REF: L1806.4 V2
HER-RTL-A1-ZZ-ZZ-T-U-000008 P01
S4 Suitable for Review and Comment

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18th August 2026

RE: HERONSBRIDGE SEN SCHOOL – RESIDENTIAL PROVISION
STAGE 4 ACOUSTIC DESIGN REVIEW

Dear Ms Warren,

Following our recent correspondence, we are pleased to provide our review of the design intent for the above project against relevant standards for the sound insulation of the proposed redevelopment project.

We understand the project involves the construction of a new SEN school over 3 No storeys providing facilities for 300 students, in addition to 2 No residential units, and will replace an existing school and residential provision at a different site in the borough. This review focuses on the residential provision of the project which consists of 2 No residential buildings of 8 bedrooms (School Residential) and 4 bedrooms (Harwood Social Services) respectively.

We have assessed the proposed design against the requirements set out in Building Regulations England and Wales 2010 Approved Document E 2003 (with amendments 2015) and we understand that the project is targeting BREEAM excellent (BREEAM UK New Construction Version 6.1, 2023).

We are also aware that there may be project specific design targets that target lower performance specifications than ADE / BREEAM on the basis of reducing sound transmission through partitions to enable improved staff surveillance / supervision. Any deviation from the minimum requirements of building regulations would need to be agreed by the building inspector. We have, at this stage, assessed the proposed residential buildings on the basis of achieving all relevant BREEAM credits and target thresholds set out in ADE, BREEAM and BS8233.

We are writing this letter for design team use and for submission to the building inspector for their information.

This letter should be regarded as detailing the minimum construction to achieve suitable acoustic performance. Where products are named, it should be noted that equivalent alternative products may be selected and used.

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1.0 DESIGN EVALUATION OBJECTIVES…

1.1Design Approach

The accommodation within the development is assessed against the building regulations requirements for *New Rooms for Residential Purposes*.

1.2Building Regulations Requirements

1.2.1 Regulation E1 – Protection against Sound from Other Parts of the Building and Adjoining Buildings

Regulation E1 states,

> *"All dwelling houses, flats and rooms for residential purpose shall be designed and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and from adjoining buildings"*

The normal way of satisfying this requirement is considered achievement of the acoustic design objectives for the separating structure given in ADE Section 0, Table 0.1b. Table 1 shows the airborne and impact noise requirements for new separating constructions between the various areas taken from ADE.

Performance Standard	Airborne Sound Insulation Minimum Value $D_{nT,w}$ + C_{tr} (dB)	Impact Sound Isolation Maximum Value $L'_{nT,w}$ (dB)
Rooms for residential Purposes		
Walls	43	-
Floor and Stairs	45	62

TABLE 1: BUILDING REGULATIONS PART E MINIMUM REQUIREMENTS FOR NEW SEPARATING WALLS & FLOORS

The impact noise objectives apply to the floor vertically above a residential space and does not include horizontal transfer of impact noise. Nor does it include impact sound transfer into communal or commercial areas of the building.

1.2.2 Regulation E2 – Protection against sound within a dwelling house etc.

Regulation E2 states:

> *"Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that: (a) internal walls between a bedroom or a room containing a water closet, and other rooms; and (b) internal floors, provide reasonable resistance to sound."*

However, it is stated that the Requirement does not apply to the following,

> *"(a) an internal wall which contains a door, (b) an internal wall which separates an en-suite toilet from the associated bedroom, (c) existing walls and floors in a building which is subject to a material change of use"*

ADE Section 0 clause 0.9 states that the normal way of satisfying the regulation is to provide internal walls and floors with a laboratory measured performance as described in ADE Table 0.2. The minimum laboratory measured sound reduction of an internal wall or floor is 40 dB R_w.

1.2.3 Regulation E3 – Reverberation in the common internal parts of buildings containing flats or rooms for residential purposes

Regulation E3 states:

> *"The common internal parts of buildings which contain flats or rooms for residential purposes shall be designed and constructed in such a way as to prevent more reverberation around the common parts than is reasonable."*

The above requirement, is stated:

> *"Only applies to corridors, stairwells, hallways and entrance halls that give access to a flat or room for residential purpose."*

ADE Section 0, clause 0.11 states that the normal way of satisfying the regulation is to comply with the requirements set out in Section 7 of ADE2003. Section 7 provides two example design approaches, which are as follows:

Method A
Corridors and Hallways should be provided with acoustically absorptive ceiling tiles to ISO 11654, Class C or better to an area equal to the floor area.

For stairwells, an area of Class C tiles equal to 50% of the area of the following should be provided,

- stair treads
- upper surface of the intermediate landings
- upper surface of the landings
- ceiling area

It is also permissible to install an area of Class D tiles equal to 100% of the above area.

Method B
This comprises the calculation of total acoustic absorption within the common spaces, which allows for the acoustic absorption from carpeted floors and other similar acoustically absorptive surfaces. Method B is only recommended for Corridors, Hallways and Entrance halls. The requirement is for 0.25 m^2 of totally absorbing area per 1 m^3 of volume in Corridors and Hallways, and 0.2 m^2 of totally absorbing area per 1 m^3 of volume in entrance halls in each of the octave bands between 125 to 4k Hz inclusively.

1.2.4 Regulation E4 – Acoustic Conditions in Schools

This review is considering only the residential elements of the site and as such no part of the development is classified as a school. This section of the assessment is not relevant.

Assessment of the school is provided under report ref: R1806.1.V1.

1.2.5 Demise Doors

The design objective given in ADE Clause 2.26 is for an entrance door to a flat or room for residential purpose to satisfy either of the following:

a) A surface mass of 25 kg m^{-2}, perimeter seals and drop threshold (where practical), or
b) A laboratory measured sound reduction performance of at least 29 dB R_w.

1.2.6 Pre-Completion Testing

This building will be subject to pre-completion sound insulation testing to demonstrate compliance with Regulations E1.

The building regulations state that pre-completion testing is only to be conducted by UKAS or ANC registered organisations. Red Twin is registered with the ANC.

The pre-completion testing requirement is typically 1 set of tests for every 1 in 10 dwellings using each type of separating construction. One set of tests comprises 4 airborne sound insulation tests (2 tests on walls, and 2 tests on floors) and 2 impact sound insulation tests (2 tests on floors).

At this development we initially anticipate the testing described in Table 2 to be required based on our interpretation of the building regulation requirements.

Building	No of Units	Airborne Wall Tests	Airborne Floor Tests	Impact Floor Tests	Total Tests
School Residential	8	2	1	1	4
Social Services	4	1	1	1	3

TABLE 2: EXAMPLE ADE SOUND TESTING REGIME

The extent of testing will need to be discussed and agreed with the building inspector as the testing regime is at their discretion.

Paragraph 1.8 in Section 1 of ADE states that sound insulation testing should not be carried out between living spaces and corridors, stairwells and hallways.

1.3Additional Performance Considerations

1.3.1 BREEAM UK New Construction

BREEAM requires an uplift in performance specification of +3dB better than the minimum requirements set out in ADE to achieve one credit under HEA05.

The criteria shown in Table 3 summarises the BREEAM targeted performance standards for the residential separating elements in this project.

Performance Standard	Airborne Sound Insulation Minimum Value $D_{nT,w} + C_{tr}$ (dB)	Impact Sound Isolation Maximum Value $L'_{nT,w}$ (dB)
ADE +3 dB		
Walls	46	--
Floor and Stairs	48	59

TABLE 3: BREEAM PERFORMANCE STANDARDS

1.3.2 Project Specific Operational Needs

We understand that the bedrooms serving this development may be excluded from assessment under the 'Sound Insulation' credits because the walls cannot be acoustically upgraded due to Health and Safety constraints i.e. increased supervision from on-site staff members is desired via a reduction in acoustic privacy. This falls under special operational requirements and therefore could be considered an acceptable exclusion.

