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ROAD TRAFFIC NOISE ASSESSMENT

27 Cheadle Road,
Cheddleton, Leek ST13 7HN

Client:
Mr E Bateman

Report Date: 20th May 2025
Ref: 20250520 9752.Cheddleton BS8233
Site Visit by: S B Mellor MA CMIOSH MIOA
Site Visit: 8th & 10th May 2025

Prepared by: M A Kenyon MSc BSc MIOA

Checked by: D A B Kenyon BSc CIEH MIOA

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1.0 INTRODUCTION

At the request of Hewitt and Carr Architects, acting on behalf of their client Mr E Bateman, Martec Environmental Consultants Ltd. undertook an assessment of road traffic noise affecting a development site at 27, Cheadle Road, Cheddleton.

This report considers the impact of road traffic noise on the site and details the measurements taken, the requirements of current government guidance and makes recommendations for mitigation, as necessary.

Acoustic Terminology is set out at Appendix 1 with the consultants' qualifications at Appendix 2, References at Appendix 3, full measurements are at Appendix 4 and weather data at Appendix 5.

2.0 BACKGROUND TO ASSESSMENT

Planning permission to convert the building from retail to a dwelling house [Staffordshire Moorlands Ref.SMD/2024/0494] stated that:

"11. Before the development is first brought into use, a site specific noise assessment and scheme for protecting the proposed residential unit from external noise shall have been submitted to and approved in writing by

the Local Planning Authority. The submitted scheme shall have due regard for the British Standard 8233:2014 (Sound insulation and noise reduction for buildings) and the PROPG: Planning and Noise: New Residential Development.

It shall be designed to achieve noise levels of less than 30 dB LAeq in bedrooms (23:00 to 07:00), 35dB LAeq in bedrooms (07:00 to 23:00), less than 40 dBLAeq in living areas and less than 55 dB LAeq in outdoor living areas.

The approved scheme shall be carried out prior to the first occupation of the development. Precompletion tests shall be carried out to verify compliance with this condition and the results submitted to and approved in writing by the Local Planning Authority. A report shall be produced containing all raw data and showing how calculations have been made.

Reason:-

To protect occupiers from noise and safeguard their residential amenities

The site is shown in Figure 1 below, it can be seen that the significant source of noise, is road traffic on Cheadle Road which runs directly in front of the property. Figure 2 shows the proposed floor plans.



Figure 1: Proposed Site Layout Plan



Figure 2: Proposed Floor Plans [acoustic fence as blue line]

3.0 CRITERIA

The planning condition contains the following wording:

“It shall be designed to achieve noise levels of less than 30 dB LAeq in bedrooms (23:00 to 07:00), 35dB LAeq in bedrooms (07:00 to 23:00), less than 40 dB LAeq in living areas and less than 55 dB LAeq in outdoor living areas.”

There are issues with the above wording and consequently for design purposes, the local authority’s requirements have been interpreted as shown in Table 1 below:

Activity	Location	07:00 to 23:00	23:00 to 07:00
Sleeping (daytime resting)	Bedroom	35 LAeq,16hr	30 LAeq,8hr
Resting	Other Habitable Rooms	40 LAeq,16hr	--
Resting	Main Amenity Space	55 LAeq,16hr	--

Table 1: Local Authority Target Noise Levels [Reverberant internal/free-field external]

The ProPG makes it clear that, where possible, the target internal noise levels in Table 1, in this case set by the local authority, should be achieved with windows open.

Following on from the above, the question then arises as to what attenuation should be assumed for an open window. Section 2.33 of the ProPG states

“It should be noted that the acoustic performance of the building envelope will be reduced in the event windows are opened for ventilation or cooling purposes, typically reducing the insulation to no more than 10 to 15 dB(A).”

In addition, it will be recalled that the ProPG states that if nighttime **external** noise events are 60 L_{Amax,F} or less, then there is negligible risk

of noise and no adverse **effect**; given that the corresponding **internal** target noise level is 45 L_{Amax,F}, it can be seen that the ProPG is assuming that the difference between external and internal levels, i.e. the attenuation of a façade with an open window, is 15 dBA [60-45=15]. Similarly, daytime external noise levels of 50 L_{Aeq,16hr} fall into the negligible risk category, i.e. open windows must be capable of achieving the internal noise target of 35 L_{Aeq,16hr} with no special measures; again, implying that the attenuation of a façade with an open window, is 15 dBA [50 - 35=15].

