m above local ground, between 1m-10m from the operating plant.

The sound level meter was configured to measure A-weighted noise indices, which included $L_{Amax,F}$ and $L_{Aeq,1min}$ levels. Where measurements were captured over multiple periods, the consecutive 1-minute intervals were aggregated into a cumulative sound level.

Far Field Source Term Sound Measurements

Measurements of the plant and activities were also obtained outside of the site, at the southeast site boundary and outside one of the closest noise sensitive receptors located to the north and west of site.

These locations are labelled as ST4, ST5 and ST6 on Figure A1 of Appendix A.

The purpose of the measurements at ST6 were to assist with the calibration of the computer noise model.

The purpose of the measurements at ST4 and ST5 were to observe any perceptible sound from the site activities at the closest noise sensitive receptors.

During all sound measurements, all site plant, including the bailer and excavators, were operating simultaneously. These two items of plant were observed to generate the highest sound output on site.

Other on-site mobile plant and lorry movements were also operating.

4.4 Weather Conditions

Weather conditions during the site visits are presented below in Table 4.3.

Site Visit	Date and Time	Noted Weather
Setup / Attended	10:00hrs 27/09/2024	Dry with 80% cloud cover; 10°C; 60% humidity; average windspeeds <2.4m/s
Collection	07:30hrs 04/10/2024	Dry and partial cloud cover; 7°C; 90% humidity; average windspeeds <0.3m/s

TABLE 4.3: WEATHER CONDITIONS DURING SITE VISITS

The weather conditions during the unattended noise survey were obtained using a Peet Bros Ultimeter 100 Series weather station.

Analysis of the data captured during the unattended monitoring shows a period of unsettled weather, with rain on 4 of the 6 days surveyed. There was one day where wind gusts were over 5m/s, however on these days, average winds speeds remained below 1.1 m/s.

Analysis of the noise dataset indicates that during the daytime periods between 07:00hrs and 23:00hrs on Monday 30th September and 08:45hrs and 11:45hrs on Tuesday 1st October, the rainfall may have influenced the measured sound levels and have been discounted.

The measured data has also been excluded from the analysis between 12:30 and 12:45 hrs on Friday 27th September, where the wind gust exceeded 5 m/s.

The weather conditions obtained for the survey period are presented in Table B1 of Appendix A.

4.5 Continuous Sound Survey Results

The results of the unattended sound measurement survey are presented graphically in Figure A3 of Appendix A, tabulated in Table B2 of Appendix B and summarised in Table 4.4 below.

The mean average values presented in the final row of the table exclude periods of adverse weather and periods of on-site works. The excluding periods are summarised below:

<u>Excluded Periods – Site Works</u>

- 08:00hrs to 18:00hrs Weekdays and 08:00hrs to 12:00hrs Saturday.

<u>Excluded Periods – Adverse Weather</u>

- Between 12:30hrs and 12:45hrs Friday 27th September 2024;

- Between 07:00hrs and 23:00hrs on Monday 30th September; and
- Between 08:45hrs and 11:45hrs on Tuesday 1st October.

Date	Measured Sound Levels, dB					
	Daytime (07:00 – 23:00)			Night-time(23:00 – 07:00)		
	$L_{Amax,F}$	$L_{Aeq,16hr}$	$L_{A90,16hr}$	$L_{Amax,F}$	$L_{Aeq,8hr}$	$L_{A90,8hr}$
Fri 27/09/24*	64(52-76)	50	42	53(41-73)	39	31
Sat 28/09/24	62(51-72)	47	40	53(38-67)	39	31
Sun 29/09/24	58(50-71)	46	40	53(43-71)	44	37
Mon 30/09/24	63(55-76)	53	49	53(43-67)	41	33
Tue 01/10/24	65(53-80)	51	46	56(50-73)	43	36
Wed 02/10/24	68(51-81)	50	43	52(43-72)	40	31
Average	***63(58-68)***	***50***	***43***	***53(52-56)***	***41***	***33***
Average Excluding Periods of Adverse Weather & on-site Working	***60(58-64)***	***47***	***40***	***53(52-56)***	***41***	***33***

TABLE 4.4: SUMMARY OF UNATTENDED SOUND MEASUREMENTS AT LT1
Notes: * indicates incomplete daytime periods due to equipment setup.

The results of the unattended sound measurements show that, when excluding periods of adverse weather and site works, the ambient day time $L_{Aeq,16hr}$ sound levels produced an arithmetic average of 47 dB $L_{Aeq,16hr}$. The night-time $L_{Aeq,8hr}$ sound levels produced an arithmetic average of 41 dB $L_{Aeq,\ 8hr}$.

During the daytime period, the arithmetic average of the background sound levels, excluding periods of adverse weather and site works, was 40 dB $L_{A90,16hr}$. The night-time $L_{A90,8hr}$ sound levels produced an arithmetic average of 33 dB $L_{A90,\ 8hr}$.

4.6 Attended Baseline Sound Survey Results

The results of the attended baseline survey measurements obtained on Friday 4th October 2024 are summarised below in Table 4.5.

Monitoring Location	Date	Start Time	Dur. (mins)	Measured Free-field Sound Levels, dB			Comments
				$L_{Amax,\ F}$	$L_{Aeq,T}$	$L_{A90,T}$	
		07:20	5	74.4	58.2	46.7	Distant road traffic drive the $L_{A90,T}$. Birdsong and occasional train pass. Distant construction sound just audible.
ST1	04/10/2024	07:25	5	69.3	53.7	46.8	
		07:30	5	63.7	51.5	46.2	
Cumulative				***74.4***	***55.4***	***46.6***	
		07:40	5	65.9	51.5	47.7	Road traffic drive the $L_{A90,T}$. Occasional clatter from nearby industrial sites and reverse alarms heard.
ST2	04/10/2024	07:45	5	61.3	50.7	47.5	
		07:50	5	56.4	49.2	47.5	
Cumulative				***65.9***	***50.6***	***47.6***	
		08:00	5	70.8	63.8	51.8	Road traffic dominates.
ST3	04/10/2024	08:05	5	72.6	63.9	52.5	
		08:10	5	70.7	62.7	48.4	
Cumulative				***72.6***	***63.5***	***50.9***	
		08:20	5	86.1	71.7	47.5	Road traffic is main source on Kilnhurst Road. Sound from other industrial premises also contributes to ambient sound.
ST4	04/10/2024	08:25	5	85.6	70.8	47.8	
		08:30	5	84.0	71.5	53.8	
Cumulative				***86.1***	***71.4***	***49.7***	
		08:40	5	71.1	51.5	44.8	As previous, with lower road traffic noted.
ST1	04/10/2024	08:45	5	77.4	52.4	44.0	
		08:50	5	61.5	48.5	43.0	
Cumulative				***77.4***	***51.1***	***43.9***	
		09:00	5	65.4	46.0	42.8	Lower industrial sound on this round. Road traffic drives the $L_{A90,T}$.
ST2	04/10/2024	09:05	5	61.1	48.8	43.5	
		09:10	5	57.6	45.0	42.6	
Cumulative				***65.4***	***46.9***	***43.0***	
		09:20	5	74.4	62.6	46.1	Road traffic lower on this round but still dominates.
ST3	04/10/2024	09:25	5	80.0	62.8	47.1	
		09:30	5	73.2	63.0	45.5	
Cumulative				***80.0***	***62.8***	***46.2***	
		09:40	5	83.9	68.3	48.5	Road traffic still frequent on Kilnhurst Road. Industrial sound is lower during these periods.
ST4	04/10/2024	09:45	5	80.1	65.9	47.3	
		09:50	5	85.5	69.4	48.6	
Cumulative				***85.5***	***68.1***	***48.1***	

TABLE 4.5: SUMMARY OF ATTENDED BASELINE SOUND MEASUREMENTS – FRIDAY 4TH OCTOBER 2024

Monitoring Location	Date	Start Time	Dur. (mins)	Measured Free-field Sound Levels, dB			Comments
				$L_{Amax, F}$	$L_{Aeq,T}$	$L_{A90,T}$	
		10:00	5	61.2	48.5	42.2	As previous.
ST1	04/10/2024	10:05	5	58.6	48.4	43.2	
		10:10	5	59.8	50.7	44.5	
Cumulative				***61.2***	***49.3***	***43.3***	
		10:20	5	61.6	47.0	43.2	Industrial sound lower in this round, with road traffic in surrounding area driving background sound.
ST2	04/10/2024	10:25	5	60.4	45.9	42.1	
		10:30	5	65.7	49.7	41.8	
Cumulative				***65.7***	***47.8***	***42.4***	
		10:40	5	73.5	61.3	45.0	Road traffic dominates and increases from previous round.
ST3	04/10/2024	10:45	5	74.7	62.6	48.8	
		10:50	5	76.2	63.0	51.1	
Cumulative				***76.2***	***62.4***	***48.3***	
		11:00	5	80.1	66.9	44.0	As previous.
ST4	04/10/2024	11:05	5	78.7	65.8	46.8	
		11:10	5	80.0	67.2	48.2	
Cumulative				***80.1***	***66.7***	***46.3***	

TABLE 4.5 (CTD): SUMMARY OF ATTENDED BASELINE SOUND MEASUREMENTS – FRIDAY 4TH OCTOBER 2024

4.7 Attended Sample Source-term Sound Survey Results

The results of the attended source-term sound measurements obtained on Friday 27th September and Friday 4th October 2024 are summarised below in Tables 4.6 and 4.7, respectively.