However, the non-residential rooms account for more than 5% of the total floor area. As a result, these spaces should not be disregarded. In line with the guidance set out in BREEAM in which such rooms are to be considered against the criteria set out in BS8233: 2014, where non-residential areas exceed the 5% threshold, they must be assessed and are required to comply with the criteria applicable to 'Other Buildings'.

For clarity, if the non-residential areas comprised less than 5% of the total floor area, there would effectively be no relevant spaces requiring assessment for sound insulation. In that scenario, there would be no applicable areas for the room acoustic credit. Provided the indoor ambient noise criteria were achieved, the credits could be awarded by default.

In this case, however, because the non-residential areas exceed 5% of the total floor area, they must be assessed against the 'Other Buildings' requirements, and the credits cannot be awarded automatically. Compliance must therefore be demonstrated for the non-residential spaces.

BS8233:2014 provides guidance for the control of noise in and around buildings. It is applicable to the design of new and refurbished buildings.

We have reviewed the design requirements and have derived the performance requirements for separation of adjacent Commercial Spaces. It should be noted that the BCO Guide to Fit does not provide a specific performance value. The building design is based on the following design criteria taken from BS8233.

Kitchen to Office: Min 47 dB $D_{nT,w}$
Living / Dining to WC: Min 42 dB $D_{nT,w}$
Staff Room to Bathroom: Min 42 dB $D_{nT,w}$
Office to Sensory: Min 52 dB $D_{nT,w}$
Kitchen to Sensory: Min 52 dB $D_{nT,w}$

There is no on-site performance requirement for walls penetrated by doors. The performance in these scenarios is defined elementally to achieve the following:

Doors to communal uses from non-buffered lobby areas shall achieve a minimum sound reduction index of 30 dB R_w under laboratory conditions.

1.4Noise Ingress

1.4.1 Planning Policy Wales (PPW)

The document entitled Planning Policy Wales (PPW) sets out the Welsh Assembly's planning policies for Wales and how these are expected to be applied.

PPW is supplemented by a series of Technical Advice Notes (TANs).

PPW does not contain quantitative acoustic criteria but summarises national planning policy advice and articulates the Assembly's vision of sustainable development. It provides a framework within which councils can provide their own local plans, which reflect the needs and priorities of their communities.

In respect of noise and vibration, PPW states that planning policies and decisions should aim to:

- *"ensure, as far as is practicable, that noise-sensitive developments, such as hospitals, schools and housing, that need to be located close to existing transportation infrastructure to facilitate access, are designed in such a way as to limit noise levels within and around those developments;*
- *ensure, as far as possible, that potentially noisy developments are located in areas where noise will not be such an important consideration or where its impact can be minimised;*
- *adopt policies to prevent potentially noisy developments in areas which have remained relatively undisturbed by noise;*
- *have regard to any relevant Noise Action Plan, including the need to protect urban 'quiet areas' against an increase in noise.*

With regards to 'adverse effects' and 'significant adverse effects', PPW refers to the Technical Advice Note 11 (TAN 11).

1.4.2 Technical Advice Note 11 (TAN 11)

TAN 11 seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise. The advice note applies to all forms of noise, including environmental noise, neighbour noise and neighbourhood noise.

The statement sets out the long-term vision of the Welsh Assembly's noise policy and provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business. It outlines some of the main considerations which local planning authorities should take into account in drawing-up development plan policies and when determining planning applications for development which will either generate noise or be exposed to existing noise sources.

This long-term vision is divided into three key sections:

- *Noise generating development*
- *Noise sensitive development*
- *Measures to mitigate the impact of noise"*

The long-term policy vision and aims are designed to enable decisions to be made regarding what is an acceptable noise burden to place on society.

TAN 11 should be read in conjunction with PPW and be taken into account by local planning authorities in the preparation of development plans.

Noise exposure categories have been derived and defined in TAN 11 to assist local planning authorities in their consideration of planning applications for residential development near transport related noise sources as summarised in Table 4.

Noise Exposure Categories	
A	Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as desirable
B	Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection
C	Planning permission should not normally be granted. Where it is considered that permission should be given, e.g. because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise
D	Planning permission should normally be refused

TABLE 4: NOISE EXPOSURE CATEGORIES (TAN 11 1997)

A recommended range of noise levels is given in Table 5 for each of the NECs for dwellings exposed to noise from road, rail, air and mixed sources. However, TAN 11 states in some cases it may be appropriate for local planning authorities to determine the range of noise levels they wish to attribute to the various NECs. Where there is a clear need for new residential development in an already noisy area some or all NECs might be increased by up to 3 dB(A) above the recommended levels. In other cases, a reduction of up to 3 dB(A) may be justified.

Recommended Noise Exposure Categories for New Dwellings Near Existing Noise Sources					
Noise Levels Corresponding to the Noise Exposure Categories for New Dwellings $L_{Aeq,\,T}$ dB					
Noise Source		Noise Exposure Category			
		A	B	C	D
Road	0700-2300	<55	55-63	63-72	>72
	2300-0700	<45	45-57	57-66	>66
Rail	0700-2300	<55	55-66	66-74	>74
	2300-0700	<45	45-59	59-66	>66
Air	0700-2300	<57	57-66	66-72	>72
	2300-0700	<48	48-57	57-66	>66
Mixed	0700-2300	<55	55-63	63-72	>72
	2300-0700	<45	45-57	57-66	>66

TABLE 5: TAN11 NOISE EXPOSURE CRITERIA FOR NEW DWELLINGS

This NEC procedure is applicable where consideration is being given to introducing residential development into an area with an existing noise source but is not applicable in the reverse situation i.e. where new noise sources are to be introduced into an existing residential area.

Values in Table 5 refer to noise levels measured on an open site at the position of the proposed dwellings, well away from any existing buildings, and 1.2 m to 1.5 m above the ground. Where the arithmetic average of recorded readings falls on the boundary between NECs B and C it is for the local planning authority to determine which is the more appropriate NEC for the proposal.

Levels of noise from road and rail traffic are often specified at one metre from the facade, and these facade levels should be assumed to be 3 dB(A) higher than levels measured away from any buildings, unless a more accurate figure is available.

1.4.3 Professional Practice Guidance on Planning & Noise (ProPG) (2017)

ProPG: Planning & Noise is the most recent guidance document with regard to maintaining an appropriate standard of internal ambient noise levels in residential developments. Although only formally applicable in England, ProPG

> *"encourages improvements in the consistency and quality of plan making and decision-taking in relation to acoustic matters. The context is primarily development control, although some of the content is relevant to strategic planning. Similarly, whilst the policy coverage is limited to England, the approach may be useful in other parts of the UK."*

The ProPG document bases its performance requirements on the existing British Standard 8233 – *Guidance on Sound Insulation and Noise Reduction for Buildings* for the internal noise levels and amenity areas.

As ProPG primarily relates to England, the basis of this report is informed by the criteria set out in British Standard 8233 and TAN11.

1.4.4 British Standard 8233 – Guidance on Sound Insulation and Noise Reduction for Buildings (2014)

This standard provides guidance for the control of noise in and around buildings. It is applicable to the design of new buildings, or refurbished buildings undergoing a change of use but does not provide guidance on assessing the effects of changes in the external noise levels to occupants of an existing building.

Within table 4 of the British Standard are recommended indoor ambient noise levels. The standard provides a value for ambient noise, but not levels of maximum noise.

BS8233 provides recommended criteria for internal ambient noise levels when rooms are unoccupied and dependent on their intended use. Table 6 presents the desirable internal noise levels to be achieved in new developments.

