



Noise Survey

BS 8233:2014 Analysis

Land at Hanging Heaton

Reference Number: A001230

Date: June 2022

Issue 5

Project name and reference number: Hanging Heaton . Ref: A001230

Author and contact details: Jack Park

Origination Date: March 2021

Reviser: - JP

Date of last revision: - June 2022

Issue Number: 5

Summary of changes: - Additional information regarding ventilation strategy

Document produced by:	Document reviewed by:
Jack Park AMIOA	Bryan Wood MRICS, MCIOB, MIOA

Contents

Section	Page
Introduction	4
Requirements	4
Method	5
Results and Analysis	7
Conclusions and Recommendations	19
Appendices	20
Appendix A – Measurement data	
Appendix B – Instrument and weather data	

Company Profile

Established in 2007 as a family firm, we set out to create a sustainable, resilient business, establishing a happy and positive working environment for both clients and colleagues. It was important for us to offer adaptable and growing solutions for the areas of the construction industry that would benefit from them the most.

Creating an environment that was a pleasure to work in for both colleagues and clients was, and remains, incredibly important to us. Building our future on the foundations of honest relationships, flexibility and efficiency means that we value every client's success as though it were our own.

We have grown to become a trusted construction compliance partner. We continue to grow, to offer packages of sustainability, environmental and acoustic services, with the long-term aim of making our clients' lives easier, so they can focus on the jobs that they enjoy.

Today, the business works with a wide spectrum of clients from household name plc firms, one-off builds and everything in between. Our client list includes many of the nation's major house builders and contractors, as well as universities and public sector organisations. The team also lends their know-how to many architectural practices, M&E consultants and planners.

Limitations

Future Energy Surveys Ltd T/A The FES Group and its staff shall not to be held liable for any damage or loss sustained as a result of using of the information provided in this report. The report is based on drawings and information provided by the client and/or project design team at the time of issue. The information and the drawings provided to us determine the results within the report. If anything changes during the course of the ongoing design or construction, the reduction and calculations will be incorrect. The FES Group will not be held responsible for the implications of such change.

As such this report should be viewed as providing a reasonable assessment of the predicted performance of the development based on current knowledge.

Introduction

FES Acoustics were originally instructed by Vistry Partnerships Yorkshire to carry out a two-point noise survey at the site of a proposed development at High Street, Hanging Heaton, Dewsbury WF12 7HF in order to assess compliance with BS 8233:2014 requirements, in terms of internal noise levels, overnight $L_{AF,MAX}$ events and amenity area noise levels.

This updated report addresses the possible issue of increased noise at Position B due to the Working Men's Club (WMC) having re-opened following its lockdown due to COVID 19. An additional 24 hour noise survey was carried out at Position B adjacent to the WMC starting from 08.00hrs on the 21st October 2021.

Requirements

Daytime Maximum L_{Aeq} (07.00 to 23.00)	Night Time Maximum L_{Aeq} (23.00 to 07.00)
Living Rooms	Bedrooms
35 dB(A)	30 dB(A)

Desirable Amenity Space Maximum Noise Level	Upper Guideline Value for Amenity Space Noise Level (for noisier environments)
50 dB(A)	55 dB(A)

The internal noise levels will be determined by the external noise level and the degree of attenuation offered by the external envelope of the building. External levels will be determined by the noise level of the source, the distance to the amenity spaces and any barriers (e.g. fences, walls) in the pathway of the sound.

Method

Two measurement positions was chosen as shown in Figure 1 below.

March Survey

Due to the proximity of neighbouring roads and potential other noise sources (including the petrol station) and based on the proposed layout, 2 no. measuring points were undertaken for a 24-hour period. Measuring Position A covers the High Street and measuring Position B covers Challenge Way, the petrol station and the Working Men's Club.

October Survey

The October survey was only concerned with the possibility of increased noise at Position B, and the sound level meter was again situated at that position.

Image 1 – SLM Location



Results – Position A

Graphical representations of the recorded data are presented in Appendix 2. Analysis of the data is given below.

The actual measured noise level is shown below in Tables 3 to 6.

Table 3 - Measured noise level – Position A

Period	L_{Aeq} (dB)
Daytime, 09:56 – 23:00 hrs	52.5
Night-time, 23.00 – 07.00hrs	47.7
Daytime, 07:00 – 09:56 hrs	55.1

Table 4 – L_{Aeq} Day and Night Averages_ Position A

Period	L_{Aeq} (dB)
Daytime, 07.00 – 23.00hrs	53
Night-time, 23.00 – 07.00hrs	48

Table 3 above outlines the L_{Aeq} levels of the three periods over the 24-hour recording period. These figures could then be averaged to determine the $L_{Aeq,8hr}$ and $L_{Aeq,16hr}$ within Table 4. This data can then be assessed to account for distance attenuation to the façade of the nearest sensitive receptors.

An opened window is expected to provide approximately 10-15dB attenuation from external noise sources, and as such both the day-time and night-time periods, which would leave both the day-time and night-time period over the limits by between 3dB-8dB daytime and 3dB-8dB night-time if windows were open for the entire duration. **As such, a minimum standard of glazing and ventilation provisions should be stipulated to ensure suitable internal noise levels are provided.** Such a glazing specification would achieve suitable levels with windows closed, but would allow windows to be opened at the discretion of the occupant when required.

Facades that require a specified attenuation performance and ventilation strategy have been outlined within Images 5 and 6 within this report, and a proposed acoustic barrier strategy is outlined within Image 2. This will ensure suitable levels of attenuation from the High Street noise source. This has been calculated accounting for this distance correction using the line source attenuation formula $L_p(R2) = L_p(R1) - 10 \cdot \log_{10}(R2/R1)$.

As such, the requirements of Table 1 would be met by adopting the standard specification proposed by Vistry Partnerships Yorkshire of double glazing and brick and block cavity wall construction with a suitable ventilator. The minimum window attenuation required is a minimum of 19dB R_{w+ctr} , which should be achieved by most standard 28mm double glazed frames achieving in the region of 28dB R_{w+ctr} . To ensure the attenuation of the façade is maintained, a $D_{n,e,w}$ of 35dB should accompany a 28dB R_{w+ctr} window.

The glazing specification is accompanied by a suitable ventilator capable of maintaining the composite performance of the glazing. The $D_{n,e,w}$ is the weighted average composite loss of a typical wall with the vent installed – the sound reduction (R) of the vent alone is likely to be less individually. Therefore, to select a $D_{n,e,w}$ requirement it is always necessary to specify a value higher than the required R_w attenuation value. As a rough guide, the R_w can commonly be 5dB to 10dB lower than the $D_{n,e,w}$, and as such a $D_{n,e,w}$ figure that is 7dB higher than R_w should not lessen the sound reduction performance of the window.

A fencing attenuation barrier is not feasibly able to provide attenuation to the front facades in this location due to proposed site layout, although it is expected that noise levels should fall under suitable levels within WHO guidelines.

LAF,MAX

The data below outlines the LAF,MAX results recorded during the survey at Position A in March 2021, which is a limit of 45dB LAF,MAX internally that should be exceeded no more than 10 times during the night-time period (23:00-07:00). Based on a 28mm double glazing pane achieving 28dB R_{w+Ctr} , a theoretical limit can be set at 73dB. This was not exceeded during recording.

