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REPORT

Cote Royd Cottage,
7 Halifax Road, Huddersfield

BS8233:2014 Site Suitability Assessment

Client: The Bridge Community Care Ltd

Reference: PR2098_DRAFT_R1

Date: 16/09/2026

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1 Introduction

1.1 Background

Archo Consulting Ltd have been appointed to undertake a site suitability external noise ingress assessment, ventilation strategy and assessment of external amenity for a new assisted living facility at Cote Royd Cottage, 7 Halifax Road, Huddersfield. The existing building will undergo internal renovations and as a result, an assessment of noise ingress and ventilation strategy is required.

The assessment has been undertaken in accordance with the procedures outlined within *British Standard (BS) 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings*. The assessment has used noise levels measured directly at the existing site over a 24-hour period.

The assessment has been undertaken to determine the required sound insulation performance of the building envelope to sufficiently attenuate external noise levels to comply with BS8233:2014 criteria. Therefore, noise measurements have been made in locations representative of the future bedroom windows to determine the level of glazing required to satisfy BS8233:2014 internal noise level criteria.

All measurements, calculations and methodologies are presented within this report and where applicable, mitigation measures have been recommended.

1.2 Site Description and Context

The site currently consists of Cote Royd Cottage and the associated land which is in commercial use. The proposal consists of change of use from a Class E clinic to form 7 no. Class C2 assisted living units with staff facilities. The assessment has been undertaken to discharge conditions 9 and 10 from the planning permission from Kirklees Council (herein after referred to as KC) which are as follows:

> *NC9 Noise Assessment Report and Mitigation Scheme - Condition*
>
> *Before construction work commences a report specifying the measures to be taken to protect the development from noise from all significant noise sources that are likely to affect the proposed development including road traffic and commercial farmyard noise shall be submitted to and approved in writing by the Local Planning Authority. The report shall:*
>
> *a) Determine the existing noise climate*
>
> *b) Predict the noise climate in living rooms and gardens (daytime), bedrooms (night-time)*
>
> *and other habitable rooms of the development*

c) Detail the proposed attenuation/design necessary to protect the amenity of the occupants of the new residences (including ventilation if required).

The development shall not be occupied until all works specified in the approved report have been carried out in full and such works shall be thereafter retained.

Reason: To protect the amenity of occupiers of the proposed development from noise or disturbance from nearby noise generating premises to accord with the aims of Policies LP24 and LP52 of the Kirklees Local Plan and Chapters 12 and 15 of the National Planning Policy Framework.

The development shall not be occupied until all works specified in the approved report have been carried out in full and such works shall be thereafter retained.

NC10. Before construction work commences, a ventilation scheme for rooms where windows need to be kept closed to prevent excessive noise levels shall be submitted to and approved in writing by the Local Planning Authority. The ventilation scheme shall provide the following information:

- Identify which rooms of which plots referenced back to the approved Noise Assessment require a ventilation system

- The acoustic specification of the proposed ventilation system demonstrating that when operated it will not cause indoor noise target levels to be exceeded

- The ventilation scheme must demonstrate that the air intake is located away from the sources of noise and/or poor air quality.

All works which form part of the approved scheme for each plot shall be completed prior to occupation of the aforementioned plots and retained thereafter.

Reason: To protect the amenity of occupiers of the proposed development from noise or disturbance from nearby noise generating premises to accord with the aims of Policies LP24 and LP52 of the Kirklees Local Plan and Chapters 12 and 15 of the National Planning Policy Framework.

In order to determine the level of sound insulation required for the building envelope external noise level measurements were made over a 24-hour period to quantify the existing noise climate. Since the primary noise source and concern in terms of noise ingress is the adjacent A629 road the main baseline monitoring location was located at first-floor level of Cote Royd Cottage out of a window facing the A629.

A BS8233:2014 assessment of potential noise ingress and external noise levels has been undertaken and where appropriate, mitigation measures have been proposed to achieve the criteria presented within BS8233:2014.

The plans indicating the development layout is presented in **Appendix A**.

2 Standards

2.1 British Standard (BS) 8233:2014

BS8233:2014 provides a methodology to calculate the noise levels entering a building through facades and façade elements and provides details of appropriate measures for sound insulation between dwellings.

