



NOISE ASSESSMENT

on behalf of

THE TOGETHER TRUST

for the site at

BRIDGE COLLEGE, OPENSHAW, M11 2GR

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Summary

A noise impact assessment has been undertaken to predict the potential impact of noise on development at Bridge College, Openshaw, M11 2GR. This was requested by The Together Trust to support a planning application for the site. The proposal involves the construction of two new extensions to provide new SEN classrooms and ancillary spaces.

Measurements were made at locations representative of the façades of the proposed new building. This data was subsequently used to predict the potential impact of noise on the classrooms to enable an assessment of façade mitigation to be undertaken.

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Advisory Note

The suitability of any recommended noise mitigation measures within this report should be approved by the relevant architects, structural engineers, building contractors, fire consultants and material manufacturers constituting the wider design team, prior to procurement and field application. This should ensure that when the recommended noise control measures are implemented on site, they will satisfy the requirements of all disciplines, therefore should not cause any health and safety issues.

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1 Introduction

- 1.1 Miller Goodall Ltd has on behalf of The Together Trust, undertaken a noise assessment with respect to the impact of noise on extensions to educational buildings at Bridge College, Openshaw, M11 2GR.
- 1.2 This noise assessment assesses the potential noise impact of environmental noise sources around the site affecting the new building.

2 Site Description

- 2.1 The site is located at Bridge College, Openshaw, M11 2GR and is broadly surrounded by Ashton Old Road (A635) to the north, Pottery Lane (A6010) to the west and the train line between Manchester Piccadilly and Hyde to the south. To the east of the site is The Manchester College – Openshaw Campus.
- 2.2 The immediate surrounding site area is predominantly industrial, with the exception of the Manchester College to the east. The nearest residences are approximately 110 m to the north.

3 Proposed Development

- 3.1 The proposal is for the remodelling and extension of the college within its existing site at Whitworth Street in Openshaw, East Manchester along with a reorganisation of vehicle drop-off and additional car parking.
- 3.2 The work will involve the remodelling of the existing administration suite and construction of an extension adjacent to that suite on the east side of the building between the hydrotherapy wing and refectory/kitchen wing of the existing building. In addition to the re-provision of administration offices the work will provide four additional classrooms and associated one to one rooms, teaching stores and additional staff and student toilet provision.
- 3.3 The work will involve a small extension to the north elevation adjacent to the position of the mini-bus drop-off. A reception office, a small meeting room and a Principal's Office will be formed with a minimal amount of minor remodelling to reorganise access from the extension into the existing building.

4 Policy, Guidance and Assessment Methodology

- 4.1 National planning policy is outlined in **Appendix 1: Planning Policy**. The acoustic standards and assessment techniques referred to in this assessment are outlined in **Appendix 2: Acoustic Standards and Guidance**.
- 4.2 The results of noise monitoring undertaken on the college site have been used to assess noise break-in to the new school spaces against BB93 criteria. While BB93 is not a statutory requirement for the assessment of colleges, it was produced for the assessment and design of school buildings and is therefore the most applicable guidance document. The criteria used within the assessment for rooms with external façades have been summarised in **Table 1**.

Table 1: Adopted Room Criteria

Room Classification	Upper limit for Indoor Ambient Noise Level ($L_{Aeq,30min}$), dB	Reverberation Time (T_{mf}), s
SEN Classroom	30	≤ 0.4 , AND ≤ 0.6 in each octave band from 125 Hz to 2 kHz
Meeting Room	40	≤ 0.8
Office	40	≤ 1.0
Lobby	45	≤ 1.5

5 Noise Survey – Existing Noise Sources

- 5.1 Noise measurements were undertaken at locations consistent with the facades of the two new extensions in accordance with BS 7445-1: 2003¹. Measurement locations are shown in **Appendix 3: Monitoring Positions**.
- 5.2 The calibration of the sound level meter was checked before and after measurements with negligible deviation (≤ 0.1 dB). Details of the equipment used are shown in **Table 2**.