Item	Plant Operating	Measurement Distance (m) to Plant	Date	Measurement Start Time (hh:mm)	Dur. (hh:mm:ss)	Measured Sound Levels, dB		
						$L_{Amax,F}$	$L_{Aeq,T}$	$L_{A90,T}$
1	Unloading vehicles from Lorry with Forklift	10	27/09/2024	10:09	00:01:00	78.1	66.9	61.4
				10:10	00:01:00	78.7	64.6	60.1
				Cumulative		**78.7**	**65.9**	**60.8**
2	Lorry Idle	1		10:12	00:00:46	78.7	73.9	65.9
3	Lorry Pass	5		10:13	00:00:35	72.2	66.0	59.3
4	Noise Breakout from Building 1. Sources include use of Light hand tools and airgun	5		10:16	00:01:00	73.0	68.7	66.3
				10:17	00:01:00	78.0	69.6	65.6
				10:18	00:01:00	89.9	75.3	67.1
				10:19	00:01:00	83.0	72.9	67.7
				10:20	00:01:00	84.7	75.0	64.5
				Cumulative		**89.9**	**73.1**	**66.2**
5	Noise Breakout from Building 2. Sources include use of Light hand tools short compressor sound and airgun	3		10:22	00:01:00	78.2	66.8	60.7
				10:23	00:01:00	88.6	78.9	59.6
				10:24	00:01:00	82.2	73.1	60.1
				Cumulative		**88.6**	**75.3**	**60.1**
6	Noise Breakout from Building 3. Sources include use of Light hand tools	7.5		10:26	00:01:00	82.6	69.9	60.9
				10:27	00:01:00	72.7	64.0	57.8
				10:28	00:01:00	85.8	68.2	61.5
				Cumulative		**85.8**	**68.0**	**60.1**
7	Noise Breakout from Building 4. Sources include use of Light hand tools and air gun.	5		10:35	00:01:00	78.5	69.4	64.3
				10:36	00:01:00	81.9	72.3	65.3
				Cumulative		**81.9**	**71.1**	**64.8**
8	Excavator moving scrapped cars	10		10:40	00:01:00	77.3	69.7	67.8
				10:47	00:01:00	88.7	82.5	80.4
9	Bailer. Bailing cars.	5		10:48	00:01:00	90.1	78.1	73.6
				10:49	00:01:00	106.9	85.4	79.2
				Cumulative		**106.9**	**82.9**	**77.7**
10	Scrap Loader. Loading Bailer.	5		10:51	00:01:00	86.8	80.9	76.1

TABLE 4.6: SUMMARY OF ATTENDED SOURCE-TERM SOUND MEASUREMENTS – FRIDAY 27TH SEPTEMBER 2024

Note: Underlying residual sound levels <10dB source levels for items 1-10.

Item	Plant Operating/Notes	Measurement Distance (m) to Plant	Date	Measurement Start Time (hh:mm)	Dur. (hh:mm:ss)	Measured Sound Levels, dB		
						$L_{Amax,F}$	$L_{Aeq,T}$	$L_{A90,T}$
11	In garden area of Beechwood House Dwelling. Sound Includes industrial sound from adjacent premises (not MLB Autos) and is main source. Bailer and excavator not heard at Dwelling. Occasional sound from reverse alarms on site. Unable to isolate site noise from other sources.	5m from receptor façade	27/09/2024	11:26	00:15:00	67.3	52.3	46.7
12	Main noise sources include sound from excavator, bailer and Scrap sorter. Occasional high speed train passes.	5m from south east site boundary		11:44	00:15:00	75.7	56.0	49.2

TABLE 4.6 (CTD.): SUMMARY OF ATTENDED SOURCE-TERM SOUND MEASUREMENTS – FRIDAY 27TH SEPTEMBER 2024

Item	Plant Operating/Notes	Measurement Distance (m) to Plant	Date	Measurement Start Time (hh:mm)	Dur. (hh:mm:ss)	Measured Sound Levels, dB		
						$L_{Amax,F}$	$L_{Aeq,T}$	$L_{A90,T}$
13	At the front of Brookhouse dwelling 2m from the road. Vehicles passing and industrial noise are the main sound sources at this location. The excavator can be heard only during periods of low residual sound i.e. when there are no cars passing and other industrial sound at its lowest. Bailer and scrap sorter not heard. 1 lorry enter site.	5m from receptor façade	04/10/2024	11:35	00:05:00	79.3	67.4	52.0
				11:40	00:05:00	80.5	67.3	51.7
				11:45	00:05:00	78.9	65.5	49.1
				Cumulative		**80.5**	**66.8**	**50.9**

TABLE 4.7: SUMMARY OF ATTENDED SOURCE-TERM SOUND MEASUREMENTS – FRIDAY 4TH OCTOBER 2024

5 ASSESSMENT OF PLANT SOUND LEVELS

5.1 British Standard 4142 – Assessment of Commercial Sound Levels

The method for predicting the significance of noise of an industrial and/or commercial nature in accordance with the principles of BS 4142:2014+A1:2019 is based on a comparison of the rating level, defined as the specific sound level plus any adjustment for the characteristic features of the sound, with the background sound level, $L_{A90,T}$.

5.2 Derivation of Background Sound Levels

The $L_{A90,T}$ background sound level is the sound level exceeded for 90% of the time in the absence of any sound from the specific source of interest.

'Typical' background sound levels observed over the period of interest, as described in BS4142:2014+A1:2019, are usually established for assessing plant and activities of this kind, with BS4142 stating that a 'representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value'.

Daytime Periods

Weekday

Weekday working hours are understood to be between 08:00 and 18:00hrs Monday to Friday.

Owing to the potential influence of the facility operating during the hours described above, , the data collected during the operating hours have not been used. Instead, the background sound level has been established using the 'shoulder hour' periods before and after the operating hours.

The statistical analysis is presented in Figure A4 of Appendix A.

The statistical analysis indicates that the most commonly occurring background $L_{A90,15min}$ sound level during the weekday shoulder hour periods, excluding any periods of adverse weather described in Section 4.4, is 46 dB, with this sound level occurring over 20% of the daytime weekday hours.

Weekend

Weekend working hours are understood to be between 08:00 and 12:00hrs on Saturday.

Modal statistical analysis of the background $L_{A90,T}$ sound levels has also been undertaken for the weekend period on Saturday, again using the 'shoulder hour' periods before and after the operating hours.

The statistical analysis indicates that the most commonly occurring background $L_{A90,15min}$ sound levels during these shoulder hour periods is 42 dB, with this sound level occurring over 44% of the weekend shoulder hours.

The statistical analysis is presented in Figure A5 of Appendix A.

To enable derivation of applicable long term sound levels at attended monitoring locations, simultaneous synchronised measurements were undertaken at LT1 at the same time as the attended monitoring at locations ST1, ST2, ST3 and ST4.

Where appropriate, the attended short-term sound measurements have been compared with the corresponding levels at the unattended monitoring location, with the mean differences used to provide a correction factor to extrapolate the daytime background assessment sound levels for all receptors.

Following comparison of the measured unattended and attended data, there was no observed difference in $L_{A90,15min}$ sound levels between LT1 and ST1 and LT1 and ST2 .

A difference of +5 dB in $L_{A90,15min}$ sound levels between LT1 and ST3 and LT1 and ST4 is calculated.

LT1 is considered representative of residential receptor R5, ST1 is considered representative of R1, ST2 is considered representative of R2, ST3 is considered representative of R3 and ST4 is considered representative of R4.

The adopted weekday and weekend background sound assessment levels are summarised below in Table 5.1.

Receptor ID	Address	Representative Monitoring Location	Adopted Background Sound Assessment Levels dB $L_{A90,T}$	
			Typical Daytime Weekday Hours (08:00 to 18:00 hrs) Monday to Friday	Typical Daytime Weekend Hours (08:00 to 12:00 hrs) Saturday
R1	Rawmarsh Sandhill Primary School	ST1	46	42
R2	20 Russell Road	ST2	46	42
R3	19 Wentworth Road	ST3	51	47
R4	Brookhouse	ST4	51	47
R5	Beechwood House	LT1	46	42

TABLE 5.1: BACKGROUND SOUND ASSESSMENT LEVELS

5.3 Specific Sound Levels

The specific sound level is the level equivalent continuous A-weighted sound pressure level produced by the specific sound source(s) at the assessment location over a given time.

When evaluating the specific sound level during the daytime period, a reference period of one hour is recommended.

During a typical worse case 1-hour daytime period, the following items of plant will operate:

- 1no. Bailer;
- 1 no. scrap loader;
- 1 no. 22T excavator;
- 1 no. lorry delivery/ or loading;
- 1 no. forklift unloading/ or loading; and
- Hand tools operating internally within site buildings.

The specific sound levels have been calculated using sample noise measurements obtained on site, presented in Table 4.6. The adopted sound power levels are presented in Table 5.2 below.

Plant/Activity	Measured Sound Level, dB $L_{Aeq,T}$	Measurement Distance (m)	Estimated Sound Level at 10m, dB(A)	Estimated Sound Power Level, dB(A)	No. of Plant	% On-Time[1]	Adopted Sound Power Level , dB(A)
Unloading Lorry with Forklift	66	10	66	94	1	50	91
Lorry Idle	74	1	54	82	1	10	72
Lorry Pass	66	5	60	88	1	10	78
Breakout from Building 1	73	5	67	95	1	50	92
Breakout from Building 2	75	3	65	93	1	50	90
Breakout from Building 3	68	7.5	65	93	1	50	90
Breakout from Building 4	71	5	65	93	1	50	90
Excavator	70	10	70	98	1	100	98
Bailer	83	5	77	105	1	50	102
Scrap Sorter	81	5	75	103	1	50	100

TABLE 5.2: CALCULATED SOUND POWER LEVELS FOR ON-SITE PLANT – MEASURED

Note:
[1] Per typical 1-hour daytime period.

Sound Prediction Model

A computer-generated sound model of the site including all acoustically important surrounding land topography has been generated using SoundPLAN Essential 6.0. This proprietary software implements the sound propagation calculation specified in ISO 9613-2[3] as follows:

$$L_{fT}(DW) = L_w + D_c - A$$

[3] ISO 9613-2 'Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation'.

where

$L_{ft}(DW)$	=	equivalent continuous downwind octave-band sound pressure level at a receiver location
L_w	=	sound power level of the sound source
D_c	=	directivity correction
A	=	attenuation that occurs during propagation from the point sound source to the receiver. $A = A_{div} + A_{atm} + A_{gr} + A_{bar} + A_{misc}$
A_{div}	=	attenuation due to geometrical divergence
A_{atm}	=	attenuation due to atmospheric absorption
A_{gr}	=	attenuation due to the ground effect
A_{bar}	=	attenuation due to a barrier
A_{misc}	=	attenuation due to miscellaneous other effects

The noise sources from the existing operations, as shown in Tables 5.3, have been incorporated into the noise prediction model.

The noise model has then been used to estimate the noise levels at the closest noise sensitive receptors for the daytime weekday and daytime weekend operation. The receptor locations are displayed in Figure A1 of Appendix A and listed in Table 2.2.

