

REPORT

Dinting Vale, Glossop

Noise Assessment

Client: Wain Homes (North West) Limited

Reference: PC2304-RHD-ZZ-XX-RP-Z-0001

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Revision history

Revision	Date	Description	Prepared	Checked	Approved
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Executive Summary

Royal HaskoningDHV were commissioned by Wain Homes (North West) Limited to prepare a noise assessment for a proposed residential development at Dinting Vale, Glossop

A noise survey was undertaken in November 2021 to establish the baseline noise levels at the proposed development site. The measured baseline noise levels were used to calculate the noise levels at the closest proposed facades along the redline boundary in order to assess the potential noise impacts at the proposed development.

The key sources of noise considered within the noise assessment were:

- road traffic along Dinting Vale (A57) and
- Manchester to Glossop railway, west of the proposed development.

The initial site noise risk assessment, in accordance with ProPG, indicates that the site is of negligible to low risk during both daytime and night-time reference periods. Therefore, further assessment and consideration of internal and external noise levels is required to minimise potential adverse impacts at the proposed development.

The BS 8233 internal noise assessment shows that a number of proposed properties do not require an enhanced glazing and ventilation strategy as suitable internal noise levels will be achieved with partially open windows.

Further assessment was undertaken to specify glazing and ventilation requirements at properties where the internal criteria are not met by relying on a partially open window alone. The assessment demonstrates indicatively that the internal noise criteria could be achieved at all plots within the proposed development when relying on standard double glazing with passive trickle ventilators. However, it is recommended that windows are still openable for rapid or purge ventilation, or occupant's choice.

The calculations indicate that noise levels in external amenity spaces are predicted to generally be below the recommended 50 dB $L_{Aeq,16hr}$ threshold.

1 Project Background

This noise assessment report was produced on behalf of Wain Homes (North West) Limited to support the planning application for a proposed residential development at the land off Dinting Vale, Glossop, hereby referred to as the “proposed development”.

The proposed development is situated within the administrative district of High Peak Borough Council (HPBC) and has been identified as a housing allocation under Policy DS4 of the High Peak Local Plan for approximately 130 dwellings, however, the proposed development currently consists of 100 dwellings.

The proposed development site is bounded to the north-east by Dinting Vale (A57) and to the south by a residential area on the west side of Simmondley Lane. It is also bisected by Adderley Place running east to west. The rail line between Dinting and Broadbottom stations runs parallel to the proposed development north-western boundary and is approximately 140m from the nearest proposed residential dwelling. The location of the proposed development is detailed in **Appendix A**.

The following sections of this report outline:

- the relevant legislation, policy, and the methodology for the noise assessment;
- the baseline noise conditions at the proposed development site;
- the potential for noise impacts at the proposed development; and
- the mitigation measures required to prevent, reduce or offset any significant adverse impacts; and the likely residual impacts after these measures have been employed.

A summary of acoustic terminology relevant to this report is provided in **Appendix B**.

2 Legislative Framework and Planning Policy

2.1 National Legislation and Policy

This report provides information relevant to the local planning authority, HPBC, and its consultees as part of a planning application for the proposed development. Policy guidance with respect to noise is found in the National Planning Policy Framework (NPPF)¹.

Regarding noise and planning, the NPPF contains the following short statements in paragraphs 174 (part e) and 182 (parts a & b) and longer explanatory text (paragraph 187) regarding integration of developments:

Paragraph 174

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.

Paragraph 182

a) Mitigate and reduce to a minimum potential adverse effects 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.

Paragraph 187

Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities. Existing businesses and facilities should not have unreasonable restrictions placed upon 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 should be required to provide suitable mitigation before the development is completed.

The National Planning Practice Guidance (NPPG)² web-based resource was originally launched by the Department for Communities and Local Government (DCLG) on 6 March 2014³, to support the National Planning Policy Framework and make it more accessible. The overall aim of the guidance, tying in with the principles of the NPPF and the Explanatory Note of the Noise Policy Statement for England⁴, is to 'identify whether the overall effect of noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation'.

A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the NPPG and reproduced in **Table 2-1**.

¹ Ministry of Housing, Communities & Local Government (2019) National Planning Policy Framework, last updated 20 July 2021

² Ministry of Housing, Communities & Local Government (2019) National Planning Practice Guidance: Noise. Last updated 22nd July 2019, last accessed 29th June 2021, <https://www.gov.uk/guidance/noise--2>

³ Ministry of Housing, Communities & Local Government now responsible for updating this guidance

⁴ Department for Environment, Food and Rural Affairs (DEFRA) (2010) Noise Policy Statement for England (NPSE)

Table 2-1: Noise exposure hierarchy

Response	Examples of outcomes	Increasing effect level	Action
No Observed Effect Level (NOEL)			
Not present	No Effect	No Observed Effect	No Specific Measures Required
No Observed Adverse Effect Level (NOAEL)			
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No Observed Adverse Effect	No Specific Measures Required
Lowest Observed Adverse Effect Level (LOAEL)			
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to closing windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Present and disruptive	The noise causes a material change in behaviour, attitude or other physiological response, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect (SOAE)	Avoid
Present and very disruptive	Extensive and regular changes in behaviour, attitude or other physiological response and/or an inability to mitigate effect of noise leading to psychological stress, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect (UAE)	Prevent

ProPG Planning & Noise: New Residential Development (ProPG) ⁵ is intended to supplement the NPPF and provide guidance on a recommended approach to the management of noise within the planning system in England for new residential development. The scope of the document is restricted to developments that are exposed predominantly to airborne noise from transport sources.

