The Sidings
Treforest, Pontypridd

Noise and Vibration Assessment

21122-RP-NIA-03

29 September 2026

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Document Ref.	Rev.	Date	Author	Comments
21122-RP-NIA-01	-	25 September 2026	Jamie Murray, MIOA	Checked by Lee Pickett, Director
21122-RP-NIA-03	-	29 September 2026	Jamie Murray, MIOA	Updated to LeTrucco layout LT2606.03.01 (May 2026) and client details. Checked by Lee Pickett, Director

Quality Assurance

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Date: 29 September 2026

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1.0 Introduction

1.1 Overview

Technical Services Consult has been commissioned to undertake a noise and vibration assessment of the proposed residential development at The Sidings, Treforest, Pontypridd (herein the Site). The Site lies immediately to the west of Treforest railway station, and the assessment considers the suitability of the Site for residential use with respect to environmental noise and ground-borne vibration from the railway and other local sources.

An environmental noise survey and a ground-borne vibration survey have been undertaken at the Site to establish the prevailing conditions. The measured data has been used to assess the suitability of the Site for residential development with reference to BS 8233:2014 and BS 6472-1:2008, and to derive the acoustic performance requirements of the building envelope.

This report sets out the assessment methodology, findings, and recommended mitigation measures where relevant.

1.2 Site Description

The Site is located in Treforest, Pontypridd, within the administrative area of Rhondda Cynon Taf County Borough Council. It comprises a narrow plot currently occupied by the former University of South Wales Treforest Campus buildings (Endeavour House and Innovation House) and the William Price Business Park, together with associated hardstanding and parking.

The Site is bounded to the west by the rear gardens of the residential properties on Belle Vue Terrace, and to the east by an access road serving the Treforest station car park, beyond which lie the station platforms and the railway line. The nearest railway track lies approximately 30 m to the east of the Site boundary (scaled from the OS plan supplied). The A470 lies a few hundred metres to the east of the Site, beyond the railway. The site location is shown in Figure 1.1.

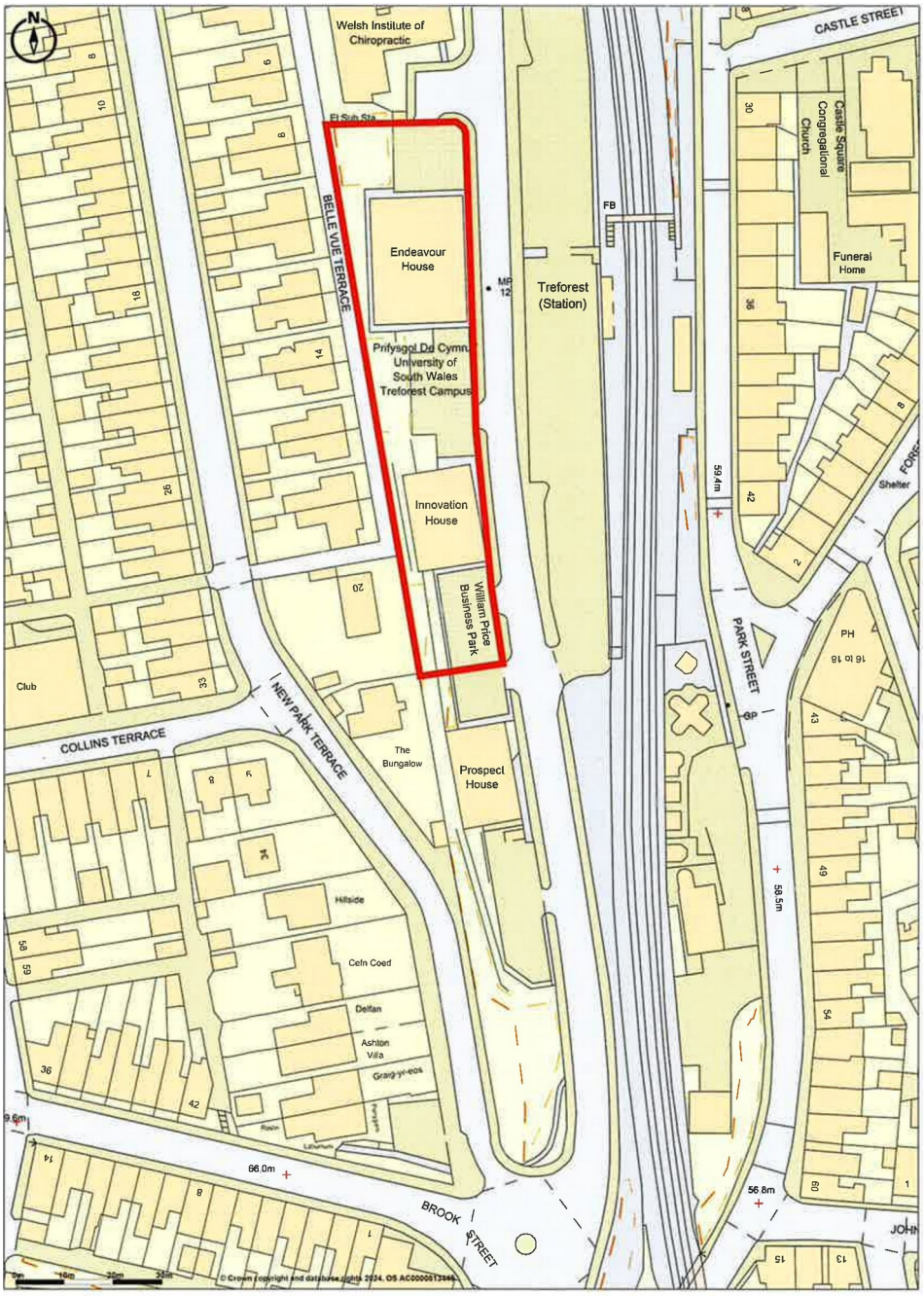


Figure 1.1 Site location plan (site edged red; base: OS plan supplied, 'Plan to Transfer')

1.3 Development Proposals

The proposals, as shown on LeTrucco Design drawing LT2606.03.01 ‘Proposed Site Plan + Site Sections’ (Feasibility Layout, May 2026), comprise the redevelopment of the Site to provide 34No one-bedroom (two-person) flats in four buildings arranged along the length of the Site: Plots 1–4 and Plots 5–16 (two storey) towards the southern end, and Plots 17–25 and Plots 26–34 (three storey) towards the northern end. Gardens and landscaped amenity space are shown to the west of the buildings, adjacent to Belle Vue Terrace, with SuDS and public open space at the southern end of the Site and the existing car parking retained at the northern end. An extract of the layout is reproduced in Figure 1.2.