Activity	Location	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Resting	Living room	35 dB $L_{Aeq,16hr}$	--
Dining	Dining room/area	40 dB $L_{Aeq,16hr}$	--
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$
--	Outdoor Amenity Area	50-55 dB $L_{Aeq,16hr}$	--

TABLE 6: TARGET INDOOR AMBIENT AND AMENITY NOISE LEVELS FROM BS8233:2014

BS8233 provides guidance on suitable noise levels for external spaces that are used for amenity areas (e.g. gardens and patios). An upper guideline value of 55dB $L_{Aeq,16hr}$ is considered acceptable for outdoor amenity areas and forms the LOAEL.

BS8233 acknowledges that this guideline value for external amenity may not be achievable in higher noise areas such as city centres or urban areas adjoining the strategic transport network. In these situations, developments should aim to achieve the lowest practicable noise levels in outdoor amenity areas.

1.4.5 World Health Organisation – Community Noise Guidelines (1999)

The World Health Organisation provides indoor noise level guidelines, including a limit on the maximum noise level experienced in a bedroom at night.

The maximum noise limit was devised as a means of improving health by avoiding awakenings. The guidance recommends the maximum noise level experienced in the bedrooms should not regularly exceed 45 dB(A) L_{AFMax} during the night.

It is worth noting that the 45 dB(A) L_{AFMax} criteria is a recommended level that is not to be exceed more than approximately 10-15 times per night to avoid a negative effect on sleep. (WHO Community Noise Guidelines 1999 Section 3.4 para 10). It is therefore not considered to be a strict upper limit on noise level.

1.4.6 The Wales Noise and Soundscape Action Plan 2018-2023

The Wales Noise and Soundscape Action Plan 2018–2023 focuses on improving how noise is managed across Wales, with an emphasis not just on reducing noise, but on creating better overall sound environments (“soundscapes”).

Its main aims are to:

- Reduce harmful noise exposure
  Target areas most affected by transport and urban noise, especially where it impacts health and quality of life.
- Protect and enhance quiet areas
  Safeguard places valued for tranquillity and ensure development does not erode these environments.
- Promote a soundscape approach
  Move beyond simply controlling noise levels to considering the overall acoustic environment, including positive sounds.
- Integrate noise into planning and design

Encourage better design of buildings and places so noise is considered early and managed effectively.

- Prioritise action in key areas
  Focus efforts on Noise Action Planning Priority Areas where the greatest benefits can be achieved.
- Increase awareness and collaboration
  Improve understanding of noise impacts and promote coordinated action between authorities, planners, and designers.

2.0 PROPOSED CONSTRUCTIONS…

2.1Separating Floors

Whilst the exact design is not yet developed, we understand that a traditional timber frame type floor is being considered and we have therefore based our assessment on the following floor build up:

Separating Floor Type 1 (Based on ADE Type 3)

- Cellecta Screedboard 28 or similar
- 18 mm Weyroc board or similar
- 220mm joists with 100 mm insulation in the void
- Resilient bars (or similar)
- 2 layers of 15 mm dense plasterboard

The floor finishes are not included in our assessment i.e. we have assessed the performance of the floor structure prior to the selected finishes being present.

2.2Separating Walls

At Stage 3, we assessed options for various design targets based on ADE, BREEAM, and BS8233. At Stage 4, we have focused on our recommended performance specification i.e. achieving the additional BREEAM credit available for sound insulation.

Please note, we have reviewed the latest information we have been provided with in relation to the proposed wall mark-ups, but have revised the proposals to reflect the attainment of the recommended performance specification.

Our assessment is therefore based on the following wall build up:

BREEAM (ADE+3dB)
Separating Wall Type 1

- 2 x 15 mm SiniatdB Boards
- Siniat AS146/Rx Acoustic Stud at 600 mm centres
- 50 mm glass mineral wool
- 2 x 15mm SiniatdB Boards

BS8233 (Non-Residential Rooms)
Wall Type 2

- 1 x 12.5 mm Siniat Universal Board
- 1 x 12.5 mm Siniat dBBoard
- Siniat CS146/Rx C-Stud at 600 mm centres

- 1 x 12.5 mm Siniat dBBoard
- 1 x 12.5 mm Siniat Universal Board

Wall Type 3

- 2 x 15 mm Siniat dBBoards
- Siniat AS70/Rx Acoustic Stud at 600 mm centres
- 50 mm glass mineral wool
- 2 x 15 mm Siniat dBBoards

Wall Type 4

- 1 x 15 mm Siniat dBBoard
- Siniat CS50/Rx C-Stud at 600mm centres
- 1 x 15 mm Siniat dBBoard

Wall Type 5

- 2 x 12.5 mm Siniat Standard Boards
- Siniat CS50/Rx C-Stud at 600 mm centres
- 2 x 12.5 mm Siniat Standard Boards

2.3Internal Floor

There are no floors defined as internal floors under the Building Regulations in this development and therefore this section is not relevant.

2.4Internal Walls

There are no walls in this project defined as internal walls under the Building Regulations and therefore this section is not relevant.

2.5Communal Ceiling Finishes (ADE requirements)

We understand the central circulation spaces form a communal area which gives access to the entrances of the residential units.

The ceiling to the communal area is understood to be formed by a Class C ceiling covering 100% of the area using e.g. an ISO Class C ceiling tile or equivalent.

Other finishes in these spaces are understood to include:

- Wall Hard surfaces e.g. plaster on blockwork or plaster on framed walls
- Door Timber door set
- Floor Hard floor e.g. Vinyl

We have used the generic absorption data provided in Approved Document E and supplemented it where necessary with proprietary absorption data for products taken from our in-house library of material data.

Please note, the central circulation spaces that provide access to individual residential rooms must be assessed under the provision of ADE. We have, however, also provided assessment of other ‘communal areas’ of the building which are non-mandatory and this is provided in Section 3.5.

2.6Bedroom Entrance Doors

We understand the entrance doors to the residential units are to be a solid core timber door set with full perimeter acoustic seals.

The doors are to achieve a sound reduction performance of at least 29 dB R_w.

2.7Internal Doors

Approved Document E does not provide acoustic or mass specifications for internal doors.

However, we recommend internal doors to non-residential areas (e.g. common rooms) be provided with a minimum sound reduction performance of 30 dB R_w.

3.0 DESIGN ASSESSMENT…

3.1Regulation E1 – Separating Structures

3.1.1 Separating Floors

We have made predictions of airborne and impact sound transmission of the separating floor constructions.

To derive the predicted performance, we have used previous test data for similar constructions, proprietary software and our experience.

The construction detailed in section 2.1 for the new separating floors are expected to provide the performances described in Table 7 based on the worst-case performances from the various room sizes and flanking arrangements.

Separating Floor Element	Airborne Sound Insulation (dB $D_{nT,w}+C_{tr}$)		Impact Sound Insulation (dB L'_{nTw})	
	Minimum Requirement	Expected	Maximum Requirement	Expected
SF Floor Type 1 (BREEAM)	48 (ADE+3dB)	50	59 (ADE-3dB)	54

TABLE 7: SUMMARY OF SEPARATING FLOOR EXPECTED PERFORMANCES

The performances of the floors between residential units are expected to achieve the Building Regulations requirements and the increased performance targets defined by BREEAM.

The realised performance of the construction is dependent on the control of sound transmission via indirect routes and workmanship. The main flanking transmission paths are discussed in more detail in section 3.7.

3.1.2 Separating Walls

We have made predictions of airborne sound transmission of the separating wall constructions.

To derive the predicted performance, we have used previous test data for similar constructions, proprietary software and our experience.

The construction detailed in section 2.2 for the new separating walls are expected to provide the performances described in Table 8 based on the worst-case performances from the various room sizes and flanking arrangements.

