BENCHMARK

ACOUSTICS

GEORGE STREET, LONGRIDGE
SOUND INSULATION ASSESSMENT

PREPARED FOR: MR T. FORREST

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GEORGE STREET, LONGRIDGE
SOUND INSULATION ASSESSMENT

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	SOUND INSULATION ASSESSMENT
ISSUED ON:	04/08/26
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1.0 EXECUTIVE SUMMARY

Benchmark Acoustics Ltd has been appointed by Mr T. Forrest (‘*the Client’*) to provide a sound insulation assessment for the proposed conversion of an existing workshop to a single storey dwelling at George Street, Longridge (‘*the Project’*).

This report has been produced to review the sound insulation requirements of the Project as required by Ribble Valley Borough Council (‘*RVBC*’).

An assessment has been undertaken to determine a suitable scheme of sound insulation to mitigate against commercial activity noise from the adjacent commercial buildings.

The proposed internal $L_{Aeq,T}$ noise limits within habitable rooms are 5 dB below (i.e. a 5 dB betterment on) the BS8233:2014 recommended L_{Aeq} guideline noise limits to allow for a degree of character correction for any commercial noise contributions from the adjacent commercial buildings.

Measured external noise levels and assumed indicative worst-case commercial activity noise levels based on the existing planning use classes of the commercial buildings have been used to inform the sound insulation assessment.

An enhanced party wall construction has been proposed to provide an increased level of sound insulation between the proposed residential dwelling and the adjoining commercial unit. It is recommended that the proposed party wall construction details are reviewed by an acoustic consultant during the detailed design stages to ensure that the required acoustic design principles have been incorporated into the scheme proposals.

The predicted enhanced party wall in-situ sound insulation performance of $D_{nT,w}+C_{tr}$ 50 dB is a +7 dB improvement compared to the Building Regulations ADE party wall minimum requirement of $D_{nT,w}+C_{tr}$ 43 dB for dwelling-houses and flats formed by material change of use.

Based on the assumed commercial activity noise levels and the assessed sound in-situ insulation performance of the enhanced party wall, the worst-case commercial activity noise breakthrough within the proposed dining/kitchen/living room accommodation is predicted to be $L_{Aeq,T}$ 27 dB (NR 22).

The commercial activity noise break-through of $L_{Aeq,T}$ 27 dB achieves the proposed internal ambient noise limit of $L_{Aeq,T}$ 30 dB for the dining/kitchen/living room, and is 8 dB below the BS8233:2014 recommended internal ambient noise limit of $L_{Aeq,16hr}$ 35 dB for resting during the daytime, demonstrating that the proposed enhanced party wall construction can provide a suitable level of sound insulation between the commercial unts and the proposed residential development.

Mitigation measures have been recommended for the building envelope in the form of suitable sound insulation performance specifications for the glazing and ventilation elements of the proposed dwelling that will allow the proposed internal noise limits within habitable rooms to be achieved.

The combined measured external noise level and the worst-case predicted commercial noise break-out in the proposed external yard area is $L_{Aeq,T}$ 53 dB, which achieves the BS8233:2014 upper guideline limit of 55 dB $L_{Aeq,T}$ for traditional external areas that are used for amenity space, such as gardens and patios.

The noise assessment concludes that, subject to the adoption of the recommended mitigation measures for the party wall and building envelope constructions, the proposed dwelling is not expected to be subject to any significant adverse noise impacts from the adjacent commercial units.

2.0 SITE DESCRIPTION & SCHEME PROPOSALS

2.1 SITE LOCATION

The Project site is an existing workshop building located on George Street, Longridge as shown in Figure 1, below.

The existing workshop building had previously been open to the adjacent commercial building at 27 Inglewhite Rd to the north of workshop when the buildings were part of the same business operated by HT Forrest but was separated from the 27 Inglewhite Rd building in 2022 when a cavity blockwork wall was constructed between the two buildings.

2.1.1 SURROUNDING COMMERCIAL BUILDINGS

The adjoining building at 27 Inglewhite Rd is a commercial property, operating as ‘Longridge Hub’, which houses a number of small retail shops, wellbeing practices, and a café.

An additional commercial building adjoins the Longridge Hub building to the south west, which houses a number of storage units.

The Project planning consultant has advised that the retail uses within the adjacent Longridge Hub building would fall under Use Class E (Commercial, Business and Service), and the building housing the storage units would fall under Use Class B8 (Storage or distribution). The Project planning consultant has advised that it is expected that the commercial activities within these buildings would be limited to their current respective planning Use Class.

2.2 SCHEME PROPOSALS

The proposals are to convert the existing workshop building into a single storey dwelling with an attached garage.

The layout of the proposed dwelling is arranged such that the less noise sensitive living/kitchen/dining room accommodation shares a party wall with the adjacent commercial building rather than the more noise sensitive bedrooms.

The location plan and proposed site plan are shown in Figure 1 and Figure 3, below.