The following assumptions have been made for the sound modelling exercise:

- the surrounding area included in the modelling exercise, such as buildings and other structures, have been based on Ordinance Survey mapping and site plans;
- where on-site vehicles are stored and stacked at height, this creates screening between the sound sources and receptors. However, to provide a worse case assessment, no additional screening afforded by vehicles has been applied to the model;
- ground cover around the site has been modelled as hard ground;
- ground cover for all other areas has been modelled as soft ground except for road that are modelled as hard ground;
- topography of the surrounding area has been modelled using a LIDAR Digital Terrain Model (DTM) data available online from Bluesky Mapshop;
- sound levels calculated at the sensitive receptors are in free-field conditions;
- receivers have been modelled at a height of 1.5 m above local ground, with repeats of 2.5m per floor, where appropriate. The floor with the highest calculated level is presented for assessment purposes;
- all modelled external sound sources are represented as point sources, 1m above local ground, except for the lorry idle, excavator and scrap sorter which has been modelled at a height of 1.5m above local ground;

- the industrial site buildings have been modelled at a height of 4m. To represent the sound breakout from the activities within the buildings, the front façade of each building was incorporated into the model as separate area sources. The front façade was chosen as these were observed to be open façades with the sound at the front being significantly higher than any other areas around the site buildings. A calibration receptor has also been placed in the model at the specified distance;
- the ST6 attended measurement receptor has been input into the computer noise model. The model calibrates to within 0.6 dB of the measured values obtained at ST6;
- the positioning of sound sources in the sound model is based on site observations and information provided by site operatives; and
- the assessment has been undertaken for the following working hours:
    - 08:00hrs to 18:00hrs Monday to Friday; and
    - 08:00hrs to 12:00hrs Saturday.

The daytime noise contours are presented in Figure A6 of Appendix A.

5.4 Rating Level Assessment

The specific sound level of the site activities was then used to determine the Rating level at the closest sensitive receptors.

Where appropriate, a rating penalty for sound based on a subjective assessment of its characteristics should be established and added to the specific sound level.

Based on the observations and subjective assessment made during the attended noise survey, tonal reversing alarms were just perceptible at R4 and R5. As such, a +2 dB penalty has been applied to the specific sound level for a tone which is just perceptible at the R4 and R5 receptors.

Assessment - Weekday Periods

The rating level assessment is set out in Table 5.3 below, for the weekday daytime, period.

Item	Nearest Noise Sensitive Receptors				
	R1	R2	R3	R4	R5
Specific Sound Level (dB $L_{Aeq, Tr}$)	37	41	37	47	48
Rating Penalty (dB)	+0	+0	+0	+2	+2
Rating Level (dB $L_{Ar, Tr}$)	37	41	37	49	50
Relevant Background Sound Level (dB $L_{A90, T}$)	46	46	51	51	46
BS4142 Assessment Level	-9	-5	-14	-2	+4

TABLE 5.3: ASSESSMENT OF DAYTIME SITE ACTIVITIES (08:00 TO 18:00HRS)

The results presented in Table 5.5 show that the rating levels are calculated to be between 14 dB below and 4dB above the existing background sound level at closest receptors. This could be an indication of low noise impact, depending on context, according to the criteria set out in BS4142: 2014+A1:2019.

The adopted criteria of a rating level of being no more than +5dB above the background sound assessment level is met at all receptors.

Assessment - Weekend Period

The rating level assessment is set out in Tables 5.4 below, for the weekend daytime period.

Item	Nearest Noise Sensitive Receptors				
	R1	R2	R3	R4	R5
Specific Sound Level (dB $L_{Aeq, Tr}$)	37	41	37	47	48
Rating Penalty (dB)	+0	+0	+0	+2	+2
Rating Level (dB $L_{Ar, Tr}$)	37	41	37	49	50
Relevant Background Sound Level (dB $L_{A90, T}$)	42	42	47	47	42
BS4142 Assessment Level	-5	-1	-10	+2	+8

TABLE 5.4: ASSESSMENT OF DAYTIME SITE ACTIVITIES (08:00 TO 12:00HRS)

The results presented in Table 5.9 show that the rating levels are calculated to be between 10 dB below and 8dB above the existing background sound level at closest receptors. The rating levels at R1-R4 are an indication of low noise impact at R1, R2, R3 and R4, depending on context, according to the criteria set out in BS4142: 2014+A1:2019. However, the +8dB rating level at R5 could be an indication of adverse noise impact depending on context.

The adopted criteria of a rating level of being no more than +5dB above the background sound assessment level is met at receptors R1, R2, R3 and R4, but is exceeded at by 3 dB at the R5 receptor.

5.5 Context

When considering the significance of an impact, BS 4142 advises that the context of the impact should be taken into account. The context of the impact should consider factors such as: the absolute level of sound; the character and level of the residual sound compared to the character and level of the specific sound; the sensitivity of the receptor; and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

An important contextual consideration is that the site itself is already established and forms part of the existing acoustic environment and operates in an industrial and commercial area, with elevated ambient sound levels from the industrial estate and train passes on the nearby railway line. The surrounding receptors are therefore used to the sound of a commercial nature and the proposal to increase the throughput of waste is not expected to alter the sound generated from the site and therefore will not alter the existing acoustic character in the surrounding area.

The site noise, which including the main noise generating plant of the excavator, scrap sorter and bailer, was barely audible at the closest receptors of R4 and R5. Based on these observations, it is considered unlikely that site noise would be audible inside the closest noise sensitive receptors.

On site, vehicles are stored and stacked at height, creating screening between the sound sources and receptors. No additional screening afforded by vehicles has been applied in the assessment, and the modelling and assessment is considered to provide a worse case.

It should also be noted that that the R5 receptor is owned and occupied by the owner of the MLB Autospares site, who works on the site during the operating hours. An assessment of the noise impact may therefore not be appropriate at this receptor.

All receptors that are not associated with the site meet the adopted assessment criteria and therefore, when also considered in context, the risk of an adverse noise impact at the closest sensitive receptors is low.

However, consideration should be given to reducing the noise emissions from site as far as reasonably practicable.

5.6 Uncertainty

There are a variety of factors that inevitably limit the accuracy associated with all steps of any noise assessment, including measurement, calculation or prediction. Factors include, but are not limited to:

- the positioning of sound sources in the sound model is based on information provided by the client and observed during the site visits;
- the inherent limitation of calculation/prediction methodology in Standards and guidance;
- it is understood that all plant/equipment could be operated simultaneously within the daytime period. This has therefore been assumed in the assessment for a worst case hourly operation;
- variability in meteorological conditions; and
- the accuracy of sound source input data of a calculation or noise model.

It is imperative to minimise the uncertainty to a level commensurate with the intention of the assessment objective. Measures taken in this assessment to minimise uncertainty are:

- Sound level measurements were undertaken in accordance with recognised Standards. Measured sound data has been discounted where adverse weather may have influenced the noise dataset;
- Field calibration checks were undertaken prior and after measurements to record acceptable drift;
- The sound source data measured on the existing site is deemed to provide a representative measure of site plant; and

- Recognised sound prediction calculations have been used to calculate sound levels at sensitive locations and any assumptions have been stated.

6 NOISE MITIGATION

To ensure that noise emanating from the site is reduced as far as reasonably practicable, it is important to manage the noise on site and the following management options should be considered.

Physical Mitigation Measures

To reduce noise levels at the closest receptors, consideration could be given to relocation the main noise generating items of plant further to the southern boundary of the site, as highlighted in Figure A7 of Appendix A. In this position, the sites industrial building acts as a screen between the plant and the R5 receptor.

By replacing tonal reversing alarms with broadband reverse alarms on all mobile vehicles and plant, the rating penalty could also be removed.

Initial calculations suggest that the plant rating levels can be reduced by 5 dB at R5 and 1 dB at R4, meaning the adopted criteria would now be met at the R5 receptor.

Plant Operation

All new plant and machinery to be sourced with regard to noise output. The Environment Agency will be notified of any new plant or machinery.

All plant and machinery to be serviced and maintained as per the manufacturer's specifications.

All plant will be switched off when not in use and not be left to idle.

All new and existing staff will be made aware of the noise management requirements and will be briefed on the importance of noise control. Measures to include the handling of materials, revving of engines, lowing of drop heights when loading material etc.

Full noise management control measures will be presented in a separate noise management plan, which will accompany the permit application.

7 CONCLUSIONS

A noise impact assessment has been undertaken at the MLB Autospares site located at Kilnhurst Road, Kilnhurst, Rawmarsh, Mexborough, South Yorkshire.

The assessment considered the noise impact on the nearest noise sensitive receptors, from the use of the land for vehicle depollution, dismantling and storage of waste motor vehicles.

A combination of unattended and attended noise monitoring was undertaken to establish the existing ambient and background sound levels in the vicinity of the proposed development, while attended source term measurements were undertaken to establish specific noise levels of existing on-site activities.

Following the methodology set out in BS4142:2014+A1:2019, an assessment of the rating noise level for the existing activities was undertaken.

The assessment has been undertaken for the following typical working hours:

- 08:00hrs to 18:00hrs Monday to Friday; and
- 08:00hrs to 12:00hrs Saturday.

The plant and site operations associated with these periods are summarised in Section 5.3.

The results of the assessment show that when considered in context, the risk of adverse noise impact at the closest sensitive receptors is low.

However, to ensure that noise emanating from the site is reduced as far as reasonably practicable, noise mitigation and management options have been considered and will be presented in a separate noise management plan.