Separating Wall Element	Airborne Sound Insulation (dB $D_{nT,w}+C_{tr}$)		Impact Sound Insulation (dB $L'_{nT,w}$)	
	Minimum Requirement	Expected	Maximum Requirement	Expected
Wall Type 1	46 (ADE +3dB)	50	Not applicable	

TABLE 8: SUMMARY OF SEPARATING WALL EXPECTED PERFORMANCES

The performances of the proposed separating walls are expected to achieve the Building Regulations requirements.

The realised performance of the construction is dependent on the control of sound transmission via indirect routes and workmanship. The main flanking transmission paths are discussed in more detail in section 3.7.

We expect the separating walls to achieve the requirements of ADE E1 in all areas subject to the control of flanking transmissions and achieving good quality workmanship at site.

3.2Regulation E2 – Internal Structures

3.2.1 Internal Floors

There are no internal floors in this project and therefore this section is not relevant.

3.2.2 Internal Walls

There are no internal walls in this project and therefore this section is not relevant.

3.3Regulation E3 – Reverberation Time in Common Areas

Regulation E3 is defined by the statement:

> "…*prevent more reverberation around the common parts … than is reasonable*".

The proposal achieves the criteria set out in Method A and therefore achieves the requirements of regulation E3 for the circulation spaces / corridors.

The internal finishes achieve the requirements of ADE E3.

3.4Assessment of Entrance Doors

We cannot confirm compliance of the demise doors at this stage.

Providing the specification of entrance door described in section 1.2.5 is satisfied, the door sets will be compliant with the design requirements. The required specification is not onerous and compliant door products are readily available.

3.5Reverberation Times in Communal Rooms

The consideration of reverberation in communal rooms is not a Building Regulations matter. We have included it herein as perception of the quality of the development would be affected. The targeted reverberation times are taken from Building Bulletin 93 *Acoustics Design of Schools.*

We have modelled the finishes of the communal spaces to estimate the resulting reverberation time.

The room modelling has included the finishes identified below, but all rooms are modelled unfurnished and unoccupied. Table 9 details the predicted reverberation times for the various spaces.

The assessment of an unfurnished room is expected to be conservative where furniture provides a significant amount of acoustic absorption. In our experience the furniture in residential buildings adds a moderate amount of absorption and provides scattering surfaces which helps to bring the measured results closer to the predicted outcome.

We have calculated the reverberation times in the dining rooms as a combined space i.e. no folding partition separating the rooms as larger volume rooms generally have a longer reverberation time.

The finishes are understood to be as follows:

<u>School Residential</u>

- Staff Office
  - Floor – Soft Floor e.g Carpet
  - Ceilings – Class C ceiling covering 100 % of the available area
  - Walls – Plasterboard, glazing and doors

- Sensory Rooms
  - Floor – Soft Floor e.g Carpet
  - Ceilings – Class A ceiling covering 100 % of the available area
  - Walls – Plasterboard, glazing and doors
  - Additional ISO Class A wall absorption of 2 m^2

- Living / Diner
  - Floor – Hard Floor e.g vinyl
  - Ceilings – Class C ceiling covering 100 % of the available area
  - Walls – Plasterboard, glazing and doors

<u>Social Services Building</u>

- Staff Room
  - Floor – Soft Floor e.g Carpet
  - Ceilings – Class C ceiling covering 100 % of the available area
  - Walls – Plasterboard, glazing and doors

- Sensory Rooms
  - Floor – Soft Floor e.g Carpet

- Ceilings – Class A ceiling covering 100 % of the available area
- Walls – Plasterboard, glazing and doors
- Additional ISO Class A wall absorption of 2 m^2

– Living / Diner
- Floor – Hard Floor e.g vinyl
- Ceilings – Class C ceiling covering 100 % of the available area
- Walls – Plasterboard, glazing and doors

Our estimates for the resulting reverberation times are summarised in Table 9.

Room Type	Approx. Volume (m^3)	Target T_{mf} (s)	Predicted T_{mf} (s)	Predicted RT (s) at Octave Band Centre Frequencies (Hz)						Achieve (Y/N)
				125	250	500	1k	2k	4k	
School Residential										
Staff Office	33	≤ 1.0	0.4	0.6	0.5	0.5	0.4	0.4	0.3	Y
Sensory	24	≤ 0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.2	Y
Living / Diner	77	≤ 1.0	0.5	0.8	0.6	0.5	0.5	0.5	0.5	Y
Social Services Building										
Staff Office	32	≤ 1.0	0.4	0.6	0.5	0.5	0.4	0.4	0.3	Y
Sensory	24	≤ 0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.2	Y
Living / Diner	100	≤ 0.6	0.5	0.9	0.7	0.5	0.5	0.5	0.5	Y

TABLE 9: SUMMARY OF PREDICTED REVERBERATION TIMES FOR COMMUNAL ROOMS

There are many products available and means of adding absorption to a room. The solutions offered could be achieved via alternatives provided the equivalent sound absorption performance is achieved. It is recommended that alternatives are reviewed prior to installation.

3.6Non-Residential Rooms Assessment (BS8233)

3.6.1 Assessment Method and Specifications

To achieve the desired level of sound insulation between adjacent rooms we have considered the room sizes and common areas of each partition, and converted the on-site $D_{nT,w}$ value into a laboratory measured sound reduction index value R_w.

The sound reduction index is a more commonly used variable for specification of constructions and can be readily compared with manufacturer's data. We have followed the method described in BS EN ISO 12354:2000 Part 1 *Building Acoustics – Estimation of acoustic performance of buildings from the performance of elements – Airborne Sound Insulation Between Rooms.*

We have based our calculations on the basis the rooms achieve our predicted mid-frequency reverberation times.

3.6.2 Proposed Separating Constructions

The separating structures within the communal areas of the building are described in Section 2.2.

3.6.3 Assessment of Non-Residential Rooms

Our assessment of the acceptability of the proposed walls against the derived performance targets is summarised in Table 10.

Room 1	Room 2	Approx Partition Area (m^2)	Minimum On-Site Separation ($dB\ D_{ntw(0.5s),w}$)	Minimum Laboratory Sound Insulation ($dB\ R_w$)	Wall Type	Pass / Fail
School Residential Block						
Kitchen	Office	4.8	47	54	Type 2	Pass
Living / Dining	WC	4.1	42	50	Type 2	Pass
Staff Room	Sensory	1.7	52	55	Type 3	Pass
Social Services Block (Harwood)						
Staff Room	Bathroom	9.1	42	51	Type 2	Pass
Kitchen	Sensory	5.8	52	58	Type 3	Pass

TABLE 10: SUMMARY OF MINIMUM SOUND INSULATION SPECIFICATION (COMMERCIAL WALLS)

The most onerous performance requirement derived for separating walls is for a minimum sound reduction index of 58 dB R_w.

3.6.4 Non-Residential Rooms Separating Construction Conclusions

Comparing the expected performance of the proposed construction against the derived minimum performances, we have concluded the proposals for the walls to be acceptable.

3.7Consideration of the Main Flanking Paths

3.7.1 General Acoustic Design Tolerance

In order that the acoustic performance of walls is realised when constructed at site, the flanking transmissions via adjacent structures need to be controlled to a suitably low level.

Within the above target performances is a 5 dB margin for site tolerance, minor practical construction weaknesses and elements of flanking transmission that were not present for the laboratory testing of elemental performance.

The following sections discuss some of the main flanking paths considered present in the building design which will need to be controlled, and junction details will need to be monitored.

