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PROPOSED DEVELOPMENT AT CAMPS FIELD, BARTONS ROAD, SOUTHLEIGH
NOISE IMPACT ASSESSMENT

Technical Report: R9435-1 Rev 1

Date: 31st October 2022

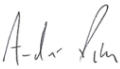
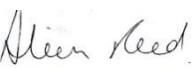
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SUMMARY

Redrow Homes Ltd has retained 24 Acoustics Ltd to carry out a noise impact assessment on a site at Camps Field, Bartons Road, Southleigh. It is proposed to redevelop the site for residential properties. This report presents the results of the noise assessment to allow Condition 33 from outline consent APP/19/00007 to be discharged.

Noise from road traffic using Bartons Road to the south is a contributor to levels on site.

Acceptable internal noise levels will be achieved taking into account the recommendations provided herein.

Recommendations have been made for garden fences, and on that basis, noise levels in external amenity areas have been mitigated and reduced to a minimum and are considered acceptable.

On the above basis, it is considered that an appropriate acoustic environment can be provided to the proposed residential properties, both externally and internally as well as being capable of meeting the agreed acoustic standards required to discharged Condition 33 of the planning consent.

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1.0 INTRODUCTION

- 1.1 Redrow Homes Ltd has retained 24 Acoustics Ltd to carry out a noise impact assessment on a site at Camps Field, Bartons Road, Southleigh. It is proposed to redevelop the site for residential use. This report presents the results of the noise assessment to allow Planning Condition 33 from outline consent APP/19/00007 to be discharged.
- 1.2 The site is affected by noise from road traffic using Bartons Road.
- 1.3 This report provides the results of the noise assessment. An explanation of noise terms used in this report is provided in Appendix A. All sound pressure levels in this report are given in dB re: 20 μ Pa.

2.0 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

- 2.1 The site is located north of Bartons Road, west of Spire Portsmouth Hospital and south of the Oaks Havant Crematorium. It is proposed to build 70 new homes plus associated green infrastructure including community orchard on the north section of the site. The access road to the Crematorium runs to the east of the site and approximately 120m west to the site boundary is the direct railway line connecting Portsmouth to Woking. Figure 1 provides an aerial image of the area
- 2.2 The proposed development scheme is shown in Figure 2.

3.0 STANDARDS AND GUIDANCE

BS 8233:2014

- 3.1 BS 8233:2014 [Reference 1] provides design guidance for dwelling houses, flats and rooms in residential use and recommends that internal noise levels in dwellings do not exceed 35 dB $L_{Aeq,16hr}$ in living rooms and bedrooms during the day, 40 dB $L_{Aeq,16hr}$ in dining rooms during the day and 30 dB $L_{Aeq,8hr}$ in bedrooms at night. A relaxation of 5 dBA in the above figures is given in the standard for rooms which are naturally ventilated.
- 3.2 BS 8233:2014 also notes that *“Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night.”*
- 3.3 Although the guidelines have no formal standing, the World Health Organisation (WHO) provides guidance on desirable internal noise levels to minimise the risk of sleep disturbance. The WHO 2000 guidelines [Reference 2] suggest internal night-time noise levels not exceeding 30 dB $L_{Aeq,8hr}$ or regularly (10 – 15 times per night) exceeding 45 dB $L_{Amax,f}$ for ‘a good night’s sleep’.
- 3.4 BS 8233:2014 suggests an upper guideline value of 55 dB $L_{Aeq,16hr}$ for noise levels in external amenity spaces such as gardens. BS 8233 recognises that the desirable noise levels for external amenity areas are not always achievable in certain locations. BS 8233 also states that development should not be prohibited on the basis of noise levels within external amenity areas.