Guidance on suitable internal noise levels is provided in BS 8233:2014 (Section 7.7.2, Table 4) derived from the guidance provided by the WHO. These details recommended internal noise levels to ensure that adequate noise reduction occurs to reduce direct and flanking transmission across facade elements. Recommended internal noise levels are reproduced in **Table 1** below:

Table 1: Recommended Internal Noise Levels – BS 8233:2014

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living rooms	35 dB $L_{Aeq,16hour}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hour}$	-
Sleeping (daytime resting)	Bedrooms	35 dB $L_{Aeq,16hour}$	30 dB $L_{Aeq,8hour}$

2.2 World Health Organization (WHO)

WHO guidelines present health-based noise limits intended to protect the population from exposure to excess noise. They present guideline limit values at which the likelihood of particular effects, such as sleep disturbance or annoyance, may increase. The guideline values are 50 or 55dB L_{Aeq} during the day, related to annoyance, and 45 dB L_{Aeq} or 60dB L_{Amax} at night, related to sleep disturbance.

3 Baseline Noise Survey

3.1 Site Context

It was determined during the site visit that the best location for the noise monitoring equipment would be in front of one of the first-floor windows facing the A629 Road. This is because the purpose of the assessment is to determine noise ingress through the same window location once renovation works are complete. Therefore, the microphone of the noise monitor was suspended out of a first-floor window at Cote Royd Cottage at a distance of 1-metre from the building façade. Baseline monitoring was undertaken in this location (denoted MP1) over a 24-hour period.

Measurements were made between 17th and 18th August 2026. The measurement positions denoted MP1 and MP2 are presented in **Appendix A**.

All noise measurements were conducted with regard to the procedures and guidance contained in BS 7445, parts 1 and 2.

During the baseline survey the following factors influencing ambient sound scape were noted:

- Vehicles passing on the A629 contributed to the max levels during the daytime and night-time;
- Traffic from the local road network was consistently audible although decreased during the night-time period;
- People passing on the street were periodically audible; and,
- Sound from vegetation and birds was also intermittently audible.

Barraclough School exists on the other side of the A629 Road approximately 150-metres from the site. However, no sound was audible from this site.

3.2 Instrumentation

Table 2 below details the equipment instrumentation used in the noise survey and the calibration due date at the time of the measurements:

Table 2: Survey Instrumentation

Instrument	Serial No.	Calibration Due Date at Time of Survey
Norsonic 140 Class 1 Sound Level Meter	1406433	May 2027
Norsonic 1209 Preamplifier	21318	May 2027
Norsonic 1225 Microphone	226973	May 2027
Nor 1252 Acoustic Calibrator	31717	June 2027

The sound level meter was fully calibrated, traceable to UKAS standards and satisfied the requirements of BS EN 61672-1:20131 for a 'Class 1' Sound Level Meter (SLM).

The SLM was set to record with a 'fast' time constant and A-weighting. The following parameters were recorded:

- L_{Aeq} – the equivalent continuous sound pressure level over the measurement period;
- L_{Amax} – the maximum sound pressure level occurring within the defined measurement period;
- L_{A90} – the sound pressure level exceeded for 90% of the measurement period and is used within BS 4142 as a descriptor of background noise level; and
- L_{A10} – the sound pressure level exceeded for 10% of the measurement period.

Appendix B presents descriptions of these terms.

The noise measurements were conducted with the SLM microphone mounted on a tripod and suspended out of the first-floor window in the location MP1 representative of the future assisted living bedrooms. The SLM was not located greater than 3.5-metres from any reflecting surface and therefore, a -3dB correction was applied. The instrument was calibrated before and after the survey using a portable calibrator. No significant deviation in the calibration level was observed.

The data from the survey was taken during periods of weather favourable for noise measurements, i.e. no rainfall and wind speeds below 5m/s. Periods of inclement weather were excluded from the data set.

3.3 Measured External Noise Levels

The location for the measurement points MP1 & MP2 is presented in **Appendix A**.

Table 3 below presents the results of the baseline noise measurements split into daytime and night-time periods in accordance with BS8233:2014.