⁵ High Peak Borough Council (2016) *The Adopted Local Plan*. Available at https://www.highpeak.gov.uk/media/160/The-High-Peak-Local-Plan-Adopted-April-2016/pdf/The_High_Peak_Local_Plan_Adopted_April_2016.pdf?m=1514473710280. Last accessed 7th December 2021

☐ Local Policy Guidance

HPBC adopted their Local Plan⁶ in April 2016. It contains within it, the council's vision and strategy for the borough until 2031 and the policies which will be used in the determination of planning applications. The relevant policies in relation to noise are detailed below.

Policy EQ6: Design and Place Making

All development should be well designed and of a high quality that responds positively to both its environment and the challenge of climate change, whilst also contributing to local distinctiveness and sense of place.

This will be achieved by:

- *Requiring that development achieves a satisfactory relationship to adjacent development and does not cause unacceptable effects by reason of visual intrusion, overlooking, shadowing, overbearing effect, noise, light pollution or other adverse impacts on local character and amenity*

Policy EQ10: Pollution Control and Unstable Land

The Council will protect people and the environment from unsafe, unhealthy and polluted environments.

This will be achieved by:

- *Ensuring developments avoid potential adverse effects and only permitting developments that are deemed (individually or cumulatively) to result in the following types of pollution if any remaining potential adverse effects are mitigated to an acceptable level by other environmental controls or measures included in the proposals. This may be achieved by the imposition of planning conditions or through a planning obligation. The Council will not permit any proposal that has an adverse effect on a European site:*
 - *Noise or vibration*

⁶ High Peak Borough Council (2016) The Adopted Local Plan. Available at https://www.highpeak.gov.uk/media/160/The-High-Peak-Local-Plan-Adopted-April-2016/pdf/The_High_Peak_Local_Plan_Adopted_April_2016.pdf?m=1514473710280. Last accessed 7th December 2021

2.2 Assessment Methodology Guidance

ProPG Planning & Noise: New Residential Development

The assessment has been based on the guidance in the ProPG Planning & Noise: New Residential Development (ProPG)⁷. The ProPG is intended to supplement the NPPF and provide guidance on a recommended approach to the management of noise within the planning system in England for new residential development. The scope of the document is restricted to developments that are exposed predominantly to airborne noise from transport sources.

It proposes a 2-stage approach for assessing the suitability of a site using an initial site noise risk assessment followed by a systematic consideration of:

- Good Acoustic Design Process;
- Noise Level Guidelines;
- External Amenity Area Noise Assessment; and
- Other Relevant Issues.

Recommendations on undertaking an initial site noise risk assessment are provided in ProPG (Section 2, Figure 1). Noise level thresholds for daytime and night-time shown in ProPG, Figure 1 are reproduced in **Table 2-2**.

⁷ Association of Noise Consultants, Institute of Acoustics & Chartered Institute of Environmental Health (2017) *ProPG Planning & Noise: New Residential Development*

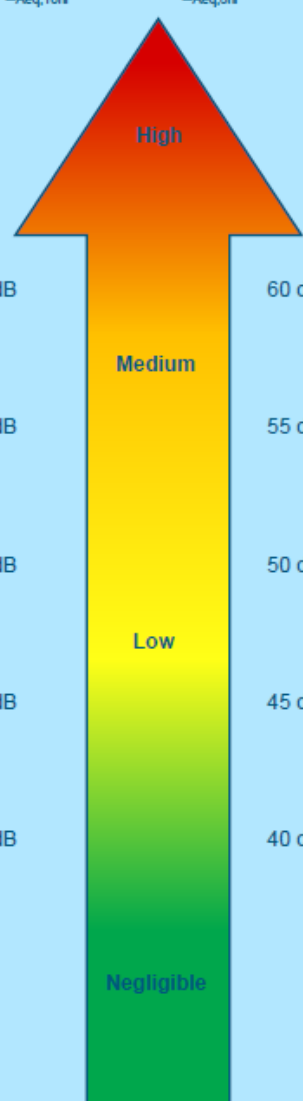
Noise risk assessment	Potential effect without noise mitigation	Pre-planning application advice
Indicative daytime noise levels $L_{Aeq,16hr}$ Indicative night-time noise levels $L_{Aeq,8hr}$  High Medium Low Negligible 70 dB 65 dB 60 dB 55 dB 50 dB 60 dB 55 dB 50 dB 45 dB 40 dB	 Increasing risk of adverse effect	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice. As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development. At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.
	No adverse effect	These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.

Table 2-2 Initial site noise risk assessment levels - ProPG

ProPG (2017) details that if there is an indication there may be more than 10 noise events during the night-time with $L_{Amax} > 60$, then the site should not be considered as negligible risk.

British Standard (BS) 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings⁸

BS 8233 provides guidance on the recommended indoor ambient noise levels for various types of room when unoccupied i.e. only noise ingress and noise from building services is considered. Recommended noise levels which apply to the proposed development are shown in **Table 2-3** below.