3.7.2 External Façade

The external walls of the building are understood to be as follows:

EW Types 01 & 02
- 102.5 mm facing brick (Reto Tiffany / Buff)
- 50 mm cavity

- 200 mm mineral wool insulation
- 100 mm masonry Block
- VCL, 10 mm dabs, 12.5 mm Ladura Plasterboard

The roof is understood to be traditional timber truss construction with concrete tiles on a pitched roof structure.
Based on a heavyweight masonry wall construction we are of the opinion that dot and dab plasterboard internal linings are appropriate.

We recommend the external wall linings be discontinuous at the separating walls and/or floors. To achieve this discontinuity, we recommend the linings to the separating walls and ceilings take priority over the linings to the external wall, and cavity closers are used in external cavity walls.

The constructions are expected to control flanking via the external wall to a reasonable level.

3.7.3 Ground Floor Slab

We understand that the ground floor construction is to be formed with a 75 mm screed on 120 mm PIR insulation on a 200 mm in-situ concrete slab. The separating walls should be built directly off the slab, with the insulation and screed independent either side.

The sound transmission via the floor slab is expected to be minimal and not be a cause for degrade of the internal wall performance.

3.7.4 Separating Floors

The separating walls extending from the top of the floor slab to the underside of the slab above, with the floating floor independent either side.

The ceilings are also to be discontinuous between residential units.

In addition to the ceilings, the sound transmission via the floor slab is not expected to be a cause for degrade of the wall performance.

It is acceptable for internal walls to be built off the top of the finished floor, extending to the underside of the ceiling. If practicable, a better acoustic performance can be achieved by installing all internal walls from slab to slab.

We recommend, however, that separating walls are built to the underside of the floor above (within the profile of the timber joists) and at first floor level, to the underside of the roof plane.

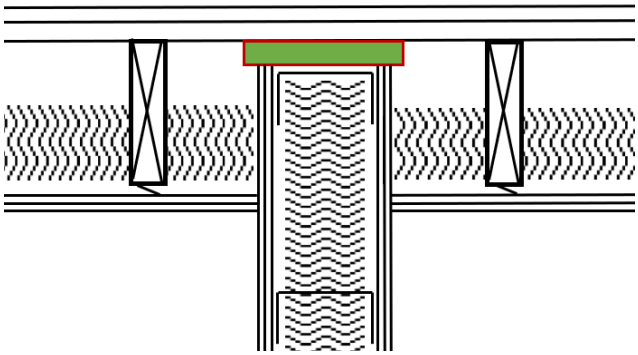

FIGURE 1: JUNCTION DETAIL OF SEPARATING WALL RUNNING PARALLEL TO JOISTS (INTERMEDIATE FLOOR)

At first floor level we recommend the ceilings are formed using a double layer of 12.5 mm Soundbloc **throughout** to keep sound transfer above the ceiling and over the separating walls to a minimum.

The sound transmission via the floor slab is expected to be minimal and not be a cause for degrade of the internal wall performance.

3.7.5 Detailing at Interfaces of Internal Walls

The detailing at the junctions of walls is subject to ongoing review.

We recommend higher performance walls take priority at junctions over lower performance walls.

Where the internal walls meet separating walls, the lower specification “internal“ wall should be installed to butt against the higher performance separating wall, and the linings of the separating wall are to be continuous and imperforate.

For acoustic performance it would be acceptable for the “internal” walls to be built off the top of the finished floor, extending to the underside of the ceilings. It is likely that other constraints will dictate, and it is also acceptable to replicate the base detail of the party walls.

Where deflection head detailing is necessary to accommodate structural movement, we recommend the manufacturer’s standard details are followed and it is ensured that the packer is formed of a material with a density of at least 840 kg m^{-3}, (such as gypsum core board or similar), the overlap of the top of the board and the packer is at least 10 mm and the gap for deflection is sealed with a flexible sealant and covered with a metal angle or insulation batt.

3.7.6 Mechanical and Electrical Penetrations

Penetrations through the separating structures are to be avoided, particularly between neighbouring units (horizontally and vertically).

We would also recommend that services runs for pipe work and cables are restricted to circulation areas and non-critical spaces, and where possible enter each room from the circulation areas rather than passing through the separating walls.

Where this is not possible and SVP and RWP should be routed through sensitive spaces, we recommend lagging the pipes with fibrous insulation and encasing them with 2 no. layers of 12.5 mm plasterboard having a minimum combined density of 16kg.m^{-2}.

Should SVP and RWP be routed through sensitive spaces, we recommend lagging the pipes with fibrous insulation and encasing them with 2 no. layers of dense 15 mm plasterboard having a minimum combined density of 25 kg m^{-2}.

We recommend that bends in the SVP and RWP's above the ceiling in occupied spaces should be avoided. If this is not possible then they should be encased with 2 no. layers of dense 15 mm plasterboard having a minimum combined mass of 25 kg m^{-2} and the cavity should be filled with fibrous insulation.

3.7.7 Other Design Issues

This review is limited to the acoustic performance. We have not reviewed the proposed constructions for any other design issues, such as fire resistance, build-ability, costs or stability, as examples.

The design team are advised to satisfy themselves that the proposed constructions are suitable for their intended location in the building and that they achieve the design requirements prior to commencing construction.

4.0 NOISE INGRESS ASSESSMENT…

4.1Noise Criteria

The current best practice is to use the unmodified indoor noise level from BS82233:2014.

The values described by BS8233 are in keeping with prevalent planning policy and can be considered to be of a level that is the LOAEL (lowest observable adverse effect level).

Achievement of internal noise levels that are below the BS8233 levels can be considered to be in accordance with all relevant policies and requirements.

4.2Baseline External Noise Levels

Our survey data was obtained over a 3-day period between 2nd – 4th March 2026 in a location considered representative of the residential buildings. Full details of the survey can be found in the Appendix to this letter.

For the purposes of this assessment, we have summarised the survey findings in Table 11.

Survey Location	Noise Levels (dB(A))		
	16-hour Day 07:00 – 23:00 (dB $L_{Aeq,16h}$)	8-hour Night 23:00 – 07:00 (dB $L_{Aeq,8h}$)	8-hour Night 23:00 – 07:00 (dB $L_{AFMax,typical}$)
Location 1	50	45	65

TABLE 11: NOISE SURVEY SUMMARY (FREE-FIELD)

The survey was carried out in free-field conditions. At façade level, a 3 dB increase can therefore be expected.

4.3TAN 11 Site Noise Assessment

4.3.1 Assessment Methodology

We have compared the estimated outdoor noise levels at each building against the parameters set out in TAN 11.

The night-time represents a worst-case scenario within the TAN 11 criteria. Meeting the design target for the night would also therefore be expected to meet the daytime criteria.

Table 12 provides the highest L_{Aeq} value at each plot over the day-time period.

Elevation	Free-Field Noise Level 8-hour Night 23:00 – 07:00 (dB L_{Aeq})	Noise Exposure Category as Defined by TAN 11
Eastern	45	NEC B
Southern		NEC B
Western		NEC B

TABLE 12: NIGHT-TIME PERIOD ESTIMATED L_{AEQ} VALUES ON EACH ELEVATION

The L_{Aeq} values at each elevation would indicate that the development falls within Noise Exposure Category B. The conclusion from TAN11 is:

> *"Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection."*

We have also estimated the external noise level which is not exceeded more than 10-15 No times per night and these values are shown in Table 13.

Elevation	Façade Noise Level 8-hour Night 23:00 – 07:00 (dB L_{AFMax})
All Elevations	68

TABLE 13: NIGHT-TIME PERIOD TYPICAL L_{AFMAX} VALUES (FAÇADE)

The measured and estimated data indicates that the design will be driven by achievement of the L_{AFMax} target values within the properties at night.

For this reason, we have based our internal noise assessment on the L_{AFMax} value, and the requirements set out in ProPG.

We have utilised the daytime L_{Aeq} data to determine the acceptability of outdoor amenity space.