Figure 1: Location plan

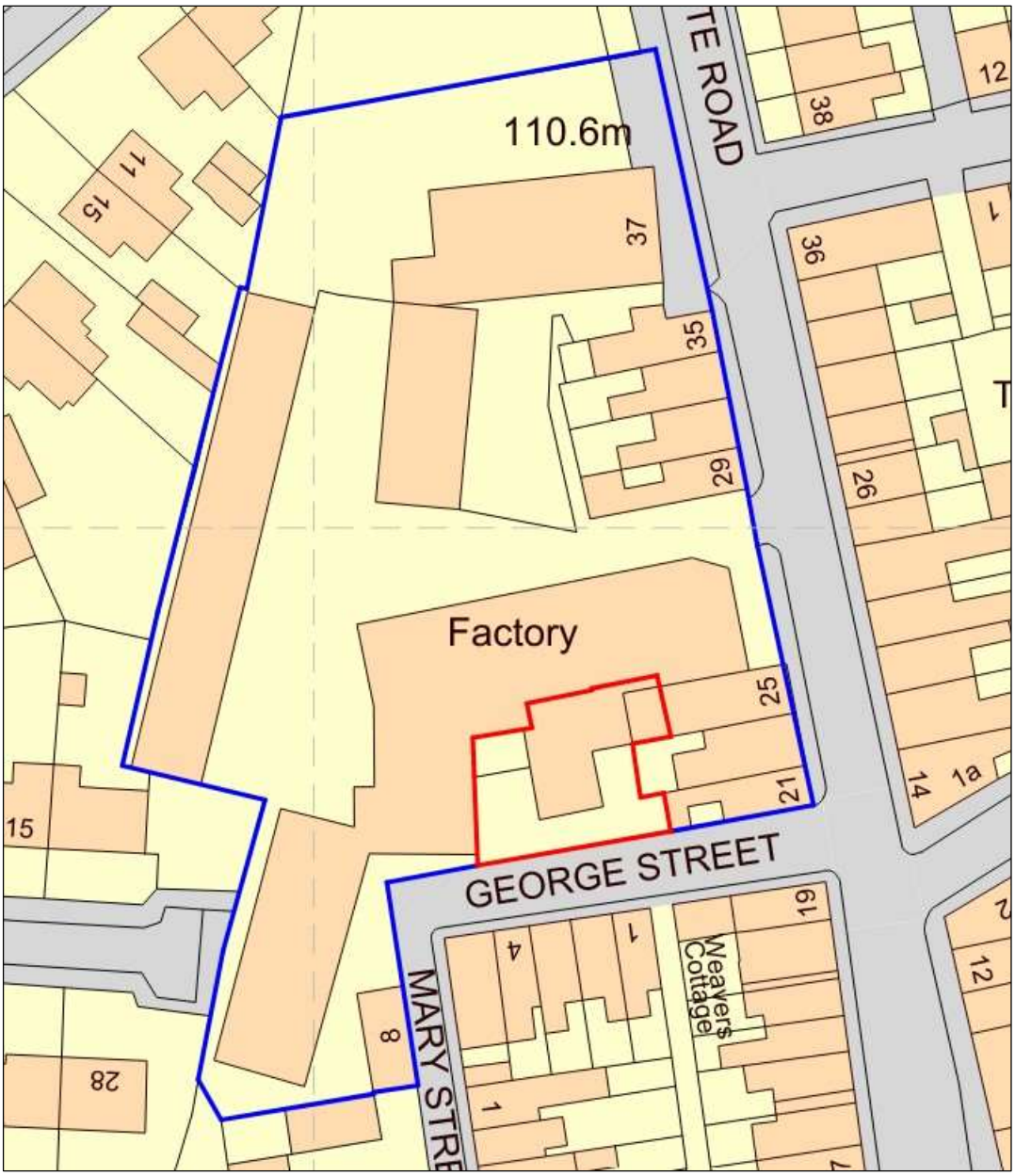

Figure 2: Proposed dwelling location and adjacent commercial properties

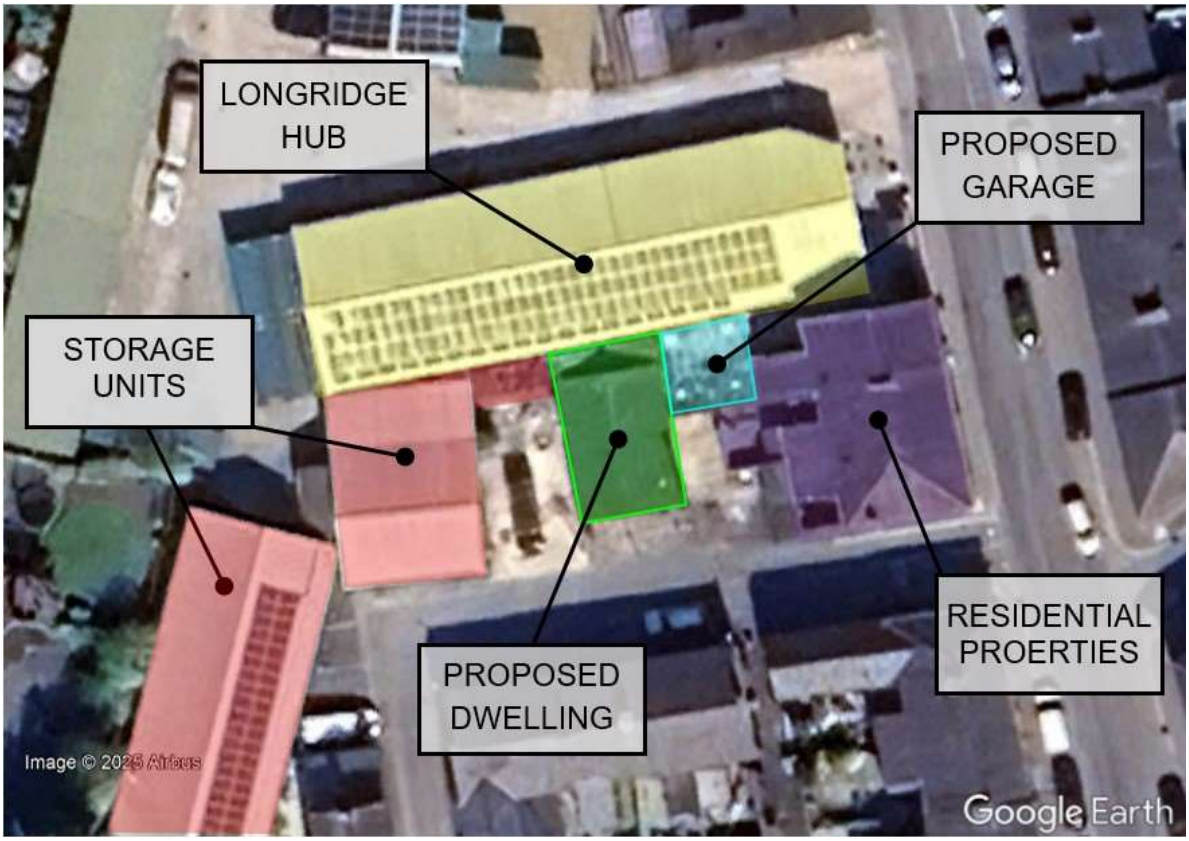

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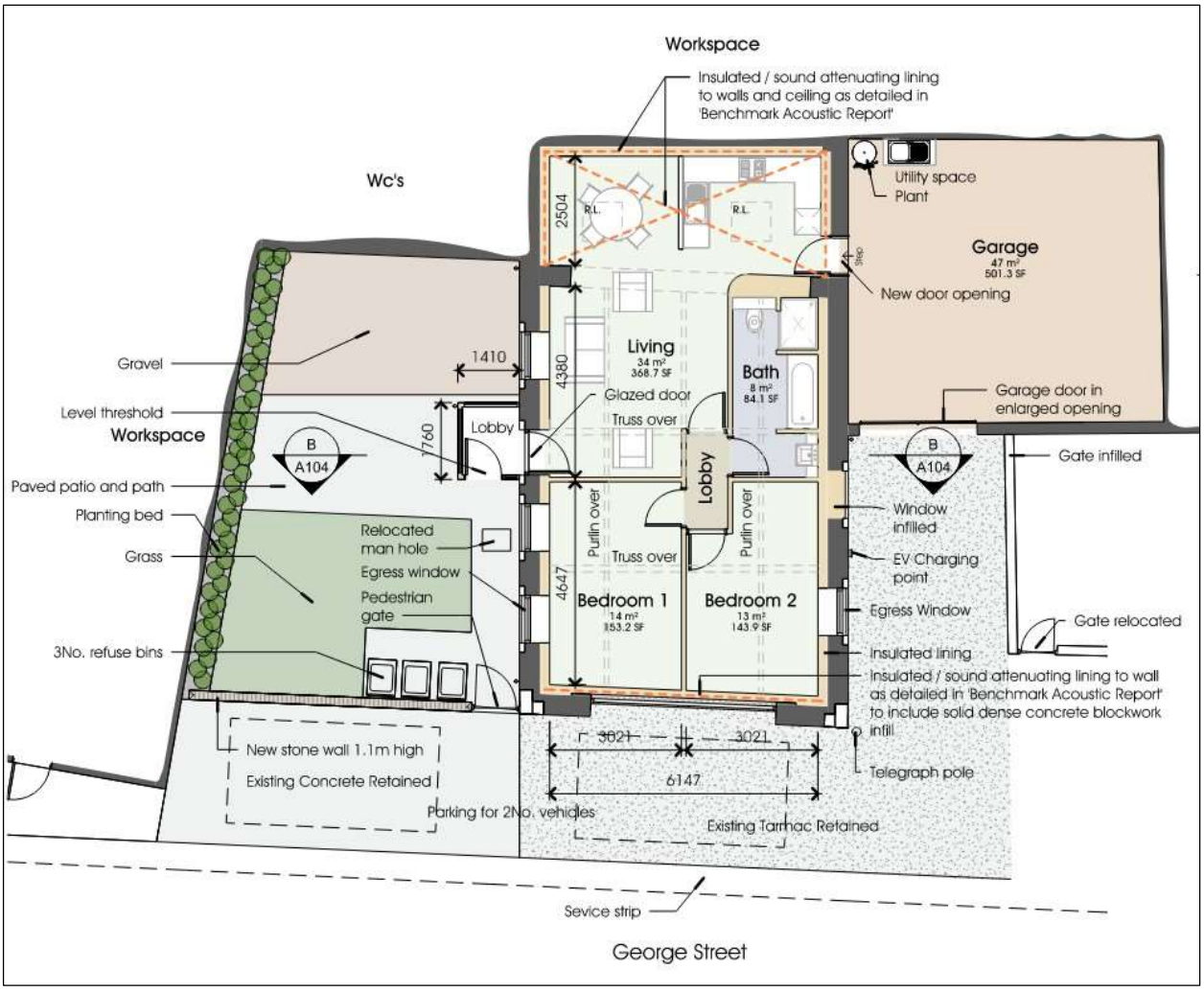
Figure 3: Proposed site plan



3.0 RELEVANT STANDARDS & GUIDANCE

3.1 RIBBLE VALLEY BOROUGH COUNCIL (RVBC)

A previous planning application for the scheme (RVBC REF 3/2024/08830) was refused by RVBC, with one of the reasons for the refusal relating to the potential noise impact on future occupiers of the proposed development, as noted in the excerpt from the RVBC decision notice below:

"… In addition, there is insufficient information submitted within the application to fully assess the noise impact on future occupiers of the proposed development. The proposal therefore fails to comply with Policies DMG1 of the Ribble Valley Core Strategy and Policy LNDP3 of the adopted Longridge Neighbourhood Plan."

With reference to the amenity and potential noise impact on future occupiers of the proposed development, the RVBC delegated planning report for the refused planning application noted that:

"..the application has not been supported by sufficient information by way of a scheme for sound insulation. The Environmental Health Officer considers that a fully detailed scheme for the sound insulation of the residential buildings against internally and externally generated noise must be submitted to and approved in writing by the Local Planning Authority. This information is required at the time of the application being determined as the dwelling would immediately adjoin an industrial estate with the potential to result in significant harm by way of excessive noise and the applicant would need to demonstrate that adequate levels could realistically be achieved. In the absence of this information, the Council are unable to fully assess the impact of the development on the amenity of future occupiers, contrary to Policy LNDP3 of the Longridge Neighbourhood Plan and Policy DMG1 of the Core Strategy…"

3.2 BS8233:2014 'GUIDANCE ON SOUND INSULATION AND NOISE REDUCTION FOR BUILDINGS'

3.2.1 INTERNAL NOISE LEVELS WITHIN DWELLINGS

British Standard BS 8233:2014 '*Guidance on sound insulation and noise reduction for buildings'* (BS8233) provides guidance on recommended internal ambient noise levels within dwellings. BS8233 states that in general, for steady external noise sources, it is desirable that the internal ambient noise levels within dwellings do not exceed the guideline values in the table below.

Table 1: BS8233 desirable internal ambient noise limits for dwellings

Activity	Location	07:00 – 23:00 hrs	23:00 – 07:00 hrs
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 $L_{Aeq,8hr}$

BS8233 comments that where development is considered necessary or desirable *'…the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.'*

With regard to the potential for sleep disturbance from individual events, BS8233 does not provide any guideline noise limits, but notes that:

'*Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,F}$, depending on the character and number of events per night. Sporadic noise events could require separate values'.*

3.2.2 EXTERNAL NOISE LEVELS IN AMENITY SPACES

With regard to external noise BS8233 states that '*for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments*..'

BS8233 recognises that the guideline values may not be achievable in all circumstances where development might be desirable and states that '…*In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited*'.

3.3 PROPG: PLANNING & NOISE: NEW RESIDENTIAL DEVELOPMENT

ProPG: Planning & Noise '*Professional Practice Guidance on Planning and Noise: New Residential Development*' (ProPG) was produced in 2017 to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.

The guidance has been developed by a Working Group consisting of representatives of the Association of Noise Consultants (ANC), Institute of Acoustics (IOA) and Chartered Institute of Environmental Health (CIEH), together with practitioners from a planning and local authority background, and aims to encourage better acoustic design for new residential development and to protect people from the harmful effects of noise.

ProPG notes that '…*It is considered that suitable guidance on internal noise levels can be found in "BS8233:2014: Guidance on sound insulation and noise reduction for buildings*".

Regarding the potential for sleep disturbance from individual events, ProPG states that:

'…*it is considered that if, in bedrooms at night, the $L_{Amax,F}$ from individual noise events (from all sources) would not normally exceed 45dB more than 10 times a night, then this represents a reasonable threshold below which the effects of individual noise events on sleep can be regarded as negligible...'*

For sites exposed to industrial and/or commercial noise, ProPG comments that:

'…great care should be taken when considering using the noise level guidelines…in circumstances where industrial and/or commercial noise is present but "not dominant". Issues that may arise include:

- *Are there particular acoustic features (tones, impulses etc.) in the industrial and/or commercial noise that may increase its effect compared to sounds without such features? Are there any non-acoustic features that may also have an effect?*

- *Will the time averaging over the 16 hour day or 8 hour night intervals used…lead to underestimation of the impacts of industrial and/or commercial noise that may occur for shorter but still substantial periods at a higher level?*

Professional judgement will have to be exercised in addressing these sorts of issues. One possible approach may be to apply BS4142:2014 character corrections to the noise level guideline values in order to derive suitable effect thresholds and/or mitigation design targets and to use the same reference time periods recommended in the standard..'

3.4 APPROVED DOCUMENT O: OVERHEATING

Approved Document O (AD-O) covers the overheating mitigation requirements of the building regulations for new residential buildings and contains standards relating to noise at night, pollution, security, protection from falling and protection from entrapment.

With regard to noise, paragraph 3.2 of AD-O states:

3.2 *In locations where external noise may be an issue (for example, where the local planning authority considered external noise to be an issue at the planning stage), the overheating mitigation strategy should take account of the likelihood that windows will be closed during sleeping hours (11pm to 7am).*

Paragraph 3.3 of AD-O defines when relying on opening windows to remove excess heat does not comply with the requirement to take account of noise at night, stating that:

3.3 Windows are likely to be closed during sleeping hours if noise within bedrooms exceeds the following limits.

a. 40dB $L_{Aeq,T}$, averaged over 8 hours (between 11pm and 7am).
b. 55dB L_{AFmax}, more than 10 times a night (between 11pm and 7am).

3.5 BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

British Standard BS 4142:2014+A1:2019 '*Methods for rating and assessing industrial and commercial sound*' (BS4142) provides a method for assessing noise from items such as building services plant and loading and unloading of goods at industrial and/or commercial premises, when compared to the existing background sound levels at the noise sensitive receptor.

The assessment procedure involves measuring or predicting the 'rating level' of the sound source and comparing it to the 'background noise level' at the location of the noise sensitive receptor. The rating level is the level of the specific sound under consideration plus any adjustment for the characteristic features of the sound such as tonality, impulsivity, and intermittency.

BS4142 requires an initial estimate of the impact of the specific sound to be obtained by subtracting the background sound from the rating level, commenting that '*the significance of sound of an industrial and/or*

commercial nature depends upon both the margin by which the rating level of the specific sound source exceeds the background sound level and the context in which the sound occurs', and goes on to comment that:

a) Typically, the greater this difference, the greater the magnitude of the impact.

b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.

c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.

d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

BS4142 notes that adverse impacts include, but are not limited to, annoyance and sleep disturbance, and that not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact.

With regard to proposed new noise sensitive receptors being affected by existing industrial and/or commercial noise sources BS4142 states that:

'…*Where a new noise sensitive receptor is introduced and there is extant industrial and/or commercial sound, it should be recognized that the industrial and/or commercial sound forms a component of the acoustic environment. In such circumstances other guidance and criteria in addition to or alternative to this standard can also inform the appropriateness of both introducing a new noise-sensitive receptor and the extent of required noise mitigation'.*

3.6 BUILDING REGULATIONS 2010 APPROVED DOCUMENT E 'RESISTANCE TO THE PASSAGE OF SOUND'

Approved Document E of the Building Regulations 2010, '*Resistance to the passage of sound'* (ADE), sets out the minimum performance requirements for sound insulation between and within residential developments, reverberation control within common internal areas of residential developments, and for acoustic conditions within schools.

Requirement E1 relates to the protection against sound from other parts of the building and adjoining buildings, and states that '*Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and adjoining buildings*.'

The relevant E1 performance standards for dwelling-houses and flats formed by material change of use are summarised below.

Table 2: ADE sound insulation performance standards for dwelling-houses and flats formed by material change of use

Element	Airborne sound insulation $D_{nT,w} + C_{tr}$ (dB) (minimum values)	Impact sound insulation $L_{n,T,w}$ dB (maximum values)
Walls	43	n/a
Floors and stairs	43	64

With regard to the sound insulation performance standards outlined above, ADE comments that:

'…The performance standards…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.'

3.7 PROPOSED NOISE CRITERIA

The noise criteria proposed for the Project are presented in Table 3, below.

Based on the site observations and noise level measurements reported in section 4.0, the existing noise climate at the Project is considered to be dominated by road traffic noise, with no noticeable contribution from commercial activity noise. Consequently, alternative guidance and criteria to BS4142 have been adopted to inform the proposed noise criteria below.

The proposed internal $L_{Aeq,T}$ noise limits within habitable rooms are 5 dB below (i.e. a 5 dB betterment on) the BS8233:2014 recommended L_{Aeq} guideline noise limits outlined in the sections above. The 5 dB betterment on the BS8233:2014 criteria is proposed to allow for a degree of character correction for any commercial noise contributions from the adjacent commercial buildings.

