

# **Acoustic** South East



## Noise Impact Assessment – New Residential Development

Report by: Josh Robinson AMIOA

Date: 08/04/2026

Project: J4182

Issue 1

Site: **37 High Street, Littlehampton, West Sussex. BN17 5EG**

Client: **Arch Construction Sussex Ltd.**

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Report by: Josh Robinson AMIOA

Checked by: Scott Castle BSc (Hons) CEnvH, MCIEH MIOA

|         |            |                |
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## 1 Introduction and Executive Summary

Acoustic South East have been appointed to undertake an acoustic assessment in support of a change of use planning application. The site is located at 37 High Street, Littlehampton. The proposed changes would comprise of a commercial unit on the ground floor and 2 residential flats above on the 1<sup>st</sup> and 2<sup>nd</sup> floors.

Standards and guidance referenced for this assessment include:

- ProPG2017- Planning & Noise, Professional Practice Guidance on Planning & Noise
- Acoustics Ventilation and Overheating Guidance, January 2020
- BS8233:2014 – Guidance on Sound Insulation and Noise reduction for Buildings.
- BS4142:2014+A1:2019 (Methods for rating and assessing industrial and commercial noise)
- World Health Organisation Guidelines for Community Noise (1999, revised 2018)
- Approved Document E of the Building Regulations 2010 (2015 amendments)
- Planning Noise Advice Document 2023

A class 1 sound level meter was installed at a representative location at the front of the existing property. This was to identify the soundscape and incident sound levels on the front facade between the 6<sup>th</sup> to the 13<sup>th</sup> of March 2026. An attended short-term measurement was also undertaken at the rear of the property to assist with assessment.

The soundscape is dominated by the sound of the Highstreet during the daytime period and mostly by the Crown Pub and other nightlife during the nighttime period.

For the daytime period, the average measured sound pressure levels were 54dB  $L_{Aeq, 16-hour}$  during the day and 49dB  $L_{Aeq, 8-hour}$  during the night (at the front façade). However, due to the presence of nearby commercial sound, the  $L_{Amax}$  conditions/events drive the requirements to protect future occupants against adverse overnight sound pressure levels. The worst-case hour was used to ensure adequate protection from daytime sound pressure levels.

The assessment concludes that the development is capable of being constructed. The indoor sound criteria of BS8233:2014 and ProPG 2017, can be achieved with enhanced double glazing and acoustic wall ventilation.

The initial site risk assessment consistent with the approach in ProPG2017 is that the risk associated with developing the site is low for the North and South facades.

A sound insulation test was carried out between the existing commercial ground floor and the 1<sup>st</sup> floor. The result was a  $D_{nT,w} + C_{tr}$  of 39 dB. This would not comply with Approved Document E. A construction specification has been provided that will meet the ADE criteria and the heightened +5dB  $D_{nT,w} + C_{tr}$  criteria (48  $D_{nT,w} + C_{tr}$  for conversion properties) which Local Authorities often require.

Based on the information presented, if appropriate measures are implemented, planning permission should not be withheld on noise grounds.

## **2 Context, Noise Criteria & Noise Assessment Methodology**

### **2.1 Context**

The proposal is for a change of use planning application. The site is located at 37 High Street, Littlehampton BN17 5EG. The proposed changes would comprise of refurbishing the existing commercial unit on the ground floor and converting the 1<sup>st</sup> and 2<sup>nd</sup> floors into 2 residential flats.

The existing ground floor is currently vacant, formerly a retail shop.

### **2.2 Location**

The development site is located on the North side of the High Street, Littlehampton. The premises' neighbours are a betting shop to the East with a photo development shop and Portuguese bar/grill restaurant to the West. The Crown pub is located approximately 20 metres to the West of the property. Some nearby commercial plant belonging to the bar/grill was noted at the rear of the property. It was not audible when site visits occurred.

#### **2.2.1 The Crown Pub**

The nearby pub, The Crown, lists its opening hours as:

|           |               |
|-----------|---------------|
| Monday    | 13:00 - 00:00 |
| Tuesday   | 13:00 - 00:00 |
| Wednesday | 13:00 - 00:00 |
| Thursday  | 13:00 - 02:00 |
| Friday    | 12:00 - 02:00 |
| Saturday  | 12:00 - 02:00 |
| Sunday    | 12:00 - 00:00 |

It should be noted that the pub advertises events on its Facebook page that involves DJs, live music and karaoke. Some of the events on Saturday are advertised as running until 2.45am.

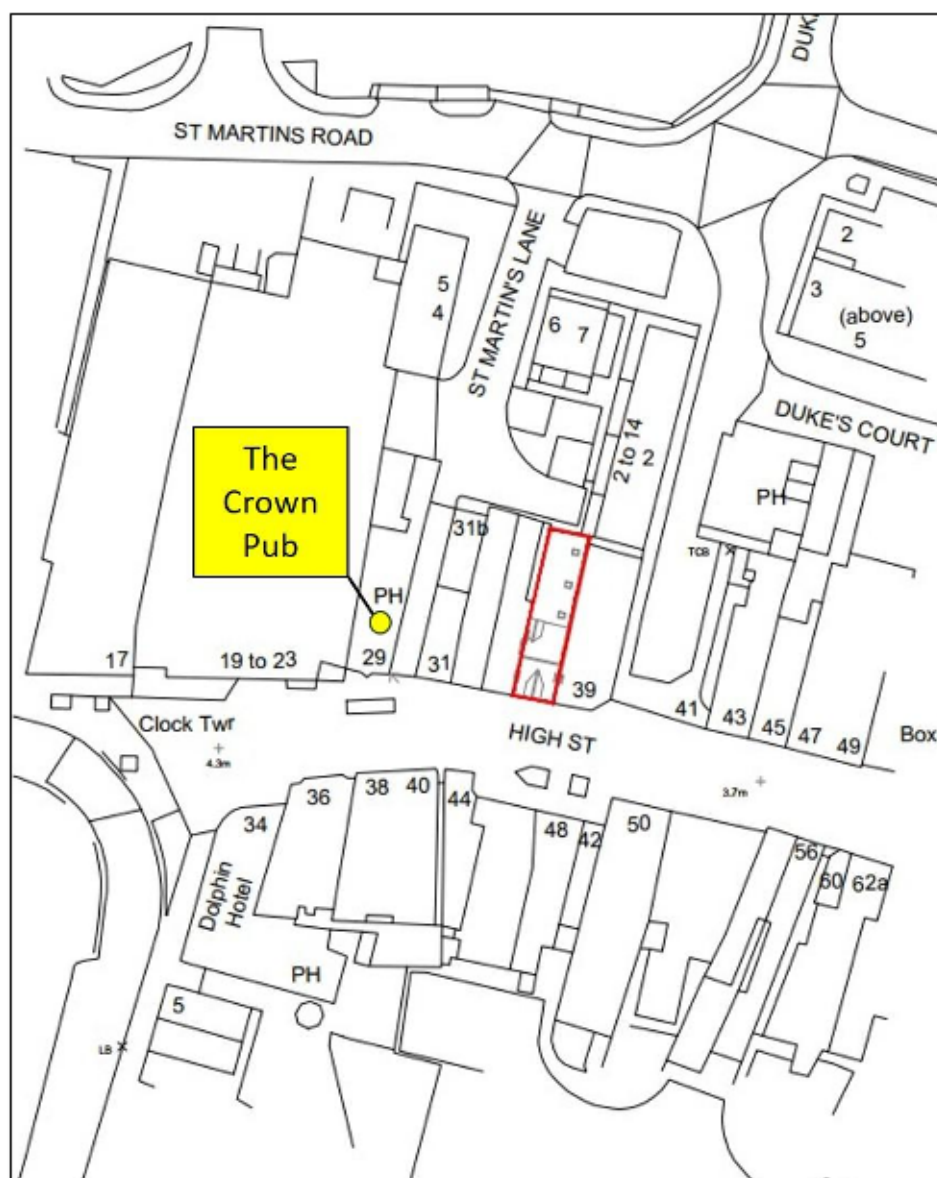


Figure 1. Site Location



Figure 2. Existing Floor Plans

### 2.3 Proposed Floor Plans



Figure 3. Proposed Floor Plans

The KLD's are on the front South facade with bedrooms located on the North rear facades.