Planning Consent Noise Condition

- 3.5 Planning consent (APP/19/00007) has been granted for residential dwellings. The consent is subject to conditions and Condition 33 relates to noise, as follows:

“(Condition 33) No above ground construction works shall take place unless and until details specifying:

- That the acoustic mitigation measures to be employed with regard to the building envelope, including fenestration and ventilation, for all residential units, will meet BS8223:2014 standards as recommended for indoor ambient noise levels for dwellings, especially in relation to living rooms and bedrooms i.e. during the day*

(07:00 to 23:00) 35dB $L_{Aeq,16hr}$ and at night (23:00 to 07:00) 30 dB $L_{Aeq,8hr}$ for bedrooms, and;

- Similarly for traditional external areas that are used for personal amenity space, such as gardens and patios, its desirable that external noise levels does not exceed 50 dB L_{Aeq} with an upper guideline value of 55 dB L_{Aeq} in noisier environments."*

Summary

3.6 The impact of noise upon the proposed development has been assessed using the following recommended maximum internal noise levels, due to road traffic, in order to address the requirements of condition 33:

- 35 dB $L_{Aeq,16hr}$ daytime noise level for living rooms and bedrooms;
- 30 dB $L_{Aeq,8hr}$ night-time noise level for bedrooms;
- 45 dB $L_{Amax,f}$ night-time noise levels in bedrooms for regular events;
- 55 dB $L_{Aeq,16hr}$ in external amenity areas or lower.

4.0 NOISE MEASUREMENTS

Instrumentation

4.1 Ambient noise measurements were undertaken on the site between 1st and 7th February 2022 using the following equipment:

- 2 x Rion (Class 1) precision sound level meters Type NL32;
- 1 x Rion (Class 1) precision sound level meters Type NL52
- Brüel and Kjær acoustic calibrator Type 4231.

Noise Measurement Procedure

4.2 The instruments were set up at three locations on the site boundaries. Location 1 was on the west of the site facing the railway line. Location 2 on the southern boundary of the site facing Bartons Road and Location 3 on the east boundary of the site facing the road access to Oaks Havant Crematorium as shown in Figure 1.

4.3 In order to assess typical ambient noise levels, the monitors were configured to continuously monitor in five-minute sample periods. The meters were set up to measure and store overall A-weighted statistical parameters include L_{Aeq} parameters (measured on fast response). Noise measurements were made in accordance with BS 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use' [Reference 3].

4.4 The instrumentation was powered by external batteries and stored in a weatherproof case. Throughout the course of the survey an outdoor microphone windshield was used. The microphone heights were 1.5m above local grade. The weather was generally dry but for some periods with wind speeds above 5 m/s, however, where weather conditions were unsuitable for noise measurement, data has been removed prior to analysis.

4.5 Calibration of instrumentation was checked before and on completion of the measurements and no drift was found. The calibration of 24 Acoustics' instrumentation is traceable to National Standards.

- 4.6 Measured noise data at Location 1 was significantly influenced by noise from construction works and machinery on site. Data collected between weekdays from 10:00 am to 1@00 pm and 2:00 pm to 4:30pm was removed from the analysis.
- 4.7 The dominant source of noise at each location was road traffic using Bartons Road during the daytime and night-time periods.

Measurement Results

- 4.8 The noise survey results are shown graphically in Appendix B and are summarised in Tables 1 and 2 below. 24 Acoustics takes the typical L_{Amax} to be the 10th highest L_{Amax} value.

Day and Date	Noise Level		
	Daytime Level (07:00 - 23:00) dB L_{Aeq} , 16 hour	Night-time Level (23:00 – 07:00) dB L_{Aeq} , 8 hour	Typical night-time dB L_{Amax} , f
Tuesday 01/02/22	*50	48	63
Wednesday 02/02/22	52	43	61
Thursday 03/02/22	53	45	61
Friday 04/02/22	51	42	61
Saturday 05/02/22	52	54**	71**
Sunday 06/02/22	47	44	65
Monday 07/02/22	*56	-	-
Design Level	52	44	65 (maximum)

Table 1: Ambient Noise Levels at Location 1 (* = incomplete period) (**= removed from the analysis because of high wind speeds)

Day and Date	Noise Level		
	Daytime Level (07:00 - 23:00) dB LAeq, 16 hour	Night-time Level (23:00 - 07:00) dB LAeq, 8 hour	Typical night-time dB LAmax, f
Tuesday 01/02/22	*59	51	69
Wednesday 02/02/22	59	51	71
Thursday 03/02/22	60	51	71
Friday 04/02/22	60	50	68
Saturday 05/02/22	59	54**	80**
Sunday 06/02/22	56	51	70
Monday 07/02/22	*62	-	-
Design Level	59	51	71 (maximum)