In addition to the above, the Defra research report NANR116 tested a variety of open windows and concluded that the difference between external and internal road traffic noise levels, ranged from 12 dBA [wide open outward opening side-hung casement] to 18 dBA [top hung opening light of single casement window]. The distribution of performance from NANR116 is as shown in Chart 1 below.

Given the above, for road traffic noise it is considered reasonable to assume a “global” figure of 15 dBA as the difference between external and internal levels for a façade with an open window.

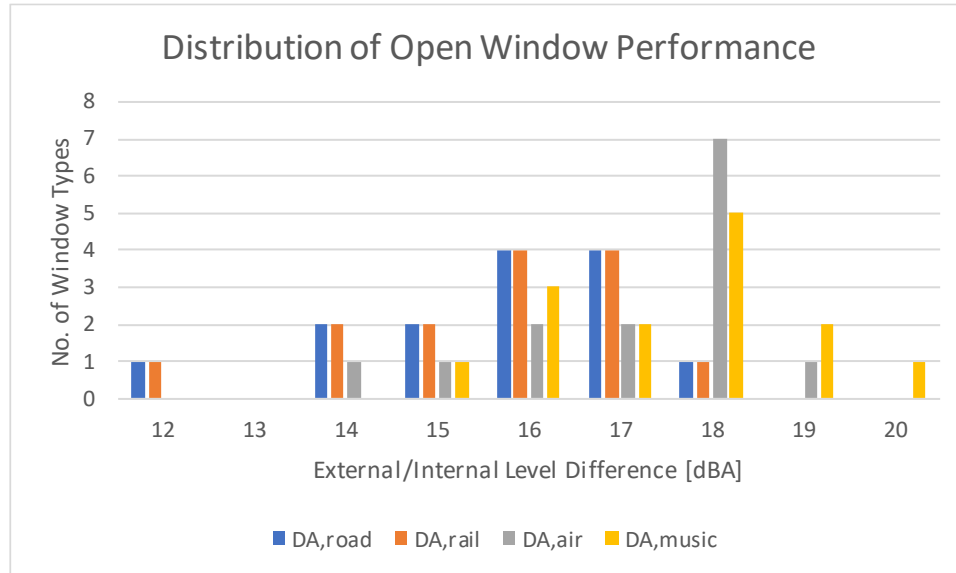


Chart 1: NANR116 test data

Should it not be possible to meet the internal noise targets with openable windows, the ProPG sets out a variety of options that should be considered in an endeavour to avoid the need for windows to be closed, but if this is the only reasonable method by which the internal noise targets can be met, the ProPG requires that the approach should be justified and

“Where the local authority accepts that there is a justification that the internal target noise levels can only practically be achieved with windows closed, which may be the case in urban areas and at sites adjacent to transportation noise sources, special care may be taken to design the accommodation...”

If closed glazing is required to achieve suitable internal noise targets, some local authorities require the glazing to be sealed; however, the ProPG explicitly states at Sn.2.22:

“Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided;”

Consequently, the ProPG confirms that windows should be well sealed but not be sealed shut, i.e. they can still be opened.

4.0 MEASUREMENTS

The instrumentation was installed on the morning of Thursday 8th and collected on the morning of Saturday 10th May 2025; the batteries unfortunately failed in the ‘front’ meter at the end of the first night; however, it is considered that sufficient data had been collected.

For each meter, the microphone was pole mounted at an approximate height of 4m above local ground height, 1m from the building facade at first floor level and was fitted with RION WS02 "all weather" wind muff.