¹ BS 7445-1: 2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures

Table 2: Noise monitoring equipment

Equipment Description	Type Number	Manufacturer	Serial No.	Date Calibrated	Calibration Certification Number
Class 1 ^{2,3} Integrating Real Time 1/3 Octave Sound Analyser	NTi XL2-TA	NTi Audio	A2A-15860-E0	27/02/2023	06143/1
Pre-amplifier	NTi MA220	NTi Audio	8102	27/02/2023	06143/1
Microphone	NTi MC230A	NTi Audio	A16445	27/02/2023	06143/1
Class 1 Calibrator ⁴	NOR 1251	Norsonic	32798	29/05/2024	U47928
Outdoor microphone housing	NTi WP30	NTi Audio	N/A	N/A	N/A

5.3 Table 3. Weather conditions were determined both at the start and on completion of the survey. It is considered that meteorological conditions were appropriate for environmental noise measurements.

Table 3: Dates, times and weather conditions during noise measurements

Measurement Locations	Date/Time	Weather conditions		
		Description	At Start of Survey	On Completion
MPI & MP2	29/01/2025, 15:10 to 29/01/2025, 18:05	Temperature:	5 °C	2 °C
		Precipitation:	Dry	Dry
		Cloud cover (oktas – see opposite):	2	5
		Any fog/snow/ice?	No	No
		Any damp roads/wet ground?	No	Slight

² IEC 61672-1 (2002) Electroacoustics – Sound level meters Part 1: Specifications

³ IEC 61260 (1995) Electroacoustics – Octave-band and fractional-octave-band filters

⁴ IEC 60942 (2003) Electroacoustics – Sound calibrators

Cloud Cover

Symbol

Scale in oktas (eighths)

0 Sky completely clear

1

2

3

4 Sky half cloudy

5

6

7

8 Sky completely cloudy

(9) Sky obstructed from view

Bridge College, Openshaw, M11 2GR

Weather conditions			
Description	At Start of Survey	On Completion	
Wind speed:	2 m/s	1 m/s	
Wind direction:	NW	NW	
Any conditions that may cause temp. inversion (e.g. calm nights with no cloud):	No	No	

- 5.4 Measurements were undertaken at times considered to be representative of the periods during which the proposed development would be subject to the highest levels of ambient noise. Measurements were made under free-field conditions at a height of 1.5 m above local ground level.
- 5.5 The primary sources of noise at and around the site were observed to be anonymous road noise and train pass-bys. Noise from nearby drainage works dominated the environmental sound climate at MPI between 17:15 hrs and 18:00 hrs. Measurements during this time period have not been used for the assessment.

6 Monitoring Results

- 6.1 A summary of the broadband measurement data is provided in **Table 4** with all data reported in sound pressure levels in dB re 20 µPa.

Table 4: Summary of noise measurements

Measurement Location	Start Time (hh:mm)	Elapsed Time (hh:mm)	L _{Aeq,T} (dB)	Overall L _{AF,max} (dB)	L _{A1,T} (dB)
MPI	15:08	00:22	58	82	67
	15:30	00:30	57	84	61
	16:00	00:30	59	84	68
	16:30	00:30	58	85	64
	17:00	00:30	67	90	77
	17:30	00:30	64	96	74
MP2	16:00	00:30	53	88	60
	16:30	00:30	53	88	58

17:00	00:30	55	88	65
17:30	00:30	52	89	60
18:00	00:05	53	73	62

6.2 Each measurement period consisted of sequential 100 ms samples which therefore allowed the variation in noise level over time to be assessed. The 100 ms noise levels have not been presented in this report but are kept on file for future reference.

6.2.1 Octave band frequency data was obtained during surveying and this data is provided in **Table 5**.

Table 5: Octave band free-field external noise level spectra

Measurement Descriptor	Sound Pressure Level, (L_{eq}) dB								L_{Aeq} dB(A)
	in Octave Band Centre Frequency, Hz								
	63	125	250	500	1k	2k	4k	8k	
MPI Ambient	65.3	58.4	51.3	49.6	55.4	54	45.3	29.7	59
MPI Impulsive	74.0	66	58.4	57.4	63.2	63.3	54.7	33.7	68
MP2 Ambient	59.8	51.8	45.5	42.3	45.6	47.6	46.1	28.4	53
MP2 Impulsive	67.1	60.5	55.4	51.7	54.0	55.9	51.2	33.6	60

7 Impact of Noise on the Development

7.1 General

7.1.1 Noise modelling has not been considered necessary for this site as measurements were undertaken at the site of the proposed new façades. Noise ingress calculations have been undertaken based on the methodology in BS EN 12354-3⁵ and assessed against the criteria provided within BB93.