APPENDIX A: FIGURES

FIGURE A1: PLAN SHOWING SITE LOCATION AND CLOSEST NOISE SENSITIVE RECEPTORS

Aerial mapping obtained from google maps

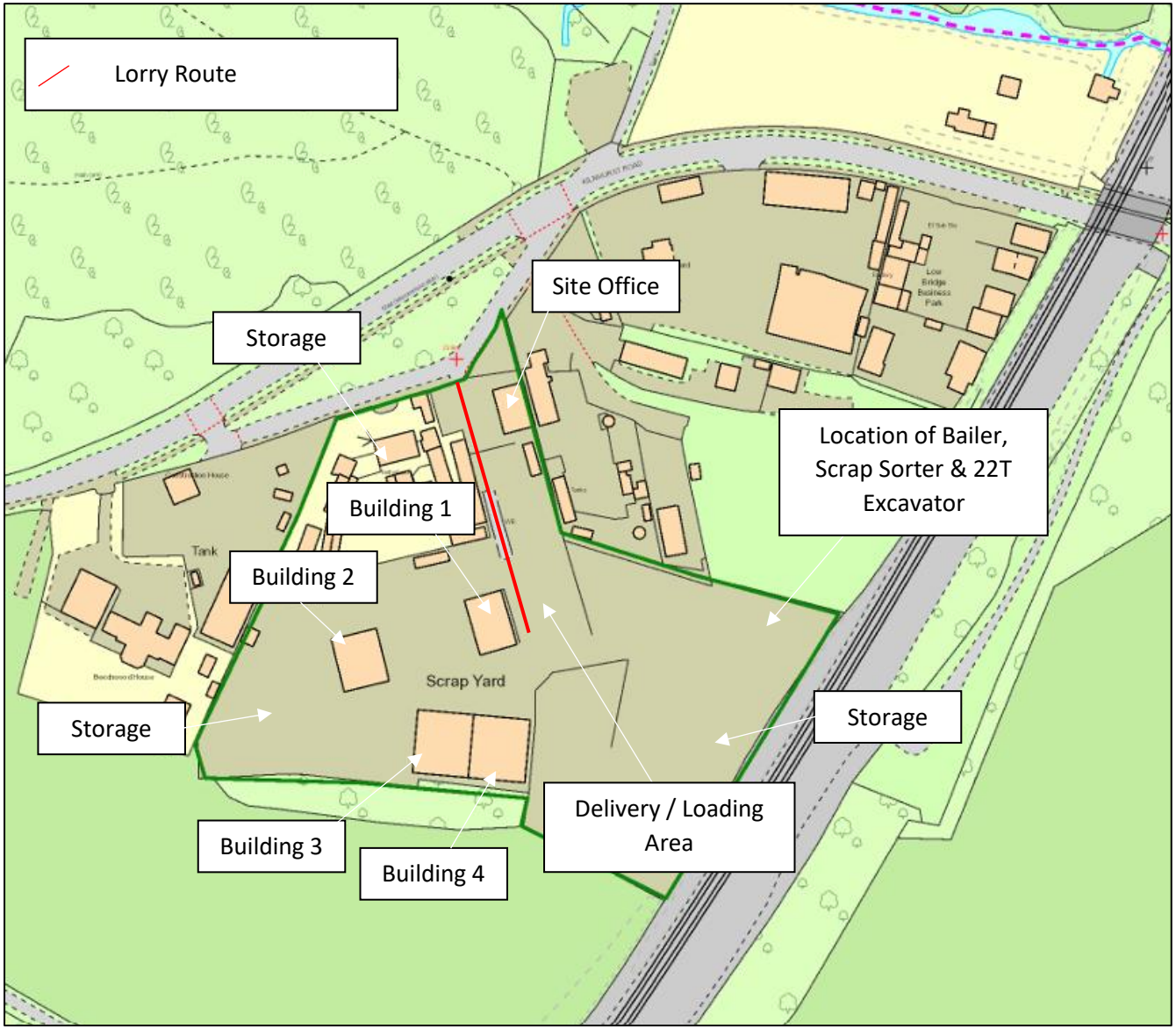

FIGURE A2: SITE PLAN SHOWING ACTIVITIES AND PROCESSES, AS OBSERVED DURING SITE VISIT / INFORMATION PROVIDED BY STAFF

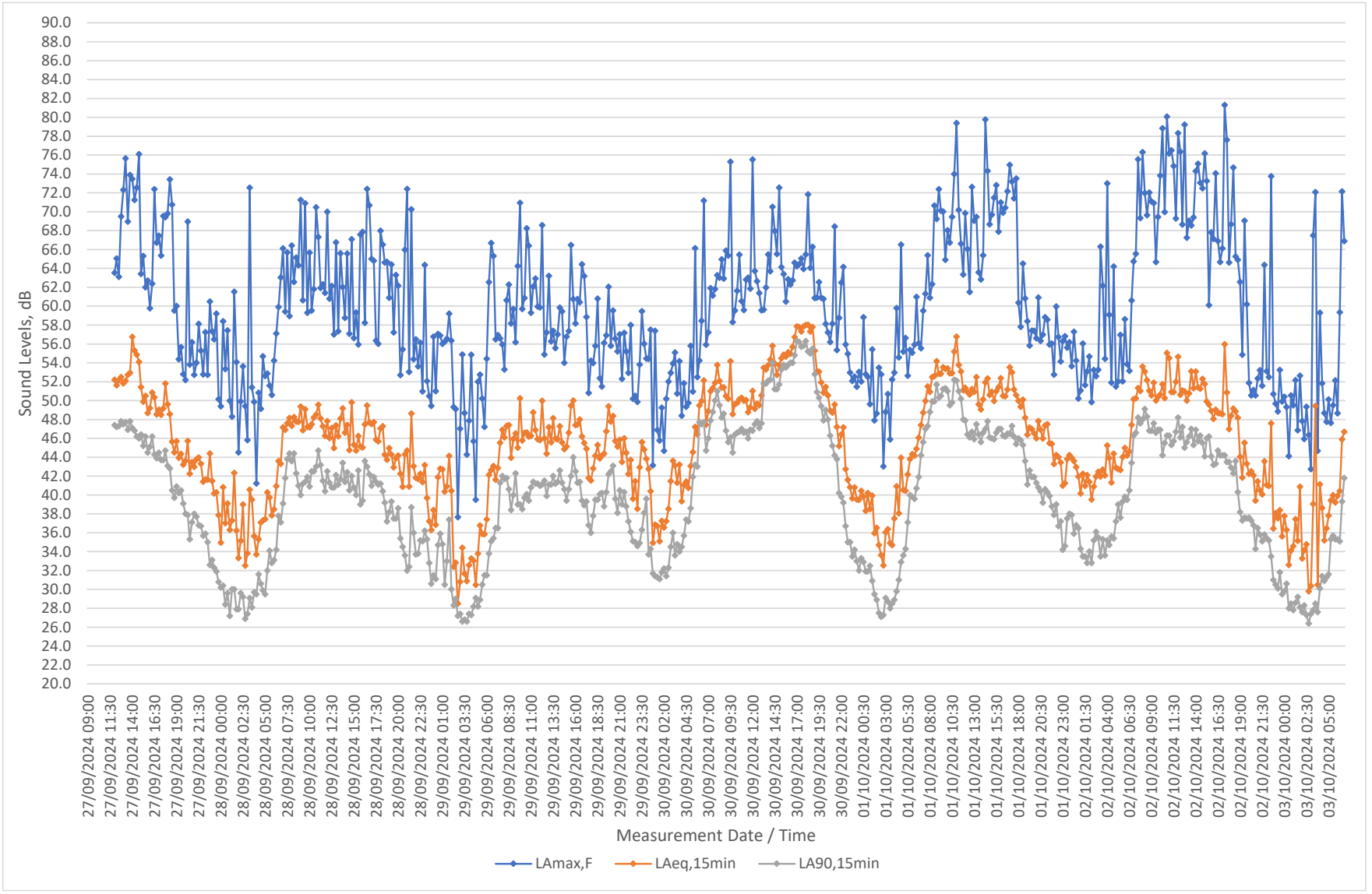

FIGURE A3: TIME HISTORY OF CONTINUOUS NOISE MONITORING DATA, LT1

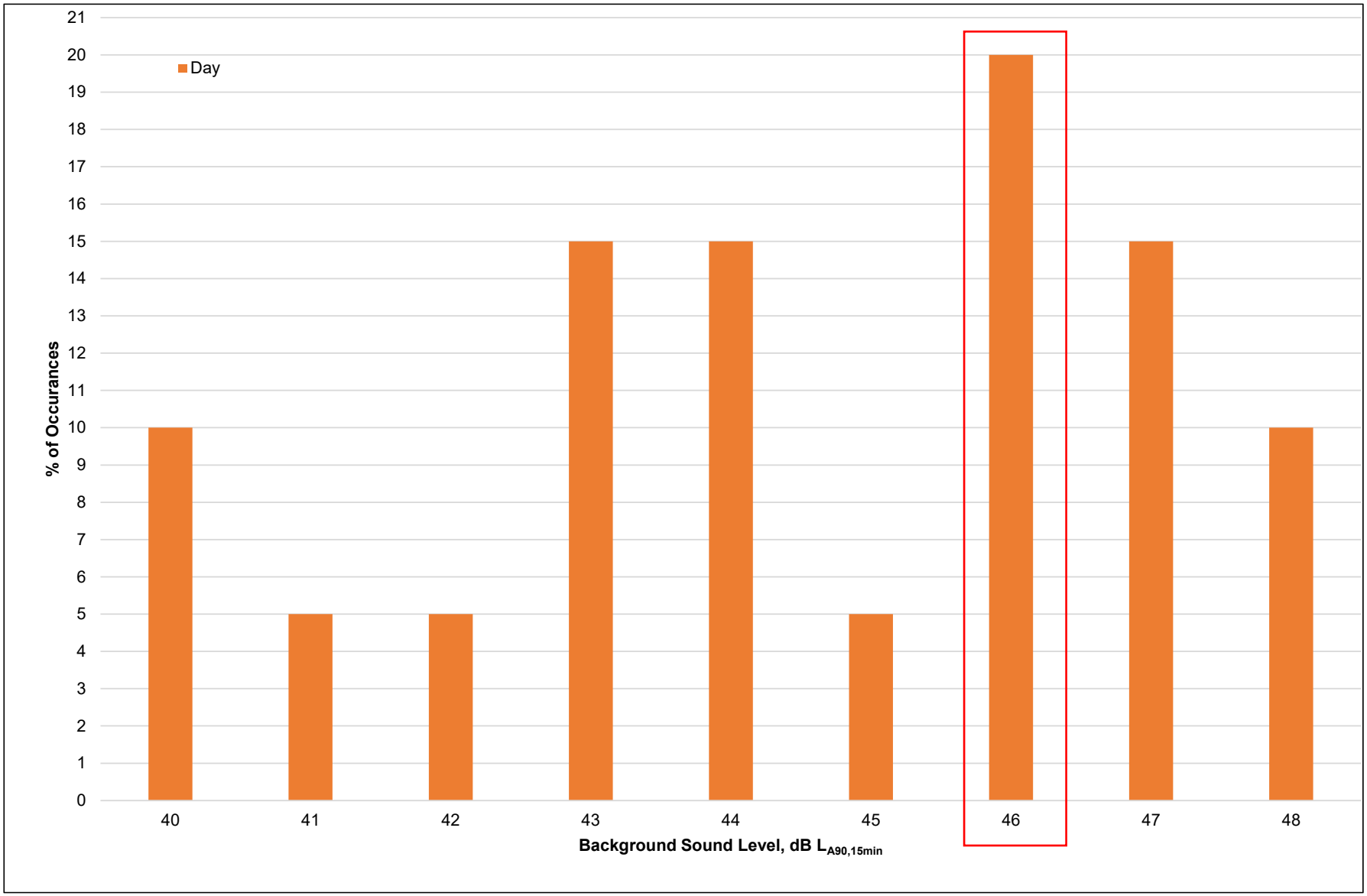

FIGURE A4: DERIVATION OF BACKGROUND NOISE LEVELS - WEEKDAY 08:00HRS TO 18:00HRS

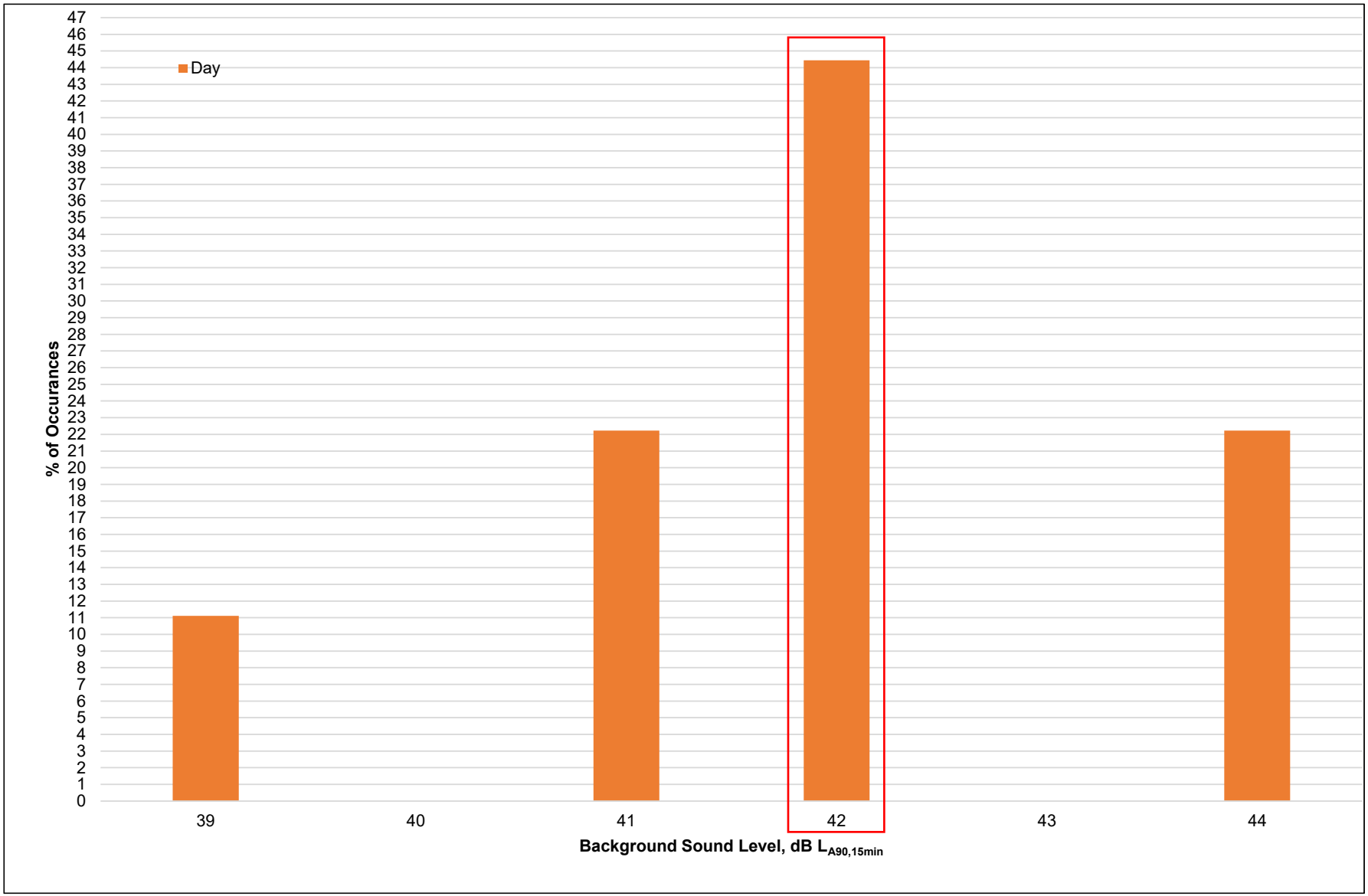

FIGURE A5: DERIVATION OF BACKGROUND NOISE LEVELS - WEEKEND 08:00HRS TO 12:00HRS

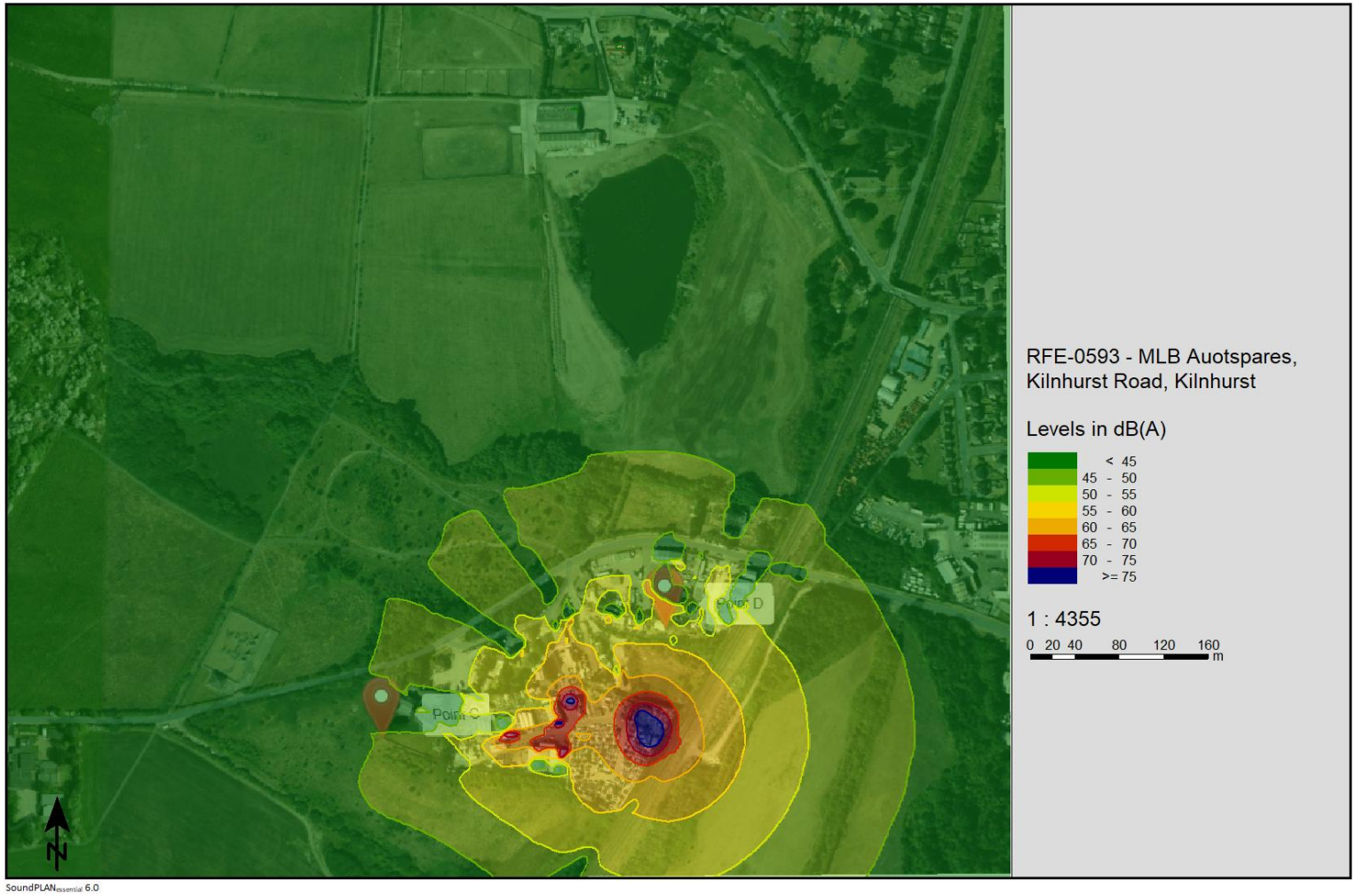

FIGURE A6: DAYTIME NOISE CONTOURS - 1.5M ABOVE TERRAIN AND AT A GRID DISTANCE OF 5M

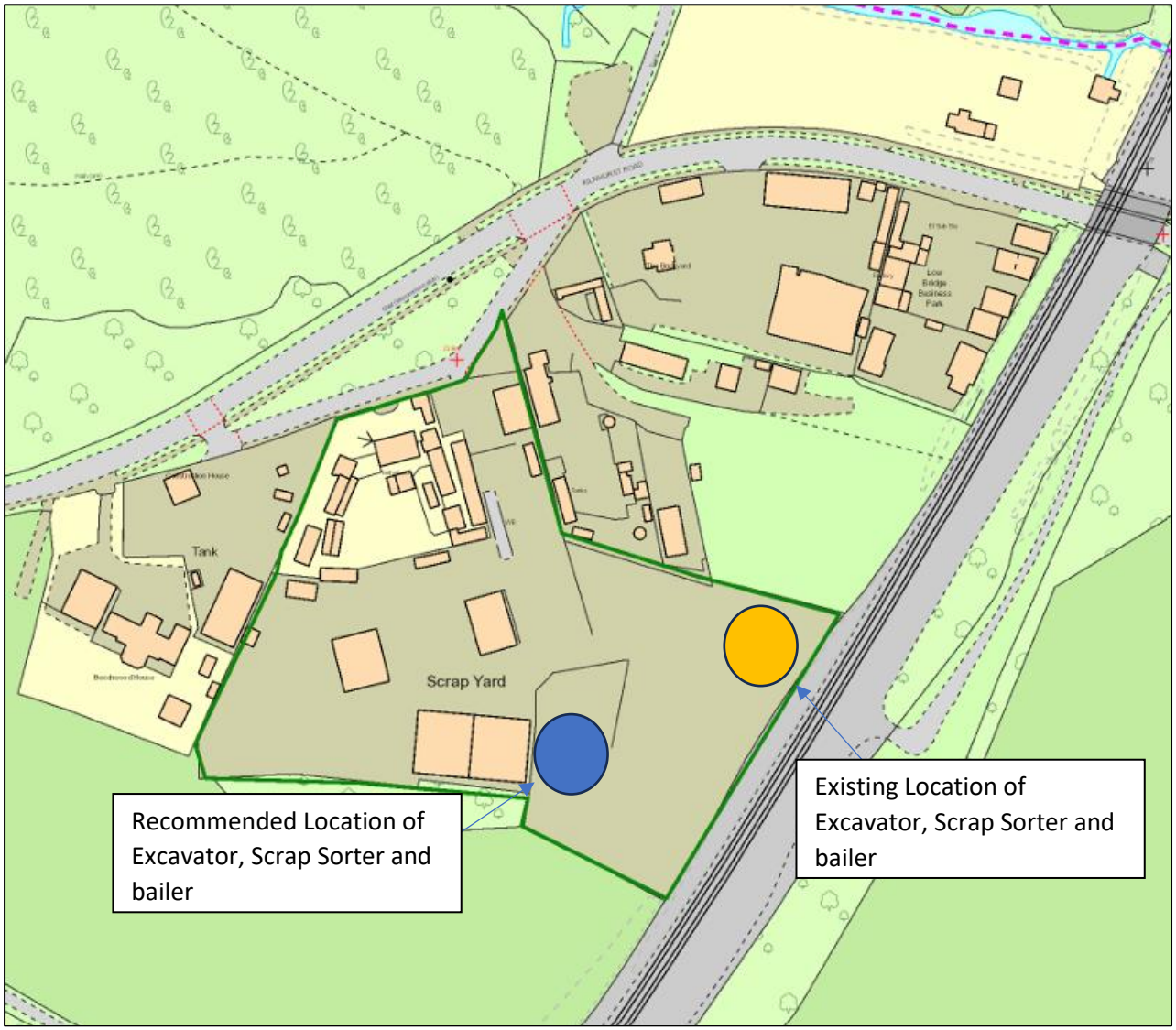

FIGURE A7: EXISTING AND RECCOMENDED LOCATION OF PLANT ITEMS

APPENDIX B: TABLES

Day	Date	Temperature (^{O}C)			Humidity (%)			Wind Speed (ms^{-1})		Wind Direction	Precipitation (mm)
		Avg.	Min.	Max.	Avg.	Min.	Max.	Avg.	Max. Gust	Avg.	Total
Friday	27/09/2024	11	7	15	36	18	69	1.0	5.0	SW	0.0
Saturday	28/09/2024	9	3	17	54	16	99	0.0	2	SSW	0.0
Sunday	29/09/2024	10	6	14	68	34	99	1.0	2	SSW	0.3
Monday	30/09/2024	12	10	14	86	49	98	1.0	3	ESE	58.4
Tuesday	01/10/2024	12	12	13	97	96	98	1.0	3	SW	13.5
Wednesday	02/10/2024	12	9	15	69	33	98	1.0	3	E	1.8
Thursday	03/10/2024	11	7	17	71	31	98	1.0	2	ESE	0.0

TABLE B1: SUMMARY OF WEATHER DATA DURING UNATTENDED MONITORING PERIOD

Date of Meas.	Start Time	Measured Sound Levels, dB		
		$L_{Amax,F}$	$L_{Aeq,15min}$	$L_{A90,15min}$