Table 5 – LAF,MAX Values

Calculation interval (absolute time)	LAFmax [dB]	Time of Max
09/03/2021 23:00:00.000 - 09/03/2021 23:04:59.999	60.7 dB	09/03/2021 22:56:43.000
09/03/2021 23:05:00.000 - 09/03/2021 23:09:59.999	59.7 dB	09/03/2021 23:06:43.000
09/03/2021 23:10:00.000 - 09/03/2021 23:14:59.999	59.7 dB	09/03/2021 23:06:43.000
09/03/2021 23:15:00.000 - 09/03/2021 23:19:59.999	60.5 dB	09/03/2021 23:16:43.000
09/03/2021 23:20:00.000 - 09/03/2021 23:24:59.999	60.5 dB	09/03/2021 23:16:43.000
09/03/2021 23:25:00.000 - 09/03/2021 23:29:59.999	58.8 dB	09/03/2021 23:21:43.000
09/03/2021 23:30:00.000 - 09/03/2021 23:34:59.999	57.8 dB	09/03/2021 23:31:43.000
09/03/2021 23:35:00.000 - 09/03/2021 23:39:59.999	57.8 dB	09/03/2021 23:31:43.000
09/03/2021 23:40:00.000 - 09/03/2021 23:44:59.999	56.2 dB	09/03/2021 23:36:43.000
09/03/2021 23:45:00.000 - 09/03/2021 23:49:59.999	57.4 dB	09/03/2021 23:46:43.000
09/03/2021 23:50:00.000 - 09/03/2021 23:54:59.999	62.9 dB	09/03/2021 23:51:43.000
09/03/2021 23:55:00.000 - 09/03/2021 23:59:59.999	62.9 dB	09/03/2021 23:51:43.000
10/03/2021 00:00:00.000 - 10/03/2021 00:04:59.999	61.7 dB	10/03/2021 00:01:43.000
10/03/2021 00:05:00.000 - 10/03/2021 00:09:59.999	61.7 dB	10/03/2021 00:01:43.000
10/03/2021 00:10:00.000 - 10/03/2021 00:14:59.999	58.9 dB	10/03/2021 00:11:43.000
10/03/2021 00:15:00.000 - 10/03/2021 00:19:59.999	60.3 dB	10/03/2021 00:16:43.000
10/03/2021 00:20:00.000 - 10/03/2021 00:24:59.999	60.3 dB	10/03/2021 00:16:43.000
10/03/2021 00:25:00.000 - 10/03/2021 00:29:59.999	62.0 dB	10/03/2021 00:26:43.000
10/03/2021 00:30:00.000 - 10/03/2021 00:34:59.999	62.0 dB	10/03/2021 00:26:43.000
10/03/2021 00:35:00.000 - 10/03/2021 00:39:59.999	67.4 dB	10/03/2021 00:36:43.000
10/03/2021 00:40:00.000 - 10/03/2021 00:44:59.999	67.4 dB	10/03/2021 00:36:43.000
10/03/2021 00:45:00.000 - 10/03/2021 00:49:59.999	72.9 dB	10/03/2021 00:46:43.000
10/03/2021 00:50:00.000 - 10/03/2021 00:54:59.999	72.9 dB	10/03/2021 00:46:43.000
10/03/2021 00:55:00.000 - 10/03/2021 00:59:59.999	65.3 dB	10/03/2021 00:51:43.000
10/03/2021 01:00:00.000 - 10/03/2021 01:04:59.999	62.3 dB	10/03/2021 00:56:43.000
10/03/2021 01:05:00.000 - 10/03/2021 01:09:59.999	60.1 dB	10/03/2021 01:06:43.000
10/03/2021 01:10:00.000 - 10/03/2021 01:14:59.999	60.1 dB	10/03/2021 01:06:43.000
10/03/2021 01:15:00.000 - 10/03/2021 01:19:59.999	60.6 dB	10/03/2021 01:16:43.000
10/03/2021 01:20:00.000 - 10/03/2021 01:24:59.999	60.6 dB	10/03/2021 01:16:43.000
10/03/2021 01:25:00.000 - 10/03/2021 01:29:59.999	60.0 dB	10/03/2021 01:21:43.000
10/03/2021 01:30:00.000 - 10/03/2021 01:34:59.999	58.3 dB	10/03/2021 01:31:43.000
10/03/2021 01:35:00.000 - 10/03/2021 01:39:59.999	62.9 dB	10/03/2021 01:36:43.000
10/03/2021 01:40:00.000 - 10/03/2021 01:44:59.999	62.9 dB	10/03/2021 01:36:43.000
10/03/2021 01:45:00.000 - 10/03/2021 01:49:59.999	60.5 dB	10/03/2021 01:41:43.000
10/03/2021 01:50:00.000 - 10/03/2021 01:54:59.999	60.1 dB	10/03/2021 01:46:43.000
10/03/2021 01:55:00.000 - 10/03/2021 01:59:59.999	61.4 dB	10/03/2021 01:56:43.000
10/03/2021 02:00:00.000 - 10/03/2021 02:04:59.999	61.4 dB	10/03/2021 01:56:43.000
10/03/2021 02:05:00.000 - 10/03/2021 02:09:59.999	56.5 dB	10/03/2021 02:01:43.000
10/03/2021 02:10:00.000 - 10/03/2021 02:14:59.999	63.3 dB	10/03/2021 02:11:43.000
10/03/2021 02:15:00.000 - 10/03/2021 02:19:59.999	63.3 dB	10/03/2021 02:11:43.000
10/03/2021 02:20:00.000 - 10/03/2021 02:24:59.999	71.9 dB	10/03/2021 02:21:43.000
10/03/2021 02:25:00.000 - 10/03/2021 02:29:59.999	71.9 dB	10/03/2021 02:21:43.000
10/03/2021 02:30:00.000 - 10/03/2021 02:34:59.999	64.9 dB	10/03/2021 02:26:43.000
10/03/2021 02:35:00.000 - 10/03/2021 02:39:59.999	62.5 dB	10/03/2021 02:31:43.000
10/03/2021 02:40:00.000 - 10/03/2021 02:44:59.999	57.3 dB	10/03/2021 02:41:43.000
10/03/2021 02:45:00.000 - 10/03/2021 02:49:59.999	57.4 dB	10/03/2021 02:46:43.000
10/03/2021 02:50:00.000 - 10/03/2021 02:54:59.999	64.6 dB	10/03/2021 02:51:43.000
10/03/2021 02:55:00.000 - 10/03/2021 02:59:59.999	64.6 dB	10/03/2021 02:51:43.000
10/03/2021 03:00:00.000 - 10/03/2021 03:04:59.999	70.9 dB	10/03/2021 03:01:43.000
10/03/2021 03:05:00.000 - 10/03/2021 03:09:59.999	70.9 dB	10/03/2021 03:01:43.000
10/03/2021 03:10:00.000 - 10/03/2021 03:14:59.999	58.2 dB	10/03/2021 03:11:43.000
10/03/2021 03:15:00.000 - 10/03/2021 03:19:59.999	58.2 dB	10/03/2021 03:11:43.000
10/03/2021 03:20:00.000 - 10/03/2021 03:24:59.999	59.3 dB	10/03/2021 03:21:43.000
10/03/2021 03:25:00.000 - 10/03/2021 03:29:59.999	59.3 dB	10/03/2021 03:21:43.000

L_{AF,MAX} Cont.