## 2.4 Site Soundscape

The sound from the Highstreet dominates the soundscape at the front façade, mostly from pedestrian noise. The rear is dominated by road traffic noise from St Martin's Road and the adjoining car park.

At the time of the survey set up and collection, a market was setup in the Highstreet. It is understood this occurs every Friday.

## 2.5 Relevant Standards and Policies

### 2.5.1 BS8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings

Table 4 of BS8233 provides the following guideline values:

| Activity                   | Location         | Period of day         |                      |
|----------------------------|------------------|-----------------------|----------------------|
|                            |                  | 07:00-23:00           | 23:00-07:00          |
| Resting                    | Living Rooms     | 35dB $L_{Aeq,16hour}$ | -                    |
| Dining                     | Dining Room/Area | 40dB $L_{Aeq,16hour}$ | -                    |
| Sleeping (daytime resting) | Bedroom          | 35dB $L_{Aeq,16hour}$ | 30dB $L_{Aeq,8hour}$ |

**Table 1 BS8233:2014 Criteria**

Please note this relates to continuous and anonymous sound and a soundscape which has acoustic character or features, which may draw a listener's attention, will typically require either the use of a worst-case hour or, a reduced internal criterion.

### 2.5.2 National Planning Policy Framework (NPPF)

The National Planning Policy Framework (Dec 2024) defines the Government's planning policies for England and how these are expected to be applied. It sets out the Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so.

The following paragraphs are relevant within NPPF Section 15 (Conserving and enhancing the natural environment) states the following:

Paragraph 187(e) - Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability, and

Paragraph 198 - Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

- a) mitigate and reduce to a minimum potential adverse impact resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;
- b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

Paragraph 200– Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or ‘agent of change’) should be required to provide suitable mitigation before the development has been completed.

It should be noted that as the agent of change principle would apply, the introduction residential receptors to the site has been accounted for.

### 2.5.3 ProPG2017

Planning guidance (ProPG2017) relates to new residential development and airborne transportation noise, which includes exposure to road traffic, railway and aviation noise. Whilst ProPG, 2017 generally mirrors the requirements of BS8233:2014 and the World Health Organisation Guidelines, 1999, it goes further in setting a limit for inside bedrooms for  $L_{Amax}$  events and specifically, no more than 10  $L_{Amax}$  events per night time period above 45dB(A).

Although the dominant sound sources are not transport related, we have used the criteria for  $L_{Amax}$  as the it is often the preferred target by Local Authorities. The internal bedroom  $L_{Amax}$  values will be used in accordance with ProPG2017. An initial site risk assessment is provided within the report.

### 2.5.4 Planning Noise Advice Document – Sussex, November 2023

A planning noise advice document which all Sussex local authorities have contributed to and signed up to (including Arun District Council) remains relevant. The guidance document has been followed in respect of measurement parameters and report presentation of data.

### 3 Methodology

#### 3.1 Survey Locations



Figure 4. Measurement Positions.

#### 3.2 Sound Survey Details

A survey of the site soundscape was carried out between the 6<sup>th</sup> and the 13<sup>th</sup> of March, 2026. This was to measure the existing sound pressure levels experienced by the site. All noise levels in this report are fast time weighted and A-weighted levels, unless stated otherwise. The sound level meter was set to a 1-minute resolution.

Due to both access and security issues, only the front façade was capable of having a long-term survey setup.

Please note that the sound pressure levels measured by the survey were next to a façade. They have therefore been adjusted to be free field.



Figure 5. LT1 (Representative of nearest façade)

| Front of Property.       |                                                                                   |
|--------------------------|-----------------------------------------------------------------------------------|
| Survey(s) carried out by | Josh Robinson AMIOA                                                               |
| Equipment Used           | Norsonic 140 - Class 1 Sound Level Meter. Mounted on monopole. Serial No. 1402829 |
|                          | Norsonic 1251 Calibrator. Serial No. 31698                                        |
| Location of Microphone   | 4.2m from ground level, 0.5m from façade.<br>W3W: puns.whips.ticket               |
| Duration of Survey       | 6 <sup>th</sup> March to 13 <sup>th</sup> March 2026                              |

## 4 Results of the Unattended Sound Survey

### 4.1 Noise Survey Results

The results obtained from the front façade overlooking the High Street are seen in Table 2 below. Only complete daytime or night time periods have been presented from the dataset. Data was adjusted to represent free-field measurements.

### 4.2 Review of Data

| Front Façade |                         |       |                                    |                 |            |                        |
|--------------|-------------------------|-------|------------------------------------|-----------------|------------|------------------------|
|              | L <sub>Aeq</sub> 16/8Hr |       | 11 <sup>th</sup> L <sub>Amax</sub> | Sound Reduction |            |                        |
| Date         | Day                     | Night | 1 min                              | Day 16Hr        | Night 8 Hr | L <sub>Amax</sub> 1min |
| 06-Mar       | -                       | 54.5  | 78.4                               |                 | 24.5       | 33.4                   |
| 07-Mar       | 55.6                    | 53.8  | 76.0                               | 20.6            | 23.8       | 31.0                   |
| 08-Mar       | 52.2                    | 43.8  | 66.0                               | 17.2            | 13.8       | 21.0                   |
| 09-Mar       | 52.7                    | 45.3  | 66.6                               | 17.7            | 15.3       | 21.6                   |
| 10-Mar       | 53.4                    | 47.7  | 70.9                               | 18.4            | 17.7       | 25.9                   |
| 11-Mar       | 57.5                    | 47.8  | 68.3                               | 22.5            | 17.8       | 23.3                   |

|                 |      |      |      |      |      |      |
|-----------------|------|------|------|------|------|------|
| 12-Mar          | 50.3 | 49.1 | 76.6 | 15.3 | 19.1 | 31.6 |
| 13-Mar          | 56.3 | -    | -    | 21.3 | -    | -    |
| <b>AVERAGE:</b> | 54   | 49   | 72   | 19   | 19   | 27   |

**Table 2: Results Front Façade**

In the table above, the required daytime sound reduction (SRI) is the predicted external free field sound pressure level minus 35dB as per the Table 4 values in BS8233:2014 and the same for the night time values (albeit minus 30dB).