Figure 1.2 Feasibility layout (extract, not to scale; LeTrucco Design drg LT2606.03.01 'Proposed Site Plan + Site Sections', May 2026)

The layout is at feasibility stage and the internal layouts have not yet been confirmed. For the purposes of this assessment, habitable rooms (including bedrooms) have been assumed to be present on all façades and at all floor levels. The eastern façades of each building face the station and railway and are the most exposed to railway noise and vibration; the western façades face towards the rear of Belle Vue Terrace and are partially screened by the buildings themselves.

1.4 Assessment Scope

The following elements have been considered within this assessment:

- internal ambient noise levels within habitable rooms of the proposed dwellings, assessed with reference to BS 8233:2014 and World Health Organization (WHO) guidance, and the resulting façade sound insulation and ventilation performance requirements;
- external amenity noise levels, assessed with reference to BS 8233:2014;
- the suitability of openable windows as a means of removing excess heat, with reference to Approved Document O of the Building Regulations (Wales); and
- ground-borne vibration from the railway and other local sources, assessed with reference to BS 6472-1:2008.

No fixed building services plant or construction phase information is available at this stage, and these matters have not been assessed.

2.0 Assessment Guidance & Requirements

2.1 Local Authority & Planning Context

The Site falls within the jurisdiction of Rhondda Cynon Taf County Borough Council. Planning Policy Wales (PPW) requires noise to be taken into account in the planning process, supported by Technical Advice Note (TAN) 11: Noise (1997), which remains the Welsh Government technical guidance on planning and noise. The Noise and Soundscape Plan for Wales 2023–2028 sets out the national strategic context.

Policy AW 10 (Environmental Protection and Public Health) of the adopted Rhondda Cynon Taf Local Development Plan states:

> *"Development proposals will not be permitted where they would cause or result in a risk of unacceptable harm to health and / or local amenity because of:- … Noise pollution … Unless it can be demonstrated that measures can be taken to overcome any significant adverse risk to public health, the environment and / or impact upon local amenity."*

TAN 11 does not prescribe internal noise criteria for dwellings, and at the time of writing no specific noise or vibration requirements have been received from the Council in respect of this Site. In the absence of specific local guidance, the assessment has been undertaken against the nationally recognised standards and guidance set out below, which are considered robust for planning purposes.

2.2 BS 8233 Assessment Methodology

BS 8233:2014 'Guidance on sound insulation and noise reduction for buildings' (herein BS 8233) provides guidance on suitable internal ambient noise levels within residential buildings, along with recommended external amenity noise levels. The guidance draws on the World Health Organization (WHO) 'Guidelines for Community Noise' (1999) and 'Night Noise Guidelines for Europe' (2009). The recommended internal ambient noise levels for dwellings are summarised in Table 2.1.

Table 2.1 Internal ambient noise levels for dwellings (BS 8233:2014)

Activity	Location	07:00–23:00	23:00–07:00
Resting	Living room	35 dB $L_{Aeq,16h}$	–
Dining	Dining room / area	40 dB $L_{Aeq,16h}$	–
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16h}$	30 dB $L_{Aeq,8h}$

In addition, the WHO 'Night Noise Guidelines for Europe' advise that individual noise events within bedrooms should not regularly exceed 45 dB L_{AFmax} at night, where 'regularly' is generally interpreted as

more than 10 to 15 occurrences per night. Night-time maximum event statistics are accordingly reported herein on the basis of the tenth-highest event per night.

For external amenity areas, BS 8233 advises that it is desirable for the external noise level not to exceed 50 dB $L_{Aeq,T}$, with an upper guideline value of 55 dB $L_{Aeq,T}$. The standard further recognises that these guideline values are not achievable in all circumstances where development might be desirable, and that in higher noise areas a compromise might be warranted, with development designed to achieve the lowest practicable levels in external amenity spaces but not prohibited.

2.3 Approved Document O Assessment Methodology

Approved Document O 'Overheating' (herein ADO) of the Building Regulations came into force in Wales on 23 November 2022 and applies to new residential buildings. It sets out requirements to limit unwanted solar gains and to provide an adequate means of removing heat from the indoor environment.

Where the strategy for removing excess heat relies upon openable windows, ADO requires that noise levels in bedrooms are kept to a minimum during the sleeping hours of 23:00 to 07:00. Unlike the equivalent document in England, the Welsh edition of ADO does not set numerical noise limits, and instead relies upon the noise criteria established at planning stage. In the absence of local criteria, the limits given in the English edition of ADO have been adopted herein as a reasonable benchmark, namely an internal level of 40 dB $L_{Aeq,8h}$ in bedrooms at night (23:00 to 07:00) and 55 dB L_{AFmax} not to be exceeded more than ten times per night.

For the purposes of this assessment, a partially open window is taken to be a window with a free opening area of approximately 2% of the room floor area, for which an outside-to-inside level difference of 13 dB has been assumed, in accordance with the ANC/IOA Acoustics, Ventilation and Overheating Residential Design Guide (2020), para. 3.24. Larger window openings will provide a lower level difference.