7.2 Achieving Good Acoustic Design

7.2.1 Assuming a typical reduction of 13 dB through a partially open window, open windows may be used where external ambient noise levels do not exceed 43 dB i.e. SEN Classroom criterion 30 dB + 13 dB

⁵ BS EN 12354-3:2017 Building acoustics – Estimation of acoustic performance of buildings from the performance of elements. Part 3: Airborne sound insulation against outdoor sound

= 43 dB. As external ambient noise levels exceed 43 dB, windows may be opened at the occupants' discretion but should not be relied on for background ventilation purposes.

7.2.2 In order to assess the potential glazing requirements for the new building, noise ingress calculations have been undertaken using the RT and target IANLs laid out in **Table 1**. Floor-to-ceiling height, room dimensions and glazed element areas have been taken from the drawings provided by Walker Simpson Architects.

7.2.3 Predictions of sound insulation performance have been made using Insul prediction software and based on the proposed wall and roof constructions provided by Walker Simpson Architects. The modelled constructions are described below:

- Walls: 103 mm brick with rigid wall ties and a 90 mm cavity, 85 mm insulated board, then 150 mm steel studs and 150 mm mineral wool batts and 1 x 12.5 mm plasterboard
- Roof: 190 mm insulated roof panel, with a 600 mm empty void beneath and 1 x 12.5 mm plasterboard ceiling

7.2.4 The most noise-sensitive spaces on each façade have been assessed, and a summary of the noise ingress calculations is provided in **Table 6**:

Table 6: Predicted internal noise levels

Description	External Noise Levels		BB93 Criteria		Predicted Internal Noise Levels		Exceedance of Criteria		Proposed Glazing and Ventilation
	dB $L_{Aeq,T}$	dB $L_{A1,T}$	dB $L_{Aeq,T}$	dB $L_{A1,T}$	dB $L_{Aeq,T}$	dB $L_{A1,T}$	dB $L_{Aeq,T}$	dB $L_{A1,T}$	
Classroom	46	54	30	60	10	18	-20	-42	Façade 1
Office	54	62	40	60	21	29	-19	-31	Façade 1

- **Façade 1** – Glazing with minimum weighted sound reduction index of 27 dB $R_w + C_{tr}$ (e.g. 4 mm float glass pane / 12 mm air gap / 4 mm float glass pane)

7.2.5 It can be seen from **Table 6** that rooms on both elevations are predicted to satisfy the internal noise level requirements with glazing with a sound reduction index of 27 dB $R_w + C_{tr}$; this could be achieved using double glazing with a 4 mm float glass / 12 mm air gap / 4 mm float glass configuration i.e. standard thermal double glazing.

7.2.6 All other spaces benefit from lower external noise levels and / or higher internal noise criteria. As a result, all other spaces in the proposed new building are expected to achieve the internal noise criteria by default.

7.3 Ventilation

7.3.1 Ventilation is to be provided by mechanical means, so no façade mounted ventilation elements have been considered. However, MVHR and mechanical ventilation units also introduce their own sources of noise which must be considered within the spaces. These systems must be designed to provide appropriate ventilation (to be designed by others)

7.3.2 The internal ambient noise levels must not exceed the noise criteria laid out in **Table 1** when noise from the mechanical services noise and environmental break-in noise are combined. It is therefore advisable to restrict the mechanical services noise to 3 dB below the criteria in **Table 1** i.e. 27 dB in classrooms.

8 Summary and Conclusions

8.1 A noise assessment has been undertaken to predict the impact of environmental noise on a proposed extension to Bridge College, Openshaw, M11 2GR to provide four new classrooms and associated ancillary spaces.