Instrument	Type	Serial No.	Calibration Cert. No.	Date of Due Calibration
Svan 977A	Sound Level Meter	69280	1501866-1	07/03/2026
Svan SV12L	Preamp	110531	1501866-1	07/03/2026
Aco Pacific 7052E	Microphone	61121	1501866-1	07/03/2026
Cirrus 511E	Calibrator	39816	Cirrus 248531	26/04/2026
Svan 977	Sound Level Meter	36870	1502651-1	21/05/2025
Svan SV12L	Preamp	71675	1502651-1	21/05/2025
Aco Pacific 7052E	Microphone	70160	1502651-1	21/05/2025
Svan SV33B	Calibrator	112680	1502651-2	21/05/2025
Svan 977 P	Sound Level Meter	97425	1504401-1	23/01/2027
Svan SV12L	Preamp	106428	1504401-1	23/01/2027
MTG MK255	Microphone	19919	1504401-1	23/01/2027
With outdoor kit and all-weather windmuffs				

Table 2: Instrumentation

All the instrumentation had had been laboratory calibrated as shown above and the correctly 'field calibrated' for noise before and after the measurements.

5.0 RESULTS

5.1 Noise

The dBA results appear in full at the rear of this report, and in summary in Table 3 below [converted to the equivalent free-field levels].

Period		Front		Rear	
Day	Date	Day LAeq,16hr	Night LAeq,8hr	Day LAeq,16hr	Night LAeq,8hr
Thu	08-May	68	64	54	51
Fri	09-May	--	--	55	49
Sat	10-May	--	--	54	--

Table 3: Period Results [dBA free-field]

The spectral weekday results appear at Table 4 below.

Location	Octave Band Centre Frequency				
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz
Front	65	64	63	64	60
Rear	54	52	50	50	45

Table 4: Spectrum Results [dB free-field logarithmic average]

5.2 Weather

The data from a nearby weather station reporting its results on Wunderground.com is shown in Appendix 5.

In relation to noise monitoring when the source is close to the monitoring position, as here, weather conditions are less likely to influence results; however, it can be seen that winds were generally between south and east and below 5 kph. As regards rain, it was dry throughout the monitoring.

In conclusion, it is not considered that the prevailing weather conditions are likely to have significantly affected the conclusions to the report.

6.0 ASSESSMENT OF MEASURED LEVELS

6.1 External Noise Levels

From Table 4 it can be seen that noise levels at the rear of the property where the main amenity space is located [just] meet the local authority's target noise level as an added precaution it is recommended that the 'open end' of the rear amenity space should be closed off with a 2m high acoustic fence running between the ends of the buildings [No.23 A/B and No.27]. This is shown as a blue line in Figure 2 above.

6.2 Internal Noise Levels

British Standard 8233:2014 and several other similar documents all indicate that when glazing is open 'for ventilation' the difference between internal and external noise levels should be taken as 15dBA no matter the room size or window area; similarly, Reference 5 indicates that the attenuation of closed thermal glazing is 33dB for road traffic.

Taking the measured noise levels, compliance with the local authority's internal noise criteria can be predicted as shown in Table 5 below.

Condition	FRONT		REAR	
	Day LAeq,16hr	Night LAeq,8hr	Day LAeq,16hr	Night LAeq,8hr
External Level	68	64	55	51
Open Windows	-15		-15	
Internal Level	53	49	40	36
Criteria	35	30	35	30
Exceedance	18	19	5	6
Criteria Met?	No	No	No	No
Thermal Glazing	-33		-33	
Internal Level	35	31	22	18
Criteria	35	30	35	30
Exceedance	0	1	-13	-12
Criteria Met?	Yes	No	Yes	Yes

Table 5: Predicted Internal Noise Levels [dBA]

It can be seen that with open glazing, the local authority's criteria are **not** met, whereas with closed thermal glazing the criteria are met, but only at the rear of the building. Therefore, closed glazing with some form of mechanical ventilation, will be necessary for all habitable rooms. For the rooms at the front of the building the glazing will need to have improved acoustic properties.

Predictions for the two 'front' rooms have been conducted in Tables 6 and 7 below, room, window, wall and roof dimensions have been scaled from the approved plans for the development.