Friday 27th	12:00	63.5	52.2	47.4
September 2024	12:15	65.0	51.6	47.2
	12:30	63.1	52.1	47.3
	12:45	69.5	52.5	47.8
	13:00	72.3	51.8	47.5
	13:15	75.7	52.1	47.7
	13:30	68.9	52.7	46.9
	13:45	73.9	52.9	47.8
	14:00	73.5	56.8	47.1
	14:15	71.3	55.3	46.8
	14:30	72.6	54.9	46.2
	14:45	76.1	54.1	46.0
	15:00	63.4	51.4	46.4
	15:15	65.3	49.9	45.2
	15:30	62.0	50.5	46.2
	15:45	62.7	48.7	44.5
	16:00	59.8	49.2	45.1
	16:15	62.4	50.9	46.2
	16:30	72.4	50.3	44.3
	16:45	66.7	48.5	43.9
	17:00	67.5	49.0	44.5
	17:15	65.4	48.5	43.7
	17:30	69.5	49.2	43.7
	17:45	69.4	51.8	44.7
	18:00	69.8	49.6	43.1
	18:15	73.4	48.6	42.8
	18:30	70.8	45.6	40.5
	18:45	59.5	44.5	39.7
	19:00	60.0	45.7	40.9
	19:15	54.4	43.9	40.2
	19:30	55.7	44.3	40.5
	19:45	52.8	43.2	39.1
	20:00	52.2	43.6	38.0
	20:15	69.0	45.7	37.9
	20:30	53.8	42.3	35.3
	20:45	56.2	43.5	37.1
	21:00	52.7	43.0	38.0
	21:15	54.0	43.8	37.7
	21:30	58.1	44.0	36.8
	21:45	55.3	43.3	36.7
	22:00	52.8	41.4	35.7
	22:15	57.3	41.6	35.9
	22:30	52.7	41.6	35.0
	22:45	60.5	44.4	32.6
	23:00	57.3	41.5	33.1

	23:15	56.5	40.2	32.3
	23:30	59.2	40.3	31.9
	23:45	50.1	37.9	30.8
Saturday 28th	00:00	49.4	34.9	30.2
September 2024	00:15	58.4	40.8	30.4
	00:30	53.3	37.0	28.4
	00:45	57.4	39.1	29.6
	01:00	50.0	36.3	27.2
	01:15	48.3	37.3	30.0
	01:30	61.5	42.3	30.0
	01:45	54.1	36.2	27.9
	02:00	44.5	33.3	27.9
	02:15	49.9	35.2	29.6
	02:30	53.6	39.0	29.2
	02:45	49.4	32.5	26.9
	03:00	45.8	33.8	27.4
	03:15	72.6	40.6	29.1
	03:30	51.4	39.5	28.1
	03:45	49.9	35.6	29.7
	04:00	41.2	33.7	29.5
	04:15	50.8	35.3	31.6
	04:30	49.1	37.1	30.6
	04:45	54.7	37.3	29.9
	05:00	52.6	37.4	29.5