Where these levels would be exceeded with windows open, either an alternative means of removing excess heat must be provided, or it must be demonstrated that windows can remain closed. Overheating mitigation itself must be led by an overheating specialist.

2.4 Ventilation

Ventilation to the proposed dwellings must be identified with reference to Approved Document F such that the internal ambient noise criteria are not compromised. Where trickle ventilators are proposed, an allowance of 2No ventilators per habitable room has been assumed; where a greater number is required, the sound insulation performance of the ventilator should be increased by 10·log(N/2), where N is the number of ventilators serving the room. Any mechanical ventilation system should be designed to achieve the internal noise levels recommended by CIBSE Guide A (2015). Purge ventilation may be provided via openable windows, as the internal noise criteria are not applicable during occasional purge ventilation.

2.5 BS 6472-1 Assessment Methodology

BS 6472-1:2008 'Guide to evaluation of human exposure to vibration in buildings – Part 1: Vibration sources other than blasting' (herein BS 6472-1) provides a method for evaluating the human response to vibration within buildings, including vibration arising from railway operations.

The standard uses the vibration dose value (VDV) as its assessment metric. The VDV is a cumulative, fourth-power measure of frequency-weighted acceleration over an exposure period, expressed in $m/s^{1.75}$ and defined as:

$VDV = (\int a(t)^4 \, dt)^{0.25}$, integrated over the exposure period T

Acceleration is frequency weighted using the W_b weighting for vertical vibration and the W_d weighting for horizontal vibration, and the assessment is based on the axis giving the highest vibration dose value. Because the VDV is a cumulative measure, the vibration dose accrued over successive measurement intervals may be combined by fourth-power summation:

$VDV(total) = (\Sigma \, VDV(i)^4)^{0.25}$, summed over all intervals i within the period

The daytime assessment period is the 16-hour period 07:00 to 23:00 and the night-time assessment period is the 8-hour period 23:00 to 07:00. The vibration dose value ranges given in BS 6472-1 which might result in various probabilities of adverse comment within residential buildings are reproduced in Table 2.2.

Table 2.2 Vibration dose value ranges which might result in various probabilities of adverse comment within residential buildings (BS 6472-1:2008)

Place and time	Low probability of adverse comment	Adverse comment possible	Adverse comment probable
Residential buildings, 16-hour day	0.2 to 0.4 $m/s^{1.75}$	0.4 to 0.8 $m/s^{1.75}$	0.8 to 1.6 $m/s^{1.75}$
Residential buildings, 8-hour night	0.1 to 0.2 $m/s^{1.75}$	0.2 to 0.4 $m/s^{1.75}$	0.4 to 0.8 $m/s^{1.75}$

Below the ranges given, adverse comment is not expected.

3.0 Environmental Noise Survey

3.1 Procedure

Continuous automated noise measurements were undertaken from approximately 14:00 on 17 September 2026 until approximately 16:00 on 18 September 2026 at 2No measurement positions on site. The equipment was installed and collected by Lee Pickett of Technical Services Consult Ltd. Measurements were logged as consecutive 15-minute periods at MP1, and as a 1-second time history with 15-minute summary periods at MP2.

Weather conditions during the survey period were generally dry with light winds and therefore suitable for the measurement of environmental noise. The measurement procedure complied with ISO 1996-2:2017 Acoustics 'Description, measurement and assessment of environmental noise – Part 2: Determination of sound pressure levels'.

3.2 Noise Climate

The noise climate at the Site is characterised by a steady background of distant road traffic noise, principally from the A470 to the east, together with intermittent railway movements at Treforest station, vehicle movements on the access road serving the station car park, and general urban activity. Site observations by the surveyor noted that railway pass-bys were relatively quiet, services calling at the station passing the Site at low speed, and that the station public address system was audible at times but not loud, being directed towards the platforms.

At both positions the measured L_{A90} follows the characteristic diurnal pattern of road traffic, falling to approximately 35 to 36 dB between 01:00 and 03:00 and rising steeply from approximately 04:15, with the highest night-time levels occurring between 05:00 and 07:00 as traffic flows increase ahead of the morning peak. At the front of the Site the night-time maximum noise events are concentrated in the periods 23:00 to 00:15 and 05:00 to 07:00, consistent with the timing of railway services and associated station and car park activity.

The rear of the Site (MP2) is screened from the railway and station by the existing buildings, and measured levels were approximately 3 to 5 dB lower than at the front. Short periods of elevated noise from local activity close to the rear measurement position were recorded during the afternoon of 17 September 2026; these have been retained in the data, which is conservative.

3.3 Measurement Positions

Measurements were undertaken at 2No positions, as indicated in Figure 3.1:

- MP1 – at the front (east) of the Site, facing the station and railway, representative of the eastern façades of the proposed blocks at first floor level; and
- MP2 – at the rear (west) of the Site, representative of the western façades of the proposed blocks, facing Belle Vue Terrace at ground floor level.

The microphones were positioned away from reflecting surfaces other than the ground, and measured levels have been treated as free-field for the purposes of the assessment. The vibration measurement position (V1) is also shown and is described in Section 4.2.



Figure 3.1 Noise and vibration measurement positions (base imagery: Esri World Imagery)

3.4 Equipment

The survey equipment is summarised in Table 3.1. The measurement chains were calibrated prior to and following the survey and no abnormalities were observed.

Table 3.1 Survey equipment

Position	Equipment	Serial No.	Calibration
MP1 (front)	Rion NA-28 sound analyser	00470356	Calibrated 04 Nov 2024, cert. UCRT24/2467 (expires 03 Nov 2026)
MP2 (rear)	Svantek SVAN 971A sound level meter	189302	Calibrated 27 May 2026, Type 7152 calibrator (S/N 99039)
V1 (vibration)	Svantek SV 803 vibration monitor (triaxial geophone)	193468	Factory calibrated 15 Jul 2026, Svantek certificate (S/N 193468)

3.5 Results

A summary of the measured sound levels is presented in Table 3.2. Daytime values relate to the 16-hour period 07:00 to 23:00 hours and night-time values to the 8-hour period 23:00 to 07:00 hours. Note that these are free-field sound levels, with background sound levels derived based on the guidance of BS 4142.