BS EN 12354-Calcs		Use	Volume	Volume	24.2				
Version	4.4	length					Building Atten dBA (68.0 - 26.4)		42
© 2018 Martec Environmental Consultants Ltd		width		RT	0.3				
© Acute Acoustics Ltd		height		Octave Band Centre Frequency [Hz]					dBA
				125	250	500	1k	2k	
		External Spectrum Leq (Free Field & Lin)		65.4	63.7	62.9	64.0	59.5	67.0
		Adjustment to Given Level if required							68.0
		External Spectrum Adjusted for Level		66.4	64.7	63.9	65.0	60.5	68.0
Wall			Area m2	Element Sound Reduction Index [SRI]					Contrib
BS8233 Brick & Block External Wall			8.3	40	44	45	51	56	20.7
Drs/Wndws									
6/20/12 double glazing			2.2	26	34	40	42	40	24.8
Roof Lights									
None			0.0	0	0	0	0	0	0.0
Door									
None			0.0	0	0	0	0	0	0.0
Roof									
Martec Office Maxi60 Floor			18.8	45	54	61	68	69	12.7
Vent Dn,e			# Vents						
None			0.0	0	0	0	0	0	0.0
									dBA
			Internal SPL/dBLin	36.7	27.6	22.7	20.0	16.2	26

Table 6: 1st Floor Bedroom - Predicted Daytime Noise Level [LAeq,16hr]

In Table 6 above it can be seen that the predicted daytime level of 26 LAeq,16hr meets the local authority's daytime criteria of 35 LAeq,16hr for bedrooms; naturally the lower nighttime levels would also meet the nighttime criteria of 30 LAeq,8hr.

In Table 7 below it can be seen that the predicted daytime level of 33 LAeq,16hr meets the local authority's daytime criteria of 40 LAeq,16hr for living rooms.

BS EN 12354-Calcs		Use	Volume	Volume	40.7				
Version	4.4	length					Building Atten dBA (68.0 - 33.0)		
© 2018 Martec Environmental Consultants Ltd		width		RT	0.5				
© Acute Acoustics Ltd		height		Octave Band Centre Frequency [Hz]					dBA
				125	250	500	1k	2k	
		External Spectrum Leq (Free Field & Lin)		65.4	63.7	62.9	64.0	59.5	67.0
		Adjustment to Given Level if required							68.0
		External Spectrum Adjusted for Level		66.4	64.7	63.9	65.0	60.5	68.0
Wall			Area m2	Element Sound Reduction Index [SRI]					Contrib
BS8233 Brick & Block External Wall			4.4	40	44	45	51	56	17.9
Drs/Wndws									
6/20/12 double glazing			14.1	26	34	40	42	40	32.8
Roof Lights									
None			0.0	0	0	0	0	0	0.0
Door									
None			0.0	0	0	0	0	0	0.0
Roof									
None			0.0	0	0	0	0	0	0.0
Vent Dn,e			# Vents						
None			0.0	0	0	0	0	0	0.0
									dBA
			Internal SPL/dBLin	43.8	34.1	27.6	26.5	23.8	33

[bedroom and living room] will need to meet the performance levels set out in Table 8 below.

2. All rooms with a requirement for closed glazing [above] will need to be provided with either a Mechanical Extract Ventilation (MEV) or a Positive Input Ventilation (PIV) system which extracts/supplies air from the habitable rooms, but which does not allow significant noise to enter from the outside, either because of the system's attenuation or because it vents to/from a quieter façade of the building. None of the front rooms should be fitted with vents.
3. The ceiling of the bedroom will need to be a Maxi60 ceiling [www.soundreduction.co.uk] or similar and approved.

Element	Example	Unit	Octave Band Centre Frequency [Hz]			
			125	250	500	1k
Windows	6/20/12 double glazing	SRI	26	34	40	42
Roof/Ceiling	Maxi60 ceiling [results from a floor test]	SRI	45	54	61	68

Table 8: Required Building Element Performance [dB]

The proposed mitigation measures ensure compliance with the local authority's criteria.

APPENDIX 1

EXPLANATION OF ACOUSTIC TERMS

The dB or the decibel, is the unit of noise. The number of decibels or the level, is measured using a sound level meter. It is common for the sound level meter to filter or 'weight' the incoming sound so as to mimic the frequency response of the human ear. Such measurements are designated **dB(A)**.

A doubling of the sound is perceived, by most people, when the level has increased by 10 dB(A). The least discernible difference is 2 dB(A). Thus, most people cannot distinguish between, say 30 and 31 dB(A).

The Background level of noise is most commonly represented by the level which is exceeded for 90% of the time i.e. the LA90.

If a noise varies over time, then the **equivalent continuous level, or LAeq**, is the notional constant level of noise which would contain the same amount of acoustic energy as the time varying noise.