	05:15	52.9	40.3	32.0
	05:30	51.6	39.7	34.1
	05:45	50.6	37.8	32.8
	06:00	54.2	38.5	33.1
	06:15	57.1	40.9	34.2
	06:30	59.9	43.6	37.8
	06:45	63.0	43.3	37.1
	07:00	66.1	47.2	39.1
	07:15	59.4	46.9	41.8
	07:30	65.7	47.6	43.8
	07:45	59.0	48.2	44.4
	08:00	66.4	47.3	43.6
	08:15	62.6	48.2	44.4
	08:30	65.1	47.8	42.3
	08:45	64.3	47.8	41.0
	09:00	71.2	49.4	40.0
	09:15	60.6	46.8	41.2
	09:30	70.9	49.1	41.4
	09:45	59.3	47.2	41.9
	10:00	65.7	47.2	40.9
	10:15	59.5	47.5	42.5
	10:30	61.8	48.2	42.5
	10:45	70.5	48.5	43.0
	11:00	67.3	49.6	44.7

	11:15	61.9	48.1	43.2
	11:30	62.3	47.3	41.5
	11:45	61.4	46.3	40.4
	12:00	70.0	47.8	42.5
	12:15	60.8	46.0	41.3
	12:30	62.1	47.1	40.8
	12:45	57.0	45.0	40.8
	13:00	66.8	47.4	42.1
	13:15	57.3	46.2	41.1
	13:30	65.6	48.1	41.7
	13:45	62.0	49.2	43.4
	14:00	58.7	46.6	41.4
	14:15	65.6	47.4	42.4
	14:30	57.1	44.8	40.5
	14:45	67.1	49.8	42.0
	15:00	56.6	45.3	40.8
	15:15	59.3	44.7	40.0
	15:30	55.9	46.2	42.6
	15:45	67.6	45.1	39.0
	16:00	67.9	45.0	39.4
	16:15	58.2	47.5	43.6
	16:30	72.4	49.5	43.0
	16:45	70.7	47.7	42.2
	17:00	65.0	47.5	41.0
	17:15	64.8	47.7	41.9
	17:30	56.3	45.9	41.4
	17:45	56.0	45.7	41.1
	18:00	68.0	47.0	41.2
	18:15	66.5	47.3	40.4
	18:30	64.6	44.3	39.2
	18:45	64.7	43.7	37.2
	19:00	60.9	45.0	38.2
	19:15	64.4	44.3	39.3
	19:30	57.2	42.9	37.5
	19:45	63.3	43.9	37.5
	20:00	62.2	44.2	38.6
	20:15	52.7	42.2	35.4
	20:30	55.4	40.9	34.5
	20:45	66.0	44.3	33.6
	21:00	72.4	44.7	32.0
	21:15	53.0	40.9	32.4
	21:30	70.3	48.6	38.7
	21:45	54.4	43.1	36.0
	22:00	56.5	41.8	33.7
	22:15	53.6	41.7	33.8
	22:30	56.1	42.3	35.2
	22:45	51.0	41.4	35.1
	23:00	64.4	43.2	36.2