8.2 An environmental noise survey has been undertaken at the site at locations of the façades of the proposed new building. The results of this survey have been used directly to undertake calculations of noise break-in to the most sensitive spaces on each façade of the proposed building and mitigation measures proposed as required to meet the noise criteria in each space.

APPENDICES

Appendix 1: Planning Policy

Noise Policy Statement for England

The Noise Policy Statement for England (NPSE⁶), published in March 2010, sets out the long-term vision of Government noise policy. The Noise Policy aims, as presented in this document, are:

“Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse effects on health and quality of life;*
- *mitigate and minimise adverse effects on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.”*

The NPSE makes reference to the concepts of NOEL (No Observed Effect Level) and LOAEL (Lowest Observed Adverse Effect Level) as used in toxicology but applied to noise impacts. It also introduces the concept of SOAEL (Significant Observed Adverse Effect Level) which is described as the level above which significant adverse effects on health and the quality of life occur.

The first aim of the NPSE is to avoid significant adverse effects, taking into account the guiding principles of sustainable development (as referenced in Section 1.8 of the Statement). The second aim seeks to provide guidance on the situation that exists when the potential noise impact falls between the LOAEL and the SOAEL, in which case:

“...all reasonable steps should be taken to mitigate and minimise adverse effects on health and quality of life while also taking into account the guiding principles of sustainable development”.

Importantly, the NPSE goes on to state:

“This does not mean that such adverse effects cannot occur”.

The Statement does not provide a noise-based measure to define SOAEL, acknowledging that the SOAEL is likely to vary depending on the noise source, the receptor and the time in question. NPSE advises that:

“Not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available”

⁶ Noise Policy Statement for England, Defra, March 2010

It is therefore likely that other guidance will need to be referenced when applying objective standards for the assessment of noise, particularly in reference to the SOAEL, whilst also taking into account the specific circumstances of a proposed development.

National Planning Policy Framework

The National Planning Policy Framework (NPPF⁷) initially published in March 2012, was updated most recently in December 2024. One of the documents that the NPPF replaces is Planning Policy Guidance Note 24 (PPG 24) "Planning and Noise"⁸.

The revised NPPF advises that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives). One of these is an environmental objective which is described in par. 8 (c):

"to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy."

At par. 187 we are advised that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by:

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. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans..."

Par. 198 goes on to state:

"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

⁷ National Planning Policy Framework, Ministry of Housing, Communities and Local Government, December 2024

⁸ Planning Policy Guidance 24: Planning and Noise, DCLG, September 1994

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 impacts 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; ...”

Par. 200 seeks to ensure that any development does not prejudice the legally permitted operations and activities of other, existing non-residential uses, stating:

“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.”

Planning Practice Guidance – Noise

As of March 2014, a Planning Practice Guidance⁹ for noise was issued which provides additional guidance and elaboration on the NPPF, the guidance was updated in July 2019. It advises that when plan-making and decision-taking, the Local Planning Authority should consider the acoustic environment in relation to:

- Whether or not a significant adverse effect is occurring or likely to occur;
- Whether or not an adverse effect is occurring or likely to occur; and
- Whether or not a good standard of amenity can be achieved.

In line with the Explanatory Note of the NPSE, the PPG goes on to reference the LOAEL and SOAEL in relation to noise impact. It also provides examples of outcomes that could be expected for a given perception level

⁹ Planning Practice Guidance – Noise, <https://www.gov.uk/guidance/noise--2> 22nd July 2019.

of noise, plus actions that may be required to bring about a desired outcome. However, in line with the NPSE, no objective noise levels are provided for LOAEL or SOAEL although the PPG acknowledges that:

“...the subjective nature of noise means that there is not a simple relationship between noise levels and the impact on those affected. This will depend on how various factors combine in any particular situation”.

Examples of these factors include:

- The source and absolute noise level of the source along with the time of day that it occurs;
- Where the noise is non-continuous, the number of noise events and pattern of occurrence;
- The frequency content and acoustic characteristics of the noise;
- The effect of noise on wildlife;
- The acoustic environment of external amenity areas provided as an intrinsic part of the overall design;
- The impact of noise from certain commercial developments such as night clubs and pubs where activities are often at their peak during the evening and night.

