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Consultants in Acoustics, Noise & Vibration

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High Road, Wembley

Environmental noise survey report

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Summary

Sandy Brown has been commissioned by Regal High Road Limited to provide acoustic advice in relation to the proposed development at High Road, Wembley.

An environmental noise survey has been carried out to determine the existing sound levels in the area. The noise survey was carried out between 12:30 on 3 February 2022 and 13:30 on 8 February 2022.

The representative background sound levels measured during the survey were $L_{A90,15min}$ 53 dB during the daytime and $L_{A90,15min}$ 44 dB at night at position 'A' (overlooking High Road), and $L_{A90,15min}$ 48 dB during the daytime and $L_{A90,15min}$ 42 dB at night at position 'B' (overlooking the railway line to the north).

Measured ambient noise levels were in the range of $L_{Aeq,5min}$ 56 to 79 dB during the day . The average ambient noise levels measured during the unattended survey were $L_{Aeq,16h}$ 58 dB during the daytime and $L_{Aeq,8h}$ 52 dB at night.

Data from the survey will be used to inform the design of the development with respect to atmospheric noise emissions from building services plant and environmental noise ingress through the building envelope.

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1 Introduction

Sandy Brown has been commissioned by Regal High Road Limited to provide acoustic advice in relation to the proposed development at High Road, Wembley.

As part of this, an environmental noise survey is required, the purpose of which is to establish the existing sound levels on and around the site.

This report presents the survey method and results.

2 Site description

2.1 The site and its surrounding

The site location in relation to its surroundings is shown in Figure 1 outlined in red. The site is bounded by High Road to the south, and existing developments to the west and east. There is a railway line approximately 50 m north of the site, the Birmingham Chiltern line running east to west between Wembley Stadium station and Sudbury & Harrow Road station.

Figure 1 Aerial view of site (courtesy of Google Earth Pro)

2.2 Adjacent premises

The site is adjacent to the following premises:

- Mixed residential and commercial premises on High Road (highlighted in yellow in Figure 1)
- Best Western Plus Hotel (highlighted in blue in Figure 1)
- Lanmore House – Residential and commercial (highlighted in orange in Figure 1)
- Ujima House – Commercial (highlighted in green in Figure 1, cumulative scheme with planning reference 19/3092).
- Proposed residential premises – Wembley Link (under construction – Highlighted in cyan in Figure 1)
- Proposed residential premises – High Road, Cecil Avenue (planning approved – Highlighted in Brown in Figure 1)

3 Development proposals

The proposed development is a 330 bedroom student accommodation building located on High Road in Wembley. The proposed development includes commercial and retail spaces, as well as indoor student amenity space on the ground floor. The development comprises a demolishment of the existing building followed by construction of the new build.

4 Noise survey method

The survey included unattended and attended noise measurements.

4.1 Unattended measurements

Unattended noise monitoring was undertaken at the site over 5 days.

Details of the equipment used and the noise indices measured are provided in Appendix A.

The unattended measurements were taken over 15 minute periods between 12:30 on 3 February 2022 and 13:30 on 8 February 2022. The equipment was installed and collected by Rachit Manchalwar and Gunes Dincer.

The measurement positions used during the survey is indicated in Figure 1, denoted by the letters ‘A’ and ‘B’. A photograph showing measurement position ‘B’ is provided in Figure 2. These locations were chosen to be reasonably representative of noise levels at the site and outside the nearest noise sensitive premises.