Table 3.2 Summary of measured sound levels (free-field)

Position	Period	$L_{Aeq,T}$ (dB)	$L_{A90,15min}$ modal (minimum) (dB)	L_{AFmax} (dB)
MP1 (front)	Daytime 07:00–23:00	55 dB	50 (46) dB	–
	Night-time 23:00–07:00	52 dB	38 (36) dB	68 dB
MP2 (rear)	Daytime 07:00–23:00	50 dB	46 (42) dB	–
	Night-time 23:00–07:00	49 dB	35 (35) dB	61 dB

The full measured sound levels throughout the survey duration are presented graphically in Appendix A.

4.0 Ground-Borne Vibration Survey

4.1 Procedure

Ground-borne vibration measurements were undertaken on 17 September 2026 between 09:20 and 12:10 hours using a Svantek SV 803 vibration monitor incorporating a triaxial geophone, placed at ground level. The equipment was installed by Lee Pickett of Technical Services Consult Ltd.

The instrument was configured to measure in accordance with BS 6472-1, with the W_b weighting applied to the vertical (z) axis and the W_d weighting applied to the horizontal (x and y) axes. The vibration dose value, the weighted RMS acceleration and the peak weighted acceleration were logged for each axis at 30-second intervals, together with the peak particle velocity (PPV) in each axis.

4.2 Measurement Position

The vibration measurement position (V1 on Figure 3.1) was located at ground level at the front (east) of the William Price Business Park building, on the side of the Site nearest to the railway and approximately 27 m from the nearest running line. The position is therefore representative of the eastern façades of the proposed blocks, which are the closest proposed dwellings to the railway; vibration levels will reduce with increasing distance from the railway.

The position was also close to the access road serving the station car park and the entrance to the existing building, and the measurements therefore include vibration from road vehicles and pedestrian activity in addition to the railway. No attempt has been made to exclude these sources, which is conservative.

4.3 Results

The measured vibration was generally low, with the 30-second vibration dose values varying between the instrument noise floor during quiet periods and short-duration peaks associated with passing trains, road vehicles on the adjacent access road and pedestrian activity close to the monitor. The vertical (z) axis gave the highest values throughout. The measured results are summarised in Table 4.1, and the time histories are presented in Appendix B.

Table 4.1 Measured ground-borne vibration, 09:26 to 12:07 on 17 September 2026

Parameter	x axis (W_d)	y axis (W_d)	z axis (W_b)
VDV over measured period, $m/s^{1.75}$	0.0016	0.0015	0.0045
Highest 30-second VDV, $m/s^{1.75}$	0.0011	0.0010	0.0033
Weighted RMS acceleration over measured period, m/s^2	0.00007	0.00006	0.00013
Maximum peak particle velocity, mm/s	0.17	0.13	0.20
95th percentile 30-second peak particle velocity, mm/s	0.08	0.08	0.08

The highest peak particle velocity of 0.20 mm/s (z axis) occurred as a single brief event at 11:18, and 95% of the 30-second intervals recorded a peak particle velocity below 0.09 mm/s in all axes. These levels are at or below the threshold of perception for the most sensitive persons given in BS 5228-2 (0.14 to 0.3 mm/s), and are substantially below the guide values associated with any risk of cosmetic damage to buildings (15 mm/s and above).

4.4 Derivation of Daytime and Night-Time Vibration Dose Values

The vibration survey covers a sample period of approximately 2.7 hours. In order to establish the vibration dose over the full 16-hour daytime and 8-hour night-time assessment periods, the measured vibration dose value has been scaled in accordance with BS 6472-1 as follows, where t is the measured period and T is the assessment period:

$$VDV(T) = VDV(t) \times (T / t)^{0.25}$$

This approach assumes that the rate of vibration events measured during the late-morning sample, which includes railway, road and pedestrian activity, continues throughout the 16-hour day and, for the night-time estimate, throughout the 8-hour night. As railway services do not operate for much of the night and road and pedestrian activity is considerably lower, the night-time estimate is pessimistic. As a further sensitivity test, the most active 30-minute period of the sample (10:25 to 10:55) has also been scaled to each assessment period. The resulting vertical (z axis) vibration dose values, which govern, are given in Table 4.2.

Table 4.2 Predicted daytime and night-time vibration dose values (z axis, governing)

Assessment period	Basis	VDV ($m/s^{1.75}$)	BS 6472-1 assessment
Daytime 07:00–23:00	Full sample (2.7 h) scaled to 16 h	0.007	Below the low probability of adverse comment range
	Most active 30 minutes scaled to 16 h	0.009	Below the low probability of adverse comment range

Assessment period	Basis	VDV ($m/s^{1.75}$)	BS 6472-1 assessment
Night-time 23:00–07:00	Full sample (2.7 h) scaled to 8 h	0.006	Below the low probability of adverse comment range
	Most active 30 minutes scaled to 8 h	0.007	Below the low probability of adverse comment range

The predicted vibration dose values are assessed in Section 6.0.

5.0 Residential Noise Impact Assessment

5.1 Criteria

The internal ambient noise criteria adopted for the assessment of the proposed dwellings are those recommended by BS 8233, supplemented by the WHO guidance on individual night-time noise events, as set out in Table 2.1.

5.2 Façade Zones

For the purposes of façade specification, the proposed blocks have been considered as two zones:

- Zone A – the eastern (railway-facing) façades of all buildings (Plots 1–34), together with the north and south end (return) façades, assessed using the levels measured at MP1; and
- Zone B – the western façades of all buildings (Plots 1–34), facing Belle Vue Terrace, assessed using the levels measured at MP2.

The design incident noise levels are set out in Table 5.1.