4.4 Stage 2 Assessment…

4.4.1 Internal Noise Level Guidelines

To provide suitable protection for the residents from external noise we have considered a package of sound insulation measures which are expected to offer an acceptable internal noise environment.

To define the performance of the building envelopes and demonstrate an acceptable internal environment is possible within the development, the calculations have been based on the data obtained from the site noise survey and architectural details of the building form and heights.

There are numerous noise sources evident at the site and therefore we have adopted the approach that the measured noise levels are broadly similar on all elevations.

The most onerous requirement placed on the building envelopes is determined by the night-time maximum internal noise level requirement of 45 dB $L_{Amax,10x}$ and Table 14 set out the minimum level difference from the outside to the inside required.

Elevation (Room Type)	Most Onerous Design Case		
	External Design Level at Façade	Indoor Target Level	Minimum Level Difference Between Outside (Façade) and Inside Sound Levels (dB D_{Atr})
All Elevations (Living / Bedrooms only)	68 L_{AFMax}	45 L_{AFMax}	23

TABLE 14: MINIMUM LEVEL DIFFERENCE BETWEEN OUTSIDE AND INSIDE

The minimum level difference would not be achieved by natural ventilation using opening windows, so an alternative means of providing fresh air is considered.

The construction specifications considered in this assessment are as follows

> **Specification 1** (Basic) – Standard double-glazing. Normal ventilation is not provided by opening windows, but mechanical ventilation openings within the ceiling void. Purge ventilation via opening windows or boost setting.

The minimum performance specification of the elements for each design is summarised in Table 15.

Room Type	Minimum Sound Insulation Target for Elements			
	Walls dB R_w+C_{tr}	Glazing dB R_w+C_{tr}	Roof dB R_w+C_{tr}	Ventilation Openings dB $D_{ne,w}+C_{tr}$
Specification Type 1 – Basic				
Living / Bedrooms	50	26	--	24

TABLE 15: MINIMUM SOUND INSULATION PERFORMANCE TARGETS FOR FAÇADE ELEMENTS

The laboratory-based specification of building elements should be ascertained by testing and have been undertaken in a laboratory accredited to undertake sound insulation testing to BS EN ISO

10140-5 (e.g. UKAS or equivalent). All testing should have been undertaken in accordance with BS EN ISO 10140 Part 1 and Part 2 or equivalent. For the avoidance of doubt the laboratory measured performance of windows shall include the effects of the framing as well as the glass.

Within our calculations we include a correction to the sound insulation performance of the façade elements to account for site installation and construction tolerance of (minus) -3 dB from the laboratory measured performance. All specifications provided herein are laboratory measured performances.

4.4.2 Detailed Façade Design Proposals

The construction descriptions in Table 16 are considered typical examples of constructions that are capable of suitable performance for the respective parts of the development described in Table 15. The constructions described are acoustic design intent only and have not been considered for thermal performance, fire resistance, structural integrity or any other design requirements.

Location	Minimum Performance Criteria	Typical Construction Description
Specification Type 1 – Basic		
Walls	50 dB R_w+C_{tr}	102.5 mm facing brick (Reto Tiffany / Buff), 50 mm cavity, 200 mm mineral wool insulation, 100 mm masonry Block, VCL, 10 mm dabs, 12.5 mm Ladura Plasterboard
Windows	26 dB R_w+C_{tr}	Sealed double glazed unit in a 4 mm float glass, 16 mm airspace, 4 mm float glass configuration
Vent	24 dB $D_{ne,w}+C_{tr}$	Unattenuated mechanical ventilation openings within ceiling void expected to achieve requirement

TABLE 16: TYPICAL CONSTRUCTION DESCRIPTIONS

The minimum performance criteria for glazing are to be inclusive of the performance of the window frame and seals. We recommend this be confirmed by the chosen manufacturer prior to installation.

The detailed sound reduction performances of the above construction in 1/1 octave bands between 63 Hz and 8 kHz are summarised in Table 17.

Element	Typical Sound Reduction Index R (dB) at each 1/1 Octave Band Centre Frequency (Hz)								R_w (C_{tr})
	63	125	250	500	1000	2000	4000	8000	
Walls	37	40	38	46	54	62	68	--	55 (-5)
Type 1 Window (4/16/4)[1]	--	24	18	26	40	45	39	--	29 (-3)

TABLE 17: TYPICAL ACOUSTIC PERFORMANCE SPECIFICATION OF PROPOSED CONSTRUCTION ELEMENTS

[1] Data based on Guardian Glass specifications

All external doors leading from residential locations to balcony areas are to achieve a minimum acoustic rating to match that of the windows described in Table 16.

4.5External Amenity Area Noise Assessment

PropPG references the recommended external amenity area noise levels provided is BS8233, and states the following:

> *"The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$."*

The survey indicates that the pre-development noise exposure on the residential buildings (53 dB $L_{Aeq,16hrs}$) falls within this range and therefore an acceptable standard of external amenity, in terms of noise, can be expected.

4.6Assessment of Other Relevant Issues

4.6.1 Compliance with Relevant National and Local Policy

The design specification described thus far is based on achievement of the minimum requirements set out in TAN 11 and BS8233.

We have investigated what effect there would be to the design to achieve compliance with all the reviewed national and local policies.

We have analysed the available noise survey information, and the more onerous criteria leads to more onerous requirements placed on the building façades at night.

Our modelling suggests that to achieve the night-time maximum levels unattenuated mechanical vents on all windows are appropriate. Achieving the more onerous night-time maximum levels will be expected to also achieve daytime requirements.

4.6.2 Magnitude and Extent of Compliance

Through achievement of the individual elemental performances specified, the internal noise level targets set out above are expected to be achieved.

For clarity, all rooms can be expected to achieve indoor noise levels of no greater than 35 dB(A) $L_{Aeq,16hr}$ during the day and less than 30 dB(A) $L_{Aeq,8hr}$ at night without exceeding 45 dB(A) $L_{AFmax,}$ more than 10-15 times during the night.

Suitable recommendations have been provided which involve reliance solely on the building fabric to achieve BS8233 internal ambient noise levels, which is in full accordance with the guidance document.

4.6.3 Likely Occupants of the Development

With the provisions described to mitigate external noise within the development, we are of the opinion that there are no restrictions on the type of occupant that could reside within the development.

4.6.4 Acoustic Design v Unintended Adverse Consequences

Potential adverse consequences of a system dependent entirely on the building fabric to reduce noise ingress include the possibility that windows may generally be closed and lead to a lack of connection with the external environment.

Furthermore, the achievement of the targeted indoor noise levels at night will supress the levels experienced between each noise event. The very quiet conditions that occur may lead to privacy issues between adjacent rooms.

The differences between maximum and average noise levels on the site are not unusual, and there would not be an unusual outcome in terms of privacy from using the building envelope to control external noise.

4.6.5 Acoustic Design v Wider Planning Objectives

We are not aware of any wider planning objectives which might be compromised by the acoustic design.

5.0 CONCLUSION…

Compliance with the requirements of Approved Document E regulations E1, E2 and E3 can be expected subject to the design recommendations stated.

Demonstration of compliance with regulation E4 is not relevant to this part of the development.

Compliance with the requirements of BS8233 (sound insulation) can be expected subject to the design recommendations stated.

We can also conclude that the development location is considered suitable for residential use with respect to noise, being exposed to a moderately low level of external sound and that the proposed building is expected to be sufficient to achieve compliance with the relevant guidance.

Compliance with the requirements of BREEAM can be expected subject to the design recommendations stated.

It is recommended a suitably qualified acoustics consultant is retained to inspect the building work during construction to provide on-going advice on acoustics related construction issues, product substitutions and design changes.