Table 3: Baseline Noise Measurements

Location	Time Period	Start Time (HH:MM)	Duration (HH:MM)	L_{Aeq}	L_{Amax}	L_{A10}**	L_{A90}**
MP1	Day	13:00*	11:00	56.5	79.1	58.8	50.5
	Night	23:00	08:00	52.4	80.3	54.6	34.1

**Two daytime measurements were amalgamated. Periods of inclement weather were excluded from the data set.*

***Note: Taken as an arithmetic average of the individual 5min sample periods.*

The levels measured at MP1 were used to undertake the BS8233:2014 assessment of external noise ingress. The measurements were made in the future location of the bedrooms of the assisted living apartments. This prudent approach will ensure that the future occupants are adequately protected from external noise and the BS8233:2014 and WHO criteria are comfortably satisfied.

4 BS8233:2014 Site Suitability Assessment Noise Impact Assessment

4.1 Attenuation Achieved by Partially Open Window

NANR116: 'Open / Closed Window Research

The Building Performance Centre – School of the Built Environment at Napier University published a research paper in April 2007 entitled *NANR116: 'Open/Closed Window Research' Sound Insulation Through Ventilated Domestic Windows* which detailed the measured sound attenuation which can be achieved by partially open windows with different opening areas.

Based on the attenuation values for a bottom open sash window with 100,000 mm^2 opening presented in NANR116 a sound reduction value of $D_{n,e,W}$ ($C;C_{tr}$) 17 (-1; -1) is anticipated. **Table 4** below reproduces the octave band attenuation values for this type of window.

Table 4: Measured Attenuation for Partially Open Window

Window	Attenuation at Octave Band Centre Frequencies							Dn,e,W (C;Ctr)
	63	125	250	500	1k	2k	4k	
Side Swing Reversable (B)	24.8	16.5	14.4	21.5	13.7	17.7	18.6	17 (-1; -1)

The attenuation values presented in **Table 4** above represent a scientific and prudent approach to predicting internal noise levels as a result of a partially open window. Therefore, these values were used to assess potential noise impacts.

4.2 Internal Habitable Room Noise Impact Assessment

Using the measured noise levels from MP1 presented in **Table 3** for the daytime and night-time, an assessment of potential noise ingress to the future residential dwellings has been undertaken in accordance with BS8233:2014. The bedroom windows facing the A629 road have been denoted NSR1 and the measurements at MP1 are representative of all windows at first-floor level. Typically, noise levels are higher when measured at greater heights due to the path of the sound being less impeded by obstacles such as walls and fences. With reference to the proposed floor plans presented in **Appendix A** it can be seen that only the ground floor and first-floor levels have noise sensitive spaces (i.e. bedrooms, living spaces) and therefore these have been the focus of the assessment. For the above mentioned reasons, it would be expected that noise levels at ground floor would be around 3dB lower than those measured at first-floor level. However, to provide a prudent and worst-case approach to assessment it has been assumed that the noise levels at ground floor level are the same as those at first-floor level. This approach ensures that future residents will be adequately protected from noise via the derived ventilation strategy. Therefore, NSR1 is representative of future ground floor and first-floor windows.

The assessment has been undertaken for the daytime (07:00 to 23:00) and night-time (23:00 to 07:00) to NSR1. These reference time periods are in accordance with BS8233:2014 and the measured levels are considered representative of the prevailing soundscape for the area directly in front of the buildings.

Table 5 below presents the BS8233:2014 assessment based on the 24-hour measured data made at MP1.

Table 5: BS8233:2014 Assessment

Building	Floor	Period	Noise Level at Window	BS8233 Specified Limit	Required Sound Insulation Performance Ra,tr
NSR1	F01	Daytime $L_{Aeq,16hrs}$	56.5	35	21.5
		Night-time $L_{Aeq,8hrs}$	52.4	30	22.4

Based upon the assessment presented in **Table 5** above it can be observed that the highest sound insulation requirement for the glazing is 22.4dB. Standard double glazing will achieve a sound reduction performance of Ra,tr 32 dB which will be more than sufficient to achieve the criteria stipulated within BS8233:2014. An example of this glazing uses the configuration 6mm glass/12mm airgap/6mm glass which achieves the following sound reduction:

Table 6: Glazing Specification

Description	Attenuation at Octave Band Centre Frequencies (dB)					Single Figure Ra,tr
	125	250	500	1k	2k	
6mm/12mm/6mm	20	19	29	38	34	**32**

Therefore, with the above standard double glazing configuration installed, Condition 9 of the planning permission will be satisfied for living rooms and bedrooms.