The predicted night time SRI for  $L_{Amax}$  is higher than the SRI required to achieve the  $L_{Aeq, 8\text{ Hour}}$  value. However, given the presence of commercial and pub noise, the worst-case hour from the day and night periods were identified. The worst-case daytime hour was 61.5  $L_{Aeq, 1\text{-Hour}}$  on Thursday 12<sup>th</sup> and the worst-case hour at nighttime was 60  $L_{Aeq, 1\text{-Hour}}$  on Friday 6<sup>th</sup>. This is shown in as shown below in Table 3 below.

| Friday 6th March - $L_{Aeq, 1\text{-Hour}}$ , 23:00-07:00 - Nighttime  |       |       |       |       |       |       |       |       |
|------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Time                                                                   | 23:00 | 00:00 | 01:00 | 02:00 | 03:00 | 04:00 | 05:00 | 06:00 |
| $L_{Aeq, 1\text{-Hour}}$                                               | 57.8  | 60.0  | 54.8  | 53.1  | 38.2  | 38.4  | 40.9  | 51.7  |
| Thursday 12th March - $L_{Aeq, 1\text{-Hour}}$ , 07:00-23:00 - Daytime |       |       |       |       |       |       |       |       |
| Time                                                                   | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 |
| $L_{Aeq, 1\text{-Hour}}$                                               | 54.0  | 51.1  | 51.2  | 56.7  | 56.8  | 56.8  | 55.9  | 55.3  |
|                                                                        | 15:00 | 16:00 | 17:00 | 18:00 | 19:00 | 20:00 | 21:00 | 22:00 |
| $L_{Aeq, 1\text{-Hour}}$                                               | 57.4  | 60.1  | 61.5  | 53.3  | 52.2  | 54.1  | 54.3  | 54.1  |

**Table 3. Worst case hours. Day and Nighttime period.**

| Location   | SRI for Daytime<br>$L_{Aeq, 16\text{-Hour}}$ | SRI for Daytime<br>$L_{Aeq, 1\text{-Hour}}$ | SRI for Nighttime<br>$L_{Aeq, 8\text{-Hour}}$ | SRI for Nighttime<br>$L_{Aeq, 1\text{-Hour}}$ | SRI to ensure less than 10 $L_{Amax}$ events - 45dB(A) |
|------------|----------------------------------------------|---------------------------------------------|-----------------------------------------------|-----------------------------------------------|--------------------------------------------------------|
| LT1 Survey | 19                                           | 27                                          | 19                                            | 30                                            | 33                                                     |

**Table 4. Summary of SRI requirements.**

As Table 4 shows, the SRI requirement for the worst-case night  $L_{Amax}$  is still higher than the requirement for the night-time  $L_{Aeq, 8\text{-Hour}}$  average or worst-case nighttime  $L_{Aeq, 1\text{-Hour}}$ .

The worst-case  $L_{Aeq, 1\text{-Hour}}$  for the daytime requires a higher SRI than the  $L_{Aeq, 16\text{-Hour}}$  average however.

Therefore, both of the worst-case values will be used in their respective periods and assessment to ensure future occupants are protected from nearby commercial noise.

#### 4.2.1 Attended Measurement results

A time-aligned attended measurement was taken at the rear of the property in conjunction with the long- term survey.

| Level difference between LT1 and ST1 |                             |
|--------------------------------------|-----------------------------|
| Measurement Position                 | $L_{Aeq, 15\text{-Minute}}$ |
| LT1 Front Façade                     | 49.4                        |
| ST2 Rear Façade                      | 50.2                        |

**Table 5. Level Difference Used to Inform Rear Façade SRI**

There is a 0.8 dB difference in level between the front and rear facades. This level difference will be used to inform the SRI requirement for the rear façade. As SRIs use whole number values, the level difference of 0.8dB will be rounded up to 1dB.

this will most likely represent worst-case scenario. The attended comparison measurements may present a different case to a night time scenario when the high street sound pressure levels are higher due to people going out to pubs as well as noise escaping from the pub front doors as they open and close. In reality it is considered that evening and night noise levels, incident to the bedroom windows at the rear, will be lower than the levels at the front of the building.

### 4.3 Night Noise Levels - $L_{Aeq, 1\text{ hour}}$

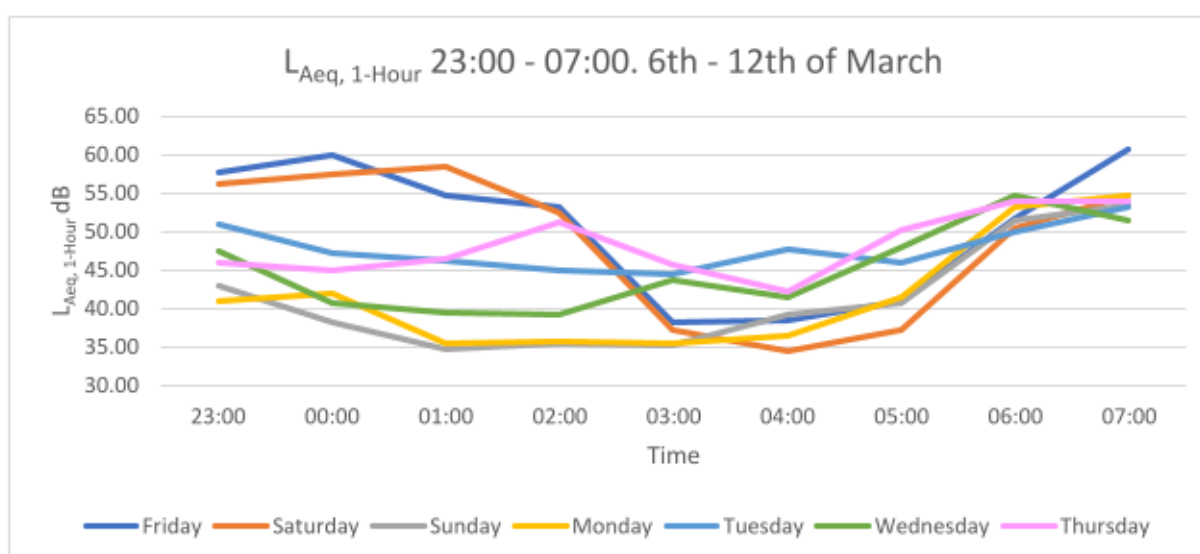


**Figure 6. Night-time period,  $L_{Aeq, 1\text{-Hour}}$**

Looking at the nighttime period, the measured data corresponds with the opening hours of the Crown pub and its listed/advertised late-night closing hours on Thursday, Friday and Saturday between 02:00 – 02.45.

The higher level from 06:00 on Friday morning, compared the other days, is attributable to the presence of the weekly market that takes place in the high street.

## 5 ProPG2017 Assessment

### 5.1 Initial Site Risk Assessment – ProPG2017

In accordance with the requirements of ProPG2017, an initial site risk assessment has been carried out. The results in Figure 7 below indicate a low risk with regards to noise for the development of the site on the Front and Rear facades. It should be noted that this initial assessment only considers the full Daytime and Nighttime periods. Further assessments will use the worst-case hour.