Table 3: Proposed Project noise criteria based on relevant standards and guidance documents

Description	Reference	Location	Period, T	Noise limit
Internal noise levels	BS8233:2014 [1]	Living Room & Bedrooms	07:00 – 23:00	30 dB $L_{Aeq,16hr}$
Internal noise levels	BS8233:2014 [1]	Bedroom	23:00 – 07:00	25 dB $L_{Aeq,8hr}$
Internal noise levels	ProPG	Bedroom	23:00 – 07:00	45 dB L_{AFmax} [2]
External noise levels	BS8233:2014	Garden	07:00 – 23:00	55 dB $L_{Aeq,T}$

1: Proposed noise limit is based on BS8233:2014 recommended noise limit with a 5 dB betterment
2: L_{AFmax} from individual noise events (from all sources) should not normally exceed 45 dB more than 10 times a night

4.0 EXTERNAL SOUND LEVEL MEASUREMENTS

A series of sound level surveys were undertaken to determine the prevailing external sound levels around the site, which will be used to assess the building envelope sound requirements of the Project. The sound level surveys were undertaken during the following dates and times:

- Tuesday 05/05/26, 16:03 – 18:30 hrs (attended)
- Tuesday 05/05/26, 18:45 – 08:00 hrs, Wednesday 06/05/26 (unattended)
- Wednesday 06/05/26, 08:05 – 11:10 hrs (attended)

4.1 SITE DESCRIPTION

The Project site is located on George Street, off Inglewhite Rd in Longridge. The site is bounded by the commercial building at 27 Inglewhite Rd ('Longridge Hub') to the north, and a commercial building housing storage units to the west, with residential properties on George Street to the south and Inglewhite Rd to the east. The site location is shown in Figure 1, above.

In the wider site context, there are a number of commercial buildings to the north and west of 27 Inglewhite Rd, which are understood to include a hardware/household retail outlet and storage units, with residential properties beyond. The areas to the south and east of the site are predominantly residential. An aerial image of the Project site location and surrounding area is shown below in Figure 4 for reference.

The adjacent Longridge Hub building houses a number of small retail shops, wellbeing practices, and a café. An additional commercial building adjoins the Longridge Hub building to the west, which houses a number of self-storage units. The Longridge Hub and the adjacent self-storage unit building are accessed on the opposite side of the commercial buildings to the Project site. Whilst there are existing steel clad sliding doors located on the George Street elevation of the self-storage building we understand that these doors have been partitioned off internally and are not used to access the storage units. As such, there is no vehicular or pedestrian access or parking for the commercial buildings on George Street. The Project site therefore benefits from acoustic screening from vehicle movements and external loading/unloading activity associated with the adjacent commercial buildings by the commercial buildings themselves.

4.2 EQUIPMENT / INSTRUMENTATION

The following equipment was used for the sound level measurements.

Table 4: Summary of noise survey measurement equipment

Equipment	Model	Serial No.	Lab Calibration Date
Sound Level Meter	NTi XL2-TA	A2A-10831-E0	16/09/2024
Preamplifier	NTi MA220	5628	16/09/2024
Microphone	NTi MC230	9033	16/09/2024
Sound Level Meter	Rion NA-28	00170250	14/03/2025
Preamplifier	Rion NH-23	80932	14/03/2025
Microphone	Rion UC-59	01054	14/03/2025
Calibrator	Larson Davis CAL200	13371	10/09/2025

Figure 4: Aerial image with approximate location of the Project site highlighted in cyan

Image copyright Airbus / Google Earth

4.3 WEATHER CONDITIONS

The following weather conditions were noted during the survey. The weather conditions were considered to be suitable for noise measurements across the survey periods.

Table 5: Summary of weather conditions during the noise surveys

Date	Time	Weather conditions
Tue 05/05/26	16:03 – 18:30 hrs	Generally dry with temperature 11 - 13°C and typical wind speeds below 1.5 m/s. Occasional light rainfall for limited periods between 17:30 – 18:30.
Tue 05/05/26 – Wed 06/05/26*	18:45 – 08:00 hrs	Dry with temperature ranging between 5°C during the night-time to 12°C during the daytime and typical wind speeds below 3 m/s.
Wed 06/05/26	08:05 – 11:10 hrs	Dry with temperature 8 - 12°C and typical wind speeds below 2 m/s.

* *Unattended survey: weather data obtained from nearby weather station via www.wunderground.com*

4.4 METHODOLOGY

All measurements were undertaken by a Suitably Qualified Acoustician holding full membership of the Institute of Acoustics (MIOA).

Measurements were undertaken in accordance with the principles of BS 7445: 2003: '*Description and measurement of environmental noise.*

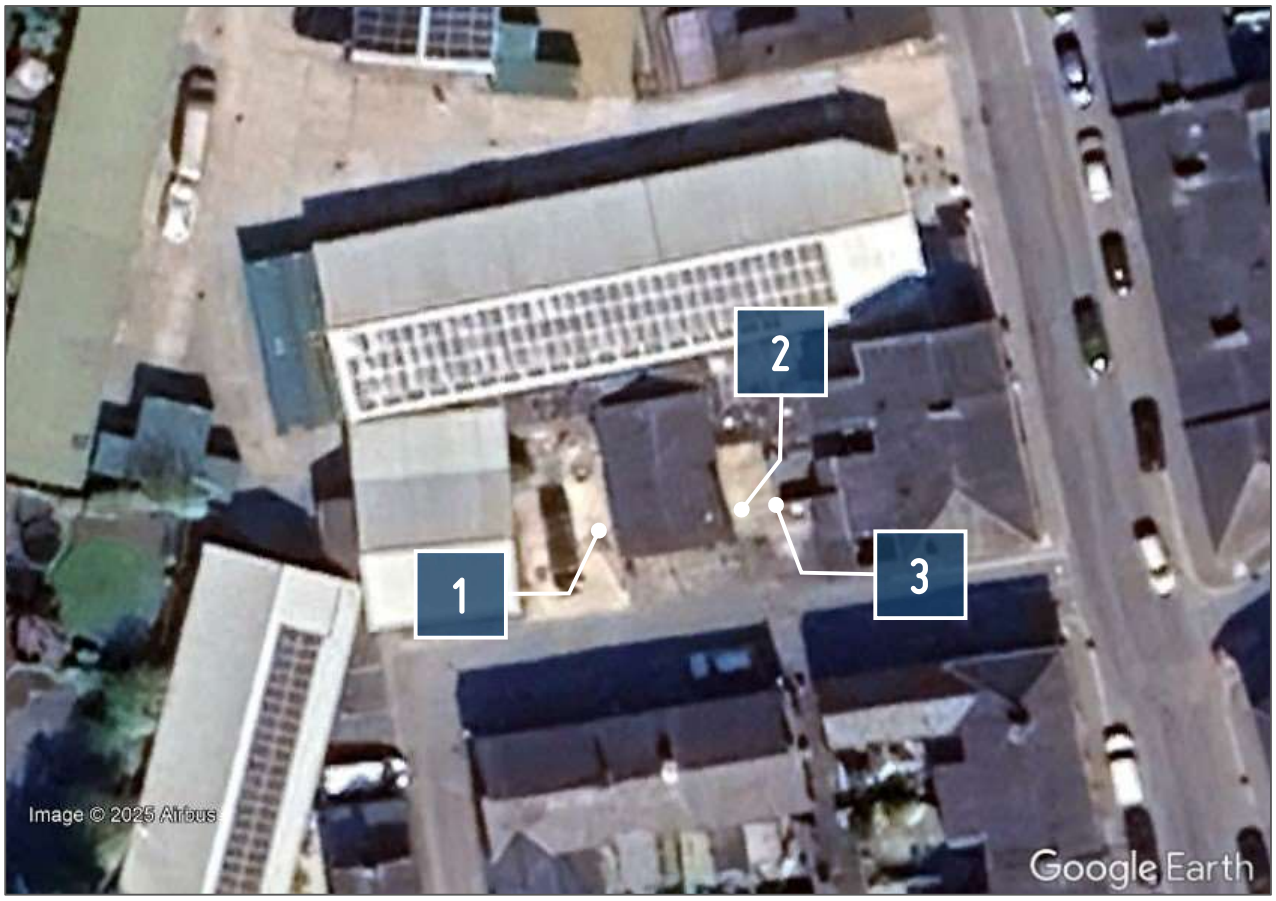
The sound level meter was field calibrated prior to the start and after the end of each survey with no significant drift in sensitivity observed.

4.5 MEASUREMENT POSITIONS

Figure 5 below illustrates the approximate location of the measurement positions.

A description of the measurement positions and the observed noise sources is provided in Table 6, below.

Figure 5: Approximate locations of measurement positions



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4.6 DESCRIPTION OF NOISE CLIMATE

A scoping site visit was undertaken between 13:30 – 14:30 on Friday 24/04/26 to assess the noise sources present at the site and identify suitable measurement positions in advance of the proposed noise surveys.

During the scoping site visit it was noted that traffic noise from Inglewhite Rd was the dominant source of noise at the Project site with contributions from occasional traffic and pedestrians along George St. No external fixed plant noise or commercial activity noise was noticeable at the Project site during the scoping site visit and the internal noise levels within the Longridge Hub commercial building were noted to be subjectively low.

Over the course of the external noise surveys undertaken on Tuesday 05/05/26 and Wednesday 06/05/26, it was noted that the dominant source of noise at the site was traffic noise from Inglewhite Rd with contributions from occasional traffic movements and pedestrians along George St. No external fixed plant noise or noise from operational activities associated with the nearby commercial units was noticeable during the attended noise surveys.

Table 6: Description of measurement positions and observed noise sources

Pos	Description
1	Sound level meter microphone mounted on a tripod at a height of approximately 1.4 m above local ground level, approx 1m from the end window on the west facade of the proposed dwelling. The main source of noise observed at this measurement position was noted to be traffic noise from Inglewhite Rd with additional contributions from traffic movements on George Street, birdsong, people talking on George Street, and occasional distant construction activity noise from St Marys Close.
2	Sound level meter microphone mounted on a tripod at a height of approximately 1.4 m above local ground level, approx 1m from the end window on the east facade of the proposed dwelling. The main source of noise observed at this measurement position was noted to be traffic noise from Inglewhite Rd with additional contributions from traffic movements on George Street, birdsong, people talking on George Street, and occasional distant construction activity noise from St Marys Close.
3	Unattended noise survey with sound level meter microphone mounted on a boom pole at a height of approximately 2.4 m above local ground level in the corner of the back yard of 23 Inglewhite Rd, approx 3.8m from the end window on the east facade of the proposed dwelling. The noise level measurements at this position were unattended, however it is expected that the noise sources during the daytime would be the same as those observed for measurement position 2, given the proximity to measurement position 2. It is noted that the L_{A90} background noise levels remained relatively constant at around 38 dB between approx 21:00 – 02:00 hrs (refer to highlighted noise plot in Appendix II). It is expected that the constant low level background noise levels during this period were caused by noise from a domestic boiler flue on the facade of 21 Inglewhite Rd, located approx 3 m from the measurement position, as the flue was observed to be briefly operational when the sound level meter was collected from this position at 08:00 hrs. Whilst the noise level measurements at this position were unattended, it is expected that the maximum noise levels measured during the night-time were caused by road traffic and/or birdsong. Note that sound insulation testing was undertaken between 27 Inglewhite Rd and the proposed dwelling between approx 19:00 – 20:30 hrs. As the tests involved generating high levels of noise within the nearby storeroom of 27 Inglewhite Rd, the external noise level measurements during this period have been excluded from the summary results tables below.

4.7 MEASURED NOISE LEVELS

A summary of the measured noise levels is provided in Table 7 and Table 8 below. Plots of the measured noise levels at each position are presented in Appendix II.

Table 7: Summary of measured noise levels at Positions 1 - 3

Pos	Date	Period, T	$L_{Aeq,T}$ dB	$L_{Aeq,5min}$ dB	$L_{A90,5min}$ dB	$L_{AFmax,5min}$ dB
1	Tue 05/05/26	16:03 – 18:03	52	49 - 54	40 - 46	59 - 76
1	Wed 06/05/26	08:05 – 11:05	53	50 - 56	39 - 47	60 - 79
2	Tue 05/05/26	16:15 – 18:30	55	54 - 58	41 - 51	61 - 80
2	Wed 06/05/26	08:10 – 11:10	55	52 - 58	42 - 48	62 - 80
3*	Tue 05/05/26	21:00 – 23:00	47	38 - 54	37 - 40	42 - 80
3*	Wed 06/05/26	23:00 – 07:00	43	20 - 52	19 - 39	30 - 73
3*	Wed 06/05/26	07:00 – 08:00	52	49 - 53	36 - 44	60 - 74

** unattended noise survey*

Table 8: Summary of measured hourly noise levels at Position 1 for comparison with external amenity noise criteria

Pos	Date	Period, T	$L_{Aeq,T}$ dB	$L_{Aeq,1hr}$ dB	$L_{A90,1hr}$ dB	$L_{AFmax,1hr}$ dB
1	Tue 05/05/26	16:03 – 18:03	52	51 - 52	43 - 43	70 - 76
1	Wed 06/05/26	08:05 – 11:05	53	52 - 54	42 - 43	74 - 79

5.0 COMMERCIAL ACTIVITY NOISE LEVELS

As noted in section 4.0, there was no noticeable fixed plant or activity noise contributions from the adjacent commercial buildings during the scoping site visit and noise surveys. In order to allow for a robust sound insulation assessment, the following sections assess the potential for elevated commercial noise levels that could be experienced at the Project site given the current use classes of the adjacent commercial buildings.