Table 2: Ambient Noise Levels at Location 2 (* = incomplete period) (**= removed from the analysis because of high wind speeds)

Day and Date	Noise Level		
	Daytime Level (07:00 - 23:00) dB LAeq, 16 hour	Night-time Level (23:00 - 07:00) dB LAeq, 8 hour	Typical night-time dB LAmax, f
Tuesday 01/02/22	*52	43	58
Wednesday 02/02/22	51	43	57
Thursday 03/02/22	51	47	63
Friday 04/02/22	51	43	57
Saturday 05/02/22	54	59**	79**
Sunday 06/02/22	*52	-	-
Design Level	52	44	63 (maximum)

Table 3: Ambient Noise Levels at Location 3 (* = incomplete period) (**= removed from the analysis because of high wind speeds)

5.0 NOISE IMPACT ASSESSMENT

Road Traffic Impact

- 5.1 Calculations have been undertaken using corrected noise measurement results to determine the glazing requirements for the habitable rooms which will ensure that internal noise levels do not exceed 35 dB $L_{Aeq, 16 \text{ hour}}$ during the day and 30 dB $L_{Aeq, 8 \text{ hour}}$ at night.
- 5.2 Typical room dimensions and glazed areas (based on current architectural drawings provided by Redrow Homes in February 2022) have been used in the calculations. If there are any future changes to the site layout, room layout, volumes or elevations, the calculations should be reviewed accordingly.
- 5.3 It will be necessary to design building facades and fenestration systems to ensure that the internal noise guidelines of BS 8233: 2014 as required by Condition 33 (as described in Section 3) are complied with.
- 5.4 The analysis given below has been based on 24 Acoustics' understanding of the envelope construction to be used for this scheme (based on a cavity masonry construction).
- 5.5 Table 4 and 5 summarises the requirements for glazing and ventilators. These requirements would be readily achievable with standard thermal double glazing (e.g. 4mm glass / 6-16mm cavity / 4mm glass) with a minimum of 29 dB R_w for windows and standard trickle ventilators with a minimum of 32 dB $D_{n,e,w}$.

Window	Minimum SRI (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
Window Type	21	17	25	35	37	31

Table 4: Minimum Glazing Requirements

Ventilator	Minimum Dne (dB) per Octave Band Centre Frequency (Hz)					
	125	250	500	1k	2k	4k
Ventilator Type	23	26	29	30	33	33

Table 5: Minimum Ventilator Requirements

- 5.6 It should be noted that trickle ventilators will need to meet background ventilation requirements in accordance with Part F of the Building Regulations [Reference 4].