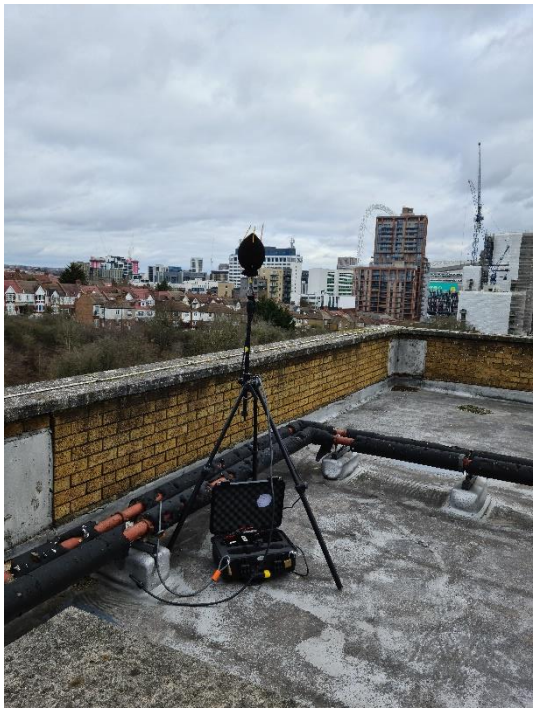


Figure 2 Photograph of unattended measurement position 'B'

4.2 Attended measurements

Attended sample measurements were taken by Rachit Manchalwar and Gunes Dincer at 4 locations around the site. These are indicated in Figure 1 as positions 1 to 4. The measurements were carried out on 3 February 2022 and 8 February 2022, over 5 minute periods.

At each position the microphone was mounted on a tripod approximately 1.2 m above the ground level and at least 1.5 m from any other reflective surface. Details of the equipment used and the noise indices measured are provided in Appendix A.

Dominant noise sources occurring during the measurements were noted.

4.3 Weather conditions

Weather conditions during the survey are described in Appendix A.

5 Noise survey results

5.1 Observations

The dominant noise sources observed at the site during the survey were from road traffic on High Road and nearby construction noise.

Less significant noise sources included plant noise from the existing development and road works on High Road.

5.2 Noise measurement results

5.2.1 Unattended measurement results – Position A

A graph showing the results of the unattended measurements is provided in Appendix B.

Day and night-time ambient noise levels measured during the unattended survey at position 'A' are presented in Table 1.

Table 1 Ambient noise levels measured during the unattended survey at position 'A'

Date	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Thursday 3 February 2022	-	52
Friday 4 February 2022	59	54
Saturday 5 February 2022	57	54
Sunday 6 February 2022	57	50
Monday 7 February 2022	59	51
Average	58	52

Analysis of night-time maximum noise levels indicate that the night-time maximum noise level not normally exceeded 10 times a night is L_{AFmax} 70 dB

In line with BS 4142:2014+A1:2019, representative background sound levels have been determined using statistical analysis of the continuous measurements.

Daytime and night-time statistical analysis of representative values for the site are given in Figure 3 and Figure 4 for position 'A'.