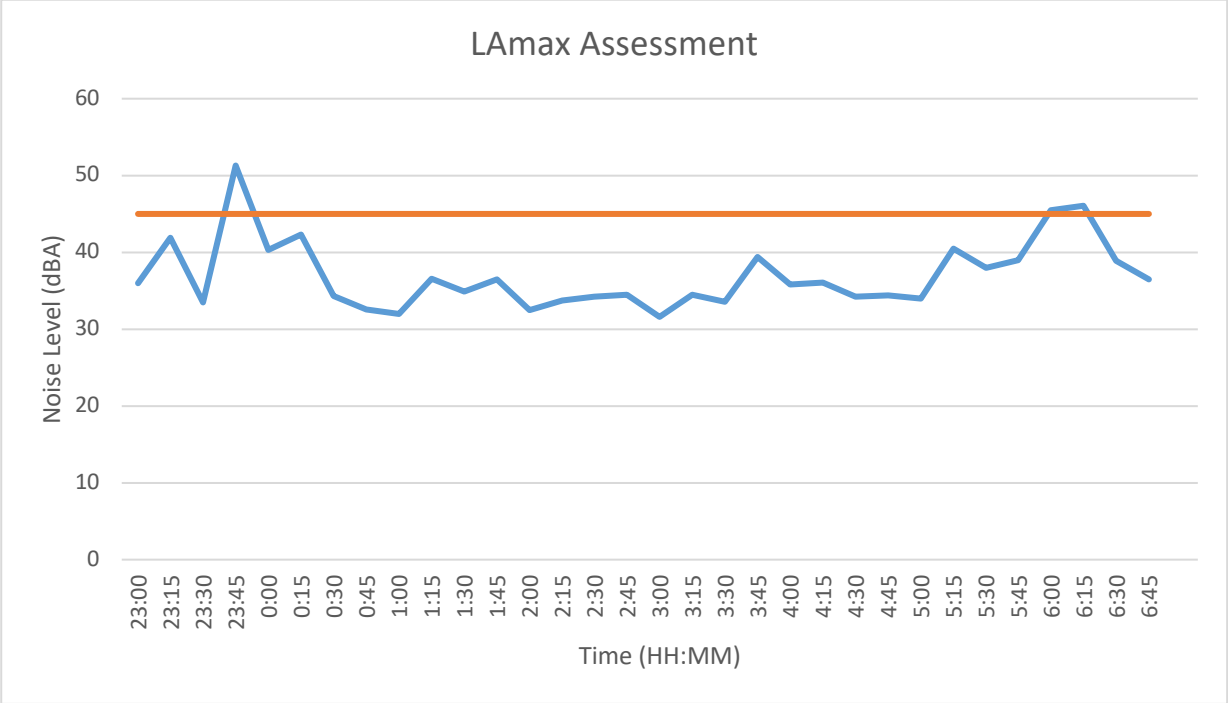
Based on the attenuation value for a partially open window of Dn,eW 17 dB presented in NANR116 and reproduced in **Table 4,** it can be seen that a partially open window will not be sufficient to attenuate external noise levels to comply with the BS8233 criteria. It is recommended that an alternative form of ventilation is included (particularly for the bedroom façades) which can take the form of trickle ventilation. Trickle vents achieve a range of acoustic performances from minimum of Rw18 to Rw45. An example of a midrange trickle vent that will comfortably meet the criteria is a Simons EHAS Acoustic Trickle Vent which when open can achieve a reduction of 38dB. Any trickle vent can be used provided it achieves a minimum sound reduction of 25dB or greater. Alternatively mechanical ventilation can be considered to eliminate the need for partially open windows for ventilation purposes.

Provided that ventilation for each room on the front façade of the building facing the A629 Road is installed either from trickle ventilation achieving Rw25 or greater or a mechanical ventilation system, Condition 10 will be satisfied.

4.3 Assessment of Max Levels

Previous versions of BS8233 stated that internal noise levels within bedrooms during the night-time should not regularly exceed 45 dBA. Although the current iteration of BS8233 does not include this it is still considered prudent to adhere to this. With reference to the measured night-time levels **Figure 1** below presents a time-trace of the measured max levels during the night predicted to break into the second-floor bedrooms with glazing achieving a sound insulation performance of Rw 32dB.

Figure 1: Time-trace of Max Levels at MP1



It can be observed form **Figure 1** above that, with standard double glazing in place, predicted max levels in the bedrooms do not regularly exceed 45 dBA during the night. Therefore, the criteria is satisfied.