Noise Levels in External Amenity Areas

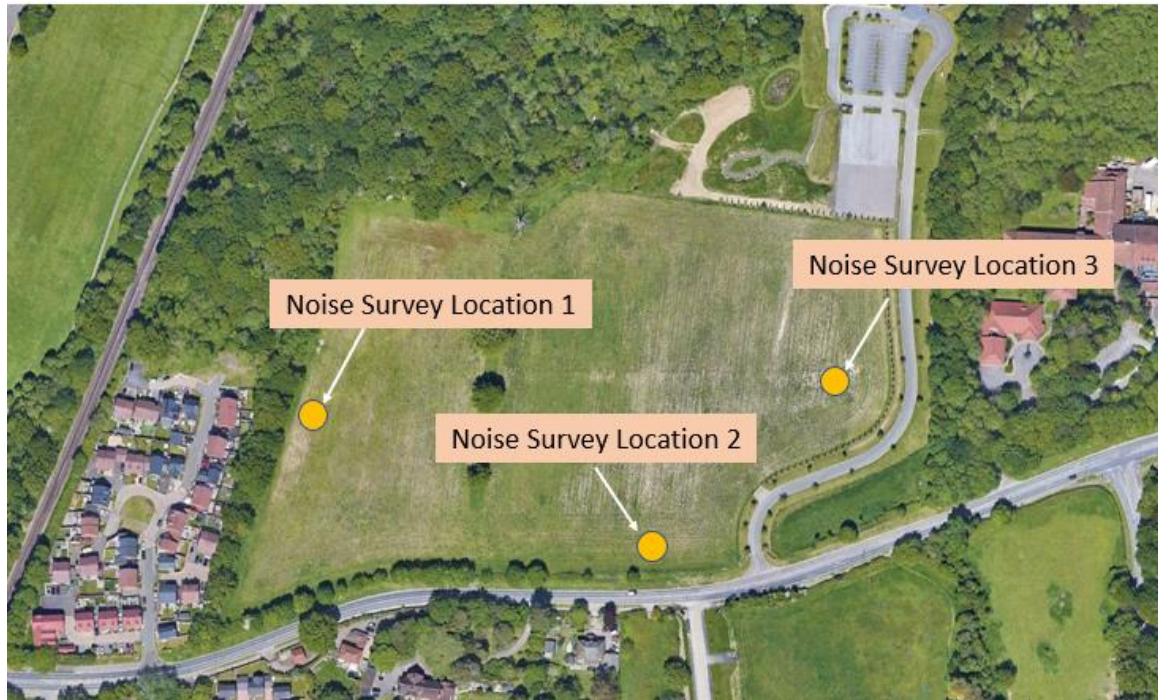
- 6.2 It is recommended that garden fences 1.8 m in height (minimum surface density 12 kg/m³ with no holes or openings in the barrier) be utilised at the south border of the site as shown in Figure 2. With this mitigation in place external amenity areas will be within the constraints identified in British Standard 8233 of 55 dB $L_{Aeq,16hr}$ or lower and therefore comply with Condition 33.

6.0 CONCLUSIONS

- 6.1 Redrow Homes Ltd has retained 24 Acoustics Ltd to carry out a noise impact assessment on a site at Camps Field, Bartons Road, Southleigh. It is proposed to redevelop the site for residential properties. This report presents the results of the noise assessment to allow Condition 33 of outline consent APP/19/00007 to be discharged.
- 6.3 The site is affected by noise from road traffic using Bartons Road to the south of the site.
- 6.4 Acceptable internal noise levels will be achieved taking into account the recommendations provided herein.
- 6.5 Recommendations have been made for garden fences, and on that basis, noise levels in external amenity areas have been mitigated and reduced to a minimum and are considered acceptable.
- 6.6 On the above basis, it is considered that an appropriate acoustic environment can be provided to the proposed residential properties, both externally and internally and, therefore, the scheme is compliant with the requirements of planning condition 33.

REFERENCES

1. British Standards Institution. British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings, 2014.
2. World Health Organisation. Guidelines for Community Noise, 2000.
3. British Standards Institution. British Standard 7445: 1991 'Description and measurement of environmental noise Part 2 - Acquisition of data pertinent to land use'
4. Building Regulations. Approved Document F - Ventilation, 2010.



Project: Camps Field, Bartons Road, Southleigh	Title: Site Location and Noise Survey Location		
DWG No: Figure 1	Scale: N.T.S.	Rev: 1	
Date: Oct 2022	Drawn By: AP	Job No: 9435-1	



— 1.8 m fence

Project: Camps Field, Bartons Road, Southleigh	Title: Proposed development scheme		
DWG No: Figure 2	Scale: N.T.S.	Rev: 1	
Date: Oct 2022	Drawn By: AP	Job No: 9435-1	

APPENDIX A: NOISE TERMINOLOGY

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 dB(A) weighting. This is an internationally accepted standard for noise measurements.

For variable sources, such as traffic, a difference of 3 dB(A) is just distinguishable. In addition, a doubling of traffic flow will increase the overall noise by 3 dB(A). The 'loudness' of a noise is a purely subjective parameter, but it is generally accepted that an increase/ decrease of 10 dB(A) corresponds to a doubling/ halving in perceived loudness.