Table 5.1 Design external noise levels

Zone	Daytime $L_{Aeq,16h}$ (dB)	Night-time $L_{Aeq,8h}$ (dB)	Night-time L_{AFmax} (dB)
Zone A (east and returns)	55 dB	52 dB	68 dB
Zone B (west)	50 dB	49 dB	61 dB

5.3 Non-Glazed Elements

The assessment assumes a conventional masonry cavity or timber frame external wall construction achieving a minimum weighted sound reduction index of R_w 45 dB. Such a construction is achieved by standard residential wall build-ups and is not anticipated to require enhancement. Roof constructions to habitable rooms within the roof space, where proposed, should achieve an equivalent performance.

5.4 Glazed Elements

The minimum acoustic performance required of the glazing in each zone is set out in Table 5.2, expressed as the weighted sound reduction index with the spectrum adaptation term for traffic noise, $R_w + C_{tr}$. The performance has been derived from the design façade levels in Table 5.1 so as to achieve the internal criteria of Table 2.1 with windows closed, the night-time maximum noise level being the governing parameter in each zone.

Table 5.2 Minimum glazing performance by zone

Zone	Minimum glazing performance	Indicative specification
Zone A (east and returns)	$R_w + C_{tr}$ 26 dB	Standard thermal double glazing, e.g. 4 mm / 16 mm cavity / 4 mm
Zone B (west)	$R_w + C_{tr}$ 26 dB	Standard thermal double glazing, e.g. 4 mm / 16 mm cavity / 4 mm

The performance is specified for the whole window unit, including the frame, seals, etc. as appropriate; sole glass performance data would not demonstrate compliance with this specification. The nominated glazing supplier should verify that their proposed window system meets the specified performance. The specifications given above are indicative only and are provided to demonstrate that the required performance is readily achievable with commercially available units.

5.5 Ventilation

5.5.1 Normal Ventilation

Ventilation to the proposed dwellings should be provided such that the internal ambient noise criteria set out in Table 2.1 are achieved with windows closed. Where background ventilation is provided by trickle ventilators, the ventilators serving habitable rooms should achieve the element-normalised level difference set out in Table 5.3. Where more than 2No ventilators serve a single room, the required performance should be increased by 10·log(N/2), N being the number of ventilators serving the room.

Table 5.3 Minimum ventilator acoustic performance by zone

Zone	Minimum ventilator performance (2No per room)	Equivalent for 3No per room
Zone A (east and returns)	$D_{n,e,w} + C_{tr}$ 32 dB	$D_{n,e,w} + C_{tr}$ 34 dB
Zone B (west)	$D_{n,e,w} + C_{tr}$ 32 dB	$D_{n,e,w} + C_{tr}$ 34 dB

Acoustic trickle ventilators achieving $D_{n,e,w} + C_{tr}$ of up to approximately 44 dB are commercially available. Where the required performance cannot be achieved by trickle ventilation, an alternative mechanical ventilation strategy will be required to the affected dwellings. In the case of mechanical ventilation, systems should be designed to meet the internal noise levels recommended in CIBSE Guide A (2015), as shown in Table 5.4.

Table 5.4 Mechanical building services noise level requirements

Room type	L_{Aeq} (dB)	NR
Bedrooms	30	25
Living rooms	35	30
Kitchens	45–50	40–45

In all cases, purge ventilation may be provided by openable windows. The internal noise level requirement would not be applicable during purge conditions as this would only occur occasionally.

5.5.2 Overheating (Approved Document O)

Where the strategy for removing excess heat relies upon openable windows, the internal noise levels achieved with windows open have been considered against the benchmark criteria of 40 dB $L_{Aeq,8h}$ and 55 dB L_{AFmax} at night set out in Section 2.3. On the basis of a partially open window, as defined in Section 2.3, providing a level difference of 13 dB, the criteria would be met where the external free-field night-time level does not exceed approximately 53 dB $L_{Aeq,8h}$ and 68 dB L_{AFmax}.

On the western façades (Zone B), the measured night-time levels of 49 dB $L_{Aeq,8h}$ and 61 dB L_{AFmax} are well within these values, and bedrooms on these façades may rely on openable windows for the removal of excess heat at night.

On the eastern façades (Zone A), the measured night-time levels of 52 dB $L_{Aeq,8h}$ and 68 dB L_{AFmax} are within these values, although the maximum level is at the limit. Bedrooms on these façades may therefore rely on partially open windows for the removal of excess heat at night only where the opening area required by the overheating assessment does not exceed that defined in Section 2.3. Where a greater opening area is required, the internal L_{AFmax} benchmark is likely to be exceeded, and an alternative means of removing excess heat should be provided to the affected bedrooms (for example, mechanical ventilation with a summer boost mode, or MVHR with a summer bypass). Alternatively, bedrooms could be located on the western façades where the internal layouts allow.

The overheating strategy itself must be led by an overheating specialist, and further input may be required dwelling by dwelling in coordination with the overheating assessment as the design develops.

5.6 External Amenity Areas

The proposed external amenity areas are located predominantly to the west of the buildings, with public open space at the southern end of the Site. The daytime level measured at MP2, representative of the western side of the Site, was 50 dB $L_{Aeq,16h}$, which meets the desirable BS 8233 guideline value of 50 dB. The blocks themselves will provide additional screening of the western amenity areas from the station

and railway. Levels on the eastern side of the Site, measured at MP1, were 55 dB $L_{Aeq,16h}$, at the BS 8233 upper guideline value.

External amenity noise levels are therefore considered to be acceptable, and no specific mitigation is required.

6.0 Ground-Borne Vibration Assessment

The predicted daytime and night-time vibration dose values derived in Section 4.4 have been compared against the ranges given in BS 6472-1 for residential buildings, reproduced in Table 2.2.

