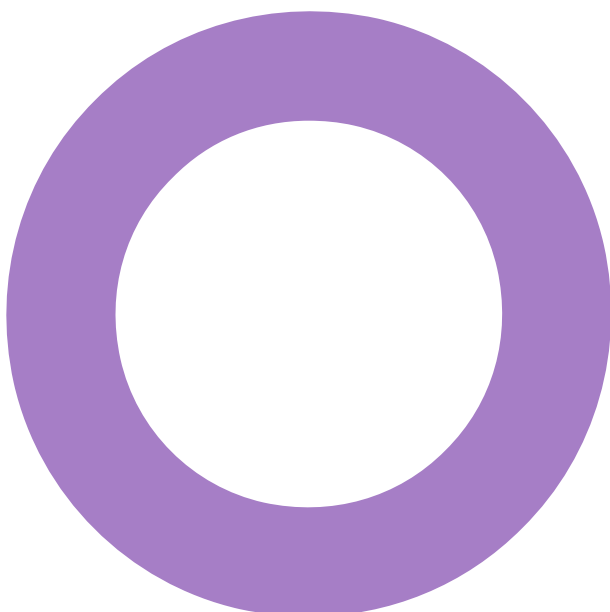


**Dunham Bush Site, Downley
Road.
Havant.**

**Canmoor Developments Ltd on
behalf of Royal London
Property.**

ACOUSTICS
NOISE IMPACT ASSESSMENT

REVISION 01 – 03 JULY 2024



Audit sheet.

Rev.	Date	Description of change / purpose of issue	Prepared	Reviewed	Authorised
00	03/06/2024	Initial issue	AM		
01	08/07/2024	Update following client comments	AM	AM	PM

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Executive summary

Hoare Lea Acoustics has been appointed by Canmoor to carry out an environmental noise survey and noise impact assessment in relation to a proposed new development site located at the Dunham Bush site off Downley Road, Havant.

This application will be for a large, singular unit split into three units with E(g)(iii), B2 and B8 use.

This report reviews typical operational noise levels for warehouse/manufacturing facilities and assesses these with respect to the existing noise climate at the nearest residential properties. Recommendations for noise control measures are provided where appropriate.

Assessment of activity noise levels in accordance with BS 4142 indicates that noise from the proposed development would achieve a condition of 'low impact' at the nearest existing residential properties at all times and would be unlikely to give rise to noise disturbance if consideration for a building envelope of minimum sound insulation performance R_w 33 is incorporated into the design.

The representative ambient sound levels measured during the survey at the development site were 62 dB $L_{Aeq,T}$ during the day (07:00 to 23:00 hrs) and 56 dB $L_{Aeq,T}$ during the night (23:00 to 07:00 hrs).

The representative background sound levels measured during the survey were 36 dB $L_{A90,15min}$ during the daytime and 28 dB $L_{A90,15min}$ during the night.

1. Introduction.

Hoare Lea Acoustics have been appointed to carry out an environmental noise survey and report to assist the planning application for the development site located at Downley Road, Havant. The site falls within the jurisdiction of Havant Borough Council.

An environmental noise survey has been carried out at the site over 8 days commencing on Friday 24th May 2024. The aim of the survey was to determine the prevalent noise levels around the site in order to set maximum noise egress limits for plant and machinery associated with the development and assesses these with respect to the existing noise climate at the nearest residential properties. Recommendations for noise control measures are provided where appropriate.

2. Assessment criteria.

2.1 National Planning Policy framework.

The National Planning Policy Framework (NPPF): December 2023 sets out the Government's planning policies for England and how these are expected to be applied. The document seeks to encourage sustainable development subject to all relevant factors.

Section 15: 'Conserving and enhancing the natural environment', paragraph 170, states the following:

'Planning policies and decisions should contribute to and enhance the natural and local environment by:

- 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'.*

Furthermore, paragraph 180 states that:

'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:

- mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason'*

Paragraph 183, additionally, states *'The focus of planning policies and decisions should be on whether proposed development is acceptable use of land rather than control of processes or emissions (where these are subject to separate pollution control regimes)'.*

NPPF also makes reference to the DEFRA Noise Policy Statement for England (NPSfE) 2010. This latter document is intended to apply to all forms of noise other than that which occurs in the workplace. It includes environmental noise and neighbourhood noise in all forms.