4.4 WHO External Amenity Area Noise Assessment

With reference to **Section 2.2**, the World Health Organization (WHO) recommends that noise levels in external areas do not exceed 50 – 55dB during the daytime in order to avoid annoyance. With reference to **Table 3** it can be seen that the measured baseline levels at first-floor level were measured to be L_{Aeq} 56.5dB.

As previously explained, noise levels measured at first-floor level are louder than at ground floor due to the unimpeded path for sound transmission. Therefore noise levels in the central garden area are anticipated to be in the region of L_{Aeq} 53.5dB which will satisfy the WHO criteria.

To further mitigate potential noise to the garden area it is recommended that the site incorporate a 1.8-metre-high close boarded timber fence along the perimeter with the road which will have the effect of reducing external noise levels to the future garden areas even further (by 5-10dB when line of sight is broken).

4.5 Mitigation Measures for Construction Noise & Vibration

Several safeguards exist to minimise the effects of construction noise and include:

- The various EC Directives and UK Statutory Instruments that limit noise emissions of a variety of construction plant;
- Guidance set out in BS5228-1:2009[1], that covers noise control on construction and open sites; and
- The powers that exist for local authorities under Sections 60 and 61 of the Control of Pollution Act 1974 to control environmental noise and pollution on construction sites.

The precise mitigation measures to control noise from the works may require the agreement of the local authority prior to the works starting. Generic measures below are given to illustrate the range of techniques available.

The adoption of Best Practicable Means, as defined in the Control of Pollution Act 1974, is usually the most effective means of controlling noise from sites. Within the constraints of efficient site operations and the requirements of the relevant British Standards, the following is advisable:

- Limiting the use of particularly noisy plant, i.e. do not use particularly noisy plant early in the morning where avoidable;
- Limiting the number of plant items in use at any one time;
- Plant maintenance operations should be undertaken as far away from noise-sensitive receptors as possible;

[1] British Standards Institute (2009) Code of practice for noise and vibration control on construction and open sites – Park 1 : Noise. BSI, London.

- Any compressors, generators etc. brought on to site should be silenced or sound reduced models fitted with acoustic enclosures;
- Reducing the speed of vehicle movements;
- All pneumatic tools should be fitted with silencers or mufflers;
- Ensuring that operations are designed to be undertaken with any directional noise emissions pointing away from noise-sensitive receptors where practicable;
- When replacing older plant, ensuring that the quietest plant available is considered wherever possible; any deliveries/waste removal vehicles should be programmed to arrive and depart during daytime hours only.
- Drop heights must be minimised when loading vehicles with rubble.
- Care should be taken when loading vehicles to minimise disturbance to local residents. Vehicles should be prohibited from waiting within the site with their engines running;
- All plant items should be properly maintained and operated according to the manufacturers' recommendations in such a manner as to avoid causing excessive noise. All plant should be sited so that the noise impact at nearby noise-sensitive properties is minimised;
- Local hoarding, screens or barriers should be erected as necessary to shield particularly noisy activities; and,
- Any problems concerning noise from construction works can sometimes be avoided by taking a considerate and neighbourly approach to relations with local residents.

Experience from other sites has shown that by implementing these measures, typical noise levels from construction works can be reduced by 5 - 10dB (A).

Training

The contractor's site induction programme and site rules must include good working practice instructions for site staff/managers and contractors to help minimise noise and vibration whilst working on the site. Good working practice guidance/instructions should include, but not be limited to, the following points:

- avoiding un-necessary revving of engines;
- plant used intermittently should be shut-down between operational periods;
- avoiding reversing wherever possible;
- driving carefully and within the site speed limit at all times; and
- reporting any defective equipment/plant as soon as possible so that corrective maintenance can be taken.

Maintenance

A pre-commencement inspection of all plant shall be made to ensure that:

- Any plant found to be requiring interim maintenance should be identified by the operator and repairs undertaken by a qualified engineer as soon as possible.
- Doors fitted to acoustic enclosures around fixed plant remain closed; the fitting of self-closing mechanisms is advisable.

Regular and effective maintenance of plant can play an important part in keeping noise levels under control.