The building will be subject to pre-completion testing to demonstrate compliance.

We hope the above information is useful to progress the project at this stage. Please feel free to contact me if you require any further clarification.

Yours sincerely,
For Red Twin Limited

RED TWIN LIMITED
Consultants in Acoustics

Dr Ashley Punter BEng (Hons) EngD MSc MRTPI MIOA
Acoustic Consultant

APPENDIX A – PLAN MARK-UP INDICATING ACOUSTIC DESIGN INTENT…

Wall Type	Description	Expected Laboratory Performance dB R_w	Substantiation Reference
1	2 x 15mm Siniat dB Boards, Siniat AS146/Rx Acoustic Stud at 600mm centres, 50mm glass mineral wool, 2 x 15mm Siniat dB Boards	62	Siniat AS14R-215dB-50G
2	1 x 12.5mm Siniat Universal Board, 1 x 12.5mm Siniat dB Board, Siniat CS146/Rx C-Stud at 600mm centres, 1 x 12.5mm Siniat dB Board, 1 x 12.5mm Siniat Universal Board	54	Siniat CS14R-12Un12dB
3	2 x 15mm Siniat dB Boards, Siniat AS70/Rx Acoustic Stud at 600mm centres, 50mm glass mineral wool, 2 x 15mm Siniat dB Boards	58	Siniat AS70R-215dB-50G
4	1 x 15mm Siniat dB Board, Siniat CS50/Rx C-Stud at 600mm centres, 1 x 15mm Siniat dB Board	40	Siniat CS50R-15dB
5	2 x 12.5mm Siniat Standard Boards, Siniat CS50/Rx C-Stud at 600mm centres, 2 x 12.5mm Siniat Standard Boards	45	Siniat CS50R-212St
●	Typically, 45 mm solid core door set (25 kg m^{-2}) with smoke seals	29	TBC
●	Typically, 45 mm solid core door set (38 kg m^{-2}) with smoke seals	35	TBC

TABLE 18: WALL TYPES KEY

Marked up plans are indicative of acoustic design intent only and not to scale.

ISO CLASS C Absorption

ISO CLASS A Absorption

FIGURE 2: GROUND FLOOR SCHOOL RESIDENTIAL ACOUSTIC DESIGN INTENT

FIGURE 3: GROUND FLOOR SOCIAL SERVICES RESIDENTIAL ACOUSTIC DESIGN INTENT (HARWOOD)

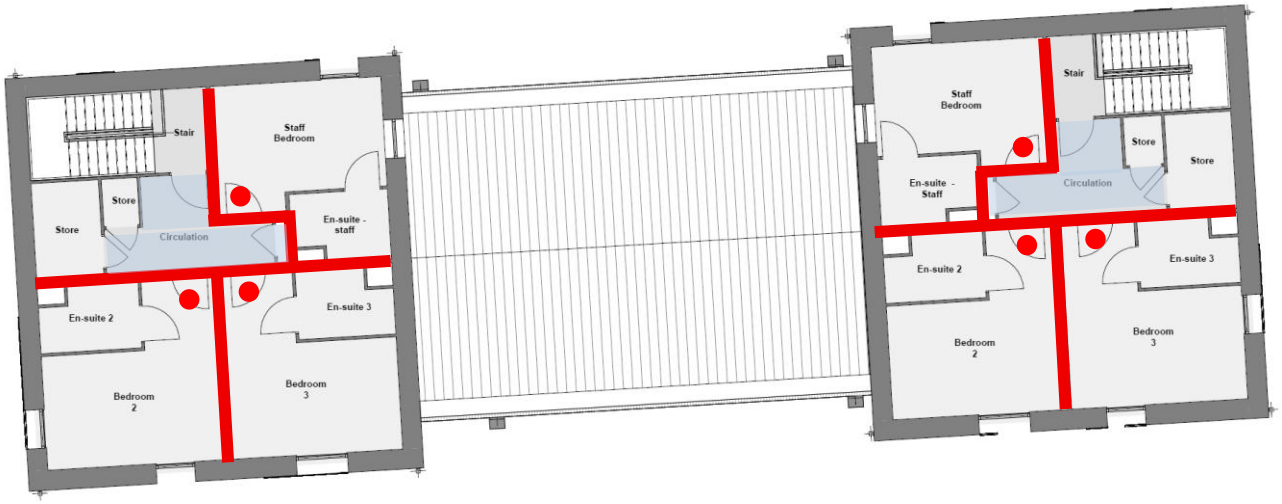

FIGURE 4: FIRST FLOOR SCHOOL RESIDENTIAL ACOUSTIC DESIGN INTENT

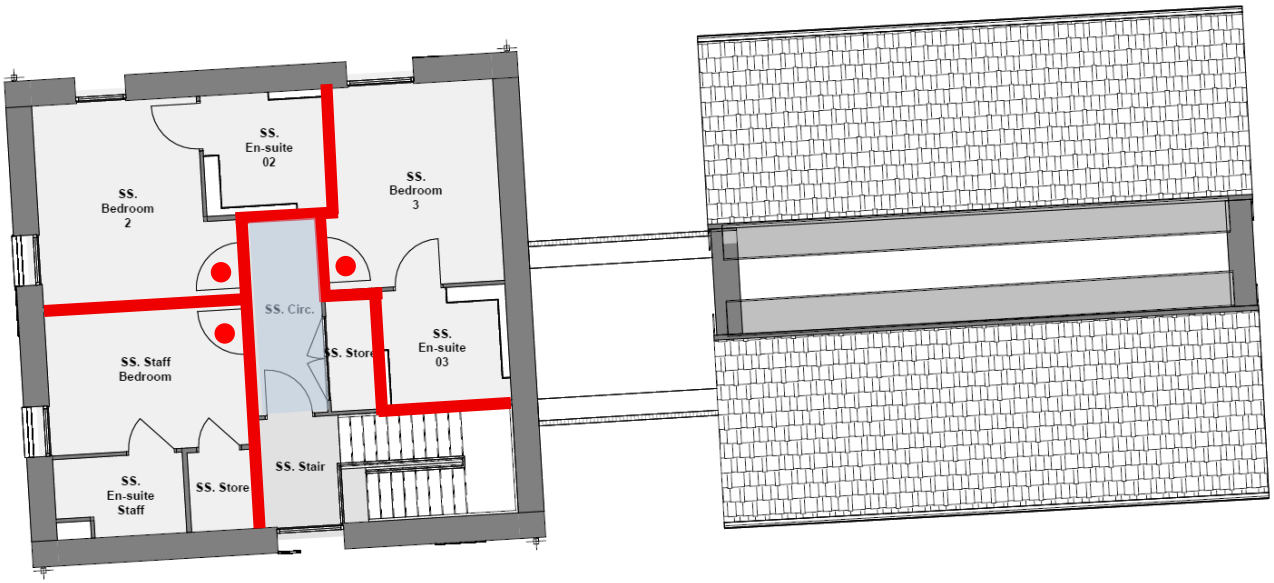

FIGURE 5: FIRST FLOOR SOCIAL SERVICES RESIDENTIAL ACOUSTIC DESIGN INTENT (HARWOOD)