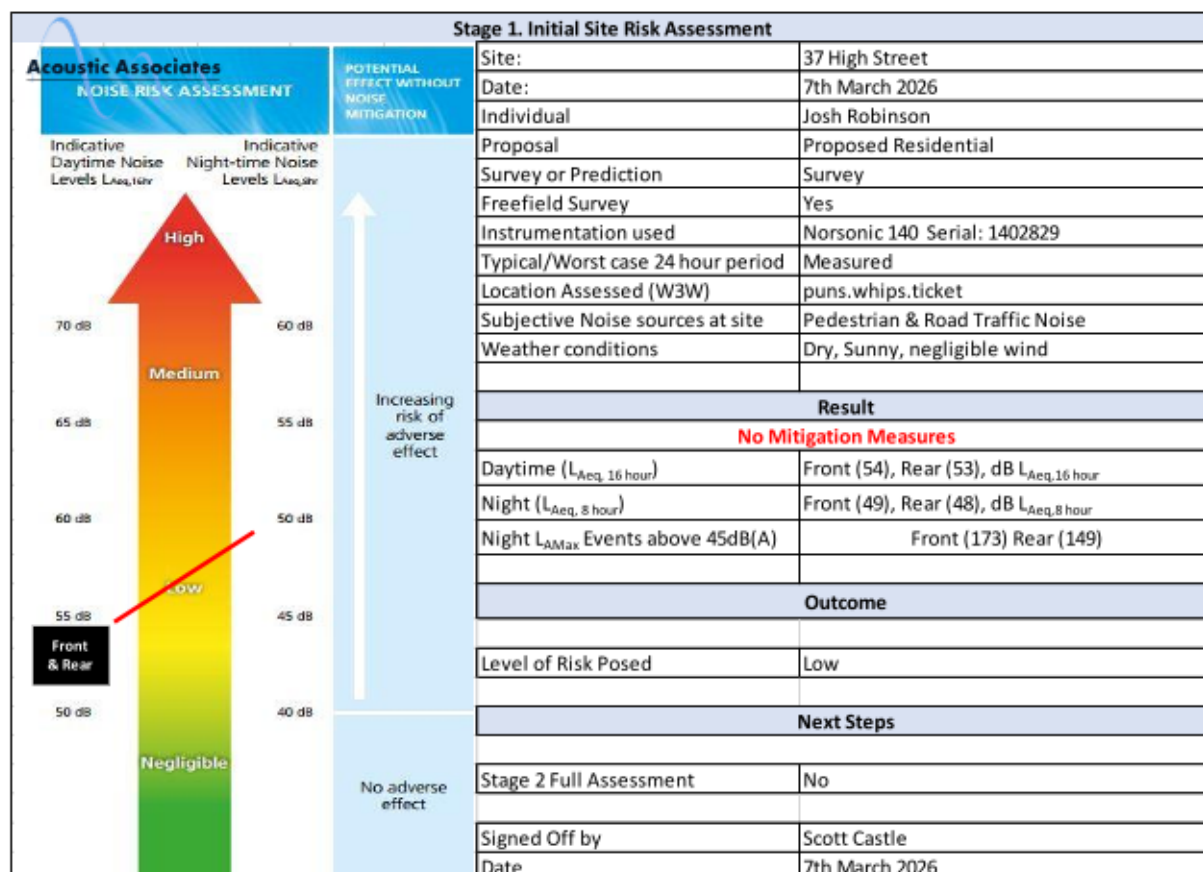


Figure 7. ProPG2017 Initial Site Risk Assessment

## 6 Mitigation Measures

### 6.1 Required Sound Reduction of External Façade

There are three drivers which impact the façade sound reduction index or SRI. These are the daytime continuous noise levels measured over 16 hours in  $L_{Aeq,T}$ , the night time continuous noise levels over 8 hours, also measured in  $L_{Aeq,T}$ . Thirdly, ProPG2017 requires a consideration of the number of  $L_{Amax}$  events which will occur in a bedroom during the night time period. Specifically, ProPG2017 requires no more than ten events exceeding 45dB  $L_{Amax}$  measured internally. Whichever of these drivers is highest is applied to ensure that the residents are protected from each criterion.

It is relevant to note that living room and bedroom calculations differ, as whilst living rooms are subject to only the daytime predicted sound pressure levels, bedrooms must consider both daytime and night time continuous sound pressure levels as well as  $L_{Amax}$  events during the night to protect sleep.

The required daytime SRI is the predicted external free field sound pressure level minus 35dB as per the Table 4 values in BS8233:2014 and the same for the night time values (albeit minus 30dB).

As shown in Table 4, the predicted night time SRI for  $L_{Amax}$  is higher than the SRI required to achieve both the  $L_{Aeq, 8\text{ Hour}}$  and the worst case  $L_{Aeq, 1\text{-hour}}$  at night. As such the  $L_{Amax}$  will be used in determining the requirements for appropriate SRI for bedrooms as shown below in Table 6. As the bedrooms are located on the rear of the property, a 1db uplift has been added to the SRI requirement as per Section 4.2.1.

The worst-case hour from Table 3 has been used for the daytime assessment. This is to ensure that residents are protected against commercial soundscapes which are likely to have character.

| Location                   | Daytime<br>$L_{Aeq, 1\text{-Hour}}$<br>(Worst-case hour) | 11th<br>Highest<br>$L_{Amax}$<br>(Worst-case night) | Level<br>Difference<br>from ST1 | SRI to<br>meet<br>Daytime<br>Criterion<br>(35dBA) | SRI to ensure<br>less than 10<br>$L_{Amax}$ events -<br>45dB(A) |
|----------------------------|----------------------------------------------------------|-----------------------------------------------------|---------------------------------|---------------------------------------------------|-----------------------------------------------------------------|
| Flat 1 KLD<br>Front Façade | 62                                                       | -                                                   | -                               | 27                                                | -                                                               |
| Flat 2 KLD<br>Front Façade | 62                                                       | -                                                   | -                               | 27                                                | -                                                               |
| Flat 2 Bed<br>Rear Facade  | -                                                        | 78                                                  | 1                               | -                                                 | 34                                                              |
| Flat 1 Bed<br>Rear Façade  | -                                                        | 78                                                  | 1                               | -                                                 | 34                                                              |

Table 6. Façade Sound Reduction

## 6.2 SRI – Worst Case Bedroom

Table 6 shows that the highest sound reduction required is 34dB in the rear bedrooms. In order to achieve this, the effect of both the glass, wall and ventilation were taken into account and adjusted until an acceptable internal sound pressure level was achieved. Please see the Appendix for the Insul data sheet output.

Using the modelling software, Insul, the predicted performance of a masonry cavity wall was calculated. The assumed building makeup was: 100mm brick with a 75mm gap (filled with 50mm rockwool 33Kg/m<sup>3</sup>), 100mm block with a 12mm layer of plasterboard.

Greenwood MA3051 vents were used in the assessment using and have an equivalent area of 20m<sup>2</sup>.

The glazing used in the assessment was Saint Gobain 6/16Argon/10.8 (55.2). The total sound reduction was predicted to be 34dB.

The glazing and ventilation used in construction of the bedrooms should provide at least the same level of acoustic performance or better. Please see Section 6.2.1 below for the glazing and ventilation specifications used in the assessment.

### 6.2.1 Glazing and Ventilation Specification

The octave band attenuation afforded by the glazing and vents used in the assessment can be seen below:

| Bedroom Glazing - Saint Gobain 8/16Argon/10.8 Rw+Ctr = 37 (41-4)<br>Attenuation values (from Manufacturer) |       |       |       |       |       |       |      |
|------------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|------|
| Octave Band                                                                                                | 63Hz  | 125Hz | 250Hz | 500Hz | 1kHz  | 2kHz  | 4kHz |
| Attenuation                                                                                                | -31   | -28   | -31   | -40   | -42   | -42   | -55  |
| KLD Glazing - Velfac 4/16/4mm Rw+Ctr = 27 (32-5)<br>Attenuation values (from Manufacturer)                 |       |       |       |       |       |       |      |
| Octave Band                                                                                                | 125Hz | 250Hz | 500Hz | 1kHz  | 2kHz  | 4kHz  |      |
| Attenuation                                                                                                | -20   | -18.9 | -28.5 | -37.5 | -38.7 | -34.9 |      |

Table 7: Double Glazing Octave band information

| Bedroom Vent - Greenwood MA3051 Attenuation values. $D_{new} = 55$<br>(from Manufacturer)                 |       |       |       |       |       |       |
|-----------------------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|
| Octave Band                                                                                               | 125Hz | 250Hz | 500Hz | 1kHz  | 2kHz  | 4kHz  |
| Attenuation                                                                                               | -47.0 | -50   | -55   | -61   | -70.0 | -69.0 |
| KLD Vent - Simon Acoustic SL Trickle Vent $D_{new} = 33$ (open)<br>Attenuation values (from Manufacturer) |       |       |       |       |       |       |
| Octave Band                                                                                               | 125Hz | 250Hz | 500Hz | 1kHz  | 2kHz  | 4kHz  |
| Attenuation                                                                                               | -34.8 | -35.2 | -31.2 | -31.9 | -34.5 | -39.9 |

Table 8. Ventilation Octave Band Information

The data provided here was obtained from the manufacturer.