The PPG also provides general advice on the typical options available for mitigating noise. It goes on to suggest that Local Plans may include noise standards applicable to proposed developments within the Local Authority's administrative boundary, although it states that:

“Care should be taken, however, to avoid these being implemented as fixed thresholds as specific circumstances may justify some variation being allowed”.

The PPG was amended in December 2014 to clarify guidance on the potential effect of noise from existing businesses on proposed new residential accommodation. Even if existing noise levels are intermittent (for example, from a live music venue), noise will need to be carefully considered and appropriate mitigation measures employed to control noise at the proposed accommodation.

Appendix 2: Acoustic Standards and Guidance

Building Bulletin 93: Acoustic design of schools: performance standards

Building bulletin 93 (BB93) was published in February 2015 and provides design guidance and performance standards for schools. While it is specific to schools and not strictly applicable to colleges or other higher education buildings, it is the most applicable standard for use and is therefore used for reference within this report.

Within BB93, upper limits for indoor ambient noise levels (IANLs) are set in terms of $L_{Aeq,30min}$ and criteria are laid out for many typical spaces in educational buildings. Additionally, reverberation criteria for each space are provided in BB93. The relevant criteria have been summarised in the **Table A.2.1**.

Table A.2.1: Adopted BB93 design criteria

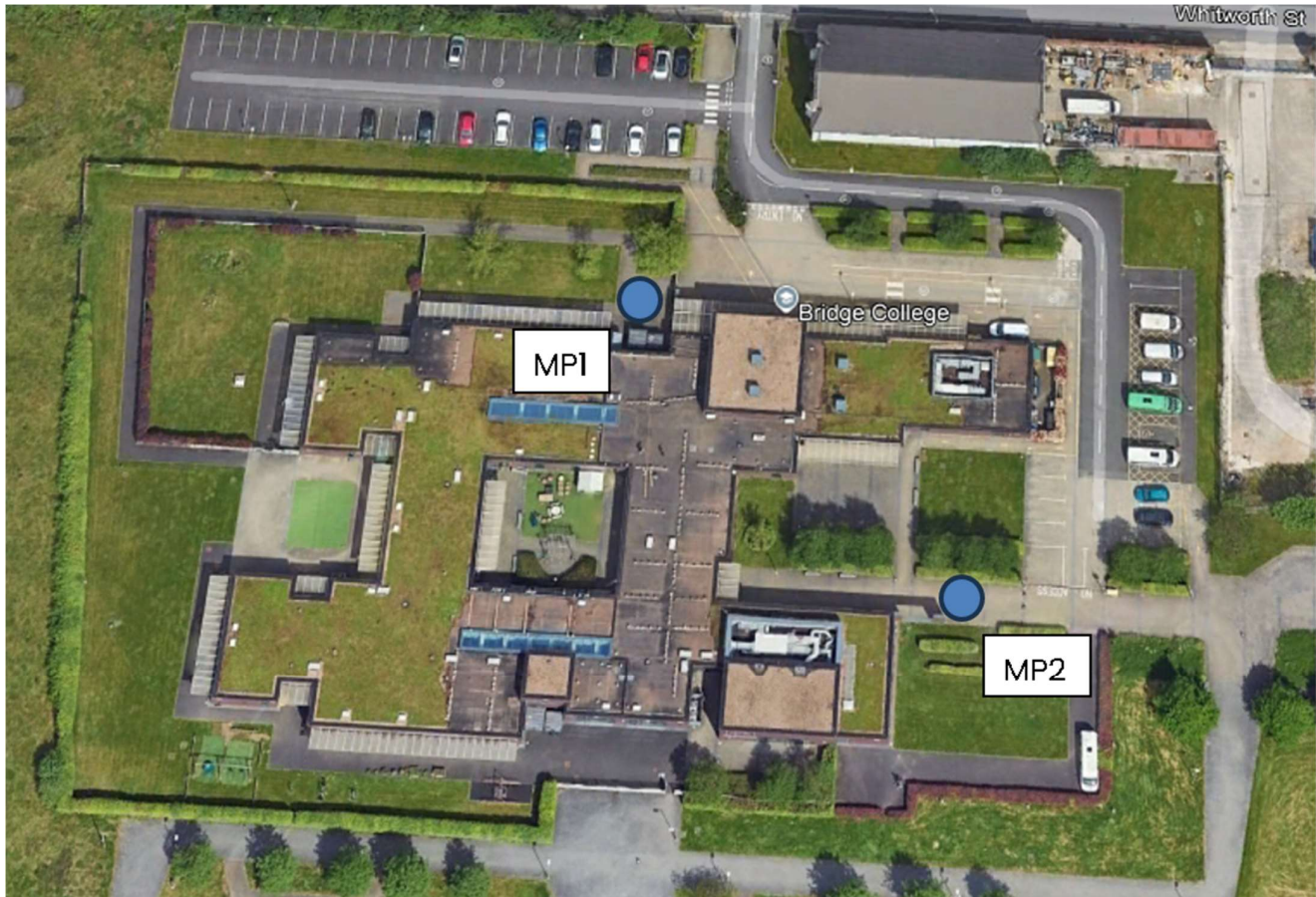
Type of room	IANL Upper Limit ($L_{Aeq,30min}$)	Reverberation Time (T_{mf})
SEN Classroom	30	≤ 0.4 , AND ≤ 0.6 in each octave band from 125 Hz to 2 kHz
Meeting Room, Waiting Room	40	≤ 0.8
Principal / Deputy Office	40	≤ 1.0
Reception / Lobby	45	≤ 1.5