APPENDIX B – PROPOSED SITE PLAN…

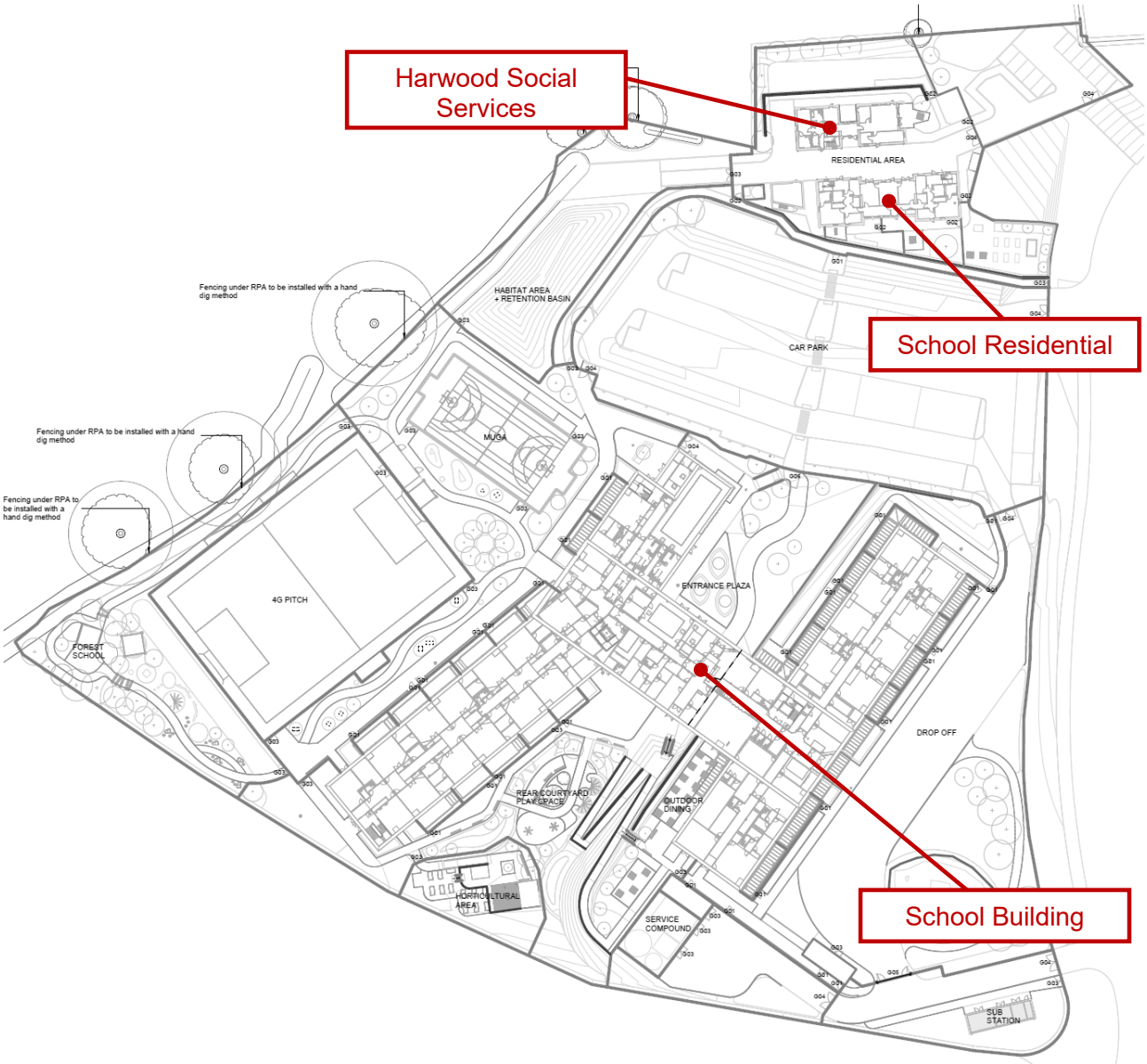

FIGURE 6: SITE PLAN SHOWING PROPOSED RESIDENTIAL BLOCKS AND SCHOOL

APPENDIX C – SURVEY DETAILS…

Address: New Heronsbridge SEN School, Land adjacent to Bridgend Science Park, Bridgend.

Date: 2nd - 4th March 2026

Measurement Location

Location 1 The monitoring equipment was set up to the West of the site at a location considered representative of the Northern façade of the proposed new school building. The microphone was pole mounted at 2.5 m above local ground level and in free-field conditions as indicated in Figure 7.

Equipment

Location 1 (Green kit)

Brüel & Kjær 2250 hand-held analyser, serial No 2832395, with a Brüel & Kjær Type 4189 Microphone, serial No 3005055. The microphone was fitted with a UA-1650 windshield. The hand-held analyser and microphone were laboratory calibrated on 9th April 2024 (Certificate No. 47434) and the calibrator was laboratory calibrated on 6th October 2025 (Certificate No. U52280). The hand-held analyser sensitivity was checked before and after the measurements using the calibrator and a drift of +0.05 dB was observed, which is not significant and no adjustments to the measurements have been made to the data.

Personnel

The survey was set up and managed by Dr Ashley Punter of Red Twin Limited.

Weather

The weather was suitable for noise measurement with sunny / part cloud conditions. There was no precipitation at any time during or immediately prior to the survey. Wind speeds were generally low (<<5 m s^{-1}) and were suitable for noise surveying.

Conditions were acceptable for noise measurement work and in full accordance with BS7445.

Survey Comments

The background and ambient sound at site are considered to be dominated by the noise from the local road network (repairs taking place with temporary traffic lights), passing airplanes, occasional passing trains, and construction noise / tree work taking place on neighbouring land.

Location	Start Time	Duration	Parameter dB(A)			
			L_{AFmax}	L_{Aeq}	L_{A1}	L_{A90}
1 Day 1	13:00:00	01:00:00	87.2	54.0	60.2	42.9
	14:00:00	01:00:00	71.6	50.5	63.5	44.0
	15:00:00	01:00:00	69.5	50.2	59.7	45.9
	16:00:00	01:00:00	69.2	50.4	56.7	47.0
	17:00:00	01:00:00	67.2	48.7	55.8	45.7
	18:00:00	01:00:00	69.2	48.2	53.9	45.7
	19:00:00	01:00:00	63.7	49.4	60.2	44.2
	20:00:00	01:00:00	66.1	47.0	59.5	41.4
	21:00:00	01:00:00	56.0	45.6	50.6	42.3
	22:00:00	01:00:00	61.6	44.9	51.1	40.3
1 Day 2	07:00:00	01:00:00	70.8	49.7	57.0	47.5
	08:00:00	01:00:00	64.7	48.1	53.5	46.1
	09:00:00	01:00:00	70.2	52.5	58.6	47.5

	10:00:00	01:00:00	73.0	52.5	61.9	45.2
	11:00:00	01:00:00	72.5	52.2	59.1	47.7
	12:00:00	01:00:00	77.8	53.5	58.4	47.4
	13:00:00	01:00:00	68.1	48.3	56.6	45.6
	14:00:00	01:00:00	78.6	51.2	55.5	46.6
	15:00:00	01:00:00	69.2	50.2	56.4	45.3
	16:00:00	01:00:00	64.6	49.0	54.6	45.6
	17:00:00	01:00:00	68.8	49.1	57.9	46.2
	18:00:00	01:00:00	57.4	46.9	50.6	45.3
	19:00:00	01:00:00	61.8	45.6	48.4	44.0
	20:00:00	01:00:00	53.3	44.3	46.9	42.8
	21:00:00	01:00:00	56.9	44.1	47.6	41.8
	22:00:00	01:00:00	55.6	42.9	47.0	40.4
1 Day 3	07:00:00	01:00:00	67.11	49.8	54.35	48.06
	08:00:00	01:00:00	76.5	50.82	58.55	47.48
	09:00:00	01:00:00	86.79	51.53	56.33	45.53
	09:54:00	00:54:00	115.4	72.47	56.9	44.07

TABLE 19: MEASURED NOISE DATA – (FREE-FIELD)

Data in read has been excluded from our survey due to it being extraneous noise sources

FIGURE 7: PHOTOGRAPH OF SURVEY MEASUREMENT LOCATION NO 1 (LOOKING NORTH)