The predicted daytime vibration dose value of 0.007 $m/s^{1.75}$ (0.009 $m/s^{1.75}$ on the most onerous basis) is well below the range of 0.2 to 0.4 $m/s^{1.75}$ identified by BS 6472-1 as giving a low probability of adverse comment within residential buildings during the 16-hour day. The pessimistic night-time value of 0.006 $m/s^{1.75}$ (0.007 $m/s^{1.75}$ on the most onerous basis) is similarly well below the corresponding range of 0.1 to 0.2 $m/s^{1.75}$ for the 8-hour night. In each period the predicted values are more than an order of magnitude below the lower limit of the low probability of adverse comment range.

It is emphasised that the measured values relate to ground vibration at the measurement position. The vibration experienced within the completed dwellings will differ, as vibration entering a building through its foundations is generally attenuated at a ground-bearing slab, whilst suspended floors may amplify vibration at their fundamental resonance. Even allowing for an amplification factor of 2 within the building, which is conservative, the most onerous vibration dose values would be approximately 0.018 $m/s^{1.75}$ by day and 0.015 $m/s^{1.75}$ by night, remaining well below the low probability of adverse comment ranges.

Given the low levels of ground-borne vibration measured, re-radiated (ground-borne) noise from the railway is not anticipated to be perceptible within the proposed dwellings.

On the basis of the above, the Site is considered suitable for residential development in ground-borne vibration terms, and no specific vibration mitigation is considered necessary.

7.0 Conclusion

Technical Services Consult has been commissioned to undertake a noise and vibration assessment of the proposed residential development of 34No one-bedroom flats at The Sidings, Treforest, Pontypridd, adjacent to Treforest railway station. An environmental noise survey was undertaken at the front and rear of the Site from 17 to 18 September 2026, and a ground-borne vibration survey was undertaken at the front of the Site on 17 September 2026.

The noise climate at the Site is governed by distant road traffic, principally the A470, together with railway and station activity and vehicle movements on the adjacent access road. Measured levels were 55 dB $L_{Aeq,16h}$ and 52 dB $L_{Aeq,8h}$ at the front of the Site facing the railway, and 50 dB $L_{Aeq,16h}$ and 49 dB $L_{Aeq,8h}$ at the rear.

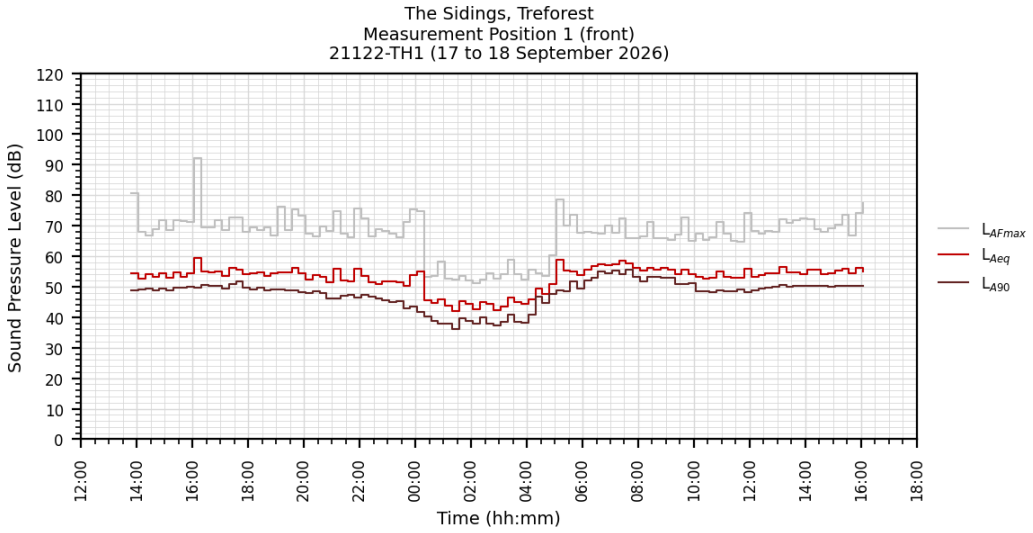
Based on the measured levels, glazing achieving $R_w + C_{tr}$ 26 dB, which is achievable with standard thermal double glazing, is required to all façades, together with trickle ventilators achieving $D_{n,e,w} + C_{tr}$ 32 dB (2No per room). With the specified envelope in place the internal ambient noise criteria of BS 8233 and the WHO guidance on night-time maximum levels are expected to be achieved throughout. External amenity areas to the west of the blocks meet the desirable BS 8233 guideline.

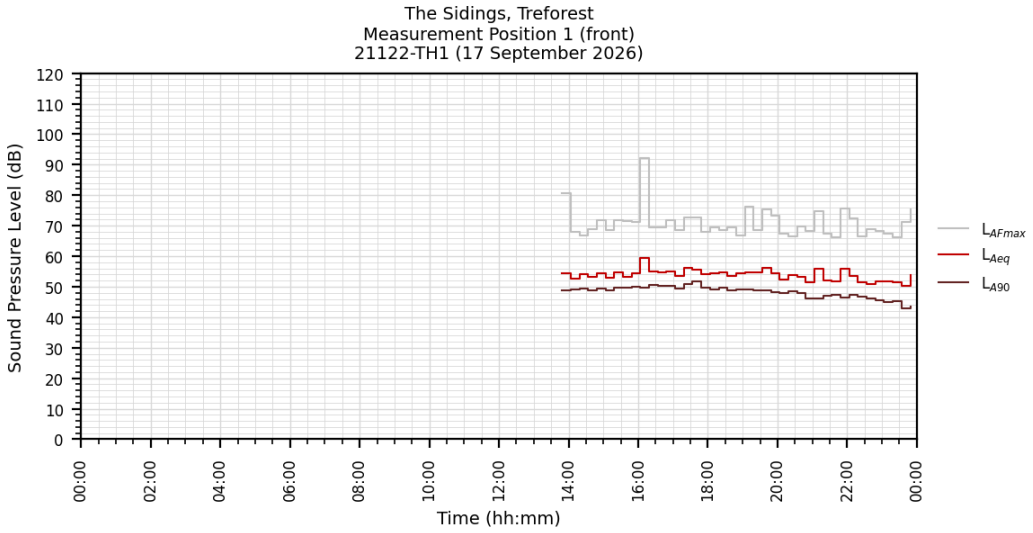
With respect to overheating, the adopted Approved Document O benchmark is met with windows open at night on the western façades (Zone B). On the eastern (railway-facing) façades (Zone A), the benchmark is met only with windows partially open, i.e. with a free opening area of approximately 2% of the room floor area. The overheating assessment should confirm whether this opening area is sufficient for eastern bedrooms; where it is not, an alternative means of removing excess heat will be required to those rooms.