BB93 also states the following with regard to discrete noise 'events':

"In order to protect students from regular discrete noise events, eg, aircraft or trains, indoor ambient noise levels should not exceed 60 dB $L_{A1, 30mins}$. This is achieved by default for spaces with IANLs up to 40 dB $L_{Aeq, 30min}$, but requires assessment in spaces with higher IANL limits, eg, 45 and 50 dB."

For completeness, assessment of discrete noise events has been undertaken for each space assessed and demonstrated to be significantly below a level of 60 dB internally.

Appendix 3: Monitoring Positions



Glossary of Terms

Decibel (dB) The unit used to quantify sound pressure levels; it is derived from the logarithm of the ratio between the value of a quantity and a reference value. It is used to describe the level of many different quantities. For sound pressure level the reference quantity is 20 μPa , the threshold of normal hearing is in the region of 0 dB, and 140 dB is the threshold of pain. A change of 1 dB is usually only perceptible under controlled conditions.

dB L_A Decibels measured on a sound level meter incorporating a frequency weighting (A weighting) which differentiates between sounds of different frequency (pitch) in a similar way to the human ear. Measurements in dB L_A broadly agree with an individual's assessment of loudness. A change of 3 dB L_A is the minimum perceptible under normal conditions, and a change of 10 dB L_A corresponds roughly to halving or doubling the loudness of a sound. The background noise level in a living room may be about 30 dB L_A ; normal conversation about 60 dB L_A at 1 meter; heavy road traffic about 80 dB L_A at 10 meters; the level near a pneumatic drill about 100 dB L_A .

$L_{A90,T}$ The A weighted noise level exceeded for 90% of the specified measurement period (T). In BS 4142: 2014+A1:2019 it is used to define background noise level.

$L_{Aeq,T}$ The equivalent continuous sound level. The sound level of a notionally steady sound having the same energy as a fluctuating sound over a specified measurement period (T). $L_{Aeq,T}$ is used to describe many types of noise and can be measured directly with an integrating sound level meter.

R_w Single number rating used to describe the sound insulation of building elements and is defined in BS EN ISO 10140-2: 2010 (formerly BSEN ISO 140-3:1995). It is derived by measurement under laboratory conditions and does not take into account the effects of flanking transmissions.

$D_{nT,w}$ The weighted standardized level difference is a single figure rating used to describe the sound insulation of a construction separating two rooms, for example a wall or floor, and is defined in BS EN ISO 16283-1:2014 (formerly BSEN ISO 140-4:1998). It is derived by measurement of an in-situ construction and therefore takes into account the effects of flanking transmissions, workmanship etc.

C_{tr} A single-number spectrum adaptation term used to characterise the sound insulation rating with respect to urban traffic. It is defined in ISO 717-1:2013.

