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Consultants in Acoustics, Noise & Vibration

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HPH 3 Hyde Park Hayes

Supplemental acoustic report for the proposed change of use from office (B1) to residential (C3)

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Summary

Sandy Brown has been appointed to provide acoustic consultancy services in relation to the change of use of HPH 3, Hyde Park Hayes, Millington Road, Hayes, from an office to residential use.

The application is submitted pursuant to Class O of the Town and Country Planning (General Permitted Development) (Amendment) (England) Order 2016 (GPDO 2016), for the conversion of the existing building from office (Use Class B1) to residential (Use Class C3). As per the legislation outlined under Class O, there is a requirement to assess the impacts of noise from commercial premises and transport sources on the intended occupiers of the development – this report provides such an assessment.

This report covers the results of a new environmental noise survey carried out in November 2020 at the site, and should be read in conjunction with Sandy Brown's report *20441-R01-A HPH 3 Hyde Park Hays Acoustic report*, dated 22 October 2020.

The purpose of the new environmental noise survey was to establish the existing ambient and background sound levels in the vicinity of the site and nearby noise sensitive premises and to assess whether there has been a change in the noise climate since the last survey was carried out in 2016.

The minimum measured background sound levels were $L_{A90,5min}$ 43 dB in the day (07:00-23:00) and $L_{A90,5min}$ 38 dB at night (23:00-07:00), versus 44 dB $L_{A90,5min}$ during the daytime and 39 dB $L_{A90,5min}$ during the night-time in the 2016 survey.

In general, values measured during this survey tended to be similar to those measured in 2016 (±2dB difference), meaning plant noise limits and facade sound insulation performances set in the acoustic report issued on 22 October 2020 are still valid and relevant.

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1 Introduction

Sandy Brown has been appointed to provide acoustic consultancy services in relation to the change of use of HPH 3, Hyde Park Hayes, Millington Road, Hayes, from an office to residential use.

The application is submitted pursuant to Class O of the Town and Country Planning (General Permitted Development) (Amendment) (England) Order 2016 (GPDO 2016), for the conversion of the existing building from office (Use Class B1) to residential (Use Class C3). As per the legislation outlined under Class O, there is a requirement to assess the impacts of noise from commercial premises and transport sources on the intended occupiers of the development – this report provides such an assessment.

This report covers the results of a new environmental noise survey carried out in November 2020 at the site, and should be read in conjunction with Sandy Brown's report *20441-R01-A HPH 3 Hyde Park Hays Acoustic report*, dated 22 October 2020. The aforementioned report was based on survey conducted by Sandy Brown in September 2016.

The ambient sound levels measured during the survey are used to determine the facade sound insulation requirements.

The background sound levels measured during the survey are used as the basis for setting limits for noise emission from proposed building services plant. These limits are set in accordance with the requirements of the London Borough of Hillingdon.

This report presents the noise survey methods, the results of the survey, a comparison with the results from the previous survey carried out in 2016 (also conducted by Sandy Brown) and commentary on the facade sound insulation performance.

2 Site description

2.1 The site and its surrounding

The site location in relation to its surroundings is shown in Figure 1. Hyde Park Hayes, Building 3 (HPH 3) is highlighted in red. HPH 3 sits in the Hyde Park Hayes Business Park with four other office buildings. Dawley Road is located to the west side of the site. North Hyde Road (the A437) and the nearby railway link to Harlington and Hayes station is positioned to the north of the site.

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

2.2 Adjacent premises

The buildings in the immediate vicinity of the site are predominantly commercial as part of Hyde Park Hayes Business Park. The nearest residential properties to the site are approximately 90 m away on Waltham Avenue and have been indicated in blue in Figure 1.

3 Noise survey method

The survey included unattended and attended noise measurements.

3.1 Unattended measurements

Unattended noise monitoring was undertaken at the site over 7 days over two locations. The measurement positions used during the survey is indicated in Figure 1, denoted by the letters 'A' and 'B': Position A is located at the North of the site and Position B at the West.

In both locations, the meter was placed at least 1.2 m above roof level and less than a meter to the building's edge protection, therefore the results obtained are regarded to be facade measurements.