Public Relations

It is essential to maintain good public relations with local residents in nearby noise-sensitive receptors. General measures to improve public relations are detailed below:

- Endeavour to be good neighbours, i.e.:
- Get to know the neighbours, be concerned about them and try to understand their problems, encourage them to know the site personnel, listen as well as talk,
- Provide regular communications,
- Create a good impression by running a tidy and efficient site,
- Ensure lines of communication, e.g.:
- Nominate a point of contact for issues relating to the site,
- Support public consultation,
- Give advance notice and explanation of activities that might cause complaint,
- Keep systematic records of complaints and the remedial actions taken,
- Follow up complaints with correspondence and action,
- Ensure that site staff are environmentally aware and are trained to cope with issues,
- Do not rely on the letter of the law where there are obvious problems but culpability cannot be easily proved; be prepared to be flexible,
- Try to co-operate and avoid being adversarial

5 Conclusion

The assessment has predicted the internal noise levels and required sound attenuation of the building envelope for the proposed assisted living facility at Cote Road Cottage, 7 Halifax Road, Huddersfield in accordance with BS8233:2014. The layout of the site is presented in **Appendix A**.

The assessment concluded that standard double-glazing will be sufficient to attenuate measured external noise levels in the area and protect future residential from excessive noise ingress. This will satisfy Condition 9 for living rooms and bedrooms.

The assessment demonstrates that a partially open window will not provide sufficient attenuation to achieve the BS8233:2014. Therefore, an alternative form of ventilation such as trickle ventilation is recommended with a minim Rw of 25dB. Mechanical ventilations systems can also be considered instead of trickle ventilation. The inclusion of this form of ventilation will satisfy Condition 10.

An assessment of night-time max levels has demonstrated that the internal threshold of L_{Amax} 45dB will not be regularly exceeded with the proposed glazing installed.

An assessment against the external noise level criteria specified by WHO has demonstrated that existing noise levels in the garden area are predicted to be below the higher threshold. It is recommended that a 1.8-metre-high close boarded fence is included at the site boundary between the garden and the A629 Road which will further reduce noise levels by 5-10dB.

Based on the outcome of the above BS8233:2014 and WHO assessment, the site is suitable for residential dwellings from a noise perspective, and no further mitigation measures are required.