Table 2-3 Indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00 hrs	23:00 to 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 $L_{Aeq,8hr}$
Source: BS 8233:2014			

The standard also highlights the potential impact of noise events on sleep with the following statement:

“NOTE 4 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.”

BS 8233 also provides a methodology to calculate the noise levels entering a building through facades and façade elements.

On external noise, the standard states the following: *“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. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. 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.”*

2.3 Consultation

Consultation was undertaken with the HPBC Environmental Health Team via email⁹ to agree on the methodologies for determination of the existing noise environment and the noise assessment.

A summary of the agreed approach and scope of the assessment are summarised below:

- Initial site risk assessment for the proposed development in accordance with the guidance provided in ProPG;
- Internal noise level assessment providing recommendations, where necessary, in order to satisfy the BS 8233 recommended criteria; and

⁹ Email conversation between Royal HaskoningDHV and HPBC, dated 2nd November 2021.

- Assessment of external noise levels in amenity areas against the BS 8233 lower criteria value (50 dB $L_{Aeq,16h}$). If this can't be met, ensuring good acoustic design has been considered before accepting the higher criteria value (55 dB $L_{Aeq,16h}$).

3 Baseline Environmental Noise Survey

3.1 Methodology and Procedure

To establish the baseline conditions, unattended noise measurements were conducted at two locations from 3rd to 5th November 2021.

The following were observed to be the dominant noise sources on the proposed development site:

- Road traffic on Dinting Vale (A57);
- Trains on the railway between Dinting and Broadbottom stations; and
- Overhead aircraft likely associated with Manchester Airport.

The measurement locations are detailed in **Table 3-1** and shown in Figure 1.

Table 3-1 Baseline noise survey locations

Measurement ID	Location Co-ordinates	Description
LT1	401986, 394296	Unattended measurement to the north of the site, overlooking Dinting Vale (A57).
LT2	401883, 394113	Unattended measurement to the south of the site.

The noise measurements were undertaken using the instrumentation detailed in **Table 3-2**.

Table 3-2 Noise survey instrumentation

Instrument	Type	Serial number
Sound Level Meter	Rion NL-52	00864982
Sound Level Meter	Rion NL-52	00864983
Calibrator	Rion NC-75	35081041

The sound level meters were fully calibrated, traceable to UKAS standards and satisfy the requirements for a 'Class 1' Sound Level Meter (SLM) as defined in BS EN 61672-1:2013 - *Electroacoustics - Sound level Meters Part 1: Specifications*¹⁰.

The SLMs were set to record L_{Aeq} , L_{A90} , L_{A10} and L_{Amax} data with a 'fast' time constant. The unattended SLMs were set to measure in contiguous 5-minute intervals.

The noise measurements were conducted in accordance with the SLM mounted on a tripod at heights between 1.2m and 1.5m above ground level and 3.5m away from any reflecting surface other than the ground, i.e. in free-field conditions (as specified in BS 7445-2:1991 'Description and measurement of environmental noise — Part 2: Guide to the acquisition of data pertinent to land use'¹¹).

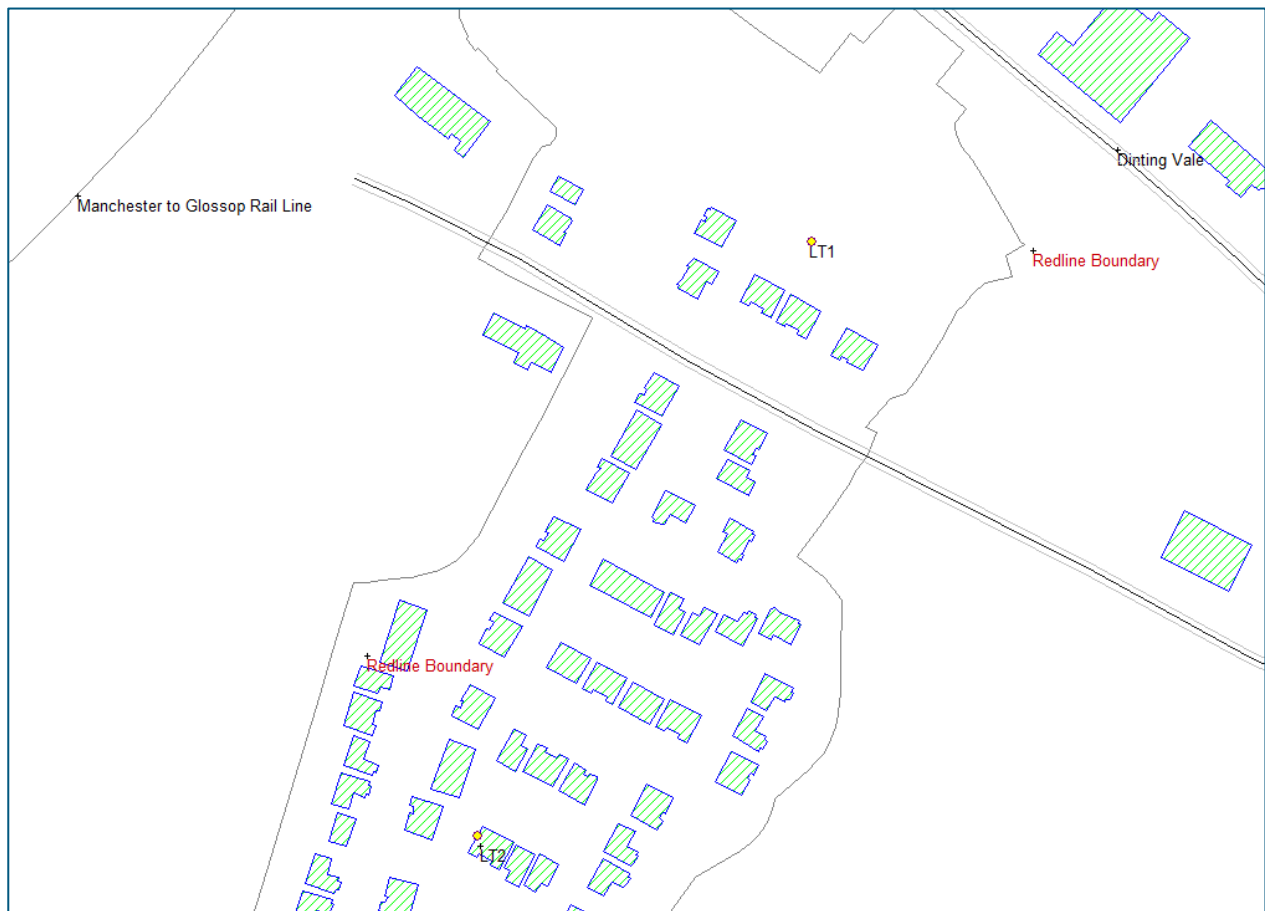
¹⁰ British Standards Institution (2013) BS EN 61672-1:2013 *Electroacoustics - Sound level Meters Part 1: Specifications*. BSI, London.