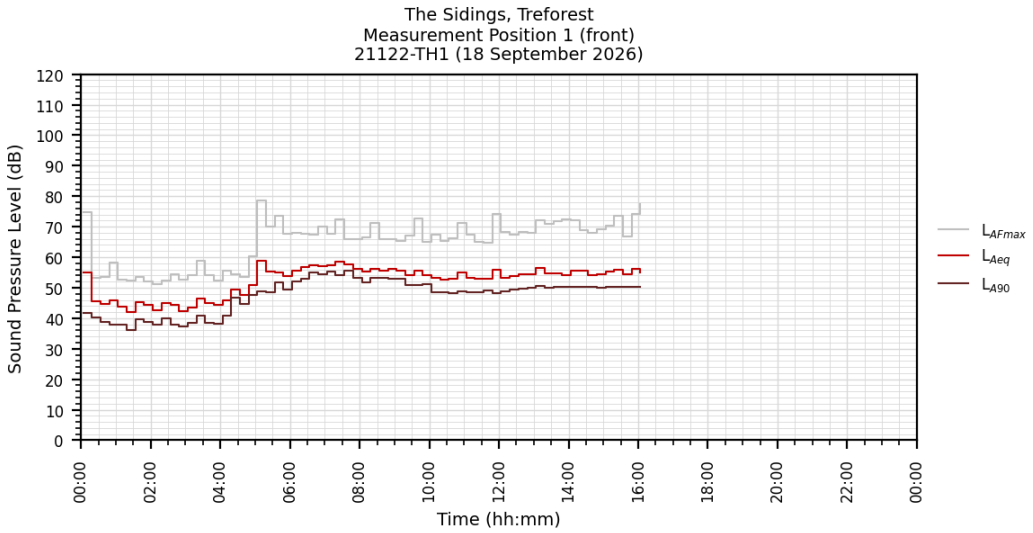
Ground-borne vibration has been measured at the Site and assessed in accordance with BS 6472-1. The predicted vibration dose values are 0.007 $m/s^{1.75}$ for the 16-hour daytime period and 0.006 $m/s^{1.75}$ for the 8-hour night-time period, both more than an order of magnitude below the ranges identified by BS 6472-1 as giving a low probability of adverse comment within residential buildings. No vibration mitigation is considered necessary.

Subject to the incorporation of the building envelope specification and ventilation strategy set out in Section 5.0, it is considered that a suitable internal and external acoustic environment can be provided for the future occupiers of the proposed development, and that the Site is suitable for residential development in terms of noise and vibration.

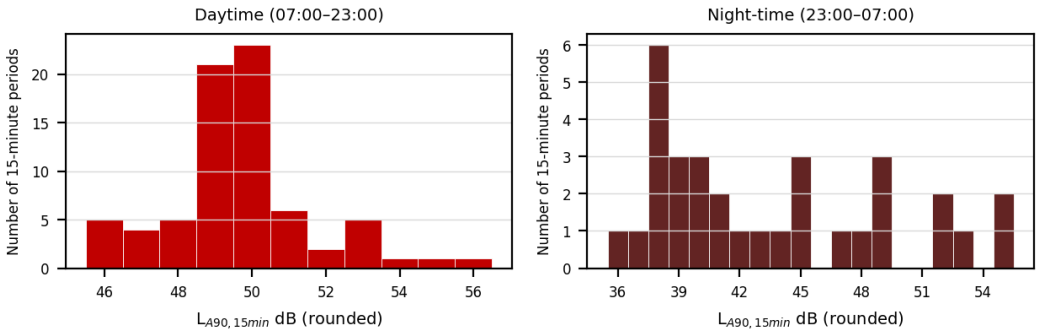
Appendix A – Environmental Noise Survey Results