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

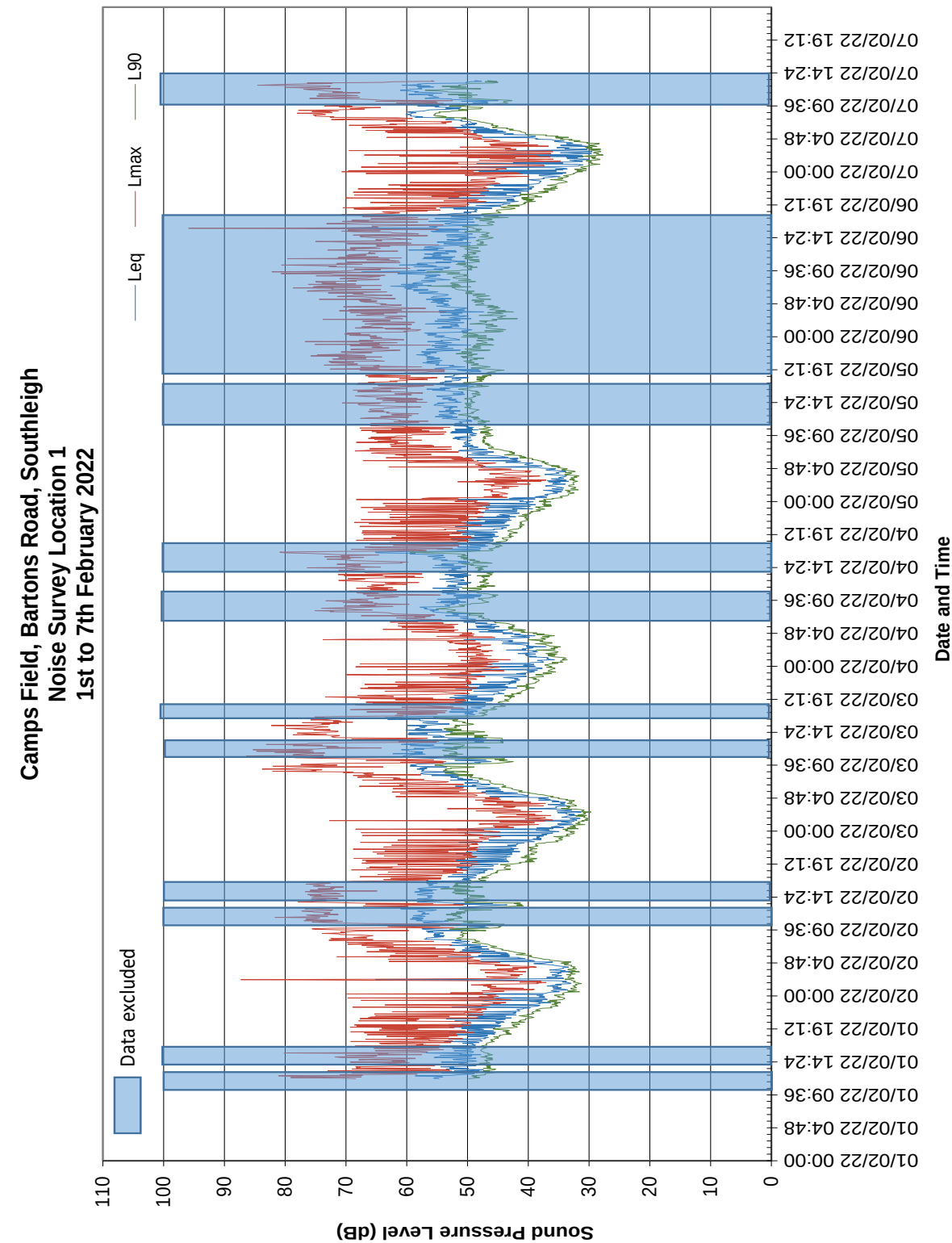
This is the maximum noise level recorded over the measurement period.