¹¹ British Standards Institution (1991) BS 7445-2: 1991 'Description and measurement of environmental noise — Part 2: Guide to the acquisition of data pertinent to land use'. BSI, London.

Weather conditions (temperature, humidity, air pressure, average and gust wind speed and direction, and rainfall) were monitored throughout the unattended noise measurement using a weather station located near to LT1. A weather station was also used to measure the local meteorological conditions (wind speed and rainfall) during the survey. The weather conditions were favourable for noise measurements (as specified in BS 7445-2) with wind speeds of less than 5m/s and no rainfall.

The instrument was calibrated before and after the survey using the portable calibrator with a maximum drift of 0.1 dB noted. Additional measurement data from the baseline survey are available on request.

Figure 1 Noise Measurement Positions



3.2 Measured Baseline Noise Data

3.2.1 Measured Levels

Measured baseline noise levels are summarised in **Table 3-3**.

Table 3-3 On-site baseline noise survey summary, unattended measurements

Measurement location	Date & start time (dd/mm/yyyy hh:mm)	Duration (hh:mm)	$L_{Aeq,T}$ (dB)	L_{AFmax} (dB)	L_{A10}^* (dB)	L_{A90}^* (dB)
LT1	03/11/2021 11:30	11:30	50.9	77.4	52.5	46.8
	03/11/2021 23:00	08:00	46.3	67.1	47.4	40.4
	04/11/2021 07:00	16:00	51.8	87.0	52.7	47.3
	04/11/2021 23:00	08:00	46.4	67.5	47.8	40.6
	05/11/2021 07:00	04:15	51.9	73.2	53.6	48.3
LT2	03/11/2021 12:30	10:30	44.2	74.4	44.1	39.5
	03/11/2021 23:00	08:00	44.0	79.5	38.4	34.0
	04/11/2021 07:00	16:00	44.7	80.5	44.8	39.9
	04/11/2021 23:00	08:00	41.4	70.2	41.0	36.6
	05/11/2021 07:00	04:30	45.7	75.0	46.2	40.9

*displayed as the arithmetic mean

3.2.2 Maximum Noise Level (L_{AFmax}) Analysis

It is recommended in *ProPG: Planning & Noise* that the good acoustic design can be used so that individual noise events do not normally exceed 45 dB L_{AFmax} more than 10 times a night, when measured in bedrooms.

Further analysis of the of maximum noise events measured during the survey was conducted to determine a suitable L_{AFmax} threshold for the noise assessment, whereby it would not be normally exceeded more than 10 times during the night-time. **Table 3-4** presents the number exceedances of a given maximum noise level threshold at LT1 during the unattended survey.

Table 3-4 Maximum noise level analysis, LT1

L_{AFmax} threshold level (dB)	Number of exceedances of threshold	
	03/11/21 23:00 to 04/11/21 07:00	04/11/21 23:00 to 05/11/21 07:00
67	1	1
66	2	2
65	5	3
64	9	4
63	9	5
62	15	7

From **Table 3-4** a level of 63 dB L_{AFmax} is deemed unlikely to be exceed more than 10 times during the night-time at LT1 and was used in the subsequent assessment.

Table 3-5 presents the number exceedances of a given maximum noise level threshold at LT1 during the unattended survey.

Table 3-5 Maximum noise level analysis, LT2

L_{AFmax} threshold level (dB)	Number of exceedances of threshold	
	03/11/21 23:00 to 04/11/21 07:00	04/11/21 23:00 to 05/11/21 07:00
65	3	3
64	3	4
63	3	4
62	5	4
61	5	5
60	6	7

From **Table 3-5** a level of 60 dB L_{AFmax} is deemed unlikely to be exceed more than 10 times during the night-time at LT2 and was used in the subsequent assessment.