	23:15	52.1	39.7	35.3
	23:30	50.5	37.2	32.8
	23:45	49.4	36.3	30.6
Sunday 29th	00:00	56.8	38.4	31.5
September 2024	00:15	51.0	36.9	31.1
	00:30	57.1	41.9	34.7
	00:45	56.9	42.8	35.9
	01:00	56.0	42.7	34.8
	01:15	56.2	40.4	30.5
	01:30	56.5	40.9	33.0
	01:45	59.2	44.1	37.4
	02:00	56.3	40.5	30.0
	02:15	49.3	32.4	28.3
	02:30	49.1	32.8	29.0
	02:45	37.6	28.5	27.2
	03:00	47.0	30.8	27.4
	03:15	54.9	34.4	26.6
	03:30	48.7	31.7	26.8
	03:45	44.3	30.9	26.6
	04:00	47.9	32.6	27.4
	04:15	54.9	33.3	27.3
	04:30	45.7	33.0	28.2
	04:45	39.5	30.5	29.1
	05:00	52.0	33.8	28.2
	05:15	52.7	36.8	28.9
	05:30	50.2	35.9	30.5
	05:45	47.2	35.9	31.5
	06:00	54.4	37.4	31.5
	06:15	62.5	42.1	33.8
	06:30	66.7	42.6	35.1
	06:45	65.3	43.1	35.4
	07:00	56.5	41.6	36.5
	07:15	56.9	42.9	36.5
	07:30	56.6	45.5	41.3
	07:45	55.9	46.9	42.0
	08:00	53.3	46.1	41.7
	08:15	60.6	47.3	41.8
	08:30	62.3	47.4	40.6
	08:45	58.2	44.0	38.4
	09:00	59.7	45.9	40.0
	09:15	56.2	46.5	42.3
	09:30	64.3	45.0	39.0
	09:45	70.9	50.2	39.0
	10:00	59.7	45.8	38.5
	10:15	60.9	46.6	39.7
	10:30	68.3	46.6	40.1
	10:45	66.4	46.2	39.4
	11:00	59.3	46.3	40.8

	11:15	62.1	48.8	41.4
	11:30	62.9	46.9	41.2
	11:45	60.0	45.9	41.2
	12:00	59.9	45.8	41.0
	12:15	68.6	50.0	41.1
	12:30	54.9	46.0	41.5
	12:45	57.2	44.4	39.9
	13:00	63.2	47.2	41.1
	13:15	56.3	45.6	41.1
	13:30	57.4	48.1	42.0
	13:45	55.6	46.0	41.2
	14:00	57.0	45.9	41.4
	14:15	59.9	47.3	42.6
	14:30	59.4	45.6	41.3
	14:45	54.0	44.8	40.6
	15:00	56.8	45.1	39.4
	15:15	57.4	46.6	40.6
	15:30	66.5	49.5	42.0
	15:45	60.7	50.0	44.0
	16:00	58.2	47.4	42.5
	16:15	60.7	47.5	41.3
	16:30	60.4	48.0	41.4
	16:45	64.4	46.2	39.4
	17:00	63.2	45.5	38.9
	17:15	58.8	44.9	39.3
	17:30	50.8	41.8	36.8
	17:45	54.2	41.5	36.0
	18:00	54.0	42.8	37.8
	18:15	55.8	44.2	39.5
	18:30	60.8	45.3	39.5
	18:45	52.4	43.9	40.1
	19:00	51.5	44.2	40.2
	19:15	56.1	44.4	38.8
	19:30	56.9	46.7	40.3
	19:45	62.1	49.4	42.2
	20:00	55.8	47.8	42.5
	20:15	59.5	48.4	43.1
	20:30	56.6	45.7	39.6
	20:45	55.2	45.1	38.1
	21:00	57.0	45.8	40.5
	21:15	52.3	43.5	39.0
	21:30	57.2	46.0	40.3
	21:45	55.2	44.5	38.8
	22:00	52.9	42.2	37.2
	22:15	58.0	43.7	36.1
	22:30	50.2	39.6	35.1
	22:45	50.5	41.5	35.0
	23:00	49.9	38.5	34.6

	23:15	53.8	42.9	34.9
	23:30	59.5	45.6	36.3
	23:45	56.0	44.8	38.1
Monday 30th	00:00	54.5	43.8	39.6
September 2024	00:15	54.4	42.8	33.7
	00:30	57.5	40.4	34.3
	00:45	43.1	34.9	31.7
	01:00	57.4	36.8	31.4
	01:15	46.9	36.7	31.3
	01:30	45.8	35.1	31.1
	01:45	49.3	37.3	31.8
	02:00	44.7	36.6	32.2
	02:15	50.2	37.2	31.4
	02:30	52.0	38.5	32.3
	02:45	52.9	41.5	34.5
	03:00	53.9	43.6	36.0
	03:15	55.1	43.1	33.6
	03:30	50.7	41.3	34.8
	03:45	54.2	43.2	34.0
	04:00	48.4	39.3	34.5
	04:15	51.8	41.0	35.7
	04:30	49.3	41.4	37.4
	04:45	49.7	40.7	37.2
	05:00	55.8	43.1	38.6
	05:15	50.9	44.5	41.9
	05:30	66.1	47.2	43.2
	05:45	52.5	46.4	43.0
	06:00	54.2	49.5	47.7
	06:15	58.5	50.0	47.5
	06:30	71.2	52.1	47.7
	06:45	55.9	47.5	44.7
	07:00	57.2	48.9	46.0
	07:15	61.9	51.0	47.9
	07:30	61.1	51.3	48.8
	07:45	61.8	51.9	50.0
	08:00	63.3	53.8	51.0
	08:15	63.0	52.1	49.5
	08:30	65.0	51.4	48.2
	08:45	62.9	51.4	48.6
	09:00	65.9	50.5	46.8
	09:15	65.4	50.2	45.6
	09:30	75.3	54.2	46.1
	09:45	58.3	48.6	44.5
	10:00	59.5	49.6	46.4
	10:15	61.6	49.7	46.6
	10:30	65.4	50.2	46.7
	10:45	60.5	50.3	47.0
	11:00	59.6	50.0	46.6

	11:15	62.8	50.0	46.7
	11:30	63.0	48.8	46.0
	11:45	61.9	49.3	46.9
	12:00	75.5	51.0	46.8
	12:15	63.7	49.1	47.5
	12:30	62.6	49.7	47.8
	12:45	61.4	49.5	47.1
	13:00	59.6	50.6	47.6
	13:15	59.6	53.5	51.8
	13:30	62.0	53.3	51.8
	13:45	65.5	53.7	52.1
	14:00	63.7	54.3	52.2
	14:15	70.5	55.8	54.0
	14:30	68.0	53.9	51.2
	14:45	65.5	52.7	51.2
	15:00	72.6	53.8	51.7
	15:15	64.1	54.5	53.3
	15:30	63.4	54.9	53.8
	15:45	60.5	54.7	53.5
	16:00	62.8	55.1	53.8
	16:15	62.3	55.0	54.0
	16:30	62.7	55.7	54.0
	16:45	64.6	56.7	54.8
	17:00	64.2	57.9	56.3
	17:15	64.4	57.8	56.2
	17:30	65.0	57.3	55.7
	17:45	63.9	57.9	55.8
	18:00	65.5	58.0	56.3
	18:15	71.8	58.0	55.2
	18:30	64.1	57.3	55.0
	18:45	66.3	57.8	55.5
	19:00	60.9	55.3	52.8
	19:15	60.9	53.1	50.9
	19:30	62.5	53.1	50.3
	19:45	60.9	51.9	49.4
	20:00	60.8	50.8	47.9
	20:15	58.1	51.5	49.0
	20:30	57.2	50.5	48.0
	20:45	56.2	48.9	46.3
	21:00	58.1	48.7	45.2
	21:15	68.4	49.6	44.2
	21:30	55.3	47.2	43.8
	21:45	58.8	45.2	40.2
	22:00	62.5	46.4	39.8
	22:15	64.2	47.2	39.2
	22:30	56.0	42.7	36.7
	22:45	55.0	41.6	35.0
	23:00	53.0	40.8	35.0

	23:15	52.1	39.6	33.5
	23:30	52.5	40.8	34.2
	23:45	51.5	39.5	33.0
Tuesday 1st	00:00	53.0	39.5	32.0
October 2024	00:15	52.0	40.4	33.3
	00:30	58.8	39.8	32.9
	00:45	52.8	38.3	31.9
	01:00	52.5	40.2	31.9
	01:15	49.6	38.5	32.5
	01:30	55.4	39.9	30.9
	01:45	47.9	36.0	29.5
	02:00	48.6	36.5	28.9
	02:15	53.5	34.7	27.5
	02:30	52.8	33.6	27.1
	02:45	43.0	32.6	27.3
	03:00	48.8	36.1	29.1
	03:15	50.7	36.4	28.7
	03:30	45.9	34.9	28.0
	03:45	52.2	34.7	28.5
	04:00	53.0	37.5	28.9
	04:15	59.8	40.9	29.8
	04:30	54.6	38.1	31.0
	04:45	66.5	43.9	32.9
	05:00	55.2	40.5	33.6
	05:15	56.6	40.4	34.3
	05:30	52.6	42.2	37.1
	05:45	55.4	43.8	40.0
	06:00	55.1	44.3	39.8
	06:15	55.9	44.2	39.6
	06:30	61.0	44.9	40.7
	06:45	56.0	46.1	41.9
	07:00	55.5	47.4	44.2
	07:15	59.5	48.7	45.6
	07:30	61.3	50.0	47.0
	07:45	65.4	51.5	47.3
	08:00	60.9	50.9	48.8
	08:15	62.3	52.5	49.9
	08:30	70.7	52.6	49.9
	08:45	69.2	54.2	51.7
	09:00	72.4	52.8	50.3
	09:15	70.1	52.8	50.5
	09:30	70.0	53.5	51.2
	09:45	64.9	53.4	51.3
	10:00	68.0	53.4	51.0
	10:15	66.7	52.9	49.5
	10:30	69.5	52.9	49.8
	10:45	74.0	55.2	52.2
	11:00	79.4	56.8	52.1