Table 6 – L_{AF,MAX} Values

10/03/2021 03:30:00.000 - 10/03/2021 03:34:59.999	53.5 dB	10/03/2021 03:26:43.000
10/03/2021 03:35:00.000 - 10/03/2021 03:39:59.999	60.3 dB	10/03/2021 03:36:43.000
10/03/2021 03:40:00.000 - 10/03/2021 03:44:59.999	60.3 dB	10/03/2021 03:36:43.000
10/03/2021 03:45:00.000 - 10/03/2021 03:49:59.999	66.2 dB	10/03/2021 03:46:43.000
10/03/2021 03:50:00.000 - 10/03/2021 03:54:59.999	66.2 dB	10/03/2021 03:46:43.000
10/03/2021 03:55:00.000 - 10/03/2021 03:59:59.999	68.3 dB	10/03/2021 03:56:43.000
10/03/2021 04:00:00.000 - 10/03/2021 04:04:59.999	68.6 dB	10/03/2021 04:01:43.000
10/03/2021 04:05:00.000 - 10/03/2021 04:09:59.999	68.6 dB	10/03/2021 04:01:43.000
10/03/2021 04:10:00.000 - 10/03/2021 04:14:59.999	65.2 dB	10/03/2021 04:06:43.000
10/03/2021 04:15:00.000 - 10/03/2021 04:19:59.999	59.8 dB	10/03/2021 04:16:43.000
10/03/2021 04:20:00.000 - 10/03/2021 04:24:59.999	59.8 dB	10/03/2021 04:16:43.000
10/03/2021 04:25:00.000 - 10/03/2021 04:29:59.999	57.4 dB	10/03/2021 04:26:43.000
10/03/2021 04:30:00.000 - 10/03/2021 04:34:59.999	63.1 dB	10/03/2021 04:31:43.000
10/03/2021 04:35:00.000 - 10/03/2021 04:39:59.999	63.1 dB	10/03/2021 04:31:43.000
10/03/2021 04:40:00.000 - 10/03/2021 04:44:59.999	57.8 dB	10/03/2021 04:41:43.000
10/03/2021 04:45:00.000 - 10/03/2021 04:49:59.999	57.9 dB	10/03/2021 04:46:43.000
10/03/2021 04:50:00.000 - 10/03/2021 04:54:59.999	57.9 dB	10/03/2021 04:46:43.000
10/03/2021 04:55:00.000 - 10/03/2021 04:59:59.999	66.0 dB	10/03/2021 04:56:43.000
10/03/2021 05:00:00.000 - 10/03/2021 05:04:59.999	70.0 dB	10/03/2021 05:01:43.000
10/03/2021 05:05:00.000 - 10/03/2021 05:09:59.999	70.0 dB	10/03/2021 05:01:43.000
10/03/2021 05:10:00.000 - 10/03/2021 05:14:59.999	64.9 dB	10/03/2021 05:06:43.000
10/03/2021 05:15:00.000 - 10/03/2021 05:19:59.999	60.5 dB	10/03/2021 05:16:43.000
10/03/2021 05:20:00.000 - 10/03/2021 05:24:59.999	60.5 dB	10/03/2021 05:16:43.000
10/03/2021 05:25:00.000 - 10/03/2021 05:29:59.999	59.7 dB	10/03/2021 05:21:43.000
10/03/2021 05:30:00.000 - 10/03/2021 05:34:59.999	61.9 dB	10/03/2021 05:31:43.000
10/03/2021 05:35:00.000 - 10/03/2021 05:39:59.999	62.9 dB	10/03/2021 05:36:43.000
10/03/2021 05:40:00.000 - 10/03/2021 05:44:59.999	62.9 dB	10/03/2021 05:36:43.000
10/03/2021 05:45:00.000 - 10/03/2021 05:49:59.999	61.1 dB	10/03/2021 05:41:43.000
10/03/2021 05:50:00.000 - 10/03/2021 05:54:59.999	62.5 dB	10/03/2021 05:51:43.000
10/03/2021 05:55:00.000 - 10/03/2021 05:59:59.999	63.2 dB	10/03/2021 05:56:43.000
10/03/2021 06:00:00.000 - 10/03/2021 06:04:59.999	63.2 dB	10/03/2021 05:56:43.000
10/03/2021 06:05:00.000 - 10/03/2021 06:09:59.999	66.4 dB	10/03/2021 06:06:43.000
10/03/2021 06:10:00.000 - 10/03/2021 06:14:59.999	66.4 dB	10/03/2021 06:06:43.000
10/03/2021 06:15:00.000 - 10/03/2021 06:19:59.999	63.3 dB	10/03/2021 06:16:43.000
10/03/2021 06:20:00.000 - 10/03/2021 06:24:59.999	63.3 dB	10/03/2021 06:16:43.000
10/03/2021 06:25:00.000 - 10/03/2021 06:29:59.999	68.8 dB	10/03/2021 06:26:43.000
10/03/2021 06:30:00.000 - 10/03/2021 06:34:59.999	68.8 dB	10/03/2021 06:26:43.000
10/03/2021 06:35:00.000 - 10/03/2021 06:39:59.999	66.6 dB	10/03/2021 06:36:43.000
10/03/2021 06:40:00.000 - 10/03/2021 06:44:59.999	66.6 dB	10/03/2021 06:36:43.000
10/03/2021 06:45:00.000 - 10/03/2021 06:49:59.999	63.7 dB	10/03/2021 06:41:43.000
10/03/2021 06:50:00.000 - 10/03/2021 06:54:59.999	71.7 dB	10/03/2021 06:51:43.000
10/03/2021 06:55:00.000 - 10/03/2021 06:59:59.999	71.7 dB	10/03/2021 06:51:43.000

Results – Position B – March 2021 Survey

Graphical representations of the recorded data are presented in Appendix 2. Analysis of the data is given below.

The actual measured noise level is shown below in Tables 7 to 10.

Table 7 - Measured noise level – Position B

Period	L _{Aeq} (dB)
Daytime, 09:49 – 23:00 hrs	51.5
Night-time, 23.00 – 07.00hrs	49.5
Daytime, 07:00 – 09:49 hrs	54.3

Table 8– L_{Aeq} Day and Night Averages_ Position B

Period	L _{Aeq} (dB)
Daytime, 07.00 – 23.00hrs	52
Night-time, 23.00 – 07.00hrs	50

This data summarises the previously undertaken Position B in March 2021, which has since been superseded by the survey undertaken in October 2021, to ensure the noise survey data accurately reflects a noise environment not affected by Covid lockdown measures.

The results has been provided for reference as a direct comparison for the October 2021 survey provided further within this report.

Results – Position B – October 2021 Survey

Graphical representations of the recorded data are presented in Appendix 2. Analysis of the data is given below.

The actual measured noise level is shown below in Tables 11 to 14.

Table 11 - Measured noise level – Position B

Period	L _{Aeq} (dB)
Daytime, 08.07 – 23:00 hrs	54.2
Night-time, 23.00 – 07.00hrs	50.4
Daytime, 07:00 – 08.02 hrs	56.5

Table 12 – L_{Aeq} Day and Night Averages_ Position B

Period	L _{Aeq} (dB)
Daytime, 07.00 – 23.00hrs	54
Night-time, 23.00 – 07.00hrs	50

Table 11 above outlines the L_{Aeq} levels of the three periods over the 24-hour recording period. These figures could then be averaged to determine the L_{Aeq,8hr} and L_{Aeq,16hr} within Table 12. This data can then be assessed to account for distance attenuation to the façade of the nearest sensitive receptors.

An opened window is expected to provide approximately 10-15dB attenuation from external noise sources, and as such both the day-time and night-time periods, which would leave both the day-time and night-time period over the limits by between 4dB-9dB daytime and 5dB-10dB night-time if windows were open for the entire duration. **As such, a minimum standard of glazing and ventilation provisions should be stipulated to ensure suitable internal noise levels are provided.** This will allow windows to remain open at the discretion of the occupant if required.

Facades that require a specified attenuation performance and ventilation strategy have been outlined within Images 5 and 6 within this report, and a proposed acoustic barrier strategy is outlined within Image 2. This will ensure suitable levels of attenuation from the Challenge Way and Working Men's Club noise sources.

As such, the requirements of Table 1 would be met by adopting the standard specification proposed by Vistry Partnerships Yorkshire of double glazing and brick and block cavity wall construction with a suitable ventilator. The minimum window attenuation required is a minimum of 19dB R_{w+Ctr} , which should be achieved by most standard 28mm double glazed frames achieving in the region of 28dB R_{w+Ctr} . To ensure the attenuation of the façade is maintained, a $D_{n,e,w}$ of 35dB should accompany a 28dB R_{w+Ctr} window.

The glazing specification is accompanied a suitable ventilator capable of maintaining the composite performance of the glazing. The $D_{n,e,w}$ is the weighted average composite loss of a typical wall with the vent installed – the sound reduction (R) of the vent alone is likely to be less individually. Therefore, to select a $D_{n,e,w}$ requirement it is always necessary to specify a value higher than the required R_w attenuation value. As a rough guide, the R_w can commonly be 5dB to 10dB lower than the $D_{n,e,w}$, and as such a $D_{n,e,w}$ figure that is 7dB higher than R_w should not lessen the sound reduction performance of the window.

Images 3 and 4 provide data of the attenuation provided by proposed acoustic barrier fencing. This acoustic fencing should be a minimum height of 1.8m, a minimum density of 15kg/m² and free from gaps and holes.