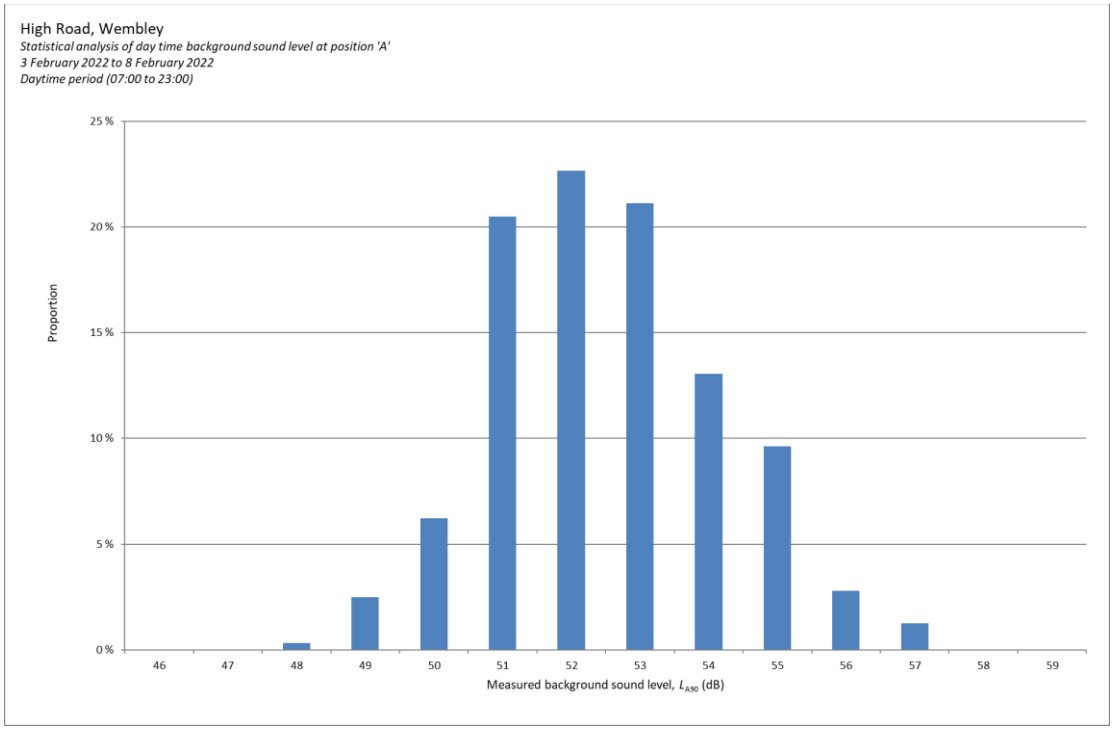


Figure 3 Statistical analysis of daytime background sound level at position 'A'

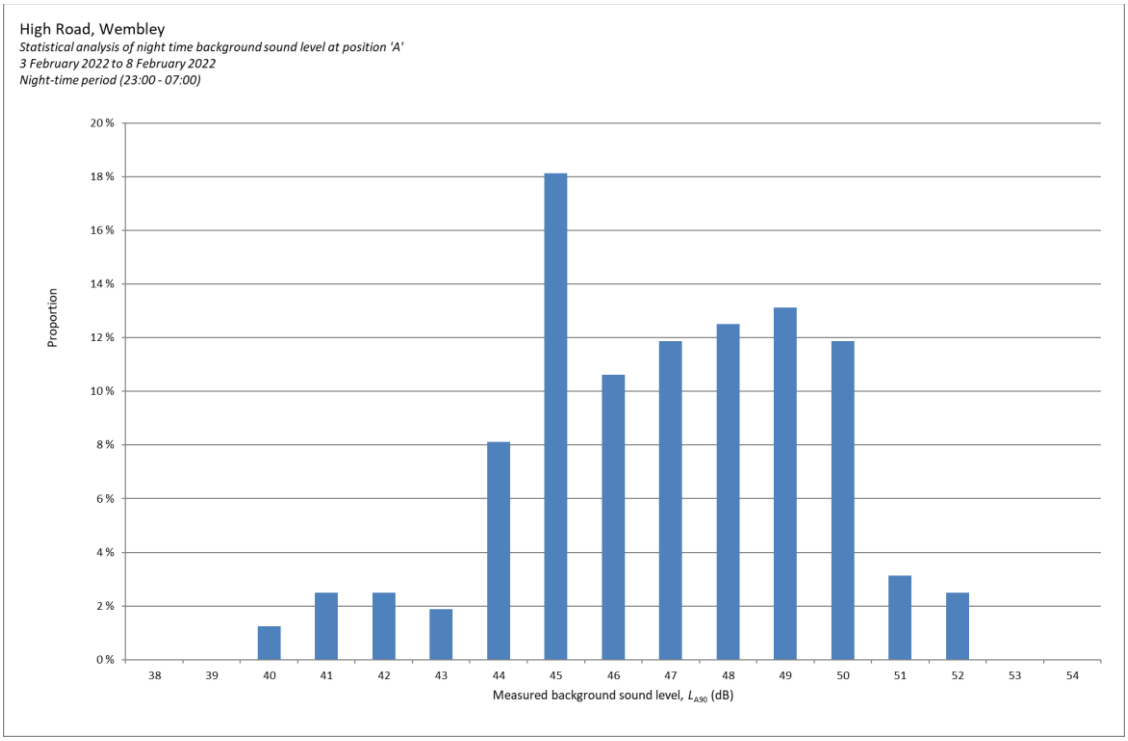


Figure 4 Statistical analysis of night-time background sound level at position 'A'

From this analysis, the representative background sound levels measured during the survey were $L_{A90,15min}$ 53 dB during the daytime and $L_{A90,15min}$ 44 dB at night at position 'A'.