Photographs showing the measurement location are provided in Figure 2 and Figure 3. These locations were chosen to be reasonably representative of noise levels at the site and outside the nearest noise sensitive premises. They were also chosen to match the measurement positions conducted during the 2016 acoustic survey.

The unattended measurements were taken over 5-minute periods 12:27 on 4 November 2020 and 13:52 on 11 November 2020. The equipment was installed by Ruairidh Carpenter and collected by Ruairidh Carpenter and Reena Mahtani

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

Figure 2 Unattended measurement position A, North of the site

Figure 3 Unattended measurement position B, West of the site

3.2 Attended measurements

Attended sample measurements were taken by Ruairidh Carpenter and Reena Mahtani at 3 locations around the site. These are indicated in Figure 1 as positions 1 to 3. The measurements were carried out on 11 November 2020, over 5-minute periods.

At each position the microphone was mounted on a tripod approximately 1.2 m above the ground level and around 1 m from any other reflective surface, therefore the results are regarded to be facade values. Details of the equipment used and the noise indices measured are provided in Appendix A.

Dominant noise sources occurring during the measurements were noted.

Figure 4 Attended measurement position 1

Figure 5 Attended measurement position 2

Figure 6 Attended measurement position 3

3.3 Weather conditions

Weather conditions during the survey are described in Appendix A.

4 Noise survey results

4.1 Observations

The dominant noise sources observed at the site during the survey were from road traffic noise from the roads surrounding the site, Millington Road and the A437 North Hyde Rd.

Less significant noise sources included trains, airplanes and pedestrians.

4.2 Unattended measurement results

Graphs showing the results of the unattended measurements is provided in Appendix B. The results presented are regarded to be facade measurements.

4.2.1 Position A

Day and night-time ambient noise levels measured during the unattended survey are presented in Table 1. Minimum background noise levels measured are presented in Table 2. The results are regarded to be facade measurements.

Table 1 Ambient noise levels measured during the unattended survey – Position A

Date	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Wednesday 4 November 2020	-[1]	56
Thursday 5 November 2020	66[2]	56
Friday 6 November 2020	63[2]	54
Saturday 7 November 2020	60	53
Sunday 8 November 2020	57	53
Monday 9 November 2020	60[2]	54
Tuesday 10 November 2020	59[2]	56
Average	59	55

[1] Measurement not made over full period due to monitoring start and end time; not included in the average.

[2] Measurement affected by plant noise near measurement location and not included in the average

Table 2 Minimum background sound levels measured during the unattended survey – Position A

Date	Daytime (07:00 – 23:00) $L_{A90,5min}$ (dB)	Night (23:00 – 07:00) $L_{A90,5min}$ (dB)
Wednesday 4 November 2020	52 *	44
Thursday 5 November 2020	52	45
Friday 6 November 2020	50	44
Saturday 7 November 2020	51	43
Sunday 8 November 2020	47	42
Monday 9 November 2020	50	43
Tuesday 10 November 2020	51	42
Wednesday 11 November 2020	53 *	-

* Measurement not made over full period due to monitoring start and end time.

The lowest background sound levels measured during the survey at Position A were $L_{A90,5min}$ 47 dB during the daytime and $L_{A90,5min}$ 42 dB at night.

4.2.2 Position B

Day and night-time ambient noise levels measured during the unattended survey are presented in Table 3. Minimum background noise levels measured are presented in Table 4. The results are regarded to be facade measurements.

Table 3 Ambient noise levels measured during the unattended survey – Position B

Date	Daytime (07:00 – 23:00) $L_{Aeq,16h}$ (dB)	Night (23:00 – 07:00) $L_{Aeq,8h}$ (dB)
Wednesday 4 November 2020	-[1]	52
Thursday 5 November 2020	60[2]	54
Friday 6 November 2020	59[2]	52
Saturday 7 November 2020	57	50
Sunday 8 November 2020	55	51
Monday 9 November 2020	59[2]	52
Tuesday 10 November 2020	59[2]	55
Average	56	52

[1] Measurement not made over full period due to monitoring start and end time; not included in the average.