LAF,MAX

The data below outlines the LAF,MAX results recorded during the survey at Position B in October 2021, which is a limit of 45dB LAF,MAX internally that should be exceeded no more than 10 times during the night-time period (23:00-07:00). Based on a 28mm double glazing pane achieving 28dB R_{w+Ctr} , a theoretical limit can be set at 73dB. This was not exceeded during recording.

Table 5 – LAF,MAX Values

Calculation interval (absolute time)	LAFmax [dB]	Time of Max
20/10/2021 23:00:00.000 - 20/10/2021 23:04:59.999	66.9 dB	57:41.0
20/10/2021 23:05:00.000 - 20/10/2021 23:09:59.999	61.2 dB	02:41.0
20/10/2021 23:10:00.000 - 20/10/2021 23:14:59.999	60.7 dB	07:41.0
20/10/2021 23:15:00.000 - 20/10/2021 23:19:59.999	58.2 dB	17:41.0
20/10/2021 23:20:00.000 - 20/10/2021 23:24:59.999	59.1 dB	22:41.0
20/10/2021 23:25:00.000 - 20/10/2021 23:29:59.999	59.1 dB	22:41.0
20/10/2021 23:30:00.000 - 20/10/2021 23:34:59.999	57.5 dB	27:41.0
20/10/2021 23:35:00.000 - 20/10/2021 23:39:59.999	58.5 dB	37:41.0
20/10/2021 23:40:00.000 - 20/10/2021 23:44:59.999	58.5 dB	37:41.0
20/10/2021 23:45:00.000 - 20/10/2021 23:49:59.999	56.3 dB	47:41.0
20/10/2021 23:50:00.000 - 20/10/2021 23:54:59.999	65.1 dB	52:41.0
20/10/2021 23:55:00.000 - 20/10/2021 23:59:59.999	65.1 dB	52:41.0
21/10/2021 00:00:00.000 - 21/10/2021 00:04:59.999	66.9 dB	02:41.0
21/10/2021 00:05:00.000 - 21/10/2021 00:09:59.999	66.9 dB	02:41.0
21/10/2021 00:10:00.000 - 21/10/2021 00:14:59.999	58.5 dB	07:41.0
21/10/2021 00:15:00.000 - 21/10/2021 00:19:59.999	57.3 dB	12:41.0
21/10/2021 00:20:00.000 - 21/10/2021 00:24:59.999	55.0 dB	17:41.0
21/10/2021 00:25:00.000 - 21/10/2021 00:29:59.999	54.8 dB	27:41.0
21/10/2021 00:30:00.000 - 21/10/2021 00:34:59.999	57.9 dB	32:41.0
21/10/2021 00:35:00.000 - 21/10/2021 00:39:59.999	59.4 dB	37:41.0
21/10/2021 00:40:00.000 - 21/10/2021 00:44:59.999	59.4 dB	37:41.0
21/10/2021 00:45:00.000 - 21/10/2021 00:49:59.999	59.7 dB	47:41.0
21/10/2021 00:50:00.000 - 21/10/2021 00:54:59.999	59.7 dB	47:41.0
21/10/2021 00:55:00.000 - 21/10/2021 00:59:59.999	57.3 dB	52:41.0
21/10/2021 01:00:00.000 - 21/10/2021 01:04:59.999	57.4 dB	02:41.0
21/10/2021 01:05:00.000 - 21/10/2021 01:09:59.999	65.8 dB	07:41.0
21/10/2021 01:10:00.000 - 21/10/2021 01:14:59.999	65.8 dB	07:41.0
21/10/2021 01:15:00.000 - 21/10/2021 01:19:59.999	58.2 dB	17:41.0
21/10/2021 01:20:00.000 - 21/10/2021 01:24:59.999	58.5 dB	22:41.0
21/10/2021 01:25:00.000 - 21/10/2021 01:29:59.999	58.5 dB	22:41.0
21/10/2021 01:30:00.000 - 21/10/2021 01:34:59.999	54.3 dB	32:41.0
21/10/2021 01:35:00.000 - 21/10/2021 01:39:59.999	58.8 dB	37:41.0
21/10/2021 01:40:00.000 - 21/10/2021 01:44:59.999	58.8 dB	37:41.0
21/10/2021 01:45:00.000 - 21/10/2021 01:49:59.999	52.8 dB	47:41.0
21/10/2021 01:50:00.000 - 21/10/2021 01:54:59.999	56.0 dB	52:41.0
21/10/2021 01:55:00.000 - 21/10/2021 01:59:59.999	56.0 dB	52:41.0
21/10/2021 02:00:00.000 - 21/10/2021 02:04:59.999	55.3 dB	02:41.0
21/10/2021 02:05:00.000 - 21/10/2021 02:09:59.999	58.7 dB	07:41.0
21/10/2021 02:10:00.000 - 21/10/2021 02:14:59.999	58.7 dB	07:41.0
21/10/2021 02:15:00.000 - 21/10/2021 02:19:59.999	55.9 dB	17:41.0
21/10/2021 02:20:00.000 - 21/10/2021 02:24:59.999	55.9 dB	17:41.0
21/10/2021 02:25:00.000 - 21/10/2021 02:29:59.999	55.6 dB	27:41.0
21/10/2021 02:30:00.000 - 21/10/2021 02:34:59.999	55.6 dB	27:41.0
21/10/2021 02:35:00.000 - 21/10/2021 02:39:59.999	55.5 dB	37:41.0
21/10/2021 02:40:00.000 - 21/10/2021 02:44:59.999	55.5 dB	37:41.0
21/10/2021 02:45:00.000 - 21/10/2021 02:49:59.999	42.8 dB	42:41.0
21/10/2021 02:50:00.000 - 21/10/2021 02:54:59.999	55.0 dB	52:41.0
21/10/2021 02:55:00.000 - 21/10/2021 02:59:59.999	55.0 dB	52:41.0
21/10/2021 03:00:00.000 - 21/10/2021 03:04:59.999	55.6 dB	02:41.0
21/10/2021 03:05:00.000 - 21/10/2021 03:09:59.999	55.7 dB	07:41.0
21/10/2021 03:10:00.000 - 21/10/2021 03:14:59.999	55.7 dB	07:41.0
21/10/2021 03:15:00.000 - 21/10/2021 03:19:59.999	58.0 dB	17:41.0
21/10/2021 03:20:00.000 - 21/10/2021 03:24:59.999	61.8 dB	22:41.0
21/10/2021 03:25:00.000 - 21/10/2021 03:29:59.999	61.8 dB	22:41.0