NPSfE advises that the impact of noise should be assessed on the basis of adverse and significant adverse effect but does not provide any specific guidance on assessment methods or limit sound levels. Moreover, the document advises that it is not possible to have *'a single objective noise-based measure...that is applicable to all sources of noise in all situations'*. It further advises that the sound level at which an adverse effect occurs is *'likely to be different for different noise sources, for different receptors and at different times'*.

In the absence of specific guidance for assessment of environmental noise within NPPF and NPSfE, it will be necessary to base the assessment on current British Standards and relevant local or national guidance.

It is noted that NPSfE also advises that the general principle that increases in ambient noise should be 'minimised', needs to be considered in context for each site and, in this regard, states:

'Of course, taken in isolation and to a literal extreme, noise minimisation would mean no noise at all. In reality, although it has not always been stated, the aim has tended to be to minimise noise as far as is reasonably practical... the application of the NPSfE should enable noise to be considered alongside other relevant issues and not to be considered in isolation. In the past, the wider benefits of a particular...development or other activity may not have been given adequate weight when assessing the noise implications'.

2.2 BS 4142:2014 guidance.

Noise egress from any plant and machinery associated with the development should not cause disturbance at nearby residential areas, therefore noise limits will be set in accordance with the guidance given in line with BS 4142:2014 'Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas'.

The rating level for all new plant and machinery should be no more than equal to the existing minimum background noise levels. Further corrections should be applied if the plant noise contains tonal and/or impulsive characteristics. The magnitude of these corrections is dependent upon the subjective perceptibility of the tones/impulses present. These corrections as stated in BS 4142:2014 are as follows:

Tonality:

- +2dB for a tone which is *just* perceptible
- +4dB for a tone which is *clearly* perceptible
- +6dB for a tone which is *highly* perceptible

Impulsivity:

- +3dB for impulsivity which is *just* perceptible
- +6dB for impulsivity which is *clearly* perceptible
- +9dB for impulsivity which is *highly* perceptible

Intermittency:

- +3 dB for intermittency which is readily distinctive against the residual acoustic environment.

The Standard makes clear that application of any correction factors should be on the basis of the noise as perceived at the receptor and not as perceived in proximity to the noise source.

Where the Rating Level exceeds the background, the level of impact increases as shown below.

Comparison with background	Assessment
+0 dB or below measured background	Low impact
+ 5 dB	Adverse impact
+ 10 dB or more above measured background	Significant adverse impact

3. Site and development details.

The proposed development comprises the construction of a new industrial building to be split into three, each with 2-3 dedicated loading bays and car parking and provision for office space at first floor level.

The site is accessed via Downley Road to the west. On the far side of Downley Road are further commercial and industrial units with dwellings beyond at a closest distance of 145 metres from the western site boundary.

To the east of site is the Haslemere to Havant (LSWR) railway line with residential dwellings beyond. The railway lies on an embankment approximately 2 metres above site level.

Immediately to the north and south of the site are existing commercial and industrial units

The nearest identified residential premises to the location of the proposed development site are located approximately 30 metres to the east on the far side of the railway, accessed via Wisteria Gardens.

The above are indicated in Figure 1 below.



Figure 1 Annotated 3D aerial render indicating site location (courtesy of Google Earth)

4. Environmental noise survey.

The environmental noise survey was carried out on site over a period of 8 days between 24 and 31 May 2024. During this time, long-term unattended measurements were carried out at Position L1, deemed representative of noise levels at dwellings to the east on the far side of the railway. Additional attended measurements were undertaken at the front of the site at Position L2.

Full details of the method and equipment used, as well as weather information are provided in Appendix A.

The survey measurement position is presented in Figure 2, indicated as Position L1.