5.2.2 Unattended measurement results – Position B

A graph showing the results of the unattended measurements is provided in Appendix C.

Day and night-time ambient noise levels measured during the unattended survey at position 'B' are presented in Table 2.

Table 2 Ambient noise levels measured during the unattended survey at position 'B'

Date	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Thursday 3 February 2022	-	51
Friday 4 February 2022	59	51
Saturday 5 February 2022	57	52
Sunday 6 February 2022	56	51
Monday 7 February 2022	59	52
Average	58	52

Analysis of night-time maximum noise levels indicate that the night-time maximum noise level not normally exceeded 10 times a night is L_{AFmax} 71 dB

In line with BS 4142:2014+A1:2019, representative background sound levels have been determined using statistical analysis of the continuous measurements.

Daytime and night-time statistical analysis of representative values for the site are given in Figure 5 and Figure 6 for position 'B'.

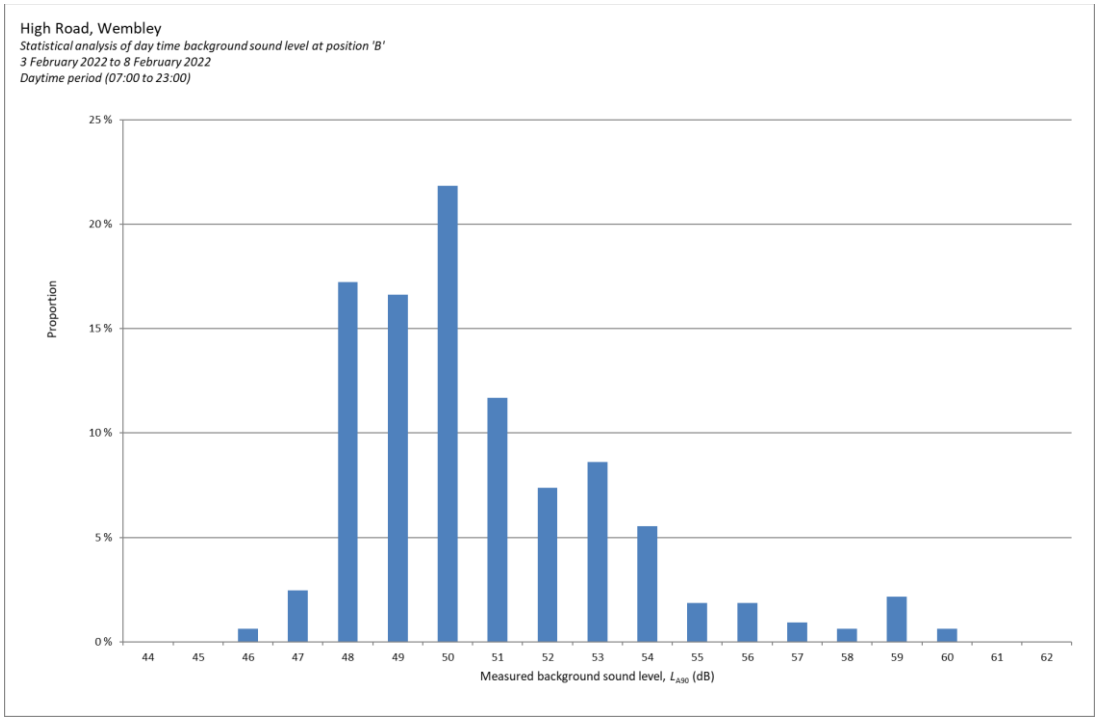


Figure 5 Statistical analysis of daytime background sound level at position 'B'