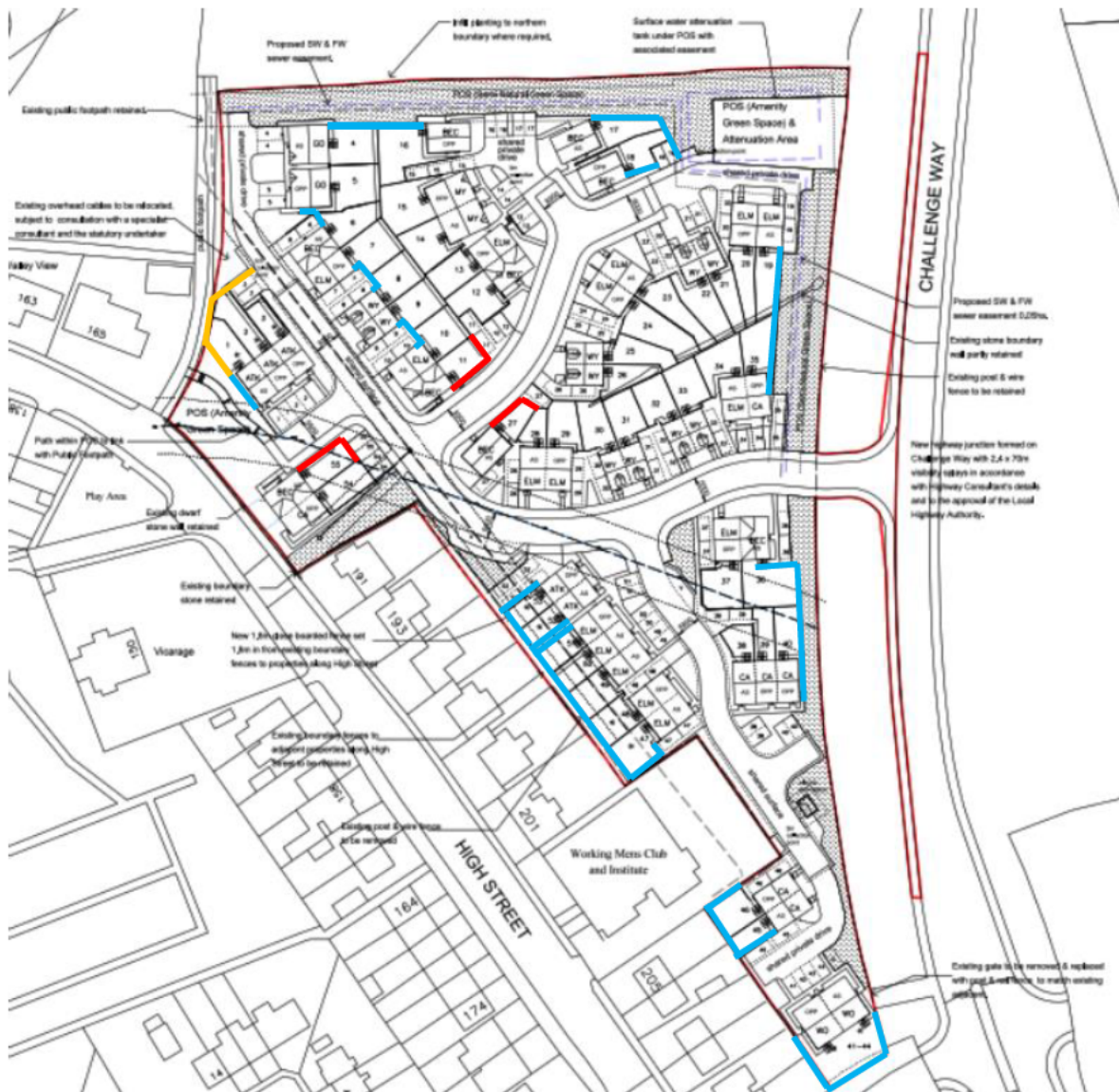
L_{AF,MAX} Cont.

Table 6 – L_{AF,MAX} Values

21/10/2021 03:30:00.000 - 21/10/2021 03:34:59.999	56.6 dB	32:41.0
21/10/2021 03:35:00.000 - 21/10/2021 03:39:59.999	56.6 dB	32:41.0
21/10/2021 03:40:00.000 - 21/10/2021 03:44:59.999	58.2 dB	42:41.0
21/10/2021 03:45:00.000 - 21/10/2021 03:49:59.999	58.2 dB	42:41.0
21/10/2021 03:50:00.000 - 21/10/2021 03:54:59.999	55.7 dB	52:41.0
21/10/2021 03:55:00.000 - 21/10/2021 03:59:59.999	57.2 dB	57:41.0
21/10/2021 04:00:00.000 - 21/10/2021 04:04:59.999	57.2 dB	57:41.0
21/10/2021 04:05:00.000 - 21/10/2021 04:09:59.999	64.7 dB	07:41.0
21/10/2021 04:10:00.000 - 21/10/2021 04:14:59.999	74.7 dB 1	12:41.0
21/10/2021 04:15:00.000 - 21/10/2021 04:19:59.999	74.7 dB	12:41.0
21/10/2021 04:20:00.000 - 21/10/2021 04:24:59.999	60.7 dB	17:41.0
21/10/2021 04:25:00.000 - 21/10/2021 04:29:59.999	65.6 dB	27:41.0
21/10/2021 04:30:00.000 - 21/10/2021 04:34:59.999	65.6 dB	27:41.0
21/10/2021 04:35:00.000 - 21/10/2021 04:39:59.999	63.3 dB	37:41.0
21/10/2021 04:40:00.000 - 21/10/2021 04:44:59.999	63.3 dB	37:41.0
21/10/2021 04:45:00.000 - 21/10/2021 04:49:59.999	64.6 dB	47:41.0
21/10/2021 04:50:00.000 - 21/10/2021 04:54:59.999	64.6 dB	47:41.0
21/10/2021 04:55:00.000 - 21/10/2021 04:59:59.999	69.6 dB	57:41.0
21/10/2021 05:00:00.000 - 21/10/2021 05:04:59.999	69.6 dB	57:41.0
21/10/2021 05:05:00.000 - 21/10/2021 05:09:59.999	65.7 dB	02:41.0
21/10/2021 05:10:00.000 - 21/10/2021 05:14:59.999	65.0 dB	07:41.0
21/10/2021 05:15:00.000 - 21/10/2021 05:19:59.999	60.6 dB	12:41.0
21/10/2021 05:20:00.000 - 21/10/2021 05:24:59.999	61.0 dB	22:41.0
21/10/2021 05:25:00.000 - 21/10/2021 05:29:59.999	61.0 dB	22:41.0
21/10/2021 05:30:00.000 - 21/10/2021 05:34:59.999	59.4 dB	32:41.0
21/10/2021 05:35:00.000 - 21/10/2021 05:39:59.999	61.8 dB	37:41.0
21/10/2021 05:40:00.000 - 21/10/2021 05:44:59.999	61.8 dB	37:41.0
21/10/2021 05:45:00.000 - 21/10/2021 05:49:59.999	61.7 dB	42:41.0
21/10/2021 05:50:00.000 - 21/10/2021 05:54:59.999	62.0 dB	52:41.0
21/10/2021 05:55:00.000 - 21/10/2021 05:59:59.999	62.0 dB	52:41.0
21/10/2021 06:00:00.000 - 21/10/2021 06:04:59.999	61.5 dB	02:41.0
21/10/2021 06:05:00.000 - 21/10/2021 06:09:59.999	61.5 dB	02:41.0
21/10/2021 06:10:00.000 - 21/10/2021 06:14:59.999	61.5 dB	12:41.0
21/10/2021 06:15:00.000 - 21/10/2021 06:19:59.999	62.6 dB	17:41.0
21/10/2021 06:20:00.000 - 21/10/2021 06:24:59.999	62.6 dB	17:41.0
21/10/2021 06:25:00.000 - 21/10/2021 06:29:59.999	62.0 dB	22:41.0
21/10/2021 06:30:00.000 - 21/10/2021 06:34:59.999	61.5 dB	27:41.0
21/10/2021 06:35:00.000 - 21/10/2021 06:39:59.999	61.7 dB	37:41.0
21/10/2021 06:40:00.000 - 21/10/2021 06:44:59.999	63.2 dB	42:41.0
21/10/2021 06:45:00.000 - 21/10/2021 06:49:59.999	63.2 dB	42:41.0
21/10/2021 06:50:00.000 - 21/10/2021 06:54:59.999	64.5 dB	52:41.0
21/10/2021 06:55:00.000 - 21/10/2021 06:59:59.999	64.5 dB	52:41.0

Acoustic Barrier Requirements

Image 2 – Drawing 4807/07-A



Key

- 1.8m Close boarded fencing or brick wall, free from gaps and holes and a minimum density of 15kg/m²
- 1.5m Close boarded fencing with 0.3m trellis, free from gaps and holes and a minimum density of 15kg/m²
- 1.8m Brick walling with timber infill panels, free from gaps and holes and a minimum density of 15kg/m²

An annotated indicative proposed barrier plan is outlined by Vistry within image 2 above using drawing number 4807/07-A. This does not indicate all boundary fencing on site, but specifies those that are exposed to the High Street or Challenge Way noise sources.

All newly introduced barriers should be continuous, free from gaps and holes and provide a minimum density of 15kg/m², with a minimum height of 1.8m or 1.5m as specified. The expected performances of the acoustic barriers is outlined within the calculations as per Images 3 & 4.