- ii) The L_{Aeq} noise level

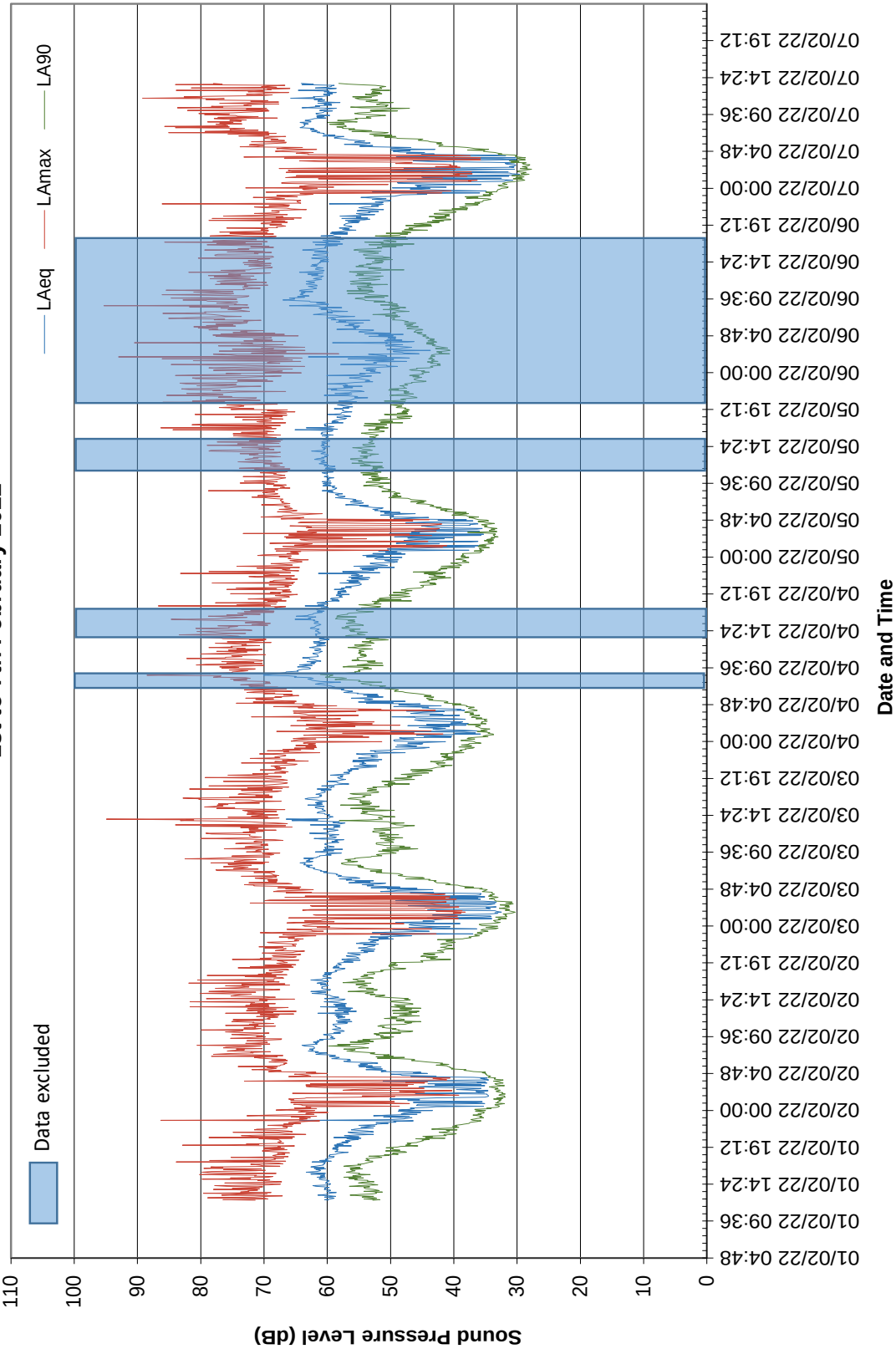
This is "equivalent continuous A-weighted sound pressure level, in decibels" and is defined in British Standard BS 7445 [1] as the "value of the A-weighted sound pressure level of a continuous, steady sound that, within a specified time interval, T , has the same mean square sound pressure as a sound 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.

APPENDIX B: Noise Survey Results



Camps Field, Bartons Road, Southleigh
Noise Survey Location 2
1st to 7th February 2022



Camps Field, Bartons Road, Southleigh
Noise Survey Location 3
1st to 6th February 2022