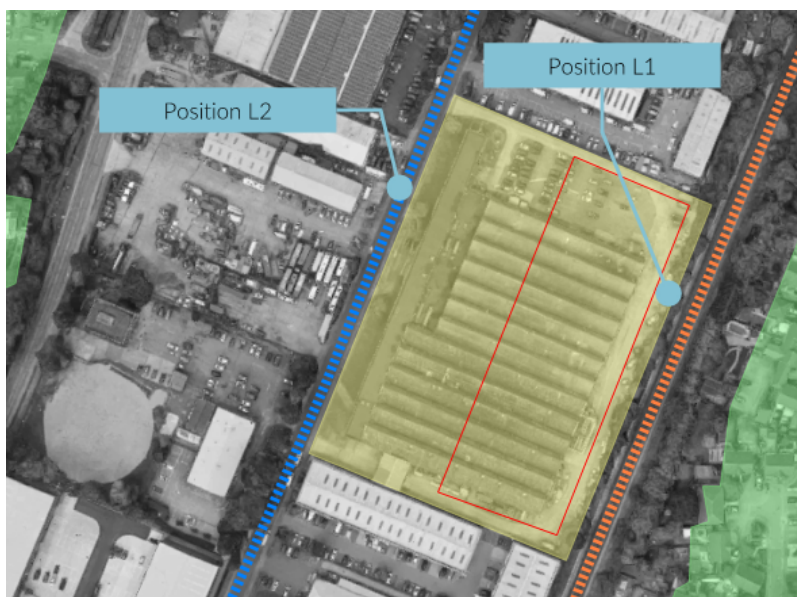


Figure 2 Annotated 3D aerial render indicating measurement position (courtesy of Google Earth)

4.1 Observations.

From observations on site during equipment set up and collection, ambient and background noise levels at the nearest dwellings to the development site are dominated by road traffic along the local roads in the local vicinity to the site. This ambient noise level is frequently punctuated by intermittent train pass-bys along the adjacent railway.

4.2 Results.

4.2.1 Ambient noise levels.

The measured ambient noise levels during the survey during each day and night of the survey period at position L1 are presented in Table 1, along with the arithmetic average for each period of the day. A time history graph of the survey results at position L1 is provided in Appendix B.

Table 1 Unattended measurement results at position L1

Date	Ambient sound pressure levels measured (dB)	
	Day (07:00 - 23:00) L _{Aeq} , 16hr	Night (23:00 - 07:00) L _{Aeq} , 8hr
24/05/2024	62	55
25/05/2024	61	54
26/05/2024	59	56
27/05/2024	61	57
28/05/2024	61	56
29/05/2024	62	56
30/05/2024	70	56
31/05/2024	63	#N/A
Typical level	62	56

4.2.2 Typical background noise levels.

In line with BS 4142:2014, for the purpose of analysis and establishing representative background noise levels during the periods of interest, the background noise levels have been quantified using statistical analysis from the continuous logging measurements.

From the analysis carried out, the representative background noise levels measured during the survey are presented to follow, based on the 20th percentile of measured noise levels:

- 36 dB L_{A90,15min} during the daytime (07:00 - 23:00), and
- 28 dB L_{A90,15min} during the night (23:00 - 07:00).

4.3 Attended monitoring.

The measured ambient noise levels at Position L2 are summarised in the table below.

Address	Start Time	M-Time	L _{Aeq}	L _{AMax}	L _{A90}	Note
1	24/05/2024 14:15	00d 00:05:00	56.8	75.1	45.5	• Mechanism noise (noise from machine) from Bluestone design and other factory • Road noise 66-67 (car not very often) • Aircraft (including helicopter) • Van passing 68 • Bigger van passing 69 • Industrial activities from the factory on the right across the road (opening/closing container) • People speaking inside the factory across the road (Bluestone)
2	24/05/2024 14:20	00d 00:05:00	62.9	85	47.2	• Road noise • Car passing 68 • 67-68 van passing • Van with acceleration 73-74 • Industrial noise (same) • Mechanism noise from same • 72-73 car with acceleration passing • HGV 75 • HGV horn 83 • More activities near the measurement position than 1st measurement • 70-71 van with acceleration passing
3	24/05/2024 14:25	00d 00:05:00	62.2	81.2	47.1	• 67 van passing • The HGV go inside the site • 81-82 HGV passing • Dog barking from distance • Pedestrian activities (rarely) • Horn • Car park activities from factory opposite (Extra Mech Services Ltd) • 74 van with acceleration passing • 77 Royal Mail • 69-70 car passing • Car is contentious but not happen all the time

Background noise levels at Position L2 are higher than those measured simultaneously at Position L1. As such, it is considered that the L1 measurements as used within the assessment will provide a worst-case scenario for both the dwellings to the west and to the east.