Acoustic Barrier Requirements

Image 3 – No acoustic boundary attenuation – Challenge Way

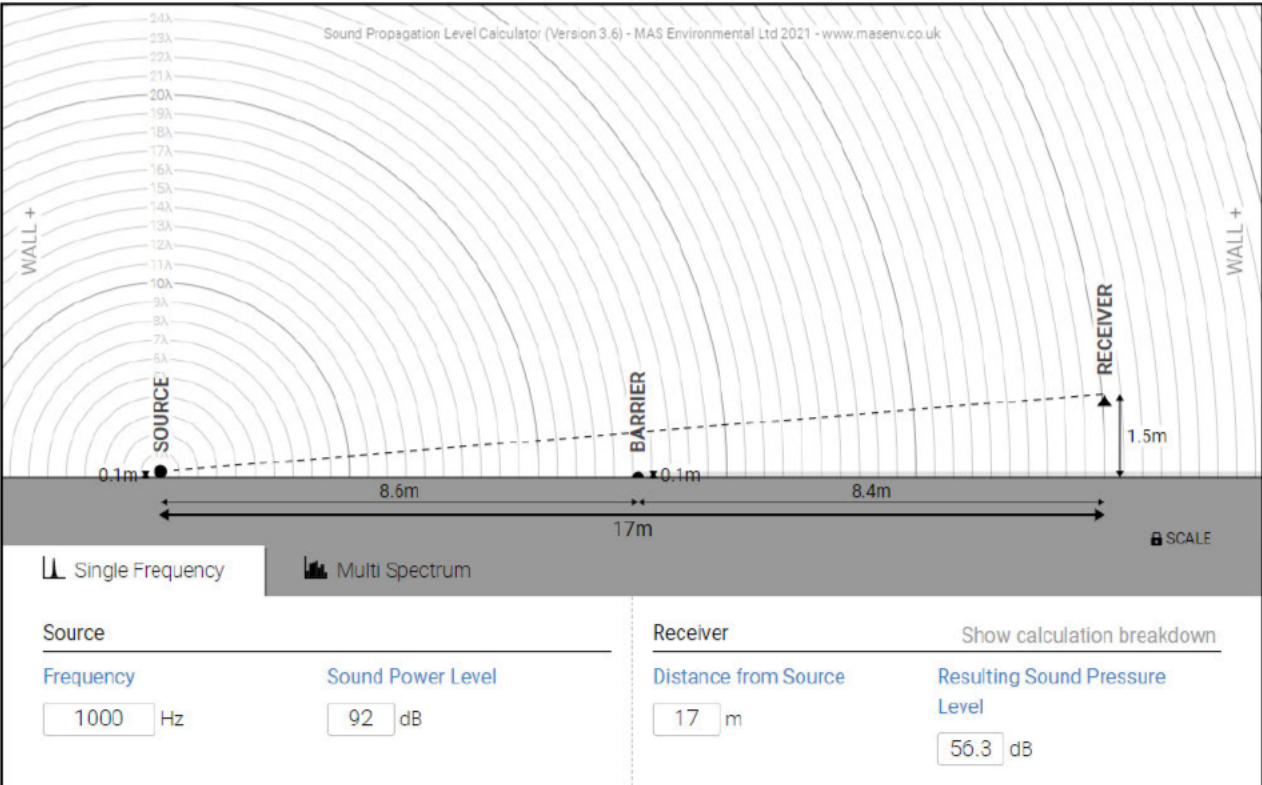
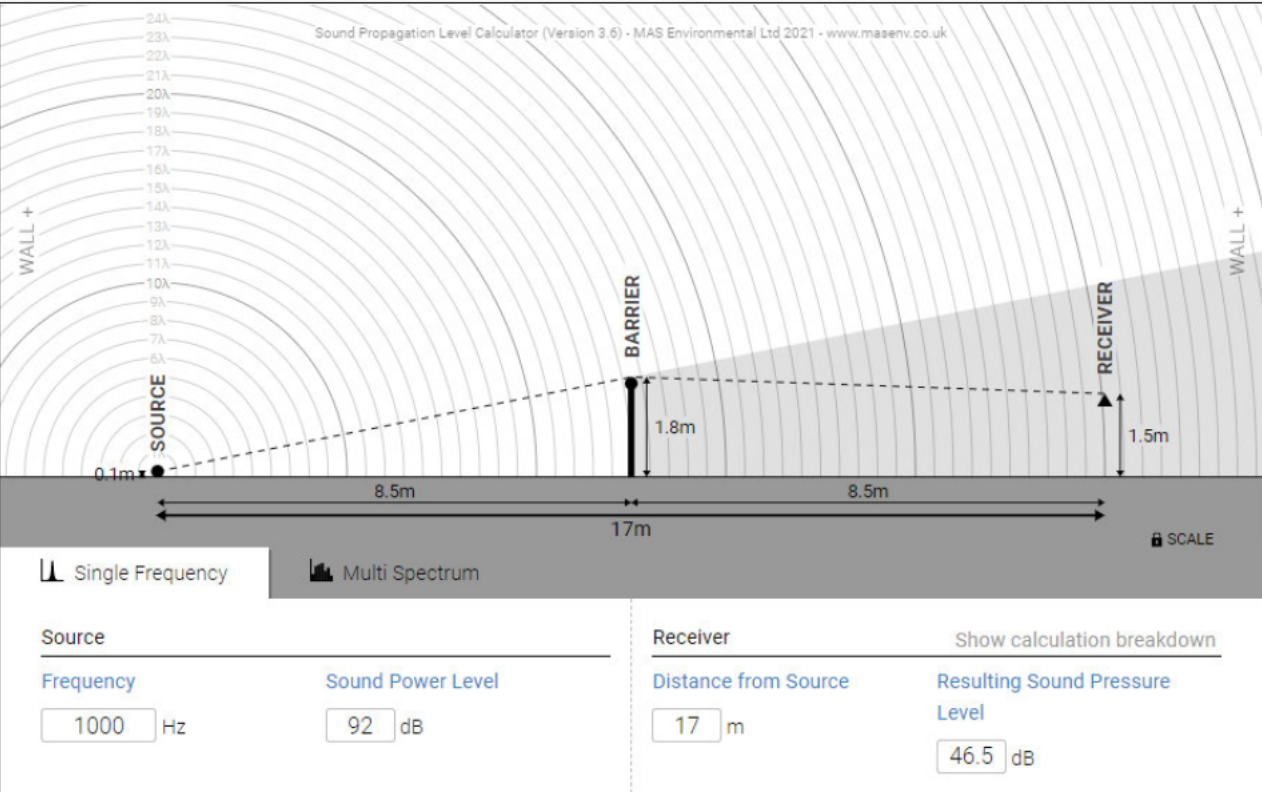


Image 4 – Acoustic boundary attenuation – Challenge Way



Acoustic Facade Requirements – Ground Floor

Image 5 – Acoustic facade requirements



Key

- 28dB R_{w+Ctr} Glazing, 35dB $D_{n,e,w}$ Trickle or Wall Vent (to habitable rooms only)
- 28dB R_{w+Ctr} Glazing, 35dB $D_{n,e,w}$ Trickle or Wall Vent (to habitable rooms only)
- no requirement for openings to remain closed at the discretion of the occupant

Acoustic Facade Requirements – First Floor

Image 6 – Acoustic facade requirements



Key

- 28dB R_{w+Ctr} Glazing, 35dB $D_{n,e,w}$ Trickle or Wall Vent (to habitable rooms only)
- 28dB R_{w+Ctr} Glazing, 35dB $D_{n,e,w}$ Trickle or Wall Vent (to habitable rooms only)
- no requirement for openings to remain closed at the discretion of the occupant

Ventilation Specification

Vistry Partnerships (Yorkshire) have confirmed the installation of an appropriate 'System 3 ventilation strategy' to all plots, and that any vent (trickle or wall) installed to habitable rooms as per System 3 requirements will comply with at least the minimum dB rating given within the acoustic report.

At this time within the design stage, the actual ventilator and its dB rating is to be confirmed.

System 3 requires all habitable rooms as defined by Approved Document F to have a minimum background ventilation with an EA of 2500mm². This can be provided by trickle or wall vents, which will be required to any habitable room. If it is deemed unfeasible to achieve the required amount of acoustic attenuation as per Page 18 and 19 of the report through the use of trickle vents, acoustic wall vents will be utilised.