5.1.1 LAYOUT OF ADJACENT COMMERCIAL UNITS

Detailed plan drawings of the current layout of the commercial units within 27 Inglewhite Rd are not currently available, however an indicative 2024 Valuation Office Agency sketch plan of the layout of the commercial building with the internal subdivision of commercial units is provided in Figure 7 below.

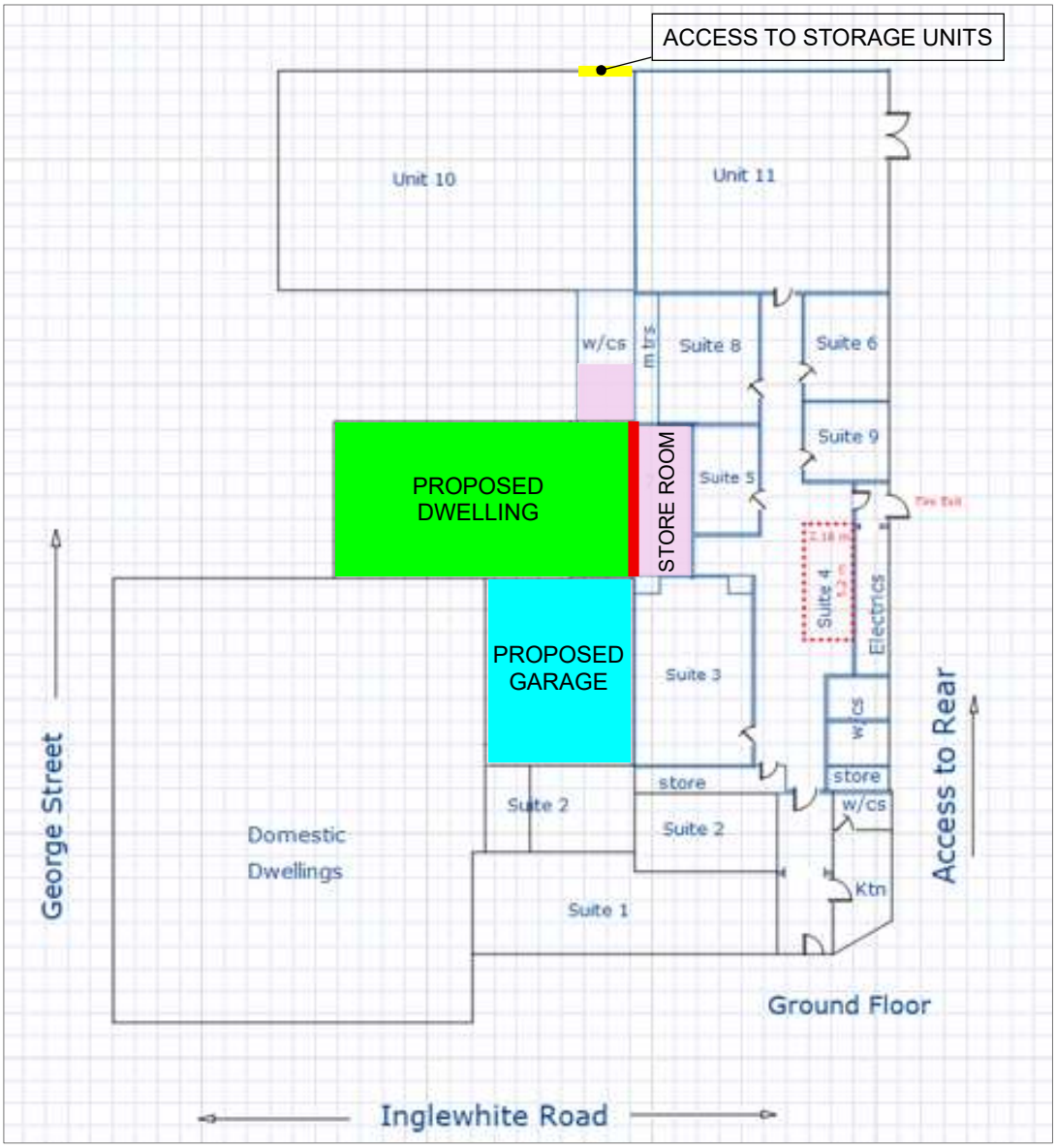
From on-site observations it was noted that the spaces adjacent to the proposed dwelling are currently used as an unoccupied store room to the north, and an unoccupied store room in a WC block to the west (refer to photos in Figure 6).

Figure 6: Photos of west party wall (highlighted blue) and north party wall (highlighted green)

The rooms adjacent to the external wall along the southern perimeter of the Longridge Hub building are typically unoccupied spaces, consisting of store rooms, WCs, and the vacant commercial unit that will be converted to the proposed garage space. As such, there are no significant noise generating commercial spaces located along the south elevation of the Longridge Hub building.

The commercial building housing the self-storage units is identified as 'Unit 10' on the sketch plan layout below. Access to the self-storage unit building is currently located on the opposite side of the storage building to the proposed dwelling, which is accessed via the rear of the Longridge Hub building.

Figure 7: Valuation Office Agency 2024 indicative sketch layout of commercial buildings with markup illustrating location of proposed dwelling with garage and cavity blockwork separating wall



5.2 ACTIVITY NOISE LEVELS WITHIN COMMERCIAL UNITS

The existing business uses of the adjacent 'Longridge Hub' commercial building are understood to include the following:

- Sa'ar Café - Cafe
- North'n'Grit – Jewellery shop
- Betula Pendula - Jewellery and Treasures
- Stoneygate Botanicals – Holistic Therapies & Skin Care
- Absolute Enigma Studio – Gifts, Curios, Art & Workshops
- Root to Rise - Reflexologist

The project planning consultant has advised that the existing commercial uses within the Longridge Hub building would fall under Use Class E (Commercial, Business and Service), and as such it is expected that the commercial use of this building would be limited to Use Class E.

The commercial building to the south west of the Longridge Hub building is understood to house self-storage units. The project planning consultant has advised that the existing commercial use of the storage units would fall under Use Class B8 (Storage or distribution), and as such it is expected that the commercial use of this building would be limited to Use Class B8.

Given the existing layout and the current uses of the commercial units outlined above, it is not expected that the commercial units would generate significant activity noise levels in the spaces adjacent to the proposed dwelling. However, to allow for a robust assessment, the following indicative worst-case commercial activity noise levels have been assumed for the commercial units, based on the existing uses of the adjacent Longridge Hub and the storage unit buildings outlined above.

- For the Longridge Hub building, it has been assumed that the highest activity noise levels that would typically be generated within a commercial unit would be equivalent to a busy café/restaurant.

- For the storage units building, it has been assumed that the highest activity noise levels that could be generated would be equivalent to loading/unloading activities undertaken by an electric forklift truck.

The following table presents the indicative octave band sound levels assumed for the commercial activities.

Table 9: Indicative internal activity noise levels assumed for commercial units, $L_{eq,T}$ (dB)

Octave Band Centre Frequency, Hz	63	125	250	500	1k	2k	4k	A
Activity noise levels for a busy restaurant, $L_{eq,T}$ (dB) [1]	60	70	75	75	75	75	70	**80**
Activity noise levels for a storage unit, $L_{eq,T}$ (dB) [2]	77	69	67	72	70	70	65	**76**
Assumed commercial activity noise levels for all spaces, $L_{eq,T}$ (dB) [3]	77	70	75	75	75	75	70	**80**

1 - Sourced from 'The Little Red Book of Acoustics: A Practical Guide' by Richard Watson and Owen Downey
2 – Indicative indoor reverberant noise levels estimated from external measurements of electric fork lift truck loading activities
3 - Highest noise level in each octave band from the range of indicative octave band activity noise levels

To allow for a robust assessment, the highest noise level in each octave band from the range of indicative commercial activity noise levels has been assumed to be generated in all spaces within the adjacent commercial buildings, including the store rooms and WC spaces directly adjacent to the proposed dwelling.

It is important to note that given the assumed Use Class of each of the commercial buildings and the layout of the commercial units as outlined in the sections above, it is assumed that any potential future forklift truck activities/movements would only occur in the storage unit main building and would not occur in any spaces adjacent to, or in close proximity to, the proposed dwelling.

5.3 EXTERNAL NOISE BREAK-OUT FROM COMMERCIAL UNITS

To allow for a robust assessment, the potential for increased commercial activity noise break-out from the Longridge Hub and storage unit buildings has been considered based on the assumed worst-case commercial activity noise levels outlined in Table 9, above.

Noise break-out calculations have been undertaken using 3D noise modelling software (iNoise v2026) to assess the external noise break-out from the adjacent commercial units assuming a worst-case scenario where all of the spaces within the Longridge Hub and the storage unit building generate the commercial activity noise levels assumed in Table 9, above. The following building envelope constructions have been assumed for the noise break-out calculations based on on-site observations and/or information received from the Client.

Table 10: Assumed sound insulation performance of commercial unit building envelope elements, R_w (dB)

Building Element	Assumed construction	R_w (dB)
Pitched roofs	Steel roof cladding with glass wool insulation over original asbestos/insulation board roof	42
Flat roofs	Felt on 19mm Plywood on 200mm joists underdrawn with plasterboard	43
External walls (brick/blockwork)	Brick or block wall, assumed minimum 100mm single skin	41
External wall (George St elevation to self-storage building)	Sliding steel clad door	19
Roller shutter access door to self-storage building	Metal roller shutter door	19

The results of the commercial activity noise breakout calculations are summarised in the table below.

Table 11: Calculated commercial unit external noise break-out levels around the proposed dwelling

Location	Commercial activity noise break-out, $L_{Aeq,T}$ dB
External amenity yard area	42
Worst-case external window	41
Worst-case roof-light above proposed kitchen/dining room	38

6.0 PARTY WALL SOUND INSULATION ASSESSMENT

6.1 BUILDING REGULATIONS ADE MINIMUM REQUIREMENTS

The party wall construction between the proposed dwelling and the adjacent commercial units will be subject to the statutory minimum sound insulation requirements of Building Regulations ADE. The ADE sound insulation requirements for dwelling houses and flats formed by a material change of use are summarised in Table 12 below.

Table 12: ADE party wall sound insulation performance standards for dwelling-houses and flats formed by material change of use

Dwelling-houses and flats formed by material change of use	Airborne sound insulation $D_{nT,w} + C_{tr}$ (dB)	Impact sound insulation $L_{n,T,w}$ dB
Party Walls	≥ 43	Not applicable

6.2 RECOMMENDED INTERNAL NOISE LEVELS

In addition to achieving the minimum ADE airborne sound insulation performance, it is proposed to achieve a suitable level of party wall airborne sound insulation to limit commercial noise break-through within the adjacent kitchen/dining/living room accommodation to $L_{Aeq,T}$ 30 dB.

6.3 EXISTING SEPARATING WALL CONSTRUCTIONS

The proposed residential dwelling is separated from the commercial spaces by the existing external wall construction of the workshop building on the west elevation, and an internal cavity blockwork wall construction on the north elevation (refer to Figure 8).