5. Noise assessment from proposed works.

5.1 Noise Break-out from the Warehouse Buildings.

Sound transfer to outside from activity within each of the buildings will be determined by the sound reduction provided by the building fabric and by the distance between the building and the receptor.

It is understood that the main building fabric will be constructed from steel frame with an outer cladding. As a worst case, it is assumed that the built-up cladding will have a minimum manufacturer's rated sound reduction of R_w 27 dB.

Measurement exercises carried out in several large manufacturing workshops indicate reasonably consistent levels in the range L_{Aeq} 75-77dB with an overall mean level of $L_{Aeq,1hr}$ 76dB and highest maximum levels in the range L_{Amax} 90-95dB. These levels are quite loud and would require shouted conversation for communication between two individuals 1m apart. For warehouse operations, a recent measurement exercise within an existing warehouse facility indicated that, over a one-hour period in an active section of the warehouse, typical sound levels were in the range $L_{Aeq,5-min}$ 50-64dB with an overall mean level of $L_{Aeq, 1-hour}$ 59dB. Short duration maximum levels were in the range L_{Amax} 80-82dB.

The assessment below has been based on the higher manufacturing sound levels. On this basis, the break-out sound level just outside the building, from standard theory, would be approximately L_{Aeq} 45dB.

For positions at a significant distance from the proposed building, there will be additional distance attenuation and an accepted method of determining noise breakout is as follows:

$$spl_{ext} = spl_{int} - TL - 20 \log r + 10 \log s - 14dB \quad \text{where } r \text{ is the distance and } s \text{ is wall area}$$

The predicted break-out sound levels at the nearest dwellings at a distance of 40 metres and a façade area of 416m² is 33dB. Assessment of the calculated emission levels at the nearest dwellings in accordance with BS 4142 is shown below

Table 2 BS4142 Assessment of break-out noise impact at nearest dwellings.

Parameter	Nearest dwellings (east)	
	Day	Night
spl_{ext}	33	33
Character correction (intermittent)	+3	+3
Rating level at nearest dwelling	36	36
Typical lowest background $L_{A90, T}$	36	28
Difference	0	+8
BS4142 Assessment- impact	'low impact'	'adverse impact'

At the nearest dwellings to the west, the assessment indicates a BS 4142 condition of 'low impact' during the day, increasing to 'adverse impact' during the night. As such, in order to enable B2 operations at the development site, it is recommended that the building envelope be constructed with a minimum manufacturer's rated sound reduction of R_w 33 dB in order to enable a level of 'low impact' when assessed in accordance with BS4142..

5.2 HGV Impact.

Based upon the current proposed site layout shown in Appendix 1, dwellings to the east of site will not have a view to the service yards due to the intervening unit. Dwellings to the west will only have a partial view due to the intervening commercial and industrial units.

An assessment of the noise from HGV movements at the dwellings has, therefore, been based upon the following assumptions:

- 1 movement per hour per loading bay during the daytime (8 no. movements per hour)
- 1 movement per hour per loading bay during the night time (2 no. movement per 15-minutes)
- The typical vehicle traverse distance from Downley Road across the service yard is 150 m which would take approximately 33 seconds at 10mph.
- HGV reversing time of 7 seconds based upon a reversing distance of 16m at a speed of 5mph
- Source noise data from Hoare Lea archived measurements
- Point source attenuation
- Barrier screening calculated in accordance with the principles of CRTN.

5.2.1 HGV Movements.

Ambient noise levels for the purposes of assessment in accordance with the principles of BS8233 and BS4142 are derived below.

Table 3 Predicted HGV noise levels at nearest dwellings.

Parameter	Dwellings to the West		Dwellings to the East	
	Daytime	Night time	Daytime	Night time
Archive HGV noise level ($L_{Aeq,T}$ at 2m)	75	75	75	75
On time correction (33 + 7 seconds)	-20	-14	-20	-14
Specific Noise Level ($L_{Aeq,T}$ dB)	55	61	55	61
Movements in assessment period (dB)	+9	+3	+9	+3
Distance Attenuation (2m to 180/120m)	-39	-39	-36	-36
Barrier screening	0	0	-10	-10
Level at Dwelling (L_{Aeq})	25	25	19	19

5.2.2 HGV Reversing Alarms

Manufacturer's data indicates that, for tonal alarms, the most common rating level is SWL 96-98 dB.