4 Impact Assessment

4.1 ProPG Initial Site Noise Risk Assessment

The closest proposed property to Dinting Vale is 80 m from the carriageway edge, whereas LT1 was approximately 82 m away. This difference in distance to the source would not result in a significant difference between the sound levels at LT1 and the proposed property. LT1 had clear line of sight to the road, whereas some of the proposed properties may be screened by the existing buildings. Hence, the levels measured at LT1 have been used to identify the worst-case noise impacts from this road on the proposed development.

Comparison of the measured levels at LT1 with the thresholds outlined in **Table 2-2** indicates that the proposed development site is negligible to low risk during the day and night-time. The analysis of the measured night-time L_{Amax} levels at LT13.2.2 also indicates that the site should not be considered negligible risk.

The closest proposed property to the Manchester to Glossop railway line is around 107m away. The trains have been assumed to be the dominant sound source at LT2, which was 237m away, with clear line of sight to the tracks. This considers a potential worst-case as other sources, in particular road traffic, will have contributed to the measured levels at this location. The measured levels at LT2 have therefore been corrected for this distance from the tracks, resulting in levels of 48 dB L_{Aeq} and 46 dB L_{Aeq} during the day and night respectively. Publicly available information for train movements on the line indicates that there a maximum of five passenger and four freight trains scheduled to run past the site, the typical number of freight train pass bys is one to three. As the number of events is below ten, night-time maximum train noise levels are not anticipated to result in significant sleep disturbance effects on the proposed development residents. It is therefore not necessary to introduce a distance correction for the measured L_{Amax} levels at LT2.

The derived noise levels using the measurements at LT2, indicate a negligible risk due to the daytime L_{Aeq} and the night-time L_{Amax} . However, the night-time L_{Aeq} indicates a low risk.

For the locations and parameters at which the identified risk is greater than negligible, further assessment and consideration of internal and external noise levels has been undertaken.

4.2 Internal and External Noise Assessment

High-level internal and external noise assessments were undertaken based on the masterplan provided by the client (WH/DV/DK/01 displayed in **Appendix A**).

4.2.1 Internal Noise Assessment

This assessment details the predicted noise levels at the proposed development and the required sound attenuation performance of the façade to meet the recommended internal noise levels, detailed in **Table 2-3**. To consider the worst-case, the assessment considers the facades of the dwellings that face the respective noise sources as being the most sensitive.

Internal noise level calculations have been undertaken using the simple calculation procedure in BS 8233. BS 8233 states that, when windows are open, the internal sound levels will be 15 dB below the external free-field level. When windows are closed, a closed double-glazed window and open sound attenuating trickle ventilators will provide a sound reduction of 33 dB R_w . The results of the calculations are provided in Table 4-1.

Table 4-1 Indoor noise level calculation results

Reference Location	Daytime Ground Floor			Night-time First Floor					
	L _{Aeq,16h} (dB)	Open Window	Closed Window	L _{Aeq,8h} (dB)	Open Window	Closed Window	L _{AFmax} (dB)	Open Window	Closed Window
LT1	52	37	19	46	31	13	63	48	30
LT2	n/a*			46	31	13	n/a*		
* risk identified as negligible; hence, no calculation required									

At the closest properties to Dinting Vale, internal daytime, night-time L_{Aeq} and L_{Amax} noise levels with windows partially open are likely to exceed the criteria in BS 8233, by between 1 and 3 dB. At the properties closest to the railway line, internal night-time L_{Aeq} noise levels may exceed this criterion by 1 dB. However, in general, it should be noted that windows are not typically left open overnight; hence, night-time impacts with windows open are not of particular concern. Without any form of mitigation, exceedances of the daytime internal noise level criterion with windows partially open are anticipated for any properties that are 121 m or less from the carriageway edge of Dinting Vale, assuming they have unobstructed line-of-sight to the road.

The internal noise level calculations indicate that, with standard double-glazed windows closed and acoustically attenuated trickle ventilators open, internal noise levels will be compliant with the criteria in BS 8233:2014 throughout the development.

4.2.2 External Noise Assessment

Disregarding the effect of any fencing, daytime external noise levels in the rear gardens of the front row of proposed properties facing Dinting Vale are anticipated to exceed the criterion of 50 dB $L_{Aeq,16h}$ by no more than 2dB. It is therefore recommended that, for any rear gardens facing Dinting Vale (identified as plot numbers 1, 3-8) that have an unobstructed line-of-sight to the road, 1.8m high acoustically attenuating garden fences are installed. These fences would reduce road traffic noise levels in the gardens by 5 to 10 dB i.e. to a level compliant with the criterion in BS 8233.

In order to be effective, the amount of noise transmitted through the fence must be significantly less than what passes over the top (and round the edges). The effectiveness of a material to prevent the transmission of noise is determined by the thickness and surface density of the material used to construct the barrier. According to ISO 9613-2, the minimum surface density of a barrier is 10 kg/m². Assuming timber fences are used, panels must be overlapping or close boarded with no air gaps between them or at the bottom. Sound 'leaks', due to holes, slits, cracks or gaps through or beneath a noise barrier can seriously reduce the barrier performance and must be avoided. With these fences in place, it is likely that the internal daytime noise levels with windows open would be reduced by around 5 dB i.e. compliant with the criterion in BS 8233.