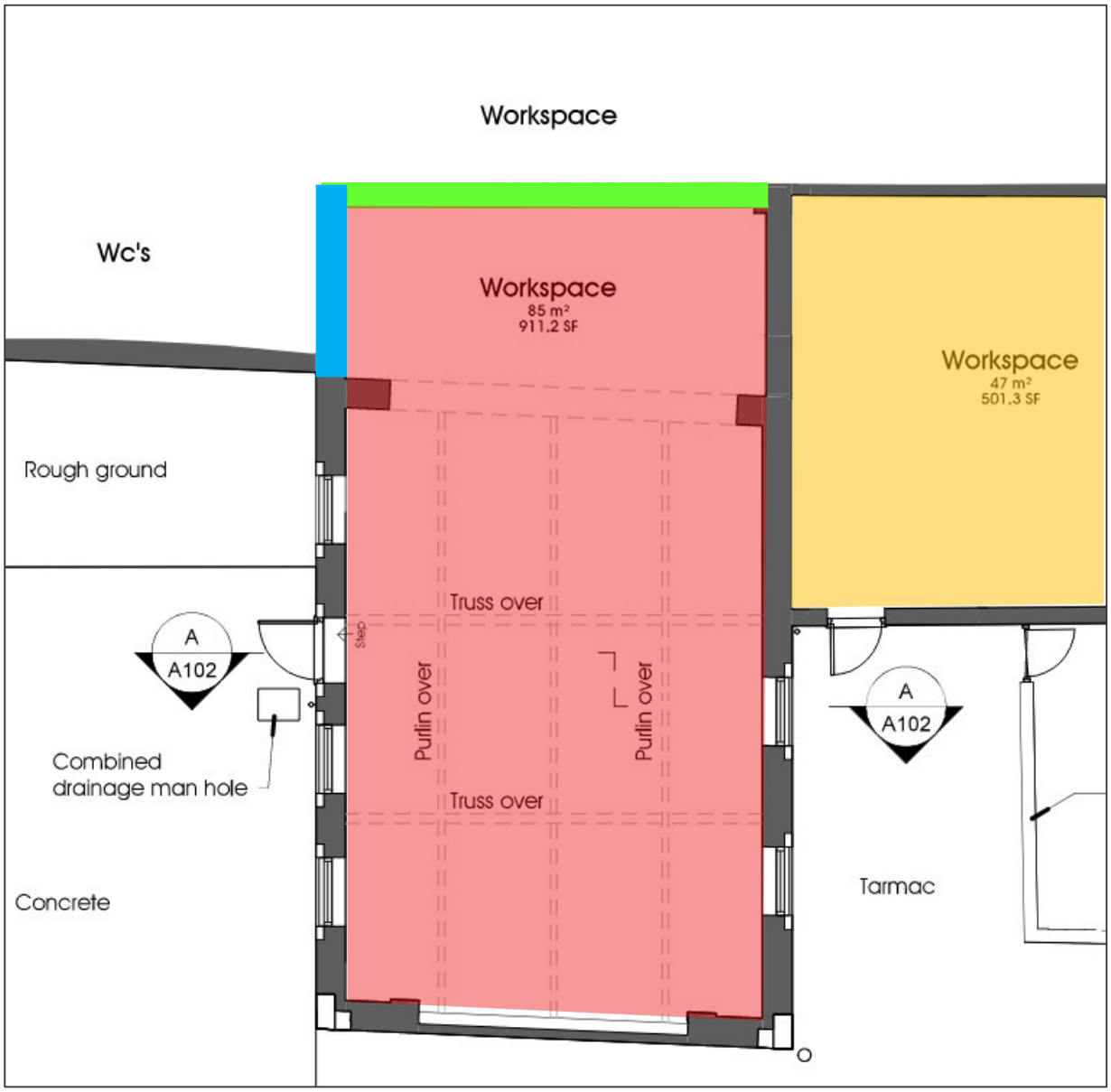
The commercial spaces adjacent to the proposed residential dwelling are currently used as store rooms which are generally unoccupied (refer to Figure 7).

Based on site observations and information received from the Client, we understand that the existing separating wall constructions between the proposed dwelling and the commercial units consist of the following build-ups

Table 13: Existing separating wall constructions

Key	Elevation	Construction
	North	Cavity blockwork wall consisting of 100mm dense concrete blocks with assumed minimum density of 1450 kg/m^3 with a 50mm cavity (no insulation in cavity)
	West	Assumed minimum 350 mm solid random stone wall with assumed minimum density of 1600 kg/m^3 with areas of blockwork infill

Figure 8: Existing floor plan with proposed dwelling highlighted in red, proposed garage highlighted in orange, and existing party wall constructions highlighted in blue and green



6.3.1 EXISTING SOUND INSULATION PERFORMANCE

An indicative sound insulation test was undertaken on 05/05/26 to measure the sound insulation performance of the existing cavity blockwork separating wall.

During the testing, it was noted that the sound insulation performance of the wall was compromised by openings in the wall, a lack of acoustic sealing at the head of the separating wall, and flanking via services penetrations and lightweight elements of the flat roof, which resulted in a measured sound insulation performance of $D_{nT,w}+C_{tr}$ 31 dB.

The existing sound insulation performance of the separating wall is below the minimum Building Regulations ADE performance requirements and will therefore require improvements to achieve a suitable sound insulation performance, as discussed in section 6.4 below.

6.4 RECOMMENDED ENHANCED PARTY WALL CONSTRUCTION

The following acoustic design guidance is provided based on the preliminary scheme design information and limited construction information available at the planning stage. It is recommended that suitable construction details are developed during the later design stages, based on detailed design information, to be reviewed by an acoustic consultant.

Make good existing walls

- The existing wall constructions should be made good by infilling any gaps in the masonry to their full depth/height with masonry/mortar of the same density as the original wall construction.
- Where existing internal window openings or other sizeable openings, or areas of infill blockwork are present in the existing solid random stone party wall, these should be infilled to the full depth of the stone wall with masonry/mortar of the same density as the original party wall construction, or infilled with a construction equivalent to the cavity blockwork wall used for the north elevation party wall. Any resulting cavities should by filled with mineral wool insulation roll, e.g. Isowool APR 1200.
- The masonry walls should be acoustically sealed on both faces with a minimum 8 mm parge coat, e.g. British Gypsum Gyproc SoundCoat Plus, to ensure that the face is fully sealed with no air gaps present across the entire face of the wall.

Install independent wall lining

An independent wall lining should be installed full height from structural floor slab to structural soffit on the dwelling side of the masonry party walls, to be constructed as follows:

- Minimum 30mm dense plasterboard linings (minimum combined mass per unit area 26 kg/m^2), e.g. 2x15mm British Gypsum Soundbloc, all joints staggered and taped.
- Plasterboard linings to be supported on independent studs, i.e. no structural connections to the masonry wall, e.g. British Gypsum Gypliner Independent (www.british-gypsum.com/Systems/wall-linings/gyplyner-independent), and isolated from floor/soffit via resilient strip connections e.g. https://www.mason-uk.co.uk/nps-partition-support/
- Minimum 100mm cavity between plasterboard linings and blockwork wall incorporating;
- 100mm glass/mineral wool in cavity, e.g. Isowool APR 1200.

Install resiliently suspended acoustic mass barrier ceiling

The following upgraded ceiling construction for the flat roof above the kitchen/dining/living room area, to be installed below the ceiling joists, is recommended to minimise flanking sound transfer via the flat roof construction (refer to section 7.2.2 for further details on the flat roof sound insulation requirements).

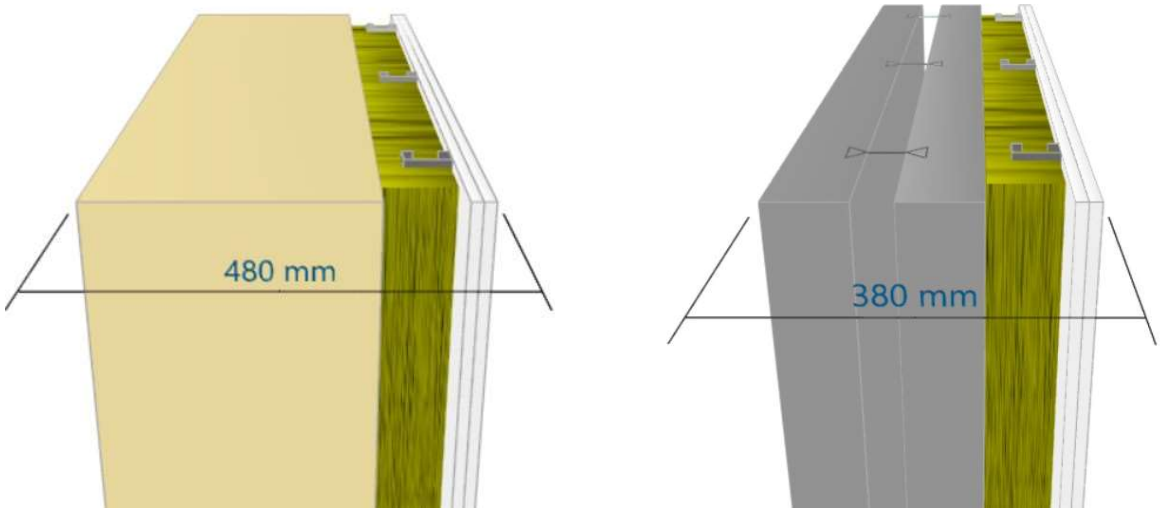
- 2x12.5mm SoundBloc plasterboard ceiling lining
- Ceiling lining suspended from joists on resilient bars or equivalent resilient suspension mounts (e.g. Gypframe RB1 Resilient Bar)

- 100mm glass/mineral wool in minimum 200mm cavity, e.g. Isowool APR 1200
- The flat roof construction must not be continuous across the party wall, i.e. any rigid flat roof linings and structural elements should incorporate a minimum 10mm gap along the line of the party wall, which should be filled with a flexible acoustic sealant.
- Upstands in the ceiling formed by the proposed roof lights should be formed from the same ceiling lining specification outlined above.

Acoustic design principles for junction and penetration details

- Suitable junction and penetration detailing will be required to prevent sound leaks and flanking from degrading the in-situ sound insulation performance of the enhanced party wall construction.
- Services penetrations through the independent wall lining and ceiling lining should be acoustically sealed, and acoustic back boxes or should be installed behind electrical sockets/switches and recessed light fittings to maintain the sound insulation performance of the plasterboard linings.
- Party wall head details will need to be acoustically treated and sealed to ensure that there are no leaks or flanking paths over the head of the party wall. Suitable party wall head details should be developed during the detailed design stages once drawings showing the interface between the head of the party wall and the roof are available, i.e. acoustic deflection head details to be incorporated where required.
- Structural elements, rigid linings, and services pipework/ductwork should not be continuous across the party wall.
- All gaps at perimeters, penetrations, and junctions should be sealed airtight sing a flexible acoustic sealant.
- It is recommended that the proposed construction details are reviewed by an acoustic consultant during the detailed design stages to ensure that the required acoustic design principles have been incorporated into the scheme proposals.

Figure 9: Illustration of Independent wall linings to existing separating wall substrates



6.4.1 SOUND INSULATION PERFORMANCE OF ENHANCED PARTY WALL

With corrections for software modelling accuracy, suitable acoustic detailing, and typical on-site workmanship allowances, the enhanced party wall construction outlined above is expected to achieve a minimum in-situ sound insulation performance of $D_{nT,w}+C_{tr}$ 50 dB.

6.5 BUILDING REGULATIONS ADE PERFORMANCE

The predicted party wall minimum sound insulation performance of $D_{nT,w}+C_{tr}$ 50 dB is a +7 dB improvement compared to the Building Regulations ADE party wall minimum requirement of $D_{nT,w}+C_{tr}$ 43 dB for dwelling-houses and flats formed by material change of use.

6.6 COMMERCIAL NOISE BREAKTHROUGH TO HABITABLE ROOMS

Based on the assumed worst-case commercial activity noise levels outlined in section 5.2 and the assessed $D_{nT,w}+C_{tr}$ 50 dB sound in-situ insulation performance of the enhanced party wall construction noted above, the worst-case commercial activity noise breakthrough within the proposed dining/kitchen/living room is calculated to be $L_{Aeq,T}$ 27 dB (NR 22).

The commercial activity noise break-through level of $L_{Aeq,T}$ 27 dB achieves the proposed internal ambient noise limit of $L_{Aeq,T}$ 30 dB for the dining/kitchen/living room, and is 8 dB below the BS8233:2014 recommended internal ambient noise limit of $L_{Aeq,16hr}$ 35 dB for resting during the daytime, demonstrating that the proposed enhanced party wall construction can provide a suitable level of sound insulation between the commercial unts and the proposed residential development.

7.0 BUILDING ENVELOPE SOUND INSULATION

7.1 NOISE BREAK-IN CALCULATIONS

Noise break-in calculations have been undertaken to determine the required building envelope sound insulation based on the measured external sound levels and the internal noise level criteria proposed in section 3.7.

7.1.1 DESIGN ASSUMPTIONS

Building dimensions have been taken from the PGB Architectural Services drawings '*Planning Application Proposed Floor - Site Plan – Rev B'* and '*Planning Application Proposed Elevations – Rev B'* dated 09/07/26.

The following indicative building envelope constructions and associated sound insulation performance have been assumed for the purposes of this assessment, based on information received from the Client and PGB Architectural Services:

- *Pitched Roof: Natural slate roof with mineral wool insulation in ceiling void and plasterboard ceiling*
- *Flat Roof: Refer to section 7.2.2 below*
- *External walls: Existing minimum 350mm thick natural stone walls or 100mm thick dense blockwork infill wall incorporating internal lining of minimum 12.5mm plasterboard with minimum 100mm cavity filled with 100mm mineral wool insulation behind timber cladding on the southern elevation.*

7.1.2 EXTERNAL NOISE LEVELS

To allow for a robust assessment, the measured external noise levels have been combined with the predicted worst-case commercial activity break-out noise levels outlined in section 5.3 to derive the assumed worst-case external noise level incident for each elevation of the proposed dwelling.