Table 4 Predicted reversing alarm noise levels at nearest dwellings.

Parameter	Dwellings to the West		Dwellings to the East	
	Daytime	Night time	Daytime	Night time
SWL (dB)	98	98	98	98
Alarm noise level (L_{Aeq} at 1m)	87	87	87	87
On time correction (7 seconds)	-27	-21	-27	-21
Specific Noise Level – $L_{Aeq,T}$ dB	60	66	60	66
movements per assessment period (dB)	+9	+3	+9	+3
Distance Attenuation (1m to 180/120m)	-45	-45	-42	-42
Barrier screening	0	0	-10	-10
Level at Dwelling - L_{Aeq}	24	24	17	17

5.2.3 BS4142 Assessment.

From the above, the BS 4142 assessment for vehicle movements at the nearest dwellings to the west and east can be calculated as follows:

Table 5 BS4142 Assessment of vehicle activity at nearest dwellings to the West.

Parameter	Day		Night	
	HGV	Alarm	HGV	Alarm
spl L_{Aeq}	25	24	25	24
Character correction	0	0	0	0
Rating Level at dwelling - L_{Aeq}	25	24	25	24
Total Rating level	28		28	
Typical lowest background	34		28	
Difference	-6		+0	
BS4142 Assessment	'low impact'		'low impact'	

Table 6 BS4142 Assessment of vehicle activity at nearest dwellings to the East.

Parameter	Day		Night	
	HGV	Alarm	HGV	Alarm
spl L_{Aeq}	19	17	19	17
Character correction	0	0	0	0
Rating Level at dwelling - L_{Aeq}	19	17	19	17
Total Rating level	21		21	
Typical lowest background	34		28	
Difference	-13		-7	
BS4142 Assessment	'low impact'		'low impact'	

The calculated rating sound levels from vehicle movements at the nearest residential dwellings to the development site achieve a condition of 'low impact' during both the daytime and night time at dwellings to the west and to the east and as such, no additional mitigation is deemed necessary.

Specific noise levels are significantly below the ambient and background noise levels at the nearest residential dwellings and as such, are unlikely to be audible at any time. Where a sound source is not audible, it cannot be either tonal or intermittent and as such, no character correction has been applied to these activities occurring within the service yard.

5.3 Plant Noise.

BS4142 can be used to derive limit noise levels at the nearest dwelling that would achieve an assessment of 'low impact'.

The following table derives the limit sound levels to be achieved at the nearest dwellings in order to achieve a BS4142 condition of 'low impact'.

Table 7 Maximum permissible sound pressure levels at 1m from the nearest noise sensitive premises

Parameter	Day	Night
Background level L_{A90}	36	28
BREEAM POL05	-5	-5
Noise Rating Level at nearest dwelling L_{Aeq}	31	23

*A further correction would be applicable if the plant contains distinguishing features, as per BS4142:2014 guidance.

The derived limit levels for fixed plant are cumulative values to be achieved at the nearest residential property with all plant operating normally. Plant noise can be expected to attenuate with distance.

5.3.1 Mitigation measures.

At this stage, the design is not sufficiently advanced to specify specific attenuation measures and will need to be assessed in detail as the design progresses; however the above limits are deemed achievable by external plant on the basis of typical mitigation measures such as in-duct attenuation, acoustic screening or enclosures, low noise equipment, acoustic lagging, and acoustically rated louvres.

Specific attenuation measures will depend on the type and location of the plant items, and will be developed as the design progresses to ensure compliance with the limits set in Table 4.

6. Conclusion.

Assessment carried out for this report indicates that the noise climate in the vicinity of the proposed development site is mostly attributable to road traffic noise in the local area.

Assessment of activity noise levels in accordance with BS 4142 indicates that noise from the proposed development would achieve a condition of 'low impact' at the nearest existing residential properties at all times and would be unlikely to give rise to noise disturbance, if consideration for a building envelope of minimum sound insulation performance R_w 33 is incorporated into the design.

In accordance with the guidance provided in BS 4142:2014 with consideration for BREEAM POL05, all plant noise associated with the development shall be controlled to ensure that the overall sound pressure level at 1m from the façade of the nearest noise sensitive premises does not exceed L_{Aeq} 29 dB during the daytime (07:00 to 23:00 hrs) and L_{Aeq} 23 dB during the night (23:00 to 07:00 hrs).