5 Conclusions

A noise assessment has been undertaken to assess the potential noise impacts at the proposed development at Dinting Vale, High Peak.

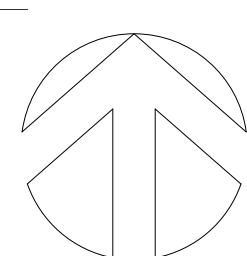
A baseline survey was undertaken in November 2021 to establish the existing noise levels around the proposed development site. The measured baseline noise levels were used to calculate noise levels at the closest proposed dwellings to the identified noise sources (road traffic from Dinting Vale and rail noise from the Manchester to Glossop mainline railway).

The initial site noise risk assessment, in accordance with ProPG, indicates that the areas of the site closest to Dinting Vale are of negligible to low risk during both daytime and night-time reference periods. For those properties closer to the railway line but further from Dinting Vale, the daytime L_{Aeq} and the night-time L_{Amax} indicate a negligible risk; however, the night-time L_{Aeq} indicates a low risk. For those risks identified as not negligible, a further assessment of internal and external noise impacts has been undertaken.

The assessment of external noise impacts shows that, for any rear gardens within 121 m of Dinting Vale with unobstructed line-of-sight to the road, 1.8m high acoustically attenuating garden fences will need to be installed. With this fencing in place, external noise levels will be compliant with the adopted criteria throughout the proposed development. This fencing is also expected to ensure that daytime noise levels in these properties will be compliant with the adopted criterion with windows partially open.

At the closest properties to Dinting Vale, internal night-time L_{Aeq} and L_{Amax} noise levels with windows partially open are likely to exceed the adopted criteria by between 1 and 3 dB. At the properties closest to the railway line, internal night-time L_{Aeq} noise levels may exceed this criterion by 1 dB. However, in general, it should be noted that windows are not typically left open overnight; hence, night-time impacts with windows open are not of particular concern. With windows closed, internal noise levels throughout the development are anticipated to comply with the adopted criteria during the day and night.

Appendix A Site Location

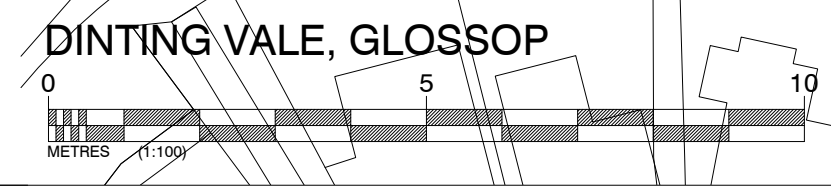
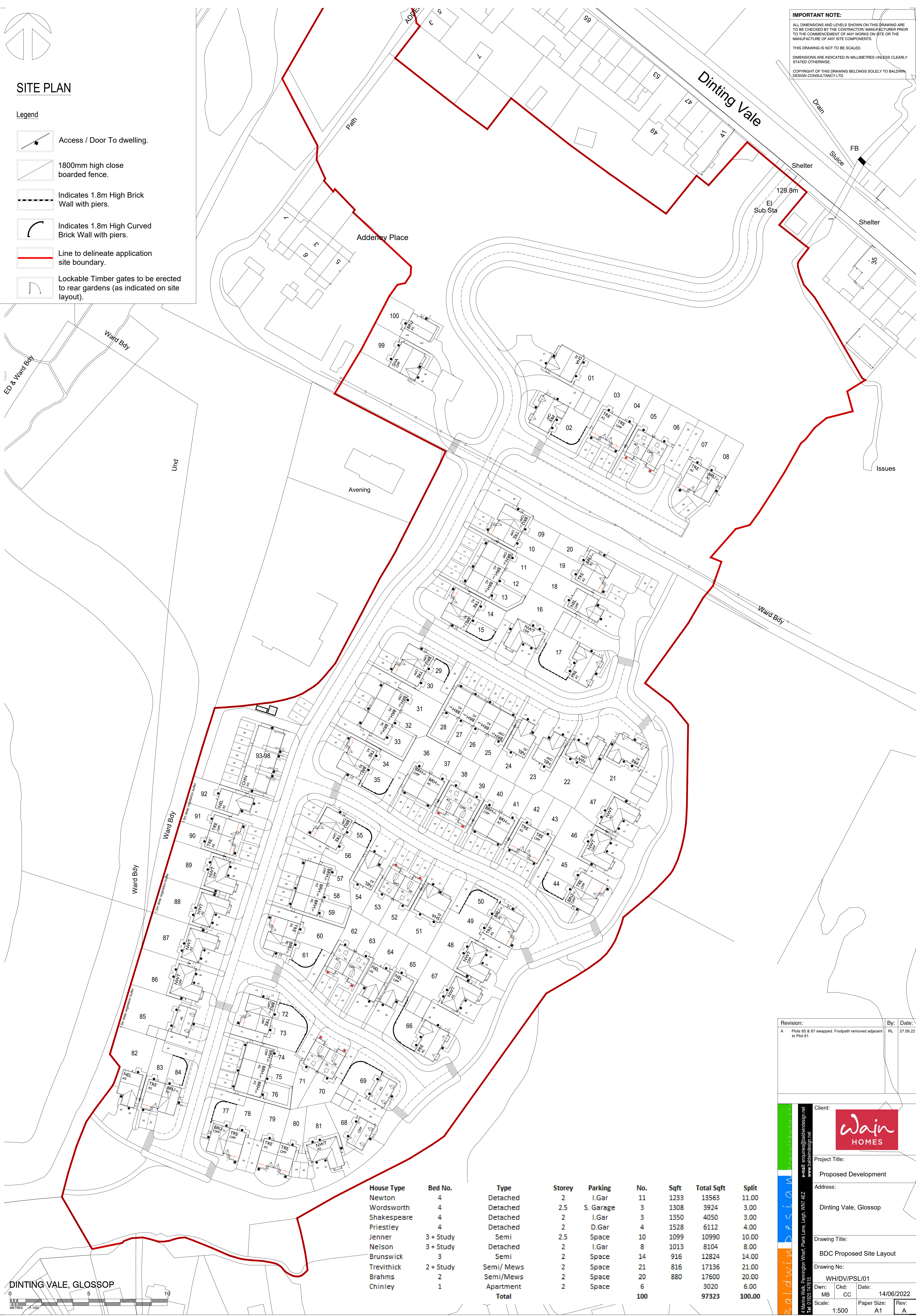