The octave band noise levels used for the noise break-in calculations are summarised in Table 14 below for reference. Note that the facade measurements at positions 1 and 2 have been corrected by 3 dB to derive the free-field equivalent noise levels at the facade.

Table 14: External noise levels used for assessment of building envelope sound insulation requirements

Octave Band Centre Frequency, Hz	63	125	250	500	1k	2k	4k	A
Daytime $L_{eq,T}$, (dB) West elevation (Pos 1) measured $L_{Aeq,T}$ between 16:03 – 18:03 and 08:05 – 11:05 hrs	60	54	52	46	45	41	33	50
Daytime $L_{eq,T}$, (dB) East Elevation (Pos 2) measured between 08:10 – 11:10 and 16:15 – 18:30 hrs	64	56	50	49	49	44	35	53
Night-time $L_{eq,8hr}$, (dB) East Elevation (Pos 3) measured between 23:00 – 07:00 hrs	54	47	45	42	41	37	29	45

7.2 ROOF SOUND INSULATION REQUIREMENTS

7.2.1 SLATE ROOF CONSTRUCTION

The proposed traditional slate roof construction incorporating a standard plasterboard ceiling with a minimum 100mm mineral wool insulation in the ceiling void is expected to provide a suitable level of sound insulation performance for the residential accommodation.

7.2.2 FLAT ROOF CONSTRUCTION

Based on information received from the Client, the existing flat roof construction above the proposed dining/kitchen accommodation is understood to consist of the following basic construction:

- Outer cladding of 3 layers of felt on 19mm plywood (assumed combined mass of 23 kg/m^2)
- 200-225mm joists
- Plasterboard or insulation board to the underside of the joists

The following enhanced flat roof construction is recommended to improve the sound insulation performance of the flat roof construction:

- Existing outer cladding, or new flat roof outer cladding, with a minimum combined mass of 23 kg/m^2
- 200-225mm joists
- Minimum 100mm mineral wool insulation in ceiling void
- 2x12.5mm Soundbloc plasterboard lining suspended from joists on resilient bars

Any services penetrations through the ceiling should be acoustically sealed and acoustic back boxes should be installed behind any recessed light fittings installed in the ceiling to maintain the sound insulation performance of the ceiling.

7.3 ROOFLIGHTS SOUND INSULATION REQUIREMENTS

It is recommended that the rooflights are specified to achieve the minimum sound insulation performance outlined in Table 15, below.

All upstand ceiling elements around the rooflights should be constructed from 2x12.5mm Soundbloc plasterboard and sealed with a flexible acoustic sealant to maintain the sound insulation performance of the plasterboard ceiling.

7.4 EXTERNAL WINDOWS SOUND INSULATION REQUIREMENTS

The noise break-in calculations indicate that the following external window and rooflight minimum sound insulation specifications will be required to achieve the achieve the proposed internal noise level criteria outlined in section 3.7.

Table 15: Minimum recommended external window and rooflight sound insulation performance

Octave Band Centre Frequency, Hz	63	125	250	500	1k	2k	4k	R_w
Minimum sound insulation (SRI), dB	23	20	23	33	42	39	40	35

Minor deviations from the recommended minimum SRI performance values in individual octave bands may be acceptable, subject to review by an acoustic consultant.

Note that the recommended minimum sound insulation specifications above relate to the complete window assembly, including the frame and seals, and a window assembly area of at least 1.8 m^2.

For guidance, it is expected that the above sound insulation performance requirements could be achieved with suitably specified 6/18/4mm DGU windows, however the window manufacturer/supplier shall be responsible for demonstrating compliance with the minimum window sound insulation performance requirements, e.g. by providing suitable laboratory test reports.

7.5 VENTILATION SOUND INSULATION REQUIREMENTS

The noise break-in calculations indicate that the following minimum sound insulation specifications will be required for background ventilators to achieve the proposed internal noise level criteria outlined in section 3.7.

Table 16: Minimum recommended combined background ventilation sound insulation performance

Octave Band Centre Frequency, Hz	63	125	250	500	1k	2k	4k	$D_{ne,w}$
Minimum sound insulation (D_{ne}), dB	31	39	35	32	32	37	41	35

Minor deviations from the recommended minimum D_{ne} performance values in individual octave bands may be acceptable, subject to review by an acoustic consultant.

Note that the combined ventilator performance must achieve the Building Regulations Approved Document F background ventilation rates whilst achieving the $D_{n,e}$ sound insulation performance values outlined in Table 16 above. Where more than one ventilator per room is required, the minimum $D_{n,e}$ values above will need to be increased to offset the loss in performance associated with the use of multiple units (i.e. by +3dB where 2 no. vents are required, +5dB where 3 no. vents are required, etc).

The ventilator manufacturer/supplier shall be responsible for demonstrating compliance with the minimum ventilator sound insulation performance requirements, e.g. by providing suitable laboratory test reports.

For guidance, it is expected that the ventilator sound insulation performance requirements would be achieved by the following example acoustic ventilator, or with a ventilation scheme incorporating whole house MVHR.

- Rytons 9×3 Acoustic AirLiner Set with Hit & Miss Ventilator (TAL4H&M)
  https://rts.vents.co.uk/blog/product-details/tal4hm-rytons-9x3-acoustic-airliner-set-hit-miss/

7.6 NIGHT-TIME LAMAX NOISE LEVELS FROM INDIVIDUAL EVENTS

Based on the measured L_{AFmax} noise levels, the noise break-in calculations indicate that the proposed L_{AFmax} night-time noise limits within bedrooms would be achieved with the provision of the external window and background ventilator minimum sound insulation performance specifications outlined above, **i.e. the L_{AFmax} from individual noise events would not normally exceed 45 dB more than 10 times a night.**

7.6.1 PURGE VENTILATION

The recommended background ventilator sound insulation performance outlined in section 7.5 above will allow the proposed internal noise criteria outlined in section 3.7 to be achieved when the windows are closed. When the windows are opened, e.g. to provide rapid or purge ventilation, the internal sound level criteria are likely to be exceeded. However, with regard to using openable windows for purge ventilation, BS8233 comments that:

'The Building Regulations' supporting documents on ventilation…recommend that habitable rooms in dwellings have background ventilation. Where openable windows cannot be relied upon for this ventilation, trickle ventilators can be used and sound attenuating types are available. However, windows may remain openable for rapid or purge ventilation, or at the occupant's choice.'

A temporary increase in internal noise levels is therefore considered to be acceptable when using openable windows to provide rapid or purge ventilation.

7.7 OVERHEATING AND NOISE

Whilst compliance with the overheating requirements of AD-O is a Building Regulations matter rather than a planning requirement, it would be prudent to consider options for compliance with AD-O prior to obtaining planning permission, given the means of removing excess heat has the potential to affect the building appearance and/or shape or form, and may have cost implications during the later design stages.

An indicative assessment has been undertaken, assuming an outside-to-inside level difference of 10 dB for window openings with a free area equivalent to 4% of the floor area of the bedrooms (as required to satisfy the AD-O simplified assessment method for 'medium' risk locations), and the $L_{AMax,5min}$ and $L_{Aeq,8hr}$ noise levels measured between 23:00 – 07:00 hrs.

The indicative assessment indicates that the use of openable windows for controlling overheating would be expected to achieve the Building Regulations AD-O internal L_{Amax} and L_{Aeq} noise limits referenced in section 3.4 above.

7.8 EXTERNAL NOISE LEVELS IN AMENITY SPACES

The measured external noise level in the proposed external yard area to the west of the proposed dwelling across the daytime noise surveys was $L_{Aeq,T}$ 53 dB (refer to section 4.7 for details of measured external noise levels).

Based on the assumed commercial activity noise levels presented in Table 9, the potential worst-case commercial noise break-out levels in the proposed external yard area to the west of the proposed dwelling is calculated to be $L_{Aeq,T}$ 42 dB.

The combined measured external noise level and the predicted potential worst-case commercial noise break-out in the proposed external yard area is $L_{Aeq,T}$ 53 dB, which achieves the BS8233 recommendation that '…*for traditional external areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments*..'

8.0 CONCLUSION

A sound insulation assessment has been undertaken for the proposed conversion of an existing workshop to a residential dwelling, to determine a suitable scheme of sound insulation to mitigate against commercial activity noise from the adjacent commercial buildings.

The proposed internal $L_{Aeq,T}$ noise limits within habitable rooms are 5 dB below (i.e. a 5 dB betterment on) the BS8233:2014 recommended L_{Aeq} guideline noise limits to allow for a degree of character correction for any commercial noise contributions from the adjacent commercial buildings.

Measured external noise levels and assumed indicative worst-case commercial activity noise levels based on the existing planning use classes of the commercial buildings, have been used to inform the sound insulation assessment.

An enhanced party wall construction has been proposed to provide an increased level of sound insulation between the proposed residential dwelling and the adjoining commercial unit. It is recommended that the proposed party wall construction details are reviewed by an acoustic consultant during the detailed design stages to ensure that the required acoustic design principles have been incorporated into the scheme proposals.

The predicted enhanced party wall in-situ sound insulation performance of $D_{nT,w}+C_{tr}$ 50 dB is a +7 dB improvement compared to the Building Regulations ADE party wall minimum requirement of $D_{nT,w}+C_{tr}$ 43 dB for dwelling-houses and flats formed by material change of use.

Based on the assumed commercial activity noise levels and the assessed sound in-situ insulation performance of the enhanced party wall, the worst-case commercial activity noise breakthrough within the proposed dining/kitchen/living room accommodation is predicted to be $L_{Aeq,T}$ 27 dB (NR 22).

The commercial activity noise break-through of $L_{Aeq,T}$ 27 dB achieves the proposed internal ambient noise limit of $L_{Aeq,T}$ 30 dB for the dining/kitchen/living room, and is 8 dB below the BS8233:2014 recommended internal ambient noise limit of $L_{Aeq,16hr}$ 35 dB for resting during the daytime, demonstrating that the proposed enhanced party wall construction can provide a suitable level of sound insulation between the commercial unts and the proposed residential development.

Mitigation measures have been recommended for the building envelope in the form of suitable sound insulation performance specifications for the glazing and ventilation elements of the proposed dwelling that will allow the proposed internal noise limits within habitable rooms to be achieved.

The combined measured external noise level and the worst-case predicted commercial noise break-out in the proposed external yard area is $L_{Aeq,T}$ 53 dB, which achieves the BS8233:2014 upper guideline limit of 55 dB $L_{Aeq,T}$ for traditional external areas that are used for amenity space, such as gardens and patios.

The noise assessment concludes that, subject to the adoption of the recommended mitigation measures for the party wall and building envelope constructions, the proposed dwelling is not expected to be subject to any significant adverse noise impacts from the adjacent commercial units.

9.0 APPENDIX I: GLOSSARY OF TERMS

Airborne sound insulation
Sound insulation that reduces transmission of airborne sound between buildings or parts of buildings.

Background sound level, $L_{A90,T}$
The A-weighted sound pressure level that is exceeded by the residual sound at the assessment location for 90% of a given time interval

C_{tr}
The correction to a sound insulation quantity (such as DnT,w) to take account of a specific sound spectrum. See BS EN ISO 717-1:1997.

$D_{nT,w} + C_{tr}$
A single-number quantity which characterises the airborne sound insulation between rooms using noise spectrum no. 2 as defined in BS EN ISO 717-1:1997. See BS EN ISO 717-1:1997.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq,T}$
The value of the A-weighted sound pressure level in decibels of continuous steady sound that, within a specified time interval, T, has the same mean-squared pressure as a sound that varies with time

Flanking transmission
Sound transmitted between rooms via flanking elements instead of directly through separating elements or along any path other than the direct path.

Hertz (Hz)
The unit of the frequency of a sound (formerly called cycles per second).

Impact sound
Sound resulting from direct impact on a building element.

Impact sound insulation
Sound insulation which reduces impact sound transmission from direct impacts such as footsteps on a building element.

Isolation
The absence of rigid connections between two or more parts of a structure.

Mass per unit area
Mass per unit area is expressed in terms of kilograms per square metre (kg/m²).

Octave band
A frequency band in which the upper limit of the band is twice the frequency of the lower limit.