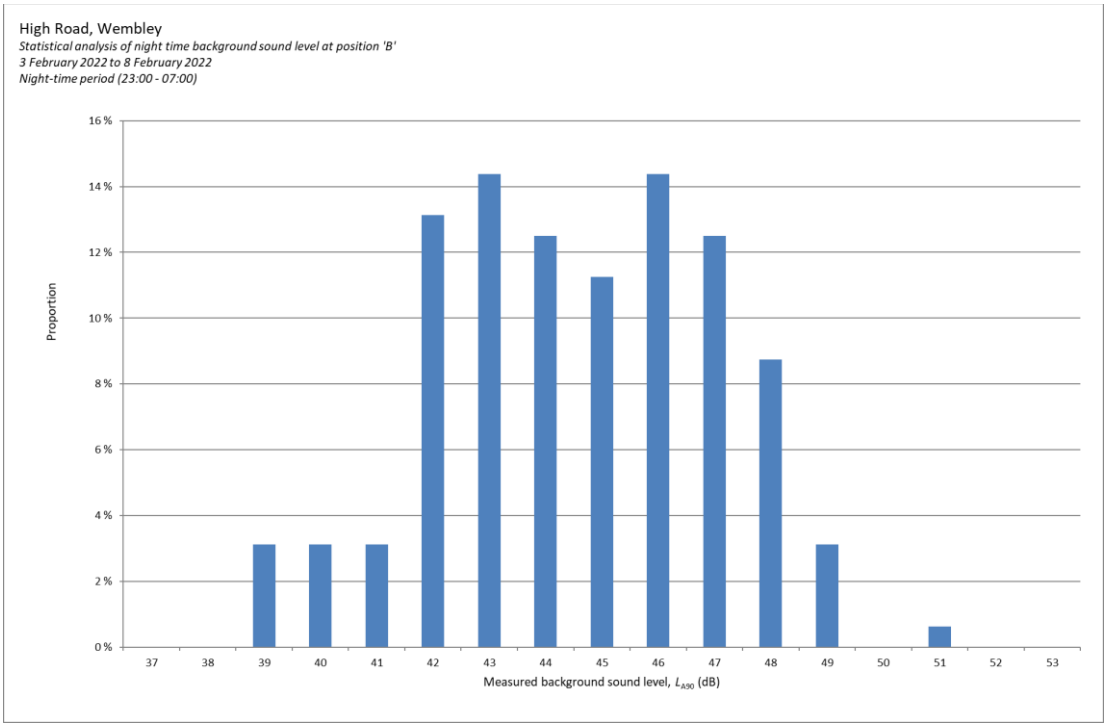


Figure 6 Statistical analysis of night-time background sound level at position 'B'

From this analysis, the representative background sound levels measured during the survey were $L_{A90,15min}$ 48 dB during the daytime and $L_{A90,15min}$ 42 dB at night at position 'B'.

5.2.3 Attended measurement results

Noise levels and key sources recorded during the attended measurements are summarised in Table 3.

Table 3 Noise levels and key noise sources from attended measurements

Position	Start time	Sound pressure levels (dB)			Noise sources
		$L_{Aeq,5min}$	$L_{AFmax,5min}$	$L_{A90,5min}$	
Thursday 3 February					
1	13:36	74	87	58	Road traffic from High Road Construction noise from Wembley Link.
	13:58	76	87	64	
	14:29	77	93	63	

Position	Start time	Sound pressure levels (dB)			Noise sources
		$L_{Aeq,5min}$	$L_{AFmax,5min}$	$L_{A90,5min}$	
2	13:31	70	80	60	Road traffic from High Road Construction noise from Wembley Link.
	14:05	73	80	63	
	14:35	74	83	65	
3	13:44	79	89	64	Construction noise from Wembley Link. Plant noise from existing development
	14:11	78	92	62	
	14:43	78	85	69	
4	13:51	62	70	56	Road traffic from High Road Construction noise from Wembley Link. Plant noise from existing development
	14:21	63	71	58	
	14:49	63	74	58	
Tuesday 8 February					
1	14:03	72	89	61	Traffic from High Road
	14:28	70	82	62	Noise from road work activity on High Road
2	14:08	79	102	63	Noise from road work activity on High Road. L_{Amax} caused by ambulance siren
	14:34	68	83	63	
3	14:14	68	80	61	Construction noise from Wembley Link.
	14:40	66	82	57	
4	14:20	58	72	56	Construction noise from Wembley Link.
	14:46	60	72	58	

6 Conclusion

A noise survey has been carried out at the site. Key noise sources at the site were noted as traffic on High Road and construction noise.