Summary of required sound reduction:

- Front KLD
  - Glazing  $R_w + C_{tr} \geq 27\text{dB}$
  - Vents  $D_{new} \geq 27\text{dB}$
- Rear Bedrooms
  - Glazing  $R_w + C_{tr} \geq 37\text{dB}$
  - Vents  $D_{new} \geq 55\text{dB}$

## 7 Building Regulations – Approved Document E – Resistance to the Passage of Sound

### 7.1 Compliance With ADE E1

Approved Document E of the Building Regulations 2010 specifies minimum performance values of Weighted Standardised Level Difference ( $D_{nT,w} + C_{tr}$ ) for airborne noise transmission through party floors and walls and Weighted Standardised Sound Pressure Level ( $L'_{nT,w}$ ) for impact sound transmission through a floor.

It should be noted that with airborne sound insulation, it is the level difference between rooms that is measured. The higher the result the better the insulation.

ADE 0.8 makes comment about mixed commercial and residential tenure.

**0.8** The performance standards set out in Tables 1a and 1b are appropriate for walls, floors and stairs that separate spaces used for normal domestic purposes. A higher standard of sound insulation may be required between spaces used for normal domestic purposes and communal or non-domestic purposes. In these situations the appropriate level of sound insulation will depend on the noise generated in the communal or non-domestic space. Specialist advice may be needed to establish if a higher standard of sound insulation is required and, if so, to determine the appropriate level.

A summary of the acoustic requirements, for a conversion property, are as follows:

| Requirements of:         | Element | Airborne Sound Insulation<br>( $D_{nT,w} + C_{tr}$ ) | Impact Sound Insulation<br>( $L_{nT,w}$ ) |
|--------------------------|---------|------------------------------------------------------|-------------------------------------------|
| Commercial/Dwelling*     | Floor   | $\geq 48\text{dB}$                                   | N/A                                       |
| B-regs Dwelling/Dwelling | Floor   | $\geq 43\text{dB}$                                   | $\leq 64\text{dB}$                        |
| B-regs Dwelling/Dwelling | Wall    | $\geq 43\text{dB}$                                   | N/A                                       |

**Table 9. Building Regulations Noise Criteria**

\* For many other projects the Local Authorities in Sussex require that the basic ADE target is exceeded when there is a commercial unit directly adjacent to a dwelling. In this case the Building Regulations+5dB target should be sufficient (ground floor units are most likely going to be retail units and will not open late)

This approach is consistent with the Planning Noise Advice Document 2023.

#### 7.1.1 Sound Insulation Test Results

A vertical airborne sound insulation test was conducted on site to measure the current level of sound insulation between the commercial ground floor and the 1<sup>st</sup> floor. The test was conducted in accordance with ADE and Acoustic South East are registered members of the Association of Noise Consultants.

A result of  $D_{nT,w} + C_{tr}$  39 dB was calculated. This is 9dB below the heightened 48  $D_{nT,w} + C_{tr}$  dB that is often required by Local Authorities.

#### 7.1.2 Recommended GF Ceiling Construction

In order to overcome the poor existing sound insulation performance, it is proposed that a suspended ceiling should be installed throughout the commercial areas. Currently in the commercial area the ceiling has been retained. If this remains the case, the ceiling should be made good before the suspended ceiling is fitted.

Using the prediction modelling software, INSUL, a recommended construction detail has been made which should achieve the  $D_{nT,w} + C_{tr}$  requirements:

Proposed Ground to 1<sup>st</sup> floor Ceiling/floor (Triple):

- Panel 1: 1 x 18 mm Plywood + 1 x 18 mm Pine + Frame: Solid Joist (200 mm x 45 mm), Stud spacing 600 mm, Cavity Width 200 mm + 100 mm Rockwool (33kg/m<sup>3</sup>) +
- Panel 2: 1 x 12.5 mm Plasterboard 12.5mm + 12.5mm + Frame: Solid joist with Gyproc acoustic hanger (187mm x 45mm) Stud spacing 600 mm, Cavity Width 350 mm + 100 mm Rockwool (33kg/m<sup>3</sup>) +
- Panel 3: 2x 12.5mm SoundBloc

INSUL predicts this will achieve  $R_w + C_{tr}$ : 58 dB

A calculation has been made to estimate the  $D_{nT,w} + C_{tr}$  which uses the formula below:

$$R_w + C_{tr} = R_w + C_{tr} - 5 \text{ (this is to correct for flanking conditions)}$$

$$D_{nT,w} + C_{tr} = R_w + C_{tr, est} - 10 \cdot \log(s \cdot t / v) - 8$$

S=Surface area of separating element, T=Reverberation time of receiving room, V=Volume of receiving room.

$$58 - 5 = 53$$

$$53 - 10 \cdot \log(8.6 \cdot 0.5 / 21.6) - 8 = 52 \text{ } D_{nT,w} + C_{tr}$$

This shows the estimated  $D_{nT,w} + C_{tr}$  of the recommended ceiling build up for the bedroom on the floor above (1<sup>st</sup> Floor). As the calculation shows, the predicted  $R_w + C_{tr}$  of the recommended detail will provide a suitable SRI for airborne sound to achieve the enhanced criteria of ADE.

As the bedroom is the smallest habitable 1<sup>st</sup> floor room, this provides a worst-case outcome.

### 7.1.3 Existing Construction

Please note that the existing floor construction details are not known. Some elements of the existing flooring/ceiling of the 1<sup>st</sup> floor may well achieve a similar result if its construction is similar to the panels of the recommendation, i.e. the original floorboards.

If any existing flooring/ceiling elements are to be retained and made good, care should be taken to examine the build-up and ensure it's of a similar detail to the recommended build up prior to any works being undertaken. It should be altered to be as similar as the recommended detail as possible.

If the existing or new floorboards are butt-joined then a plywood skin or similar should be laid over the top to cover any cracks.

### 7.1.4 Flanking

Care should be taken to minimise flanking sound as much as possible. The total sound insulation provided by the party floor relates to the construction of the flanking walls as well as the separating floor itself. If not detailed correctly flanking sound transmission will likely cause a sound test fail regardless of the floor construction.