[2] Measurement affected by plant noise near measurement location and not included in the average

Table 4 Minimum background sound levels measured during the unattended survey – Position B

Date	Daytime (07:00 – 23:00) $L_{A90,5min}$ (dB)	Night (23:00 – 07:00) $L_{A90,5min}$ (dB)
Wednesday 4 November 2020	51 *	43
Thursday 5 November 2020	48	43
Friday 6 November 2020	47	42
Saturday 7 November 2020	49	40
Sunday 8 November 2020	43	38
Monday 9 November 2020	48	41
Tuesday 10 November 2020	49	42
Wednesday 11 November 2020	55 *	-

* Measurement not made over full period due to monitoring start and end time.

The lowest background sound levels measured during the survey at Position B were $L_{A90,5min}$ 43 dB during the daytime and $L_{A90,5min}$ 38 dB at night.

4.2.3 Attended measurement results

Noise levels and key sources recorded during the attended measurements are summarised in Table 5. The values reported are considered to be facade measurements.

Table 5 Noise levels and key noise sources from attended measurements

Position	Start time	Sound pressure levels (dB)			Noise sources
		$L_{Aeq,5min}$	$L_{AFmax,5min}$	$L_{A90,5min}$	
1	11:32	58	77	52	Train pass-bys. Road traffic.
2	11:42	60	73	51	Road traffic, train pass-bys.
3	11:51	64	79	56	Road traffic
1	12:01	55	67	49	Train pass-bys. Road traffic.
2	12:11	60	68	52	Road traffic, train pass-bys.
3	12:21	61	82	53	Road traffic

5 Comparison with 2016 survey

Sandy Brown's report *20441-R01-A HPH 3 Hyde Park Hays Acoustic report*, dated 22 October 2020 was based on data from a noise survey that was carried out in 2016. The locations used for the installation of the noise monitoring equipment were the same in both the 2016 and 2020 surveys, with similar weather conditions at the time. This section of the report compares the results from the two surveys.

5.1 Unattended noise survey results

The results from both surveys are summarised below. Table 6 shows a comparison of the ambient noise levels $L_{eq,T}$ whereas Table 7 shows the minimum background noise levels $L_{A90,T}$. The calculated difference has been shown in between parenthesis.

Table 6 Comparison of ambient noise levels measured in 2016 and 2020

	2016		2020	
	Daytime (07:00 – 23:00)	Night (23:00 – 07:00)	Daytime (07:00 – 23:00)	Night (23:00 – 07:00)
	$L_{Aeq,16h}$ (dB)	$L_{Aeq,8h}$ (dB)	$L_{Aeq,16h}$ (dB)	$L_{Aeq,8h}$ (dB)
Position A	62	59	59 (-3)	55 (-4)
Position B	56	54	56 (0)	52 (-2)

Table 7 Comparison of minimum background noise levels measured in 2016 and 2020

	2016		2020	
	Daytime (07:00 – 23:00)	Night (23:00 – 07:00)	Daytime (07:00 – 23:00)	Night (23:00 – 07:00)
	$L_{A90,5min}$ (dB)	$L_{A90,5min}$ (dB)	$L_{A90,5min}$ (dB)	$L_{A90,5min}$ (dB)
Position A	48	43	47 (-1)	42 (-1)
Position B	44	39	43 (-1)	38 (-1)

From the results in both tables, it can be observed that the noise climate in the area has not varied significantly between the two surveys . Minimum background noise levels $L_{A90,T}$ are practically the same while ambient noise levels ($L_{Aeq,T}$) are slightly lower at Location A.

5.2 Attended noise survey results

A comparison of the attended measurements taken during both surveys is shown in Table 8. The calculated difference has been shown in between parenthesis.

Table 8 Comparison of attended noise levels measured in 2016 and 2020

Position	2016		2020	
	$L_{Aeq,5min}$ (dB)	$L_{A90,5min}$ (dB)	$L_{Aeq,5min}$ (dB)	$L_{A90,5min}$ (dB)
1	52	45	58 (+6)	52 (+7)
2	60	52	60 (0)	51 (-1)
3	62	58	64 (+2)	56 (-2)
1	55	48	55 (0)	49 (+1)
2	61	52	60 (-1)	52 (0)
3	60	52	61 (+1)	53 (+1)

The values measured during the attended noise measurements also tend to correlate well (with the exception of the first measurement).