Measured ambient noise levels were in the range of $L_{Aeq,5min}$ 56 to 79 dB during the day, and $L_{Aeq,5min}$ 50 to 54 during the night. The representative background sound levels measured during the survey were $L_{A90,15min}$ 53 dB during the daytime and $L_{A90,15min}$ 44 dB at night at position 'A' and From this analysis, the representative background sound levels measured during the survey were $L_{A90,15min}$ 48 dB during the daytime and $L_{A90,15min}$ 42 dB at night at position 'B'.

The data collected will be used to determine appropriate plant noise egress limits and sound insulation requirements for the building envelope

Appendix A

Survey details

Equipment

The unattended and attended noise measurements were taken using Rion NL-52 sound level meters and a Brüel & Kjær 2250 sound level meter, respectively.

Calibration details for the equipment used during the survey are provided in Table A1.

Table A1 Equipment calibration data

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
Unattended measurements				
Position A				
Sound level meter	NL-52/00264531	Rion	23 Jun 22	TCRT20/1331
Microphone	UC-59/09678	Rion	23 Jun 22	TCRT20/1331
Pre-amp	NH-25/64656	Rion	23 Jun 22	TCRT20/1331
Calibrator	NC-74/34367630	Rion	23 Jun 22	TCRT20/1328
Position B				
Sound level meter	NL-52/00375679	Rion	19 Jul 23	TCRT21/1501
Microphone	UC-59/11168	Rion	19 Jul 23	TCRT21/1501
Pre-amp	NH-25/65806	Rion	19 Jul 23	TCRT21/1501
Calibrator	NC-75/35013664	Rion	16 Nov 23	TCRT21/1800
Attended measurements				
Sound level meter	2250/3009283	Brüel & Kjær	24 Jun 22	UCRT20/1539, UCRT20/1542
Microphone	4189/3005042	Brüel & Kjær	24 Jun 22	UCRT20/1539, UCRT20/1542
Pre-amp	ZC0032/23792	Brüel & Kjær	24 Jun 22	UCRT20/1539, UCRT20/1542
Calibrator	4231/3016124	Brüel & Kjær	23 Jun 22	UCRT20/1526

Calibration of the meters used for the measurements is traceable to national standards. Calibration certificates for the sound level meters used in this survey are available upon request.

Calibration checks were carried out on the meters and their measurement chains at the beginning and end of the survey. No significant calibration deviation occurred.

Noise indices

Noise indices recorded included the following:

- $L_{Aeq,T}$ The A-weighted equivalent continuous sound pressure level over a period of time, T.
- $L_{AFmax,T}$ The A-weighted maximum sound pressure level that occurred during a given period, T, with a fast time weighting.
- $L_{A90,T}$ The A-weighted sound pressure level exceeded for 90% of the measurement period. Indicative of the background sound level.

Sound pressure level measurements are normally taken with an A-weighting (denoted by a subscript 'A', eg L_{A90}) to approximate the frequency response of the human ear.

A more detailed explanation of these quantities can be found in BS7445: Part 1: 2003 *Description and measurement of environmental noise, Part 1. Guide to quantities and procedures.*