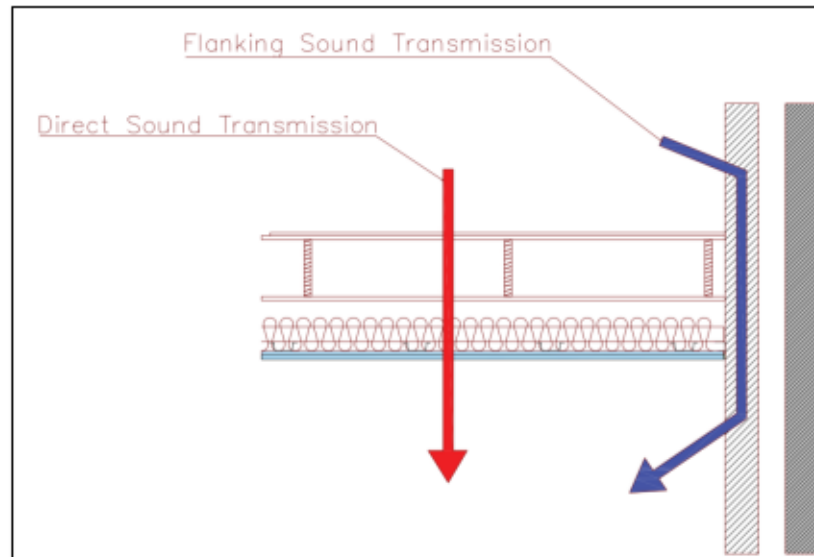


**Figure 8: Flanking Sound and Direct Sound Transmission paths**

The floor detail described in section 7.1.2 is sufficient to meet the requirement of ADE for direct sound transmission between the floors. However, sound energy transmitted up the walls and then re-radiated as airborne sound at first floor level may impact the  $D_{nt,w} + C_{tr}$  results.

In order to prevent this, it is recommended that a wall treatment be applied to either the perimeter walls of the ground floor commercial area or the first-floor flat (whichever is more convenient). The Gypliner Universal system, with a 30mm void would be suitable.

The full details would be:

- Existing masonry wall
- Gypliner Universal
- 30mm min Void
- 25mm Insulation
- 2x 12.5 Fireline/Soundbloc

Specific Products - [Gypliner Universal](https://www.british-gypsum.com/white-book-system-selector/systems-overview/linings/gyplyner-universal-wall?tab0=0)

<https://www.british-gypsum.com/white-book-system-selector/systems-overview/linings/gyplyner-universal-wall?tab0=0>

If the wall lining is fitted at ground floor level it is essential that the wall treatment does not pass through the suspended ceiling. The suspended ceiling should continue to the outer existing masonry wall with the wall lining constructed to meet it. This is shown in the below figure 10.

Only resilient connections between the wall system and the existing masonry wall should be made. Any mechanical bridging, i.e. screws between the wall system and masonry wall, will re-introduce flanking paths.

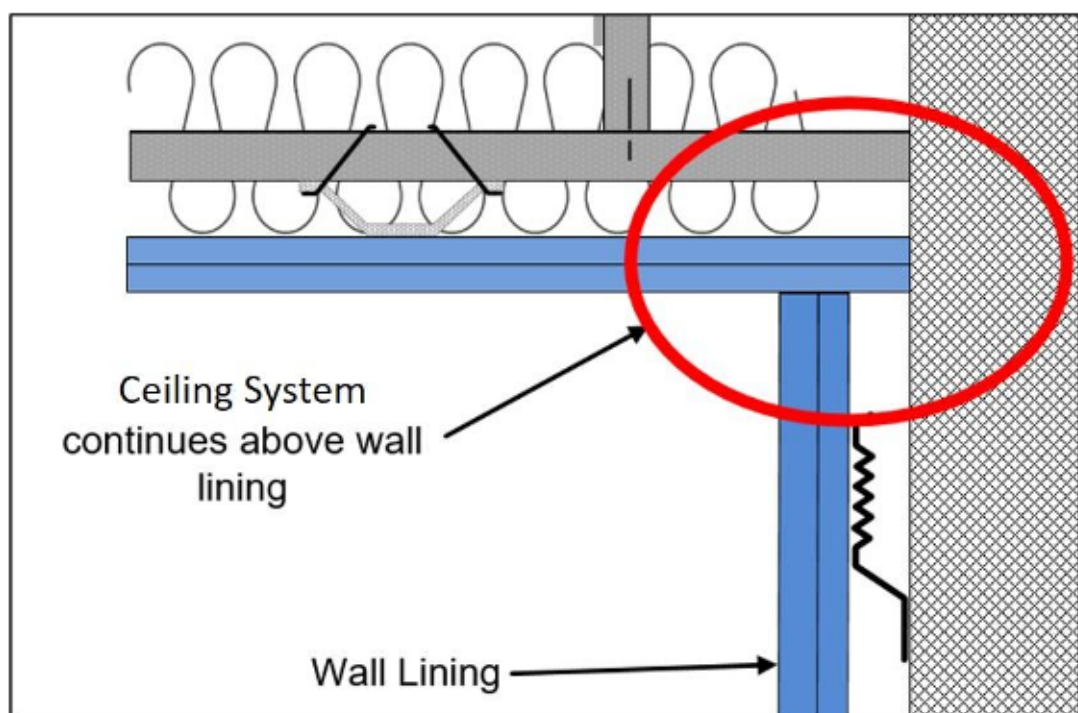


Figure 9: Wall Lining Suspended Ceiling Junction

## 7.2 Services

The following applies to any services that pass from one floor to another or that pass through a separating wall.

- Pipes and ducts that penetrate a party floor separating commercial unit and habitable rooms in the residential flat should be enclosed for their full height.
- The enclosure should be constructed of two layers of board material having a combined mass per unit area of at least  $16\text{kg/m}^2$ . (2x12.5mm plasterboard)
- Either line the enclosure, or wrap the duct or pipe within the enclosure, with 25 mm unfaced mineral wool.
- Penetrations through a separating floor by ducts and pipes should have fire protection to satisfy Building Regulation Part B - Fire safety. Fire stopping should be flexible and also prevent rigid contact between the pipe and floor. Note: There are requirements for ventilation of ducts at each floor where they contain gas pipes. Gas pipes may be contained in a separate ventilated duct or they can remain un-ducted. Where a gas service is installed, it shall comply with relevant codes and standards to ensure safe and satisfactory operation.
- Do seal the joint between casings and ceiling with tape & sealant.
- Do leave a nominal gap (approx. 5 mm) between the casing and any floating layer and fill with sealant.

## 8 Uncertainty

The following measures were taken to reduce uncertainty:

- The equipment was calibrated before and after measurements were undertaken with no significant drift occurring.
- The worst-case scenario was assessed to ensure appropriate outcomes.
- Decibel values were rounded to the nearest 0.1 dB
- The most recent plans were used and plan scales were checked.
- The sound pressure levels at the rear have been predicted based on the worst assumptions.

## 9 Conclusion

A class 1 sound level meter was installed at a representative location at the front of the existing property. This was to identify the soundscape and incident sound levels on the front facade between the 6<sup>th</sup> to the 13<sup>th</sup> of March 2026. An attended short-term measurement was also undertaken at the rear of the property to assist with assessment.

The soundscape is dominated by the sound of the Highstreet during the daytime period and mostly by the Crown Pub and other nightlife during the nighttime period.

For the daytime period, the average measured sound pressure levels were 54dB  $L_{Aeq, 16\text{-hour}}$  during the day and 49dB  $L_{Aeq, 8\text{-hour}}$  during the night (at the front façade). However, due to the presence of nearby commercial sound, the  $L_{Amax}$  conditions/events drive the requirements to protect future occupants against adverse overnight sound pressure levels. The worst-case hour was used to ensure adequate protection from daytime sound pressure levels.

The assessment concludes that the development is capable of being constructed. The indoor sound criteria of BS8233:2014 and ProPG 2017, can be achieved with enhanced double glazing and acoustic wall ventilation.