Appendix A: Survey and equipment details.

Unattended noise measurements were carried out on site between 14:15 on 24 May and 12:00 on 31 May 2024.

The microphone was fitted with a windshield. The meter was calibrated before and after the survey and no significant drift was noted.

Equipment details.

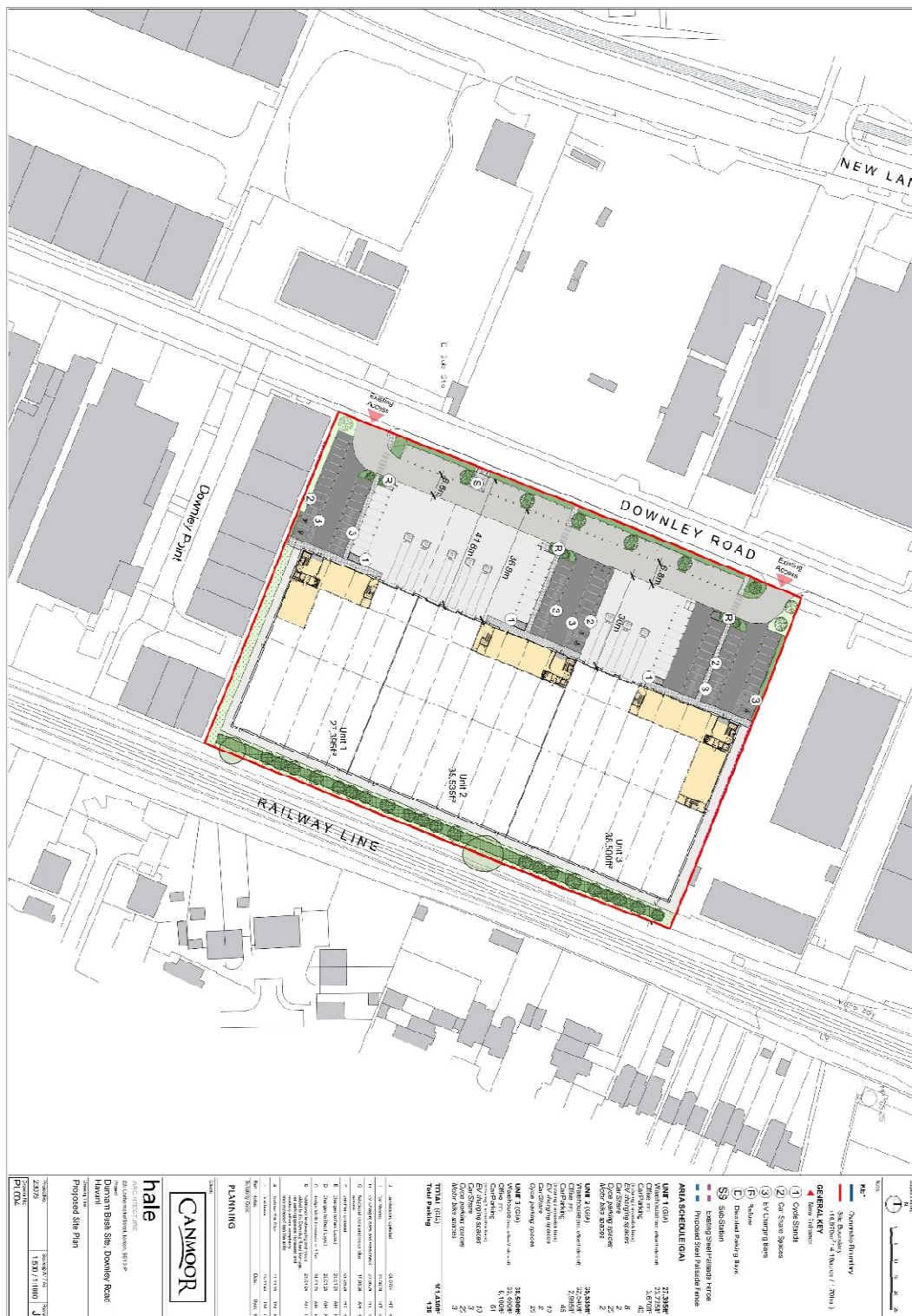
Table A1 summarises the details of the equipment used during the environmental noise survey. All equipment used was within dates of calibration and calibration certificates are available on request.