SITE PLAN

Legend

- Access / Door To dwelling.
- 1800mm high close boarded fence.
- Indicates 1.8m High Brick Wall with piers.
- Indicates 1.8m High Curved Brick Wall with piers.
- Line to delineate application site boundary.
- Lockable Timber gates to be erected to rear gardens (as indicated on site layout).

IMPORTANT NOTE:
ALL DIMENSIONS AND LEVELS SHOWN ON THIS DRAWING ARE TO BE CHECKED BY THE CONTRACTOR MANUFACTURER PRIOR TO THE COMMENCEMENT OF ANY WORKS ON SITE OR THE MANUFACTURE OF ANY SITE COMPONENTS.
THIS DRAWING IS NOT TO BE SCALED.
DIMENSIONS ARE INDICATED IN MILLIMETRES UNLESS CLEARLY STATED OTHERWISE.
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House Type	Bed No.	Type	Storey	Parking	No.	Sqft	Total Sqft	Split
Newton	4	Detached	2	I.Gar	11	1233	13563	11.00
Wordsworth	4	Detached	2.5	S. Garage	3	1308	3924	3.00
Shakespeare	4	Detached	2	I.Gar	3	1350	4050	3.00
Priestley	4	Detached	2	D.Gar	4	1528	6112	4.00
Jenner	3 + Study	Semi	2.5	Space	10	1099	10990	10.00
Nelson	3 + Study	Detached	2	I.Gar	8	1013	8104	8.00
Brunswick	3	Semi	2	Space	14	916	12824	14.00
Trevithick	2 + Study	Semi/ Mews	2	Space	21	816	17136	21.00
Brahms	2	Semi/Mews	2	Space	20	880	17600	20.00
Chinley	1	Apartment	2	Space	6		3020	6.00
Total					100		97323	100.00

Revision:	By:	Date:
A Plots 85 & 87 swapped. Footpath removed adjacent to Plot 81	RL	27.09.22

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Client:

Project Title:

Proposed Development

Address:

Dinting Vale, Glossop

Drawing Title:

BDC Proposed Site Layout

Drawing No:

WH/DV/PSL/01

Dwn: MB

Ckd: CC

Date: 14/06/2022

Scale:

1:500

Paper Size:

A1

Rev:

A

Appendix B Noise and Vibration Terminology

This Appendix provides a layperson's explanation of the acoustics terms that commonly appear in reports. It is not intended to give full scientific definitions or explain why these terms are as they are. Some obsolete terms and abbreviations have been included as they still appear in documents from time to time.

Table A.5-1 Common acoustic terms

Term	Description
Sound	the physical phenomenon of the transmission of energy through gaseous or liquid media via rapid fluctuations in pressure.
Level	values measured in decibels
Loudness	the human perception of the level of sound
Noise	no strict definition and is often used interchangeably with sound however it is usually taken to mean unwanted sound
Index	a value based on the mathematical processing of raw data
Indicator	a value used to indicate the likelihood of a particular response of effect e.g. $L_{10,18hr}$ is an index based on statistical processing of sound pressure data that is used as an indicator for road traffic noise response.
Weighted	spectral values have been modified to reflect a frequency sensitivity.
Directivity	the amount by which a source radiates more sound in one direction than another.
Decibels dB	a logarithmic ratio of two values of a variable. The decibel is not a true measurement unit nor is it exclusive to acoustics. Decibels are used because they can represent very wide ranges of ratios (from trillionths and billionths to billions and trillions) with a small range of decibel values. Decibels can be used to represent measured values by using a known reference value in the ratio. When using decibels to measure something it is therefore important to specify what variable is being measured and what reference level has been used. This is done by adding a reference value statement in the form "dB re x units", where the units indicate the variable being measured and x is the reference value. Decibels are used in acoustics because the human ear responds to sound pressure in a logarithmic way and the quantities measured in acoustics vary over wide ranges. As the decibel is used in acoustics to represent a range of sound level parameters, there is a standardised notation system. This takes the form of an italic capital letter 'L' (referring to 'level') and subscript characters which give specific details of what is being represented. Because decibels are logarithmic, they must be added, subtracted, multiplied, divided and averaged using different techniques from normal numbers.
Sound Pressure Level L_p obsolete – SPL	the basic measure of how much sound there is at a given location. It is a measure of the size of the pressure fluctuations in the air that we perceive as sound. Sound Pressure Level is expressed in decibels with a reference level of 20×10^{-6} Pa (L_p in dB re 20 μ Pa)
Sound Power Level L_W obsolete – SWL	is the total amount of sound produced by a source. It cannot be measured directly but it can be calculated from Sound Pressure Level measurements in known conditions. It can be used to predict the Sound Pressure Level at any point.