5.3 Summary

The new environmental noise survey was carried out as validation of the original survey from 2016 and to assess possible changes to the local noise climate.

The results summarised in this section tend to show good correlation with the results obtained back in 2016. There are minor differences due to variations of the noise sources at the time of the measurements but results generally agree (±2 dB difference).

Sandy Brown's report 20441-R01-A (dated 22 October 2020) makes recommendations in terms of plant noise limits, based on the minimum background $L_{A90,T}$ noise levels measured, and facade sound insulation performances based on the daytime and night-time $L_{Aeq,T}$ noise levels. From the results obtained in the 2020 survey, the assessments contained in the 22 October 2020 acoustic report are still valid and relevant.

6 Conclusion

Under the Town and Country Planning (General Permitted Development) (Amendment) (England) Order 2016, there is a requirement to consider the impacts of noise from commercial premises on the intended occupiers of the development.

The survey around the site has indicated that the noise from the nearby roads and the train line to the north dominate the soundscape, less so than noise from the surrounding commercial premises.

A new environmental noise survey was carried out as validation of the original survey from 2016 and to assess possible changes to the local noise climate.

The minimum measured background sound levels were $L_{A90,5min}$ 43 dB in the day (07:00-23:00) and $L_{A90,5min}$ 38 dB at night (23:00-07:00), versus 44 dB $L_{A90,5min}$ during the daytime and 39 dB $L_{A90,5min}$ during the night-time in the 2016 survey.

In general, values measured during this survey tended to be similar to those measured in 2016 (±2dB difference), meaning plant noise limits and facade sound insulation performances set out in the acoustic report issued on 22 October 2020 are still valid and relevant.

Appendix A

Survey details

Equipment

The unattended noise measurements were taken using a Rion NL-32 and a Rion NL-52 sound level meters, and for the attended measurements an additional Rion NL-52 sound level meter was used.

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
Sound level meter	NL-32/00623769	Rion	11 Oct 21	TCRT19/1780
Microphone	UC-53A/319244	Rion	11 Oct 21	TCRT19/1780
Pre-amp	NH-21/36677	Rion	11 Oct 21	TCRT19/1780
Calibrator	NC-74/34336009	Rion	11 Oct 21	TCRT19/1777
Sound level meter	NL-52/00264550	Rion	29 Jul 22	TCRT20/1422
Microphone	UC-59/09698	Rion	29 Jul 22	TCRT20/1422
Pre-amp	NH-25/64675	Rion	29 Jul 22	TCRT20/1422
Calibrator	NC-74/34367631	Rion	29 Jul 22	TCRT20/1419
Sound level meter	NL-52/00375679	Rion	9 Jul 21	TCRT19/1541
Microphone	UC-59/11168	Rion	9 Jul 21	TCRT19/1541
Pre-amp	NH-25/65806	Rion	9 Jul 21	TCRT19/1541
Calibrator	SV30A/10576	Svan	9 Jul 21	TCRT19/1539

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.
- $L_{ASmax,T}$ The A-weighted maximum sound pressure level that occurred during a given period, T, with a slow 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