Table A1 Equipment used during environmental noise survey

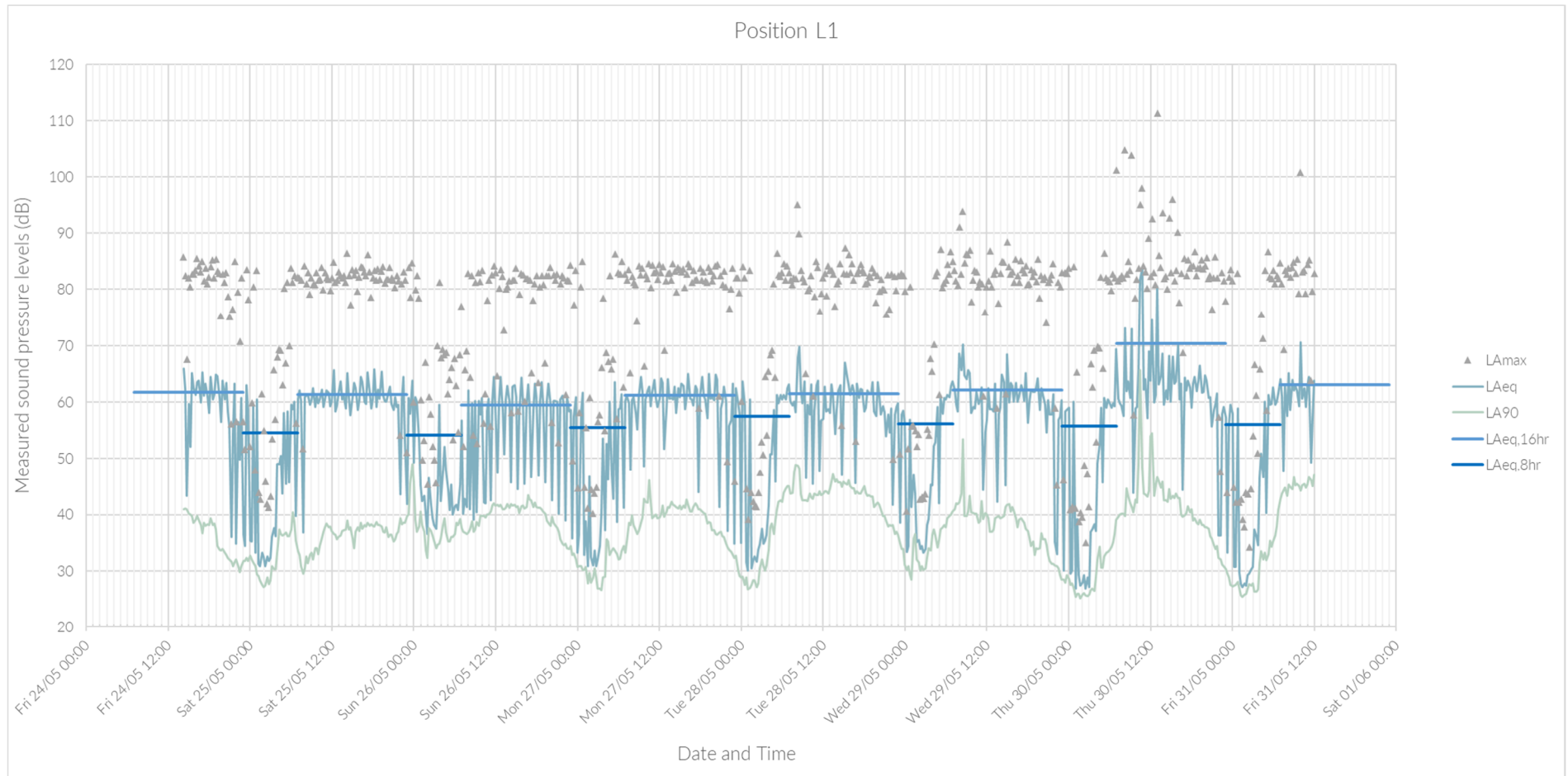
Description	Serial Number	Calibration Date
Rion - Sound Level Meter: NL-52	632046	18/08/2023
Rion - Microphone: UC-59	18987	
Rion - Pre-amplifier: NH-25	32074	