	11:15	70.2	53.8	51.0
	11:30	66.6	53.1	50.2
	11:45	63.4	51.1	48.0
	12:00	69.8	51.4	47.9
	12:15	66.1	50.9	46.4
	12:30	61.5	50.6	46.1
	12:45	72.6	51.2	46.7
	13:00	69.0	50.9	45.9
	13:15	69.5	52.5	47.5
	13:30	63.6	49.6	46.4
	13:45	62.8	49.1	45.6
	14:00	65.4	50.1	46.6
	14:15	79.8	51.9	47.0
	14:30	74.3	52.4	47.8
	14:45	68.7	50.6	46.1
	15:00	69.7	50.9	46.0
	15:15	71.5	50.0	45.9
	15:30	72.8	51.0	46.6
	15:45	67.9	51.4	47.0
	16:00	71.0	52.4	47.0
	16:15	69.9	50.5	46.3
	16:30	70.4	50.4	46.2
	16:45	72.2	51.2	46.5
	17:00	75.0	53.5	46.5
	17:15	73.2	53.0	47.3
	17:30	71.4	51.2	46.2
	17:45	73.5	50.6	45.4
	18:00	60.4	50.0	46.0
	18:15	57.8	49.3	45.8
	18:30	64.5	50.1	45.3
	18:45	60.8	48.2	43.6
	19:00	58.4	46.4	41.1
	19:15	55.8	47.1	42.6
	19:30	57.4	47.0	41.9
	19:45	57.4	46.5	41.9
	20:00	56.6	46.0	41.3
	20:15	60.9	47.8	40.8
	20:30	56.3	46.9	40.4
	20:45	57.0	46.0	39.2
	21:00	58.8	47.3	40.6
	21:15	58.6	47.5	40.3
	21:30	55.9	45.5	39.9
	21:45	56.0	45.4	38.8
	22:00	52.7	43.3	37.9
	22:15	60.0	44.2	39.0
	22:30	56.7	44.0	36.7
	22:45	54.1	43.4	37.2
	23:00	56.3	41.0	34.2

	23:15	56.8	41.2	34.6
	23:30	55.6	43.8	37.5
	23:45	56.2	44.2	38.0
Wednesday 2nd	00:00	53.6	43.9	37.9
October 2024	00:15	57.3	43.6	35.9
	00:30	54.2	43.0	36.8
	00:45	50.2	42.0	36.5
	01:00	51.1	40.2	34.3
	01:15	56.0	42.2	33.5
	01:30	51.6	41.0	33.5
	01:45	53.1	42.1	32.8
	02:00	54.7	41.4	34.0
	02:15	49.8	39.5	32.8
	02:30	53.2	40.9	35.2
	02:45	52.6	42.0	36.1
	03:00	53.3	42.5	35.5
	03:15	66.3	42.0	33.5
	03:30	62.2	42.7	35.3
	03:45	54.4	42.1	33.6
	04:00	73.0	45.2	35.2
	04:15	59.1	43.9	34.7
	04:30	51.9	41.3	35.6
	04:45	64.2	44.4	35.4
	05:00	51.5	42.9	37.2
	05:15	52.0	42.7	39.0
	05:30	57.0	42.6	37.6
	05:45	52.0	44.0	39.3
	06:00	58.6	45.0	39.8
	06:15	53.9	44.2	39.5
	06:30	53.1	44.6	40.5
	06:45	60.6	47.4	43.4
	07:00	64.7	50.1	46.3
	07:15	65.5	50.2	46.6
	07:30	75.5	51.3	48.2
	07:45	69.3	51.0	47.6
	08:00	76.3	53.6	48.0
	08:15	72.0	53.1	49.1
	08:30	69.6	52.2	48.3
	08:45	72.0	51.0	46.8
	09:00	71.1	50.5	46.8
	09:15	70.9	51.9	47.6
	09:30	64.7	50.0	46.6
	09:45	69.4	50.4	46.9
	10:00	73.8	50.6	46.9
	10:15	78.8	51.7	44.2
	10:30	70.0	50.3	45.5
	10:45	80.1	55.0	46.3
	11:00	76.2	54.5	46.3

	11:15	76.5	50.9	45.3
	11:30	74.8	50.9	45.7
	11:45	69.3	52.0	46.7
	12:00	78.3	54.6	48.2
	12:15	76.4	50.6	46.1
	12:30	68.6	51.1	47.2
	12:45	79.2	51.0	45.0
	13:00	67.2	50.0	45.6
	13:15	69.0	50.8	46.2
	13:30	68.5	53.1	47.0
	13:45	69.4	51.3	45.3
	14:00	74.3	53.1	46.9
	14:15	75.1	51.4	45.7
	14:30	73.1	51.3	46.3
	14:45	72.5	52.3	45.5
	15:00	76.2	51.8	44.1
	15:15	73.3	49.9	46.0
	15:30	60.1	49.6	46.2
	15:45	67.8	48.9	44.1
	16:00	67.1	48.1	43.2
	16:15	74.1	49.0	43.3
	16:30	66.9	48.7	44.7
	16:45	64.7	48.6	44.2
	17:00	66.1	48.6	44.2
	17:15	81.3	56.0	44.2
	17:30	77.6	50.8	43.5
	17:45	64.6	47.0	43.5
	18:00	68.7	48.4	42.9
	18:15	74.7	49.2	42.3
	18:30	65.3	48.8	43.6
	18:45	64.9	48.2	40.3
	19:00	62.6	44.1	38.2
	19:15	54.9	41.9	37.3
	19:30	69.0	45.5	37.6
	19:45	60.2	43.3	37.5
	20:00	51.9	42.2	37.6
	20:15	50.6	42.5	37.3
	20:30	51.1	42.1	36.8
	20:45	50.6	39.4	34.3
	21:00	52.3	41.4	36.5
	21:15	53.2	40.5	35.8
	21:30	51.6	40.1	35.1
	21:45	64.4	43.6	35.8
	22:00	53.1	41.0	35.4
	22:15	52.5	41.0	35.2
	22:30	73.8	47.6	33.5
	22:45	50.7	36.4	31.0
	23:00	49.7	38.1	30.5

	23:15	48.8	37.5	30.1
	23:30	53.3	38.4	31.8
	23:45	49.9	35.6	29.5
Thursday 3rd	00:00	50.4	37.8	29.8
October 2024	00:15	49.3	36.3	30.6
	00:30	44.1	32.6	28.0
	00:45	50.5	34.1	28.5
	01:00	49.5	34.6	27.8
	01:15	52.2	37.4	28.6
	01:30	46.9	35.1	29.2
	01:45	52.6	40.9	28.1
	02:00	47.8	33.3	27.6
	02:15	45.9	34.2	28.3
	02:30	49.3	34.8	27.3
	02:45	46.4	29.8	26.4
	03:00	42.7	30.4	27.4
	03:15	67.5	39.0	27.8
	03:30	72.1	49.4	28.5
	03:45	44.7	30.5	27.6
	04:00	59.3	41.1	30.1
	04:15	51.8	38.6	31.4
	04:30	48.7	35.2	30.9
	04:45	47.7	36.5	31.3
	05:00	50.1	37.8	31.6
	05:15	47.6	39.4	35.3
	05:30	49.5	40.0	35.7
	05:45	52.1	39.2	35.3
	06:00	48.7	39.9	35.3
	06:15	59.3	40.4	35.1
	06:30	72.2	45.9	39.3
	06:45	66.9	46.7	41.8
	07:00	57.3	47.1	44.3
	07:15	69.9	48.5	44.4
	07:30	67.3	48.7	44.0
	07:45	66.9	49.7	46.1
	08:00	65.2	49.4	46.1
	08:15	71.8	53.8	46.9
	08:30	71.6	50.0	46.3
	08:45	67.9	49.6	45.1
	09:00	68.4	48.9	43.9
	09:15	75.2	49.9	43.2
	09:30	64.3	47.7	43.5
	09:45	74.0	49.7	43.2
	10:00	72.8	48.2	42.6
	10:15	67.2	48.5	43.5
	10:30	69.4	49.6	43.5
	10:45	62.6	47.8	42.6
	11:00	67.5	48.8	43.6

	11:15	64.8	48.2	44.0
	11:30	72.9	48.7	43.0
	11:45	69.5	49.3	42.5

TABLE B1: UNATTENDED NOISE MONITORING DATA AT LT1

APPENDIX C: GLOSSARY

Noise

Noise is defined as unwanted sound. The range of audible sound is from 0 to 140 dB. The frequency response of the ear is usually taken to be around 18 Hz (number of oscillations per second) to 18000 Hz. The ear does not respond equally to different frequencies at the same level. It is more sensitive in the mid-frequency range than the lower and higher frequencies and because of this, the low and high frequency components of a sound are reduced in importance by applying a weighting (filtering) circuit to the noise measuring instrument. The weighting which is most widely used and which correlates best with subjective response to noise is the dBA weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dBA is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dBA. The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dBA corresponds to a doubling/ halving in perceived loudness. Noise is measured on a logarithmic scale in decibels (dB) because of the ears' sensitivity to a wide range of pressure changes. The sound pressure level (SPL) of a signal is denoted by the symbol Lp and defined by the equation Lp = 10 log (p/po)2 where p is the root mean square pressure of the signal and po is the reference sound pressure (2 x 10-5 Pa).

An indication of the range of sound pressure levels commonly found in the environment is given below:

Location	$L_{pAdB}(A)$
Normal threshold of hearing	-10 to 20
Music halls and theatres	20 to 30
Living rooms and offices	30 to 50
Inside motor vehicles	50 to 70
Industrial premises	70 to 100
Burglar alarms at 1 m	100 to 110
Jet aircraft on take-off	110 to 130
Threshold of pain	130 to 140

External noise levels are rarely steady, but rise and fall according to activities within an area. In attempt to produce a figure that relates this variable noise level to subjective response, a number of noise indices have been developed. These include:

i) The L_{Amax} noise level

This is the maximum noise level recorded over the measurement period.

ii) The L_{Aeq} noise level

This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 as the " value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time internal, T, has the same mean square sound pressure as a sound under consideration whose level varies with time".

It is a unit commonly used to describe construction noise and noise from industrial premises and is the most suitable unit for the description of other forms of environmental noise. In more straightforward terms, it is a measure of energy within the varying noise.

iii) The L_{A10} noise level

This is the noise level that is exceeded for 10% of the measurement period and gives an indication of the noisier levels. It is a unit that has been used over many years for the measurement and assessment of road traffic noise.

iv) The L_{A90} noise level

This is the noise level that is exceeded for 90% of the measurement period and gives an indication of the noise level during the quieter periods. It is often referred to as the background noise level and is used in the assessment of disturbance from industrial noise.

Community response to environmental noise sources is dependent on both acoustic and non-acoustic factors. The acoustic factors include absolute noise level, changes or exceedances of background and ambient levels as well as the characteristics, time, duration and frequency of noise.