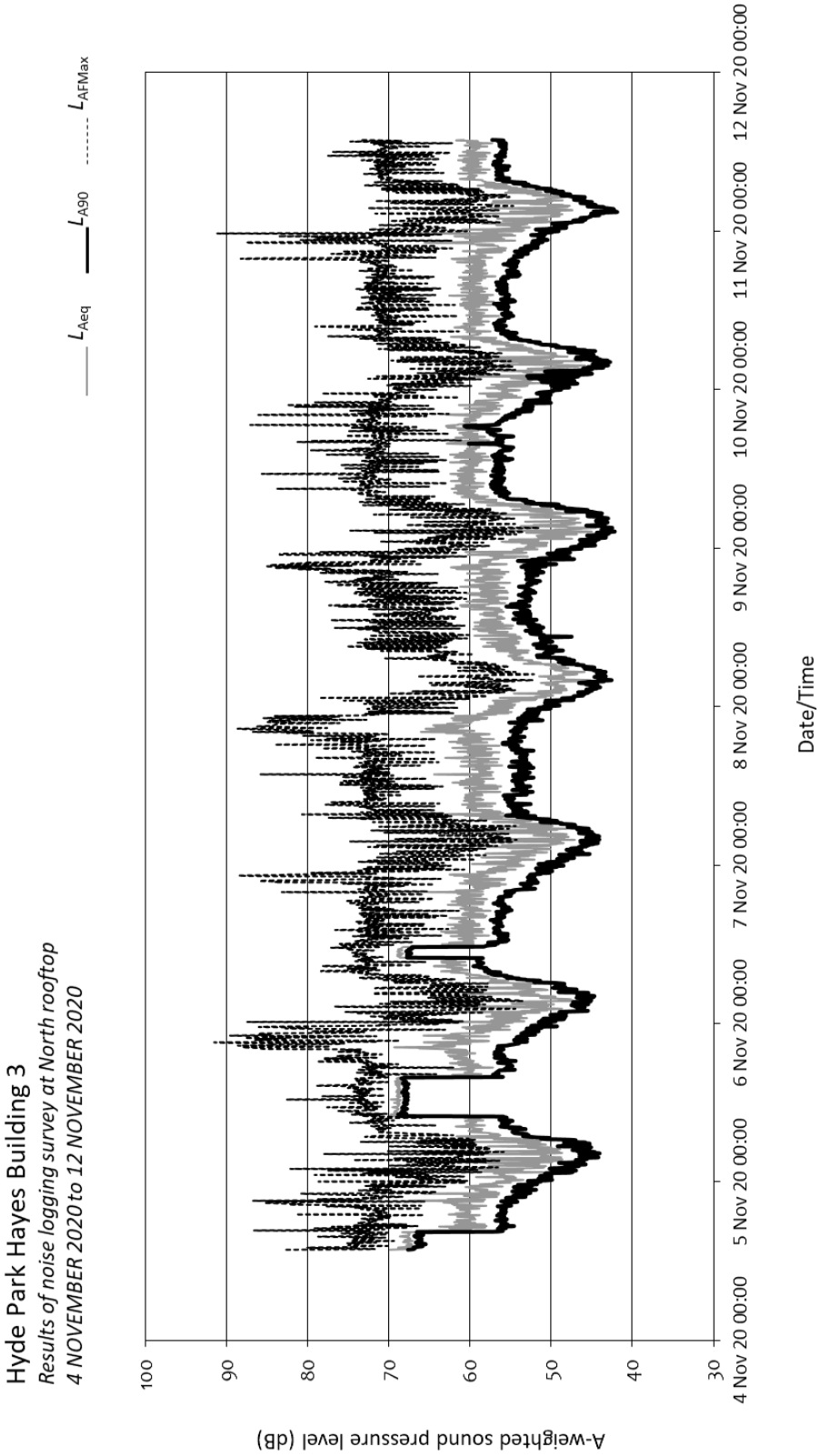
During the attended noise measurements, the weather was generally clear and dry and no rain occurred. Wind speeds at each position were below 2 m/s.