Term	Description
	Sound Power Level is expressed in decibels with a reference level of 1×10^{-12} W (L_W in dB re 1 pW).
A-weighting L_A or L_{pA} , L_{WA}	is an electronic filter which is equal to the frequency sensitivity of the human ear. Our sensitivity is at a maximum at around 2 kHz and steadily decreases above and below. Below 20 Hz and above about 20 kHz we can't hear at all. Within its operating limits a precision measurement microphone measures all frequencies the same so the output it produces does not reflect what we would hear. When considering impacts on humans, it is therefore often necessary to apply an A-weighting to the measured sound frequency spectrum. When A-weighted, the Sound Pressure Level L_p becomes L_{pA} (or L_A) and the Sound Power Level L_W becomes L_{WA} .
similar – C-weighting L_C or L_{pC} , L_{WC}	The response of the human ear varies depending on how loud the sound is. A-weighting matches the response of a sound level meter to human hearing at low levels (~ 40-90 dB). For higher levels there are other weightings, the most common of which is the C-weighting.
Near and far-fields	are the regions of the radiation field of a sound source. In the near field, the sound pressure and acoustic particle velocity are not in phase and there is no simple relationship between sound pressure level and distance from the source. The near field is limited to a distance from the source of around a wavelength of sound or three times the largest dimension of the sound source (whichever is the larger). The far field is the region of the sound field in which sound pressure level decreases predictably with distance. For a point source, the sound pressure level decreases by 6 dB for each doubling of distance. It extends from the near field to infinity.

Table A.5-2 Different types of decibels commonly used in acoustics

Term	Description
L_p L_{pA} (or L_A)	<i>The instantaneous sound pressure level (L_p)</i> <i>The A-weighted instantaneous sound pressure level (L_{pA} or L_A)</i> This is the root mean square size of the pressure fluctuations in the air. This level can fluctuate wildly even for seemingly steady sounds. To make sound level meters easier to read the values on the display are smoothed or damped out. This is effectively done by taking a rolling average of the previous 0.125 s (FAST time constant) or the previous 1 s (SLOW time constant).
L_{AF} , L_{AS}	The letters F or S are added to the subscripts in the notation to indicate when the FAST or SLOW time constant has been used. These are often omitted but it is good practice to include them.
L_{max} L_{Amax} L_{AFmax}	<i>The maximum instantaneous sound pressure level (L_{max}),</i> <i>The A-weighted maximum instantaneous sound pressure level (L_{Amax})</i> <i>The A-weighted maximum instantaneous sound pressure level with a FAST time constant (L_{AFmax}).</i> This is the highest instantaneous sound pressure level reached during a measurement period.
L_{min} , L_{Fmin}	The opposite of the L_{max} is the <i>minimum instantaneous sound pressure level</i> or L_{min} etc. It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.

Term	Description
$L_{N,T}$ $L_{AN,T}$, $L_{AFN,T}$ N = %age value, 0-100 T = measurement time e.g. L_{A90} , L_{A10} , L_{AF90} , 5 min	<i>The percentage exceedance sound pressure level ($L_{N,T}$),</i> <i>The A-weighted percentage exceedance sound pressure level ($L_{AN,T}$), the A-weighted percentage exceedance sound pressure level with a FAST time constant ($L_{AFN,T}$).</i> This is the sound pressure level exceeded for $N\%$ of the time T. e.g. If an A-weighted level of x dB is exceeded for a total of 6 minutes within one hour, the level will have been above x dB for 10% of the measurement period. This is written as $L_{A10,1hr} = x$ dB. L_{A0} (the level exceeded for 0 % of the time) is equivalent to the L_{Amax} and L_{A100} (the level exceeded for 100 % of the time) is equivalent to the L_{Amin}. It is good practice to include the letter which identifies the time constant used as this can make a significant difference to the value.
$L_{eq,T}$ $L_{Aeq,T}$ T = measurement time eg. $L_{Aeq,5min}$	<i>The equivalent continuous sound pressure level over period T ($L_{eq,T}$),</i> <i>The A-weighted equivalent continuous sound pressure level over period T ($L_{Aeq,T}$).</i> This is effectively the average sound pressure level over a given period. As the decibel is a logarithmic quantity the L_{eq} is not a simple arithmetic mean value. The L_{eq} is calculated from the raw sound pressure data. It is not appropriate to include a reference to the FAST and SLOW time constants in the notation