The initial site risk assessment consistent with the approach in ProPG2017 is that the risk associated with developing the site is low for the North and South facades.

A sound insulation test was carried out between the existing commercial ground floor and the 1<sup>st</sup> floor. The result was a  $D_{nT,w} + C_{tr}$  of 39 dB. This would not comply with Approved Document E. A construction specification has been provided that will meet the ADE criteria and the heightened +5dB  $D_{nT,w} + C_{tr}$  criteria (48  $D_{nT,w} + C_{tr}$  for conversion properties) which Local Authorities often require.

Based on the information presented, if appropriate measures are implemented, planning permission should not be withheld on noise grounds.

## 10 Appendix

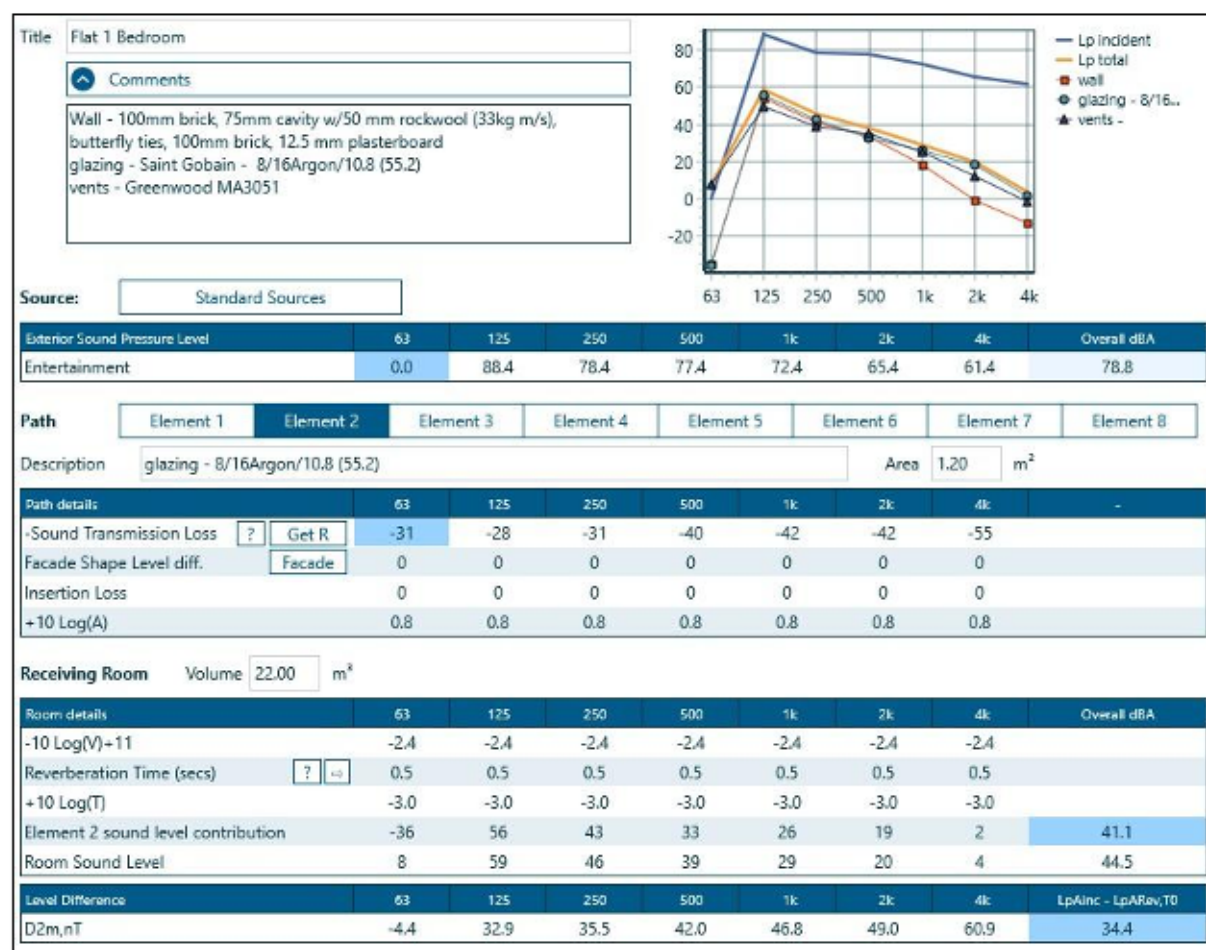


Figure 10. Insul Prediction for the worst-case bedroom.