Appendix A – Site Plan, Measurement Points and Drawings

Figure 2: Location of Site and MP1





Revisions

A - Conservatory Removed and apartment one adjusted - 20/05/26

0 0.5 1 1.5 2 2.5m

Scale 1:50 @ A1

Proposed Ground Floor Plan

7 Halifax Road
Huddersfield
HD3 3AN

Drg sheet 007/013 A



Revisions

A - Conservatory Roof Removed - 20/05/26

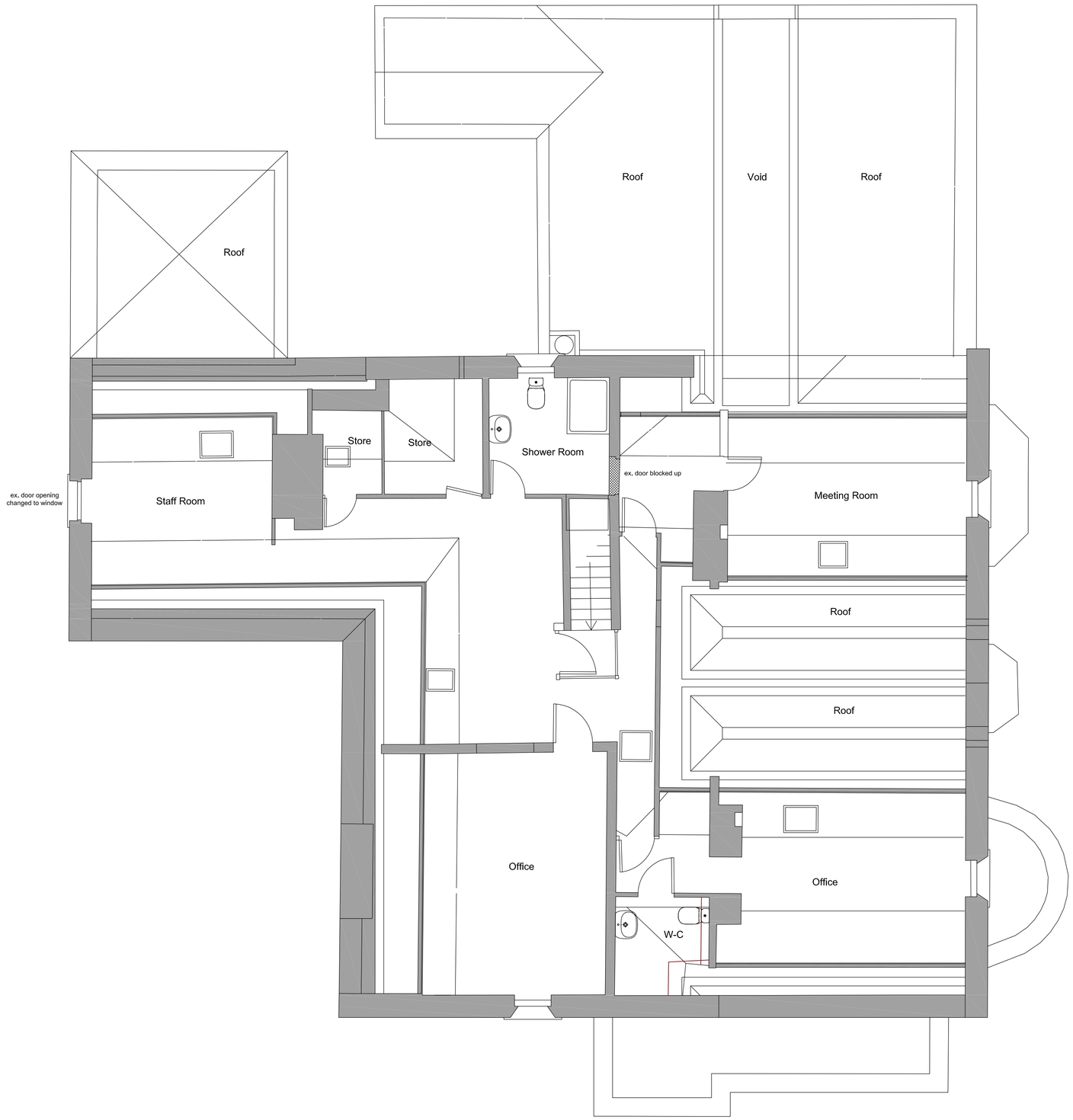
0 0,5 1 1,5 2 2,5m

Scale 1:50 @ A1

Proposed First Floor Plan

7 Halifax Road
Huddersfield
HD3 3AN

Drg sheet 007/014 A



0 0.5 1 1.5 2 2.5m

Scale 1:50 @ A1

Proposed Second Floor Plan

7 Halifax Road
Huddersfield
HD3 3AN

Drg sheet 007/015

Appendix B – Description of Acoustic Terms

Term	Description
Noise sensitive receptors	People, property or designated sites for nature conservation that may be at risk from exposure to noise and vibration that could potentially arise as a result of the proposed development/project
Noise and Vibration study area	The area assessed for noise and vibration impacts during this assessment
Baseline scenario	Scenarios with the proposed development/project not in operation
Decibel (dB)	A unit of noise level derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20 µPa, the threshold of normal hearing is 0dB, and 140dB is the threshold of pain. A change of 1dB is only perceptible under controlled conditions. Under normal conditions a change in noise level of 3dB(A) is the smallest perceptible change.
dB(A)	Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB(A) broadly agree with people's assessment of loudness. A change of 3 dB(A) is the minimum perceptible under normal conditions, and a change of 10 dB(A) corresponds roughly to halving or doubling the loudness of a sound. The background noise level in a living room may be about 30 dB(A); normal conversation about 60 dB(A) at 1 metre; heavy road traffic about 80 dB(A) at 10 metres; the level near a pneumatic drill about 100 dB(A).
LAeq,T	The equivalent continuous sound level – the sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T). LAeq,T is used to describe many types of noise and can be measured directly with an integrating sound level meter.
LA10,T	The A weighted noise level exceeded for 10% of the specified measurement period (T). LA10 is the index generally adopted to assess traffic noise

Term	Description
LA90, T	The A weighted noise level exceeded for 90% of the specified measurement period (T). In BS 4142: 2014 it is used to define the 'background' noise level.
LAmax	The maximum A-weighted sound pressure level recorded during a measurement.
Rw	Single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies.
Sound Reduction Index (SRI)	Laboratory measure of the sound insulating properties of a material or building element in a stated frequency band.