In non-habitable rooms (Kitchen/Utility/Bathrooms/WC) the use of continuous dMev extractor fans will be implemented and the windows to these rooms do not need supplementary trickle or wall vents for background ventilation to comply with building regs when adopting a System 3 strategy. As such, these rooms will require glazing attenuation that meets the minimum requirements, but acoustic trickle/wall vents are not a requirement.

As this acoustic report demonstrates, the minimum attenuation requirement dB ratings that the ventilator providing background ventilation to habitable rooms will need to satisfy are outlined within the indicative diagrams on Page 16/17 of this report. As discussed, specific acoustic trickle vents have not been selected at this stage in the design but it has been confirmed by Vistry Partnerships (Yorkshire) that any proposed product will comply with these requirements.

It is anticipated that the design SAP calculations will demonstrate compliance with the risks of overheating.

Conclusions and Recommendations

This report has been produced to establish required glazing and ventilator attenuation requirements to achieve BS 8233:2014 requirements, and to determine if the data gathered at Position B during the March 2021 survey was sufficiently accurate due to the adjacent Working Men's Club being closed at the time,

As can be seen by comparing the results in Tables 8 and 12 for the March and October surveys respectively, the difference in measured noise was negligible, with an increase of +2 dB for daytime and 0 dB for night-time levels.

As discussed through the report, it has been concluded that a specified glazing and ventilation strategy will be required to ensure compliance with BS 8233:2014 internal noise levels as stated within Table 1. Analysis of overnight $L_{AF,MAX}$ levels have determined that enhanced acoustic windows would limit noise events to less than 10 $L_{AF,MAX}$ events in all locations.

The minimum glazing and ventilation requirements have been outlined within Images 5 and 6. This includes a differing window attenuation strategy to ground floors and upper floors as a result of the provided attenuation of proposed acoustic barriers as outlined within Image 2.

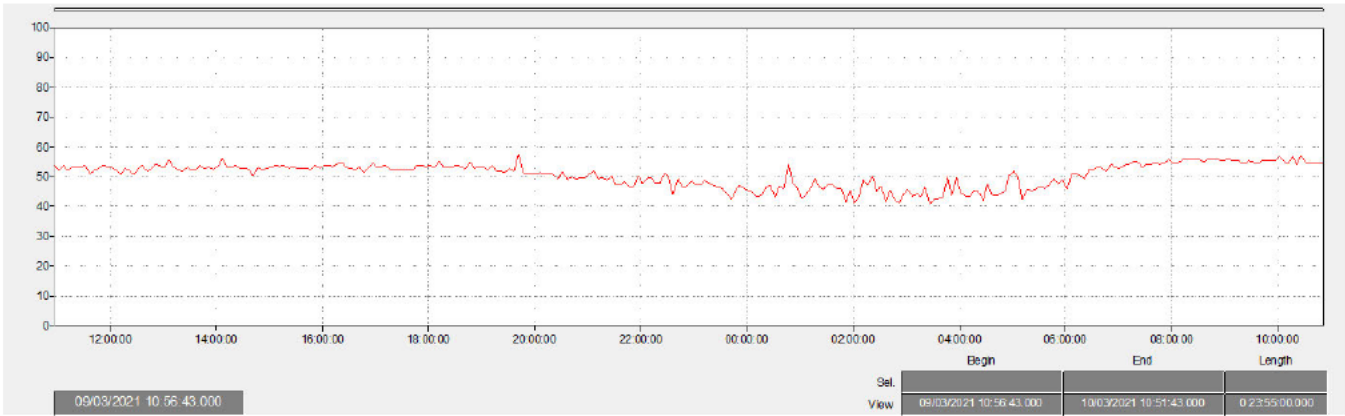
Ventilation attenuation requirements are also stipulated within Image 5 and 6. Based on the Vistry Partnerships Yorkshire specification, this will consist of acoustic trickle/wall vents dependent on the required level of attenuation to all habitable rooms as per requirements of a System 3 ventilation strategy as defined by Approved Document F of the Building Regulations. This will allow windows to be capable of remaining closed at the discretion of the occupant as required. Any increased risk of overheating is to be assessed through SAP calculation.

It is recommended that an acoustic barrier is installed as per Image 2. The calculated sound pressure levels at the nearest sensitive receptor gardens are provided within Images 3 and 4. The installed fencing should be continuous, free from gaps and holes and have a minimum density of 15kg/m² at the minimum height stipulated.