Weather conditions

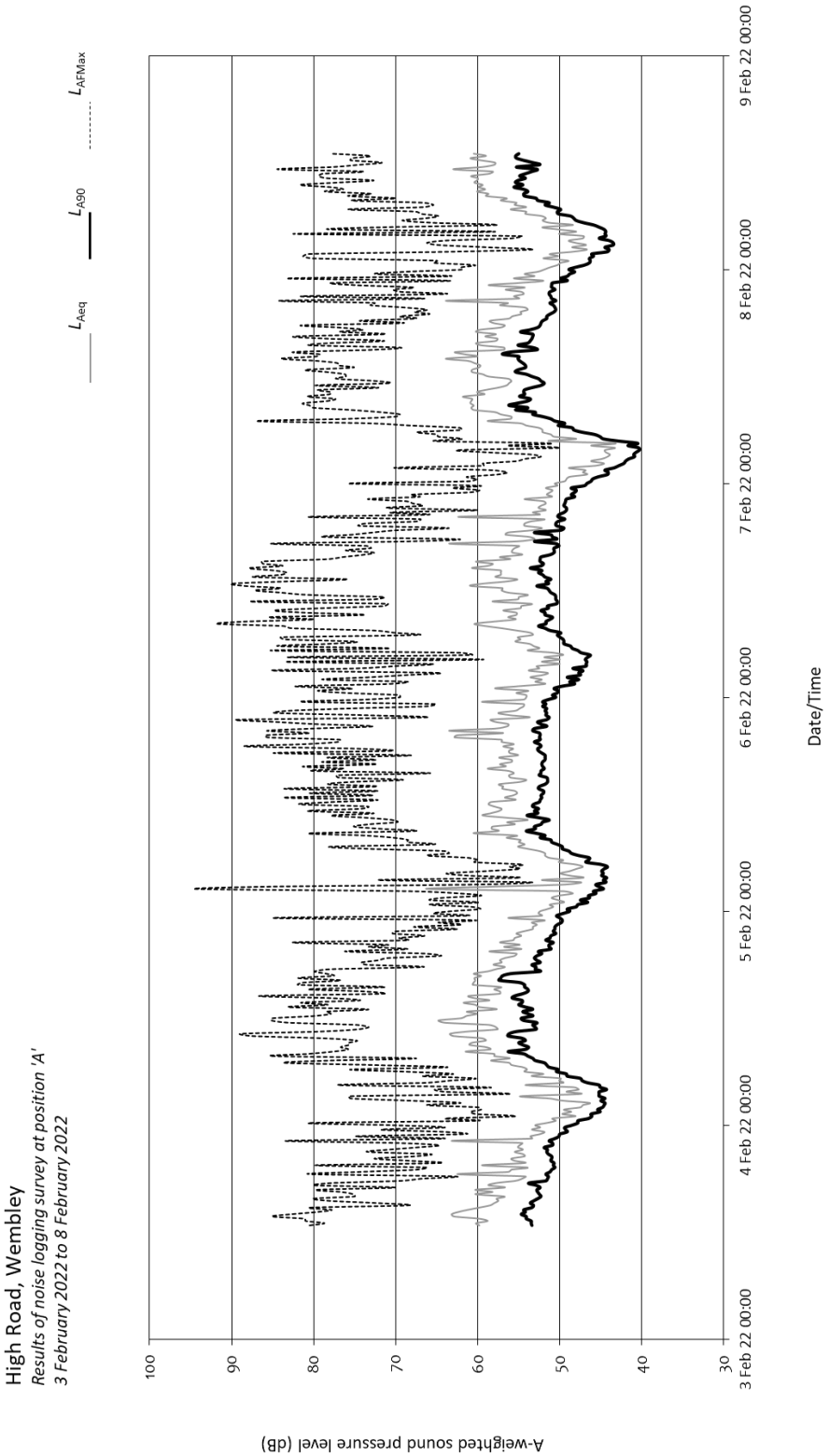
During the attended noise measurements, the weather was generally clear and dry and no rain occurred. Wind speeds were measured at each position and varied between 3 m/s and 6 m/s.

During the unattended noise measurements, weather reports for the area indicated that temperatures varied between 2°C at night and 10°C during the day, and the wind speed was less than 8 m/s.

These weather conditions are considered suitable for obtaining representative measurements.