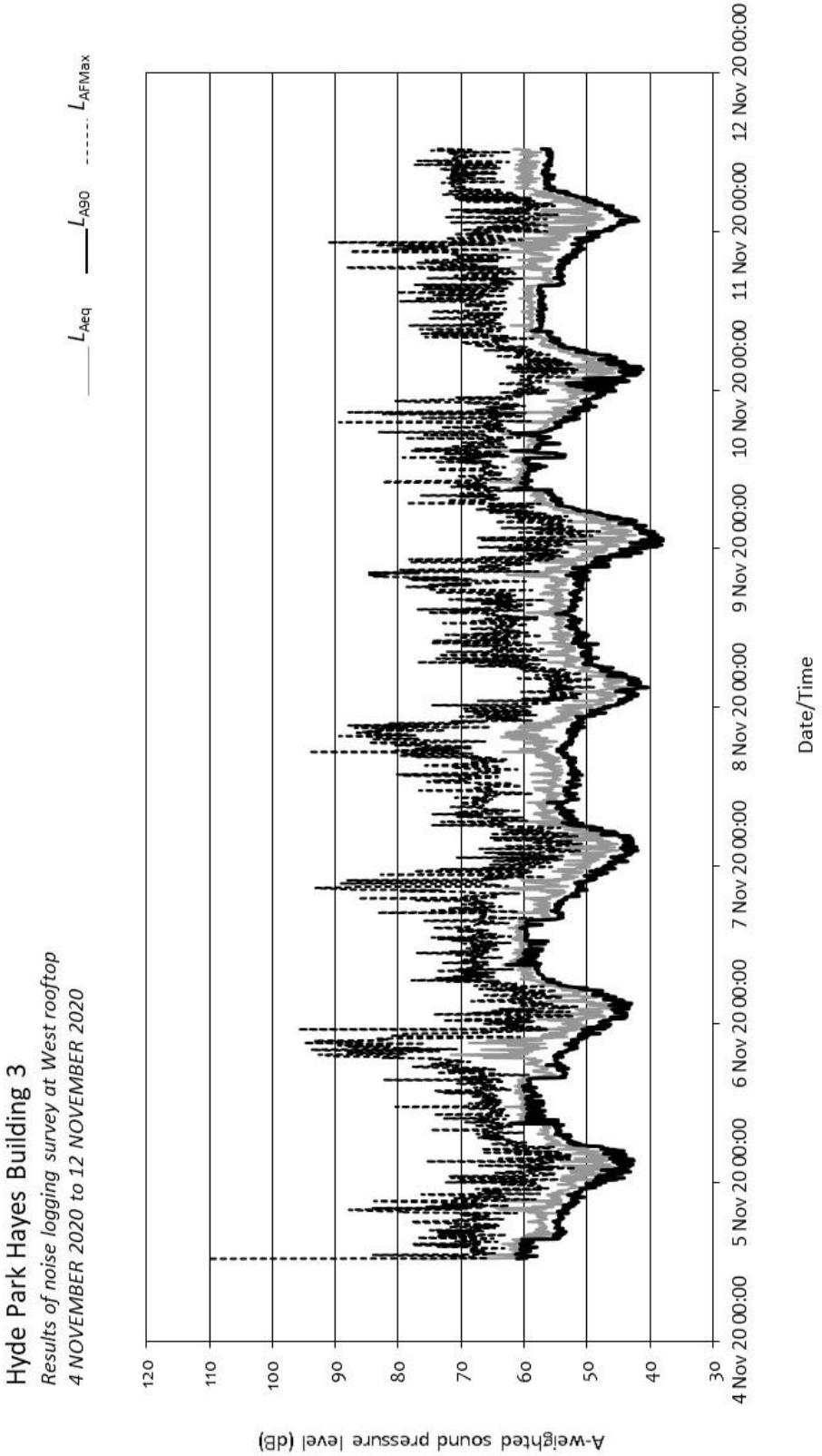
During the unattended noise measurements, weather reports for the area indicated that temperatures varied between 1°C at night and 12°C during the day, and the wind speed was less than 5 m/s.

These weather conditions are considered suitable for obtaining representative measurements.

Appendix B

Results of unattended measurements at Locations A and B


Hyde Park Hayes Building 3
Results of noise logging survey at North rooftop
4 NOVEMBER 2020 to 12 NOVEMBER 2020
LAeq
LA90
LAFMax
A-weighted sound pressure level (dB)
100
90
80
70
60
50
40
30
4 Nov 20 00:00
5 Nov 20 00:00
6 Nov 20 00:00
7 Nov 20 00:00
8 Nov 20 00:00
9 Nov 20 00:00
10 Nov 20 00:00
11 Nov 20 00:00
12 Nov 20 00:00
Date/Time


Hyde Park Hayes Building 3
Results of noise logging survey at West rooftop
4 NOVEMBER 2020 to 12 NOVEMBER 2020
LAeq
LA90
LAFMax
A-weighted sound pressure level (dB)
120
110
100
90
80
70
60
50
40
30
4 Nov 20 00:00
5 Nov 20 00:00
6 Nov 20 00:00
7 Nov 20 00:00
8 Nov 20 00:00
9 Nov 20 00:00
10 Nov 20 00:00
11 Nov 20 00:00
12 Nov 20 00:00
Date/Time