Rating level, $L_{Ar,Tr}$
The rating level is the specific sound level plus any adjustment for the characteristic features of the sound

Reference time interval, T_r
The specified interval over which the specific sound level is determined. This is 1 hr during the day from 07:00 hrs to 23:00 hrs, and a shorter period of 15 min at night from 23:00 hrs to 07:00 hrs

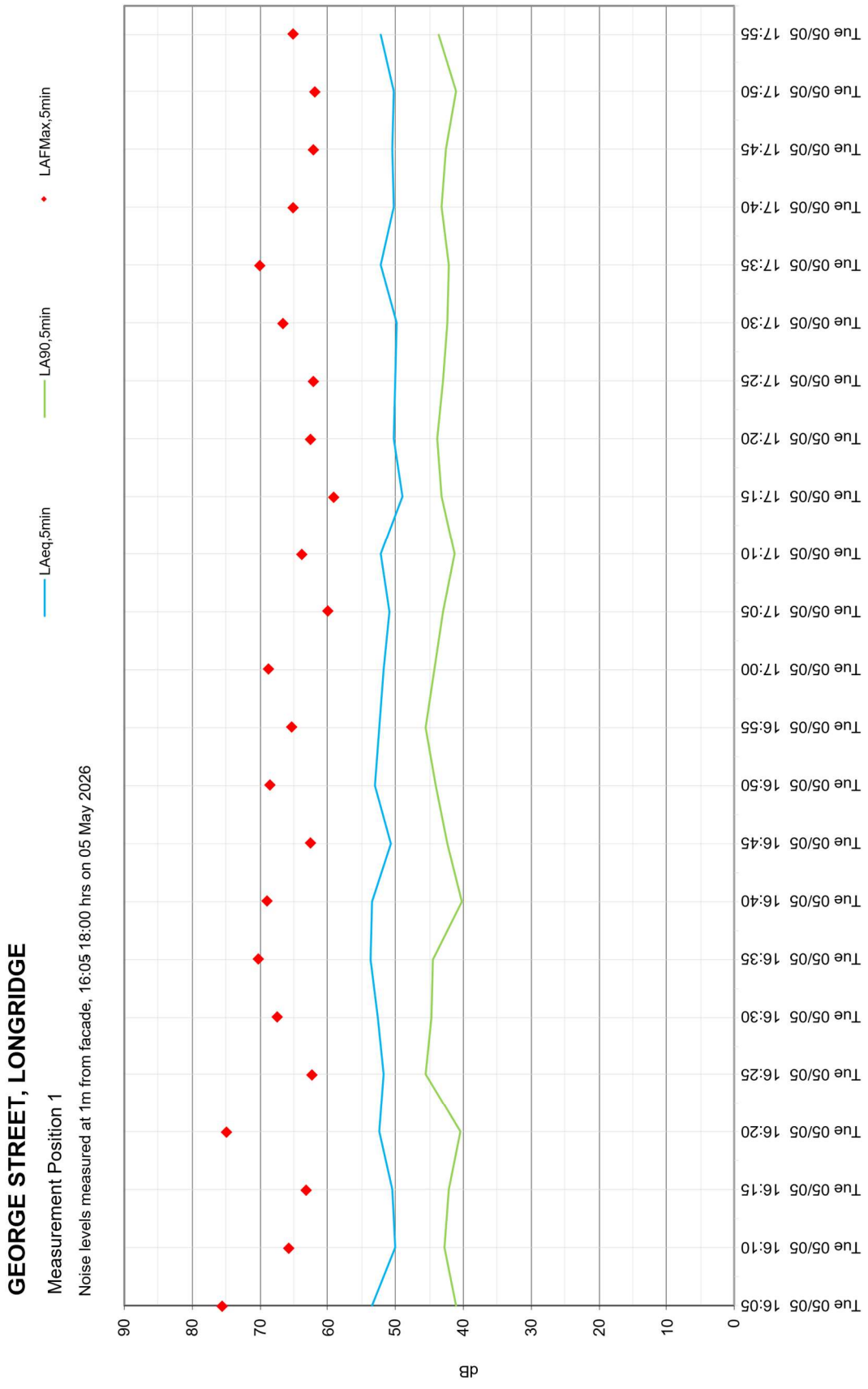
Specific sound level, L_s
The equivalent continuous A-weighted sound pressure level produced by the specific sound source at the assessment location over a given reference time interval, T_r

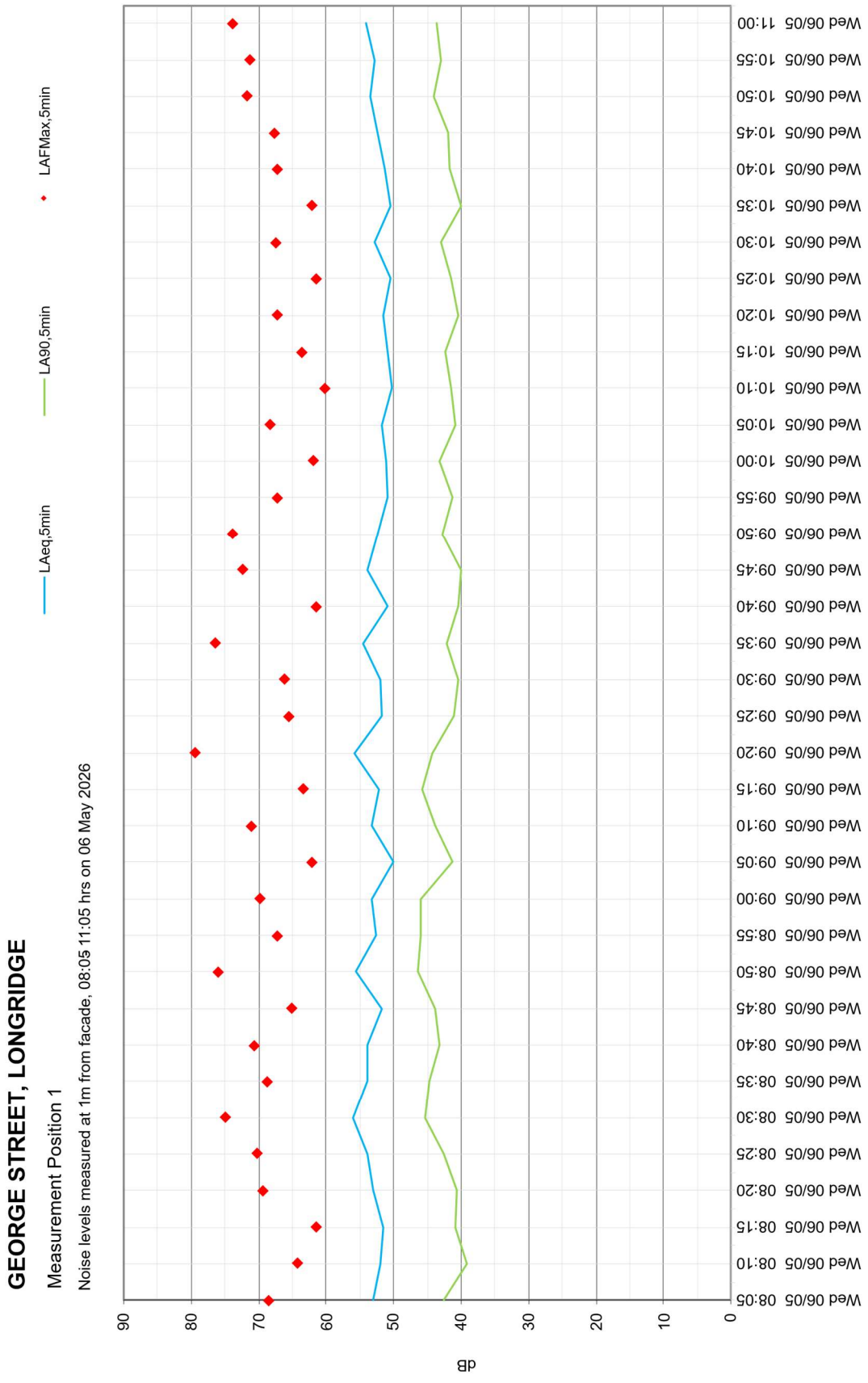
R_w
A single-number quantity which characterises the airborne sound insulation of a material or building element in the laboratory. See BS EN ISO 717-1:1997.

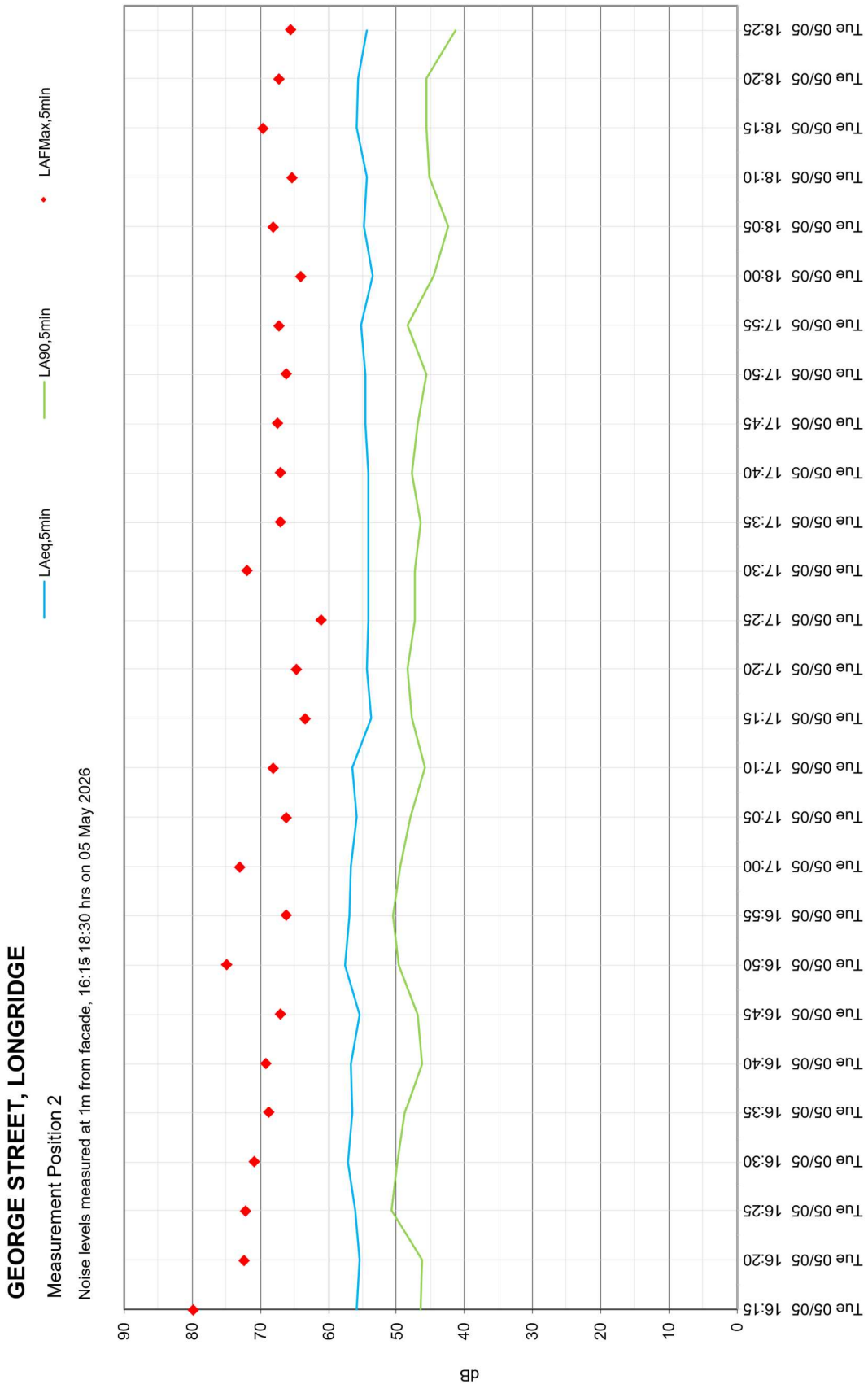
Separating wall
Wall that separates adjoining dwelling-houses, flats or rooms for residential purposes.