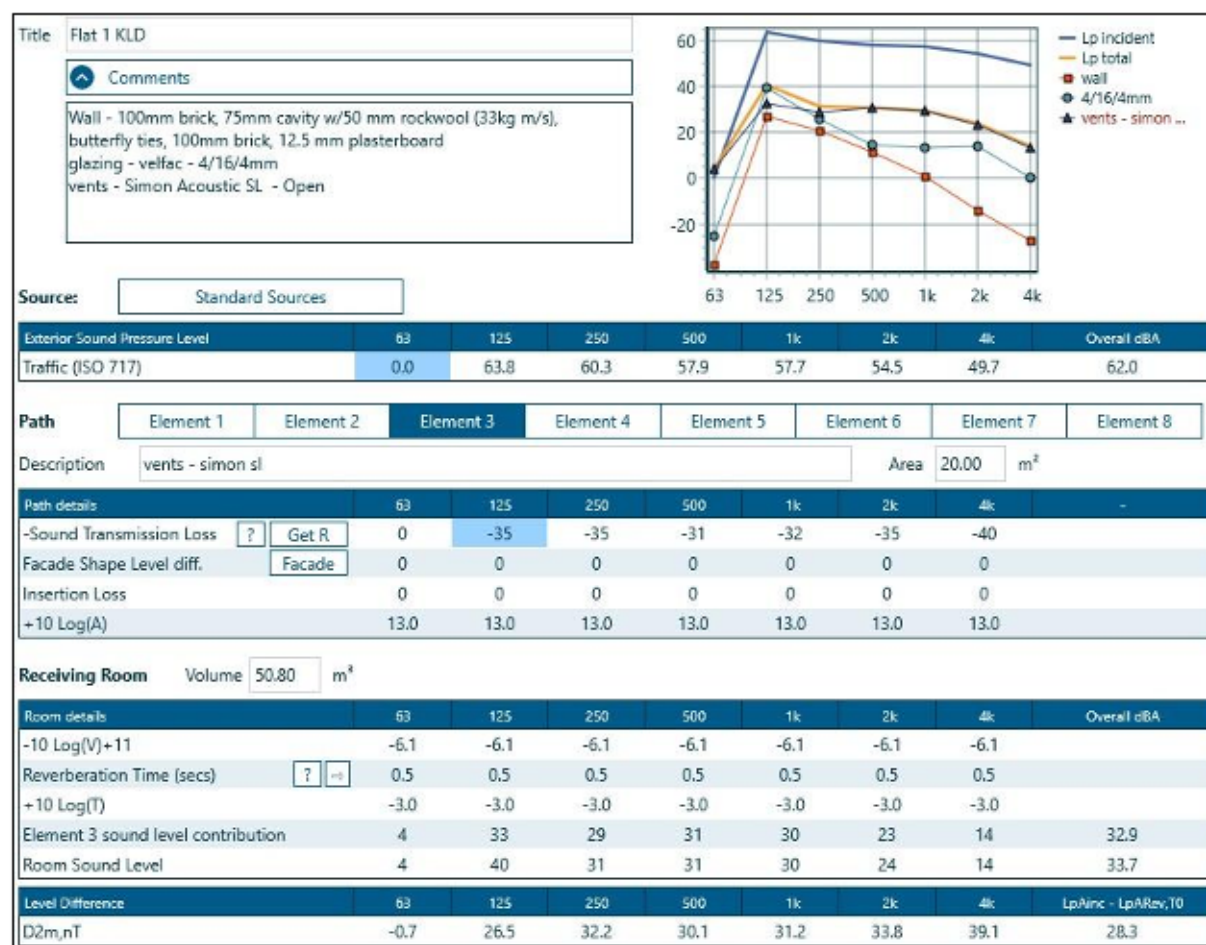


Figure 11. Insul Prediction for the worst-case KLD

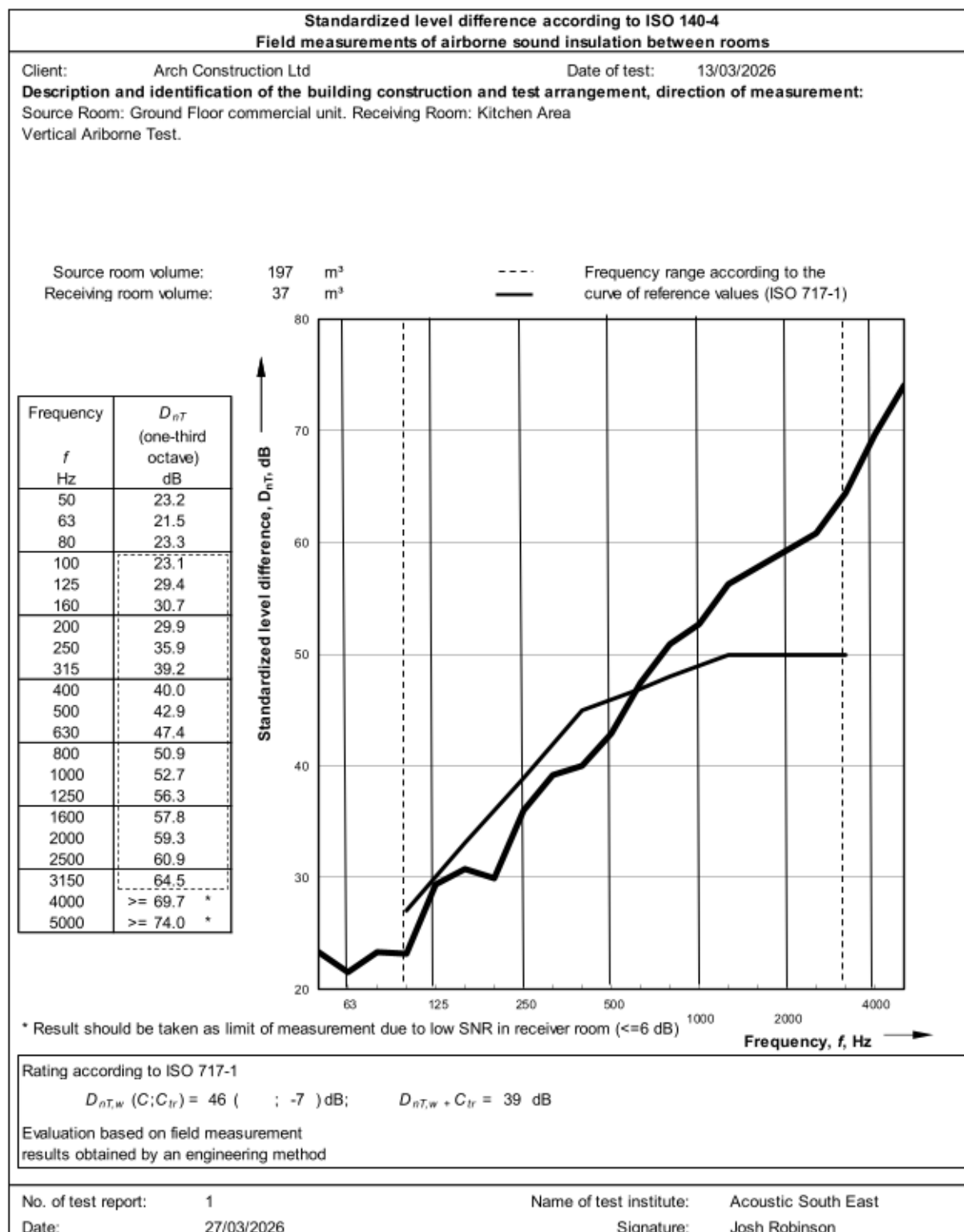


Figure 12. Sound Insulation Results Graph – GF to 1F

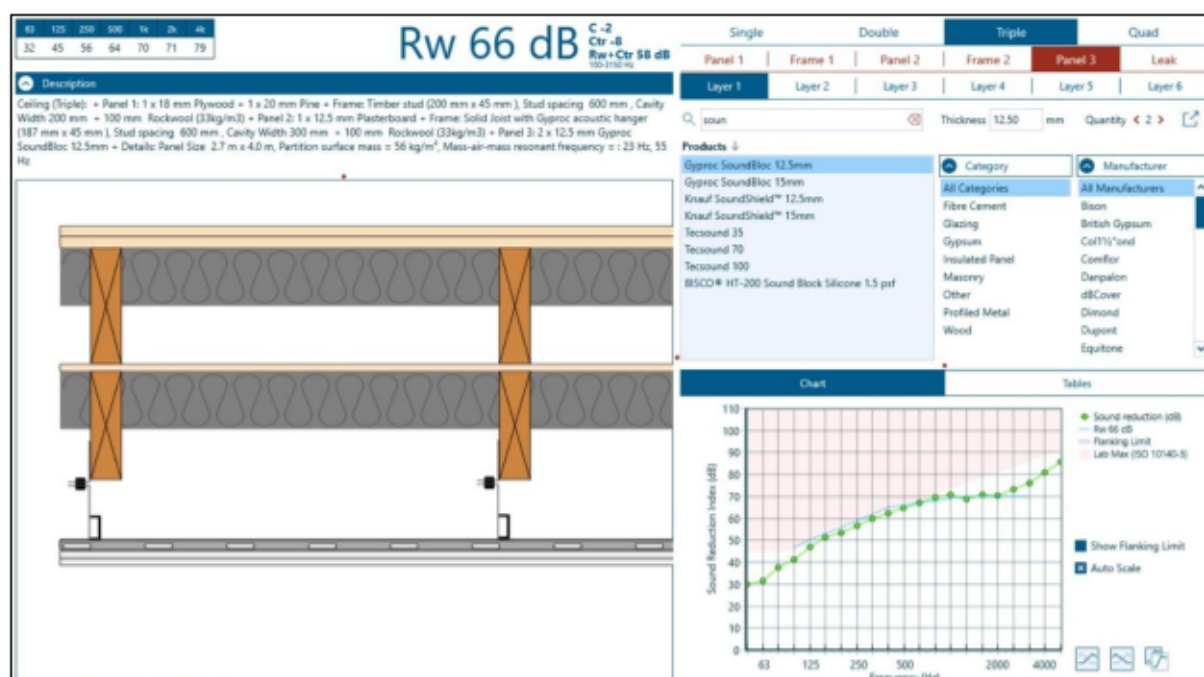


Figure 13. Insul Prediction of Recommended GF Ceiling Construction Detail.