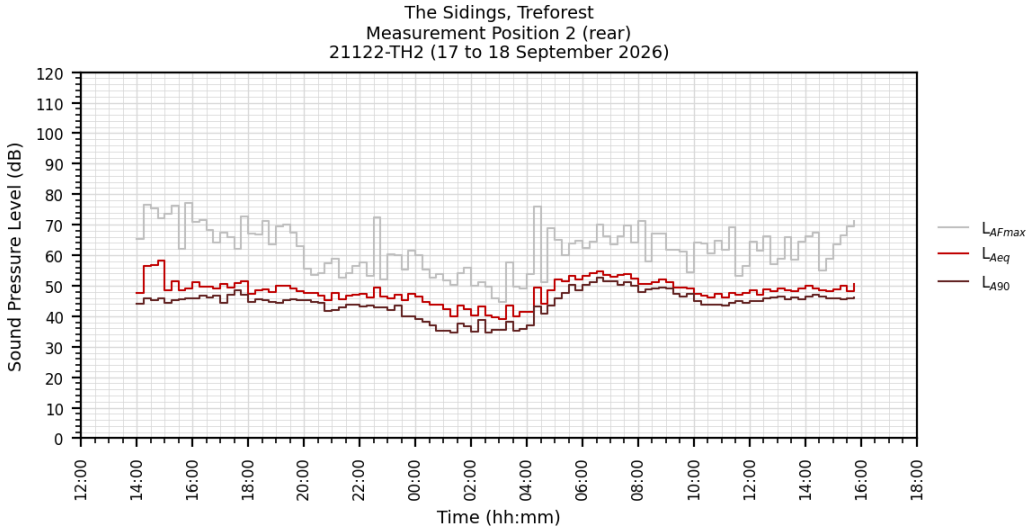


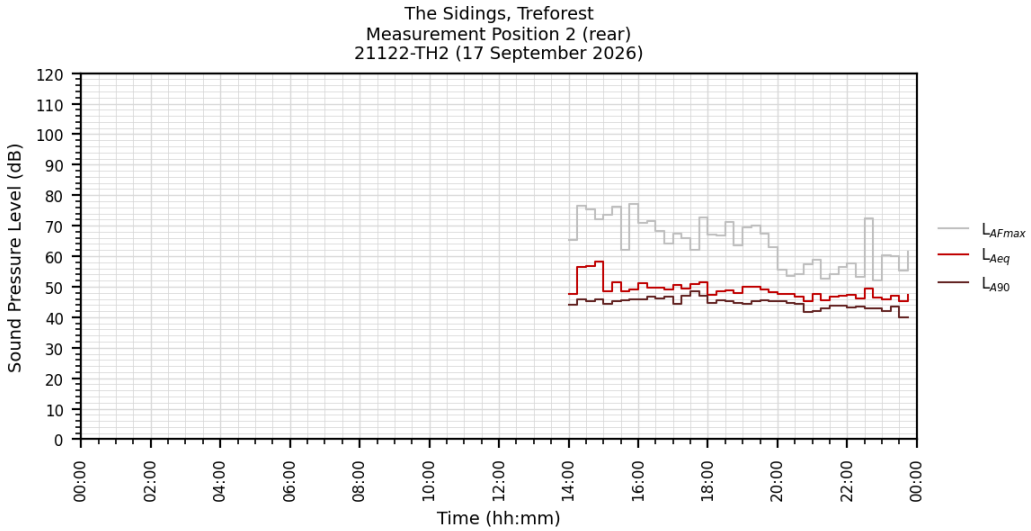


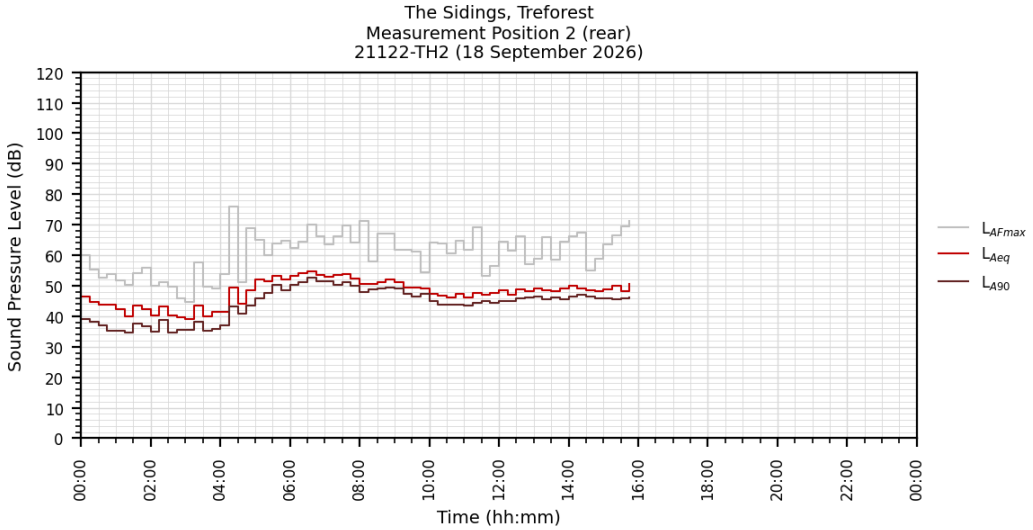


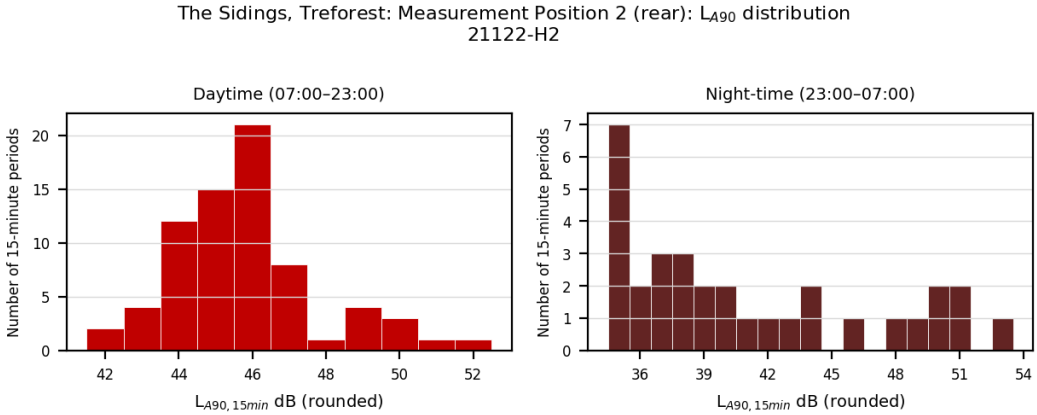
The Sidings, Treforest: Measurement Position 1 (front): L_{A90} distribution
21122-H1








The Sidings, Treforest
Measurement Position 2 (rear)
21122-TH2 (18 September 2026)
Sound Pressure Level (dB)
Time (hh:mm)
L_{AFmax}
L_{Aeq}
L_{A90}


The Sidings, Treforest: Measurement Position 2 (rear): L_{A90} distribution
21122-H2
Daytime (07:00–23:00)
Night-time (23:00–07:00)
Number of 15-minute periods
$L_{A90,15min}$ dB (rounded)

Appendix B – Ground-Borne Vibration Survey Results