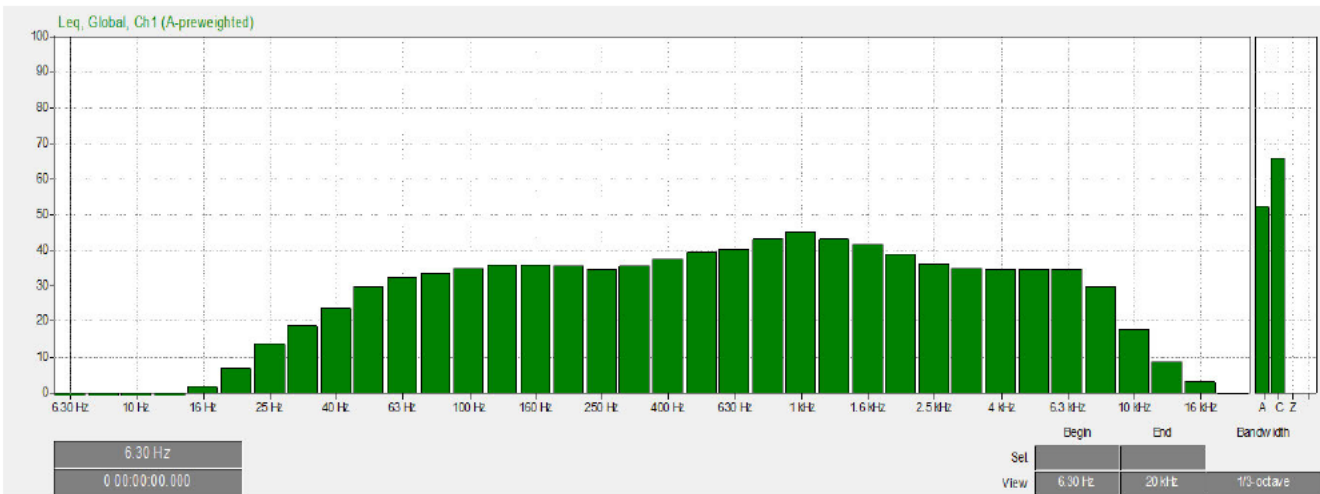
Appendix A

MEASUREMENT DATA – POSITION A – March Survey

Sound level over time



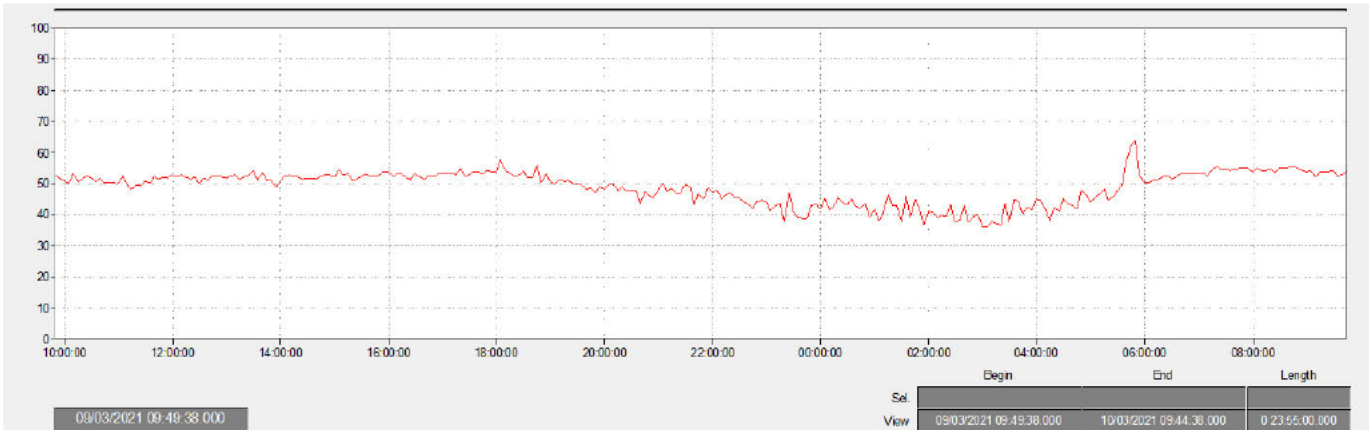
Frequency profile of recording



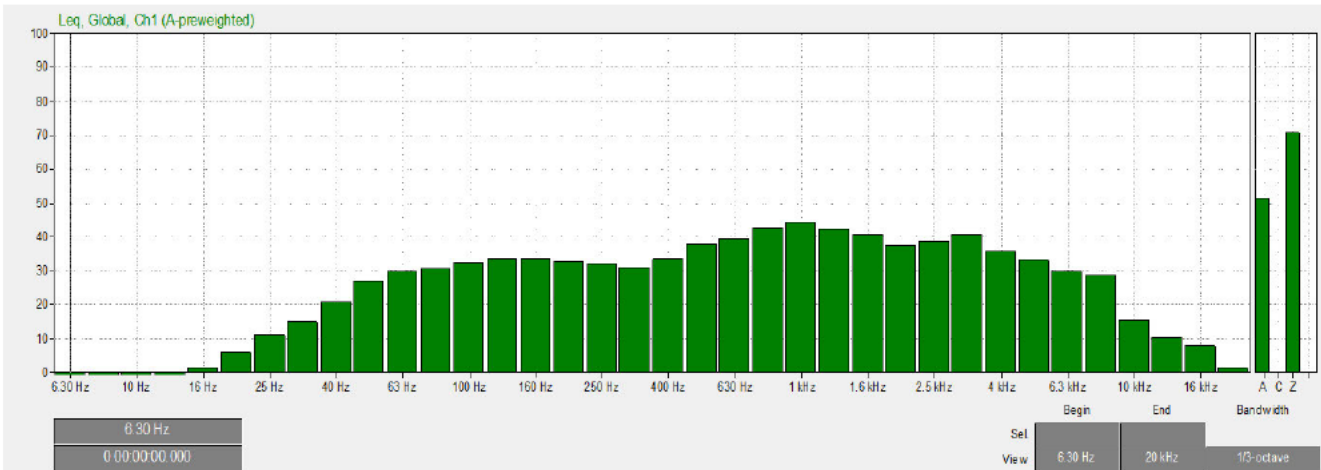
Appendix A

MEASUREMENT DATA – POSITION B – March Survey

Sound level over time



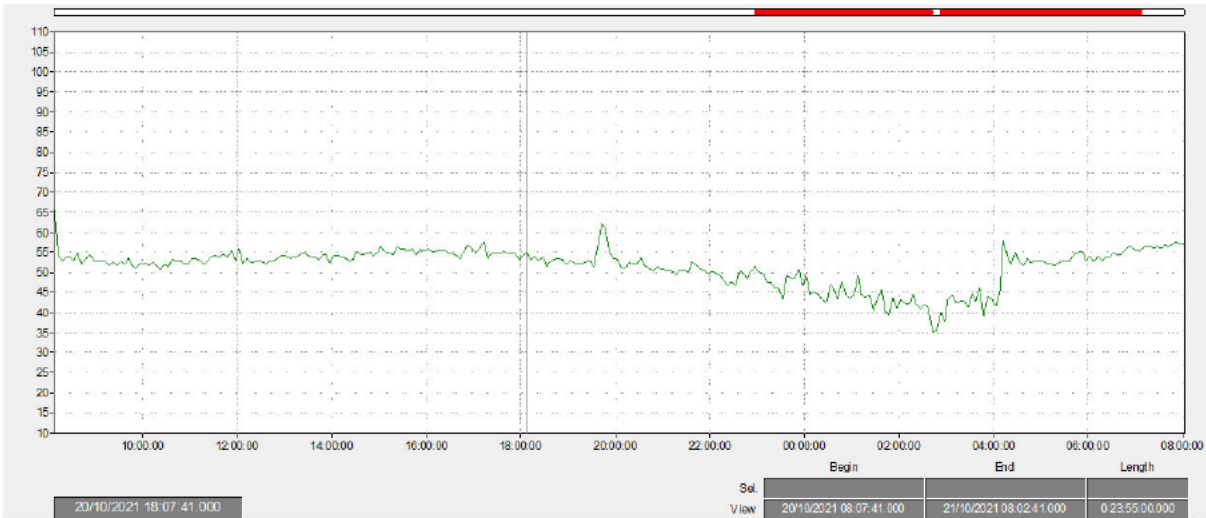
Frequency profile of recording



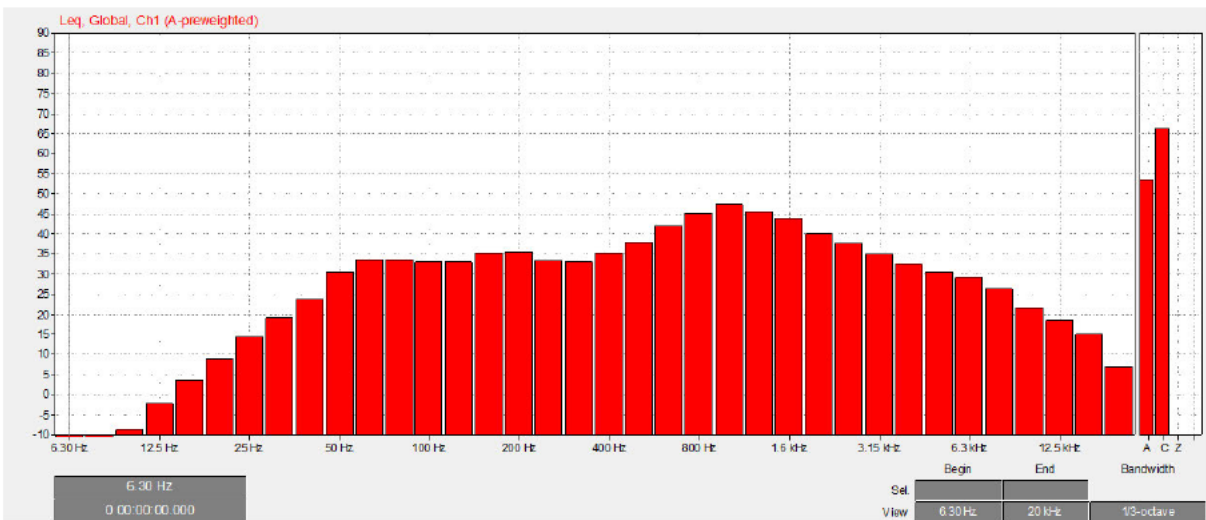
Appendix A

MEASUREMENT DATA – POSITION B – October Survey

Sound level over time



Frequency profile of recording



Appendix B

INSTRUMENT AND WEATHER DATA

Survey March 2021

	Serial Number	Calibration Date	Certificate Number
Sound level meter Norsonic 140	1406857	22 nd March 2021	U37139
Field calibrator Norsonic 1251	34960	22 nd March 2021	U37137
	Serial Number	Calibration Date	Certificate Number
Sound level meter Norsonic 140	1406548	22 nd Sept 2020	U31402
Field calibrator Norsonic 1251	34674	22 nd Sept 2020	U34510

At the time of the measurements there was 1 – 2 m/s wind, the temperature was 10°C, and the relative humidity was 65%.

The SLM was field calibrated at the beginning and the end of the measurements with no significant drift recorded.

Survey October 2021

	Serial Number	Calibration Date	Certificate Number
Sound level meter Norsonic 140	1406548	22 nd Sept 2020	U31402
Field calibrator Norsonic 1251	34674	12 th October 2021	U39176

At the time of the measurements there was 0 m/s wind, the temperature was 11°C.

The SLM was field calibrated at the beginning and the end of the measurements with no significant drift recorded.