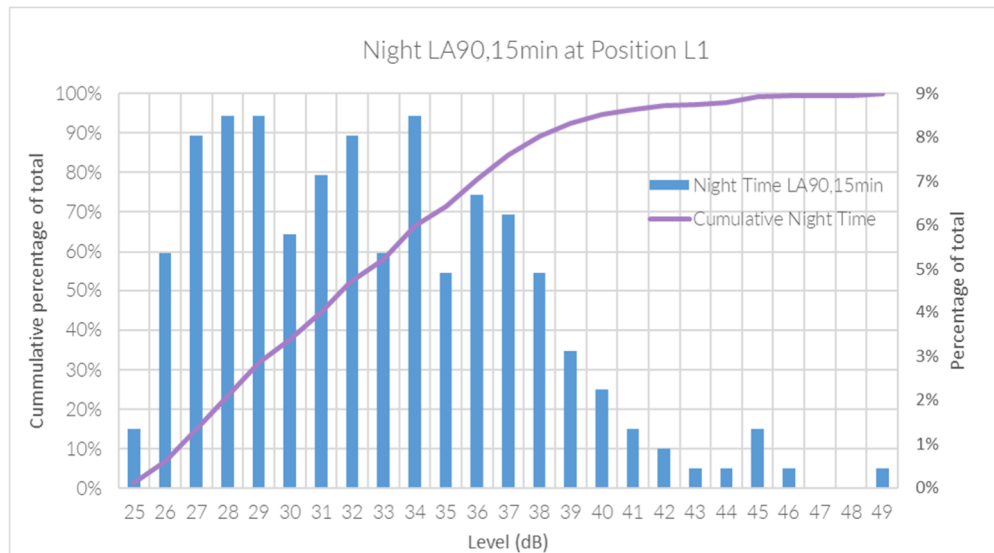
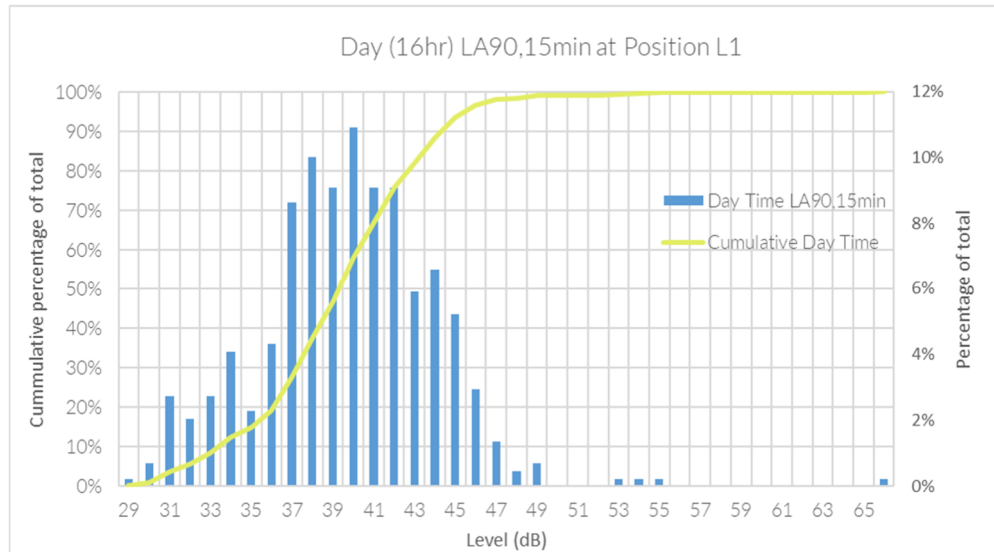
Weather information.

Weather reports for the area indicate that temperatures ranged between 2°C to 8 °C. Weather conditions during the day were noted to be predominantly dry, with wind speeds generally below 5m/s and not expected to have adversely affected measurements during the survey period.



Appendix C: Time history of unattended measurements.





**DUNHAM BUSH SITE, DOWNLEY
ROAD**

CANMOOR DEVELOPMENTS LTD
ON BEHALF OF ROYAL LONDON
PROPERTY

ACOUSTICS

NOISE IMPACT ASSESSMENT –
REV. 01

19



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