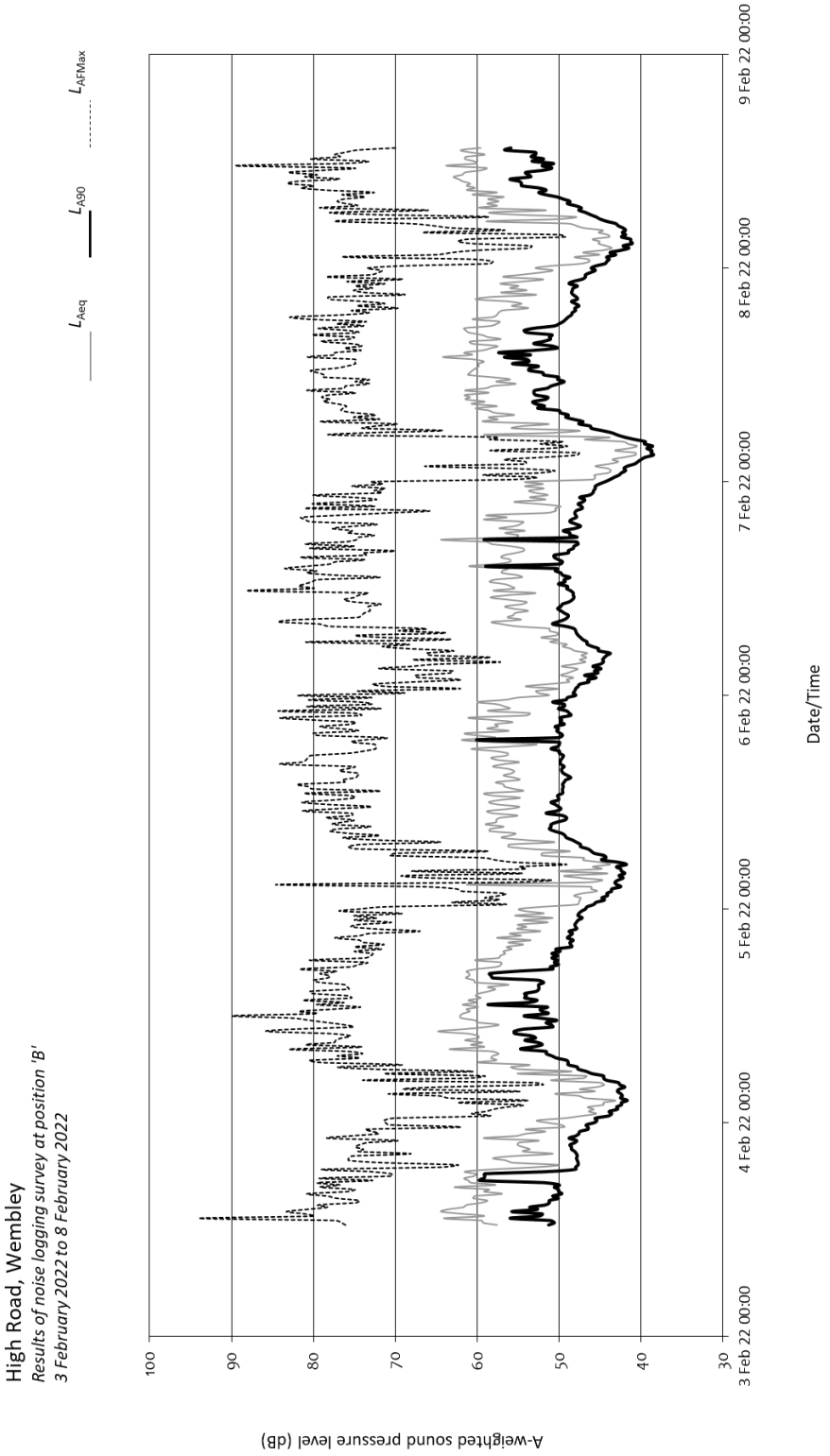
Appendix B

Results of unattended measurements at Position 'A'


High Road, Wembley
Results of noise logging survey at position 'A'
3 February 2022 to 8 February 2022
L_{Aeq}
L_{A90}
L_{AFMax}
A-weighted sound pressure level (dB)
100
90
80
70
60
50
40
30
3 Feb 22 00:00
4 Feb 22 00:00
5 Feb 22 00:00
6 Feb 22 00:00
7 Feb 22 00:00
8 Feb 22 00:00
9 Feb 22 00:00
Date/Time

Appendix C

Results of unattended measurements at Position ‘B’


High Road, Wembley
Results of noise logging survey at position 'B'
3 February 2022 to 8 February 2022
L_{Aeq}
L_{A90}
L_{AFMax}
A-weighted sound pressure level (dB)
100
90
80
70
60
50
40
30
3 Feb 22 00:00
4 Feb 22 00:00
5 Feb 22 00:00
6 Feb 22 00:00
7 Feb 22 00:00
8 Feb 22 00:00
9 Feb 22 00:00
Date/Time