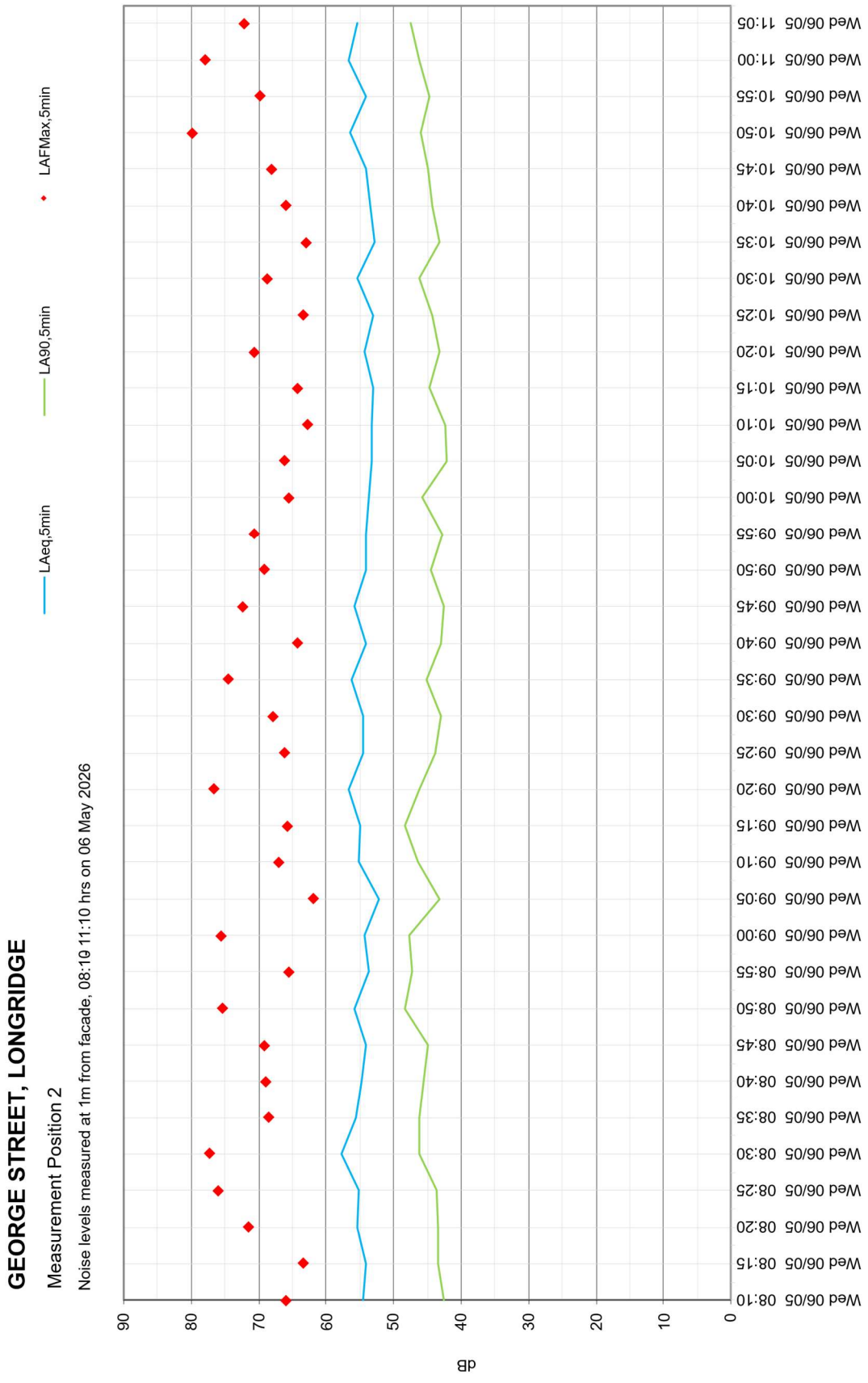
Sound reduction index (R)
A quantity, measured in a laboratory, which characterises the sound insulating properties of a material or building element in a stated frequency band. See BS EN ISO 140-3:1995.

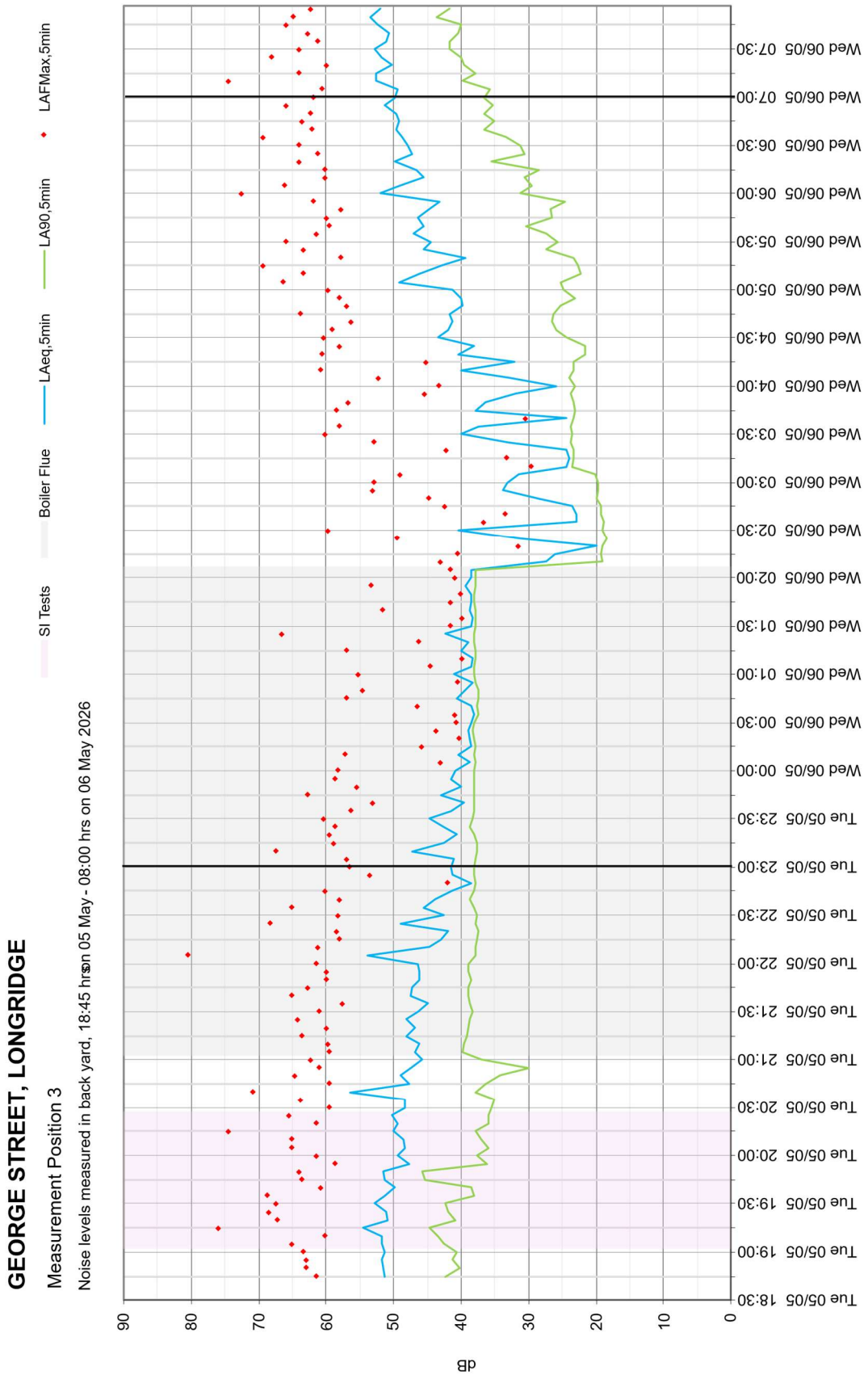
10.0 APPENDIX II: MEASURED SOUND LEVEL PLOTS


GEORGE STREET, LONGRIDGE
Measurement Position 1
Noise levels measured at 1m from facade, 16:05 18:00 hrs on 05 May 2026
LAeq,5min
LA90,5min
LAFMax,5min
dB
90
80
70
60
50
40
30
20
10
0
Tue 05/05 16:05
Tue 05/05 16:10
Tue 05/05 16:15
Tue 05/05 16:20
Tue 05/05 16:25
Tue 05/05 16:30
Tue 05/05 16:35
Tue 05/05 16:40
Tue 05/05 16:45
Tue 05/05 16:50
Tue 05/05 16:55
Tue 05/05 17:00
Tue 05/05 17:05
Tue 05/05 17:10
Tue 05/05 17:15
Tue 05/05 17:20
Tue 05/05 17:25
Tue 05/05 17:30
Tue 05/05 17:35
Tue 05/05 17:40
Tue 05/05 17:45
Tue 05/05 17:50
Tue 05/05 17:55


GEORGE STREET, LONGRIDGE
Measurement Position 1
Noise levels measured at 1m from facade, 08:05 11:05 hrs on 06 May 2026
LAeq,5min
LA90,5min
LAFMax,5min
dB
90
80
70
60
50
40
30
20
10
0
Wed 06/05 08:05
Wed 06/05 08:10
Wed 06/05 08:15
Wed 06/05 08:20
Wed 06/05 08:25
Wed 06/05 08:30
Wed 06/05 08:35
Wed 06/05 08:40
Wed 06/05 08:45
Wed 06/05 08:50
Wed 06/05 08:55
Wed 06/05 09:00
Wed 06/05 09:05
Wed 06/05 09:10
Wed 06/05 09:15
Wed 06/05 09:20
Wed 06/05 09:25
Wed 06/05 09:30
Wed 06/05 09:35
Wed 06/05 09:40
Wed 06/05 09:45
Wed 06/05 09:50
Wed 06/05 09:55
Wed 06/05 10:00
Wed 06/05 10:05
Wed 06/05 10:10
Wed 06/05 10:15
Wed 06/05 10:20
Wed 06/05 10:25
Wed 06/05 10:30
Wed 06/05 10:35
Wed 06/05 10:40
Wed 06/05 10:45
Wed 06/05 10:50
Wed 06/05 10:55
Wed 06/05 11:00


GEORGE STREET, LONGRIDGE
Measurement Position 2
Noise levels measured at 1m from facade, 16:15 18:30 hrs on 05 May 2026
LAeq,5min
LA90,5min
LAFMax,5min
dB
90
80
70
60
50
40
30
20
10
0
Tue 05/05 16:15
Tue 05/05 16:20
Tue 05/05 16:25
Tue 05/05 16:30
Tue 05/05 16:35
Tue 05/05 16:40
Tue 05/05 16:45
Tue 05/05 16:50
Tue 05/05 16:55
Tue 05/05 17:00
Tue 05/05 17:05
Tue 05/05 17:10
Tue 05/05 17:15
Tue 05/05 17:20
Tue 05/05 17:25
Tue 05/05 17:30
Tue 05/05 17:35
Tue 05/05 17:40
Tue 05/05 17:45
Tue 05/05 17:50
Tue 05/05 17:55
Tue 05/05 18:00
Tue 05/05 18:05
Tue 05/05 18:10
Tue 05/05 18:15
Tue 05/05 18:20
Tue 05/05 18:25


GEORGE STREET, LONGRIDGE
Measurement Position 2
Noise levels measured at 1m from facade, 08:10 11:10 hrs on 06 May 2026
LAeq,5min
LA90,5min
LAFMax,5min
dB
90
80
70
60
50
40
30
20
10
0
Wed 06/05 08:10
Wed 06/05 08:15
Wed 06/05 08:20
Wed 06/05 08:25
Wed 06/05 08:30
Wed 06/05 08:35
Wed 06/05 08:40
Wed 06/05 08:45
Wed 06/05 08:50
Wed 06/05 08:55
Wed 06/05 09:00
Wed 06/05 09:05
Wed 06/05 09:10
Wed 06/05 09:15
Wed 06/05 09:20
Wed 06/05 09:25
Wed 06/05 09:30
Wed 06/05 09:35
Wed 06/05 09:40
Wed 06/05 09:45
Wed 06/05 09:50
Wed 06/05 09:55
Wed 06/05 10:00
Wed 06/05 10:05
Wed 06/05 10:10
Wed 06/05 10:15
Wed 06/05 10:20
Wed 06/05 10:25
Wed 06/05 10:30
Wed 06/05 10:35
Wed 06/05 10:40
Wed 06/05 10:45
Wed 06/05 10:50
Wed 06/05 10:55
Wed 06/05 11:00
Wed 06/05 11:05


GEORGE STREET, LONGRIDGE
Measurement Position 3
Noise levels measured in back yard, 18:45 hrs on 05 May - 08:00 hrs on 06 May 2026
SI Tests
Boiler Flue
LAeq,5min
LA90,5min
LAFMax,5min
dB
0
10
20
30
40
50
60
70
80
90
Tue 05/05 18:30
Tue 05/05 19:00
Tue 05/05 19:30
Tue 05/05 20:00
Tue 05/05 20:30
Tue 05/05 21:00
Tue 05/05 21:30
Tue 05/05 22:00
Tue 05/05 22:30
Tue 05/05 23:00
Tue 05/05 23:30
Wed 06/05 00:00
Wed 06/05 00:30
Wed 06/05 01:00
Wed 06/05 01:30
Wed 06/05 02:00
Wed 06/05 02:30
Wed 06/05 03:00
Wed 06/05 03:30
Wed 06/05 04:00
Wed 06/05 04:30
Wed 06/05 05:00
Wed 06/05 05:30
Wed 06/05 06:00
Wed 06/05 06:30
Wed 06/05 07:00
Wed 06/05 07:30

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