The following table gives an approximate indication of the comparative loudness of various noises expressed in terms of the A weighted scale:

Source of noise	dB(A)	Nature of Noise
Inside Quiet bedroom at night	25-30	Very Quiet
Quiet office	40-45	
Rural background noise	35-45	
Normal conversational level	55-65	
Busy restaurant	65-75	
Inside suburban electric train	70-80	
Hand clap @ 1m	75-85	
HGV accelerating @ 5m away	85-90	Very Loud

APPENDIX 2

QUALIFICATIONS AND EXPERIENCE OF M. A. KENYON

My full name is Melville Alexander Kenyon. I am the principal of the firm of Martec Environmental Consultants Ltd, a consultancy company that specialises in environmental noise assessment and control. I graduated in 1982 with a bachelor's degree in engineering and subsequently a Master's degree in Environmental Acoustics. I have been a corporate member of the professional body for noise and vibration specialists, the Institute of Acoustics, since 1988, and have sat on the British Standards Committee dealing with noise in buildings [BS.8233:1999].

I have lectured at Liverpool John Moores University on the Diploma of Acoustics course and at Manchester Metropolitan University on their Environmental Health degree course.

The firm of Martec Environmental Engineering was formed in the 1970's and joined The Association of Noise Consultants in 1996. It is now known as Martec Environmental Consultants Ltd.

Since its formation, Martec has advised many groups of both residents and developers about the problems of noise and vibration in the environment.

APPENDIX 3

REFERENCES

- 1 ProPG: Planning and Noise. – June 2017 – IoA, ANC & CIEH
- 2 BS.8233:1999 “Sound Insulation and noise reduction for buildings – Code of practice.”
- 3 Calculation of Road Traffic Noise (CRTN) – Department of Transport and the Welsh Office, HMSO, 1988, ISBN 0-11-550847-3
- 4 Method for Converting the UK Road Traffic Noise Index $L_{A10,18h}$ to the EU Noise Indices for Road Noise Mapping – TRL/Casella Stanger
www.defra.gov.uk/environment/quality/noise/research/crtn/documents/noise-crtn-update2006.pdf
- 5 “Planning Policy Guidance 24: Planning and Noise” Annex 6 – Table 1
- 6 BS EN 12354-3:2000 *Building Acoustics-Estimation of Acoustic Performance in buildings from the performance of elements. Part 3 Airborne sound Insulation against outdoor sound.*
- 7 Road Traffic Forecasts 2015 - DTp March 2015.
- 8 ANC Guidelines "Measurement and Assessment of Groundborne Noise & Vibration – 3rd Edition" - The Association of Noise Consultants 2020
- 9 BS 6472-1:2008 "Guide to evaluation of human exposure to vibration in buildings - Part 1: Vibration sources other than blasting".
- 10 “ProPG: Planning and Noise - May 2017” Association of Noise Consultants, Institute of Acoustics & Chartered Institute of Environmental Health.

APPENDIX 4

A4.1 DETAILS OF NOISE MEASUREMENTS

Front Monitoring Location [facade levels]

Start Date & time	Duration	L _{Amax,F}	L _{Amin}	L _{Aeq}	LA01	LA10	LA50	LA90
08/05/2025 10:00:00	01:00:00.000	90.2	39.4	72.4	82.2	75.6	68.7	53.8
08/05/2025 11:00:00	01:00:00.000	91.3	38.3	71.7	80.9	75.2	67.3	51.5
08/05/2025 12:00:00	01:00:00.000	96.0	38.4	72.4	82	75.5	68.5	51.9
08/05/2025 13:00:00	01:00:00.000	89.3	39.9	72.1	82.3	75.5	68.1	51.7
08/05/2025 14:00:00	01:00:00.000	89.5	43.7	72.1	81	75.4	69.3	54.3
08/05/2025 15:00:00	01:00:00.000	93.2	43.4	72.7	82.4	75.8	69.9	54.1
08/05/2025 16:00:00	01:00:00.000	88.6	42.6	72.7	80.6	75.7	71	57.6
08/05/2025 17:00:00	01:00:00.000	88.1	45.0	72.4	79.8	75.7	70.8	57.4
08/05/2025 18:00:00	01:00:00.000	93.3	40.4	72.0	79.2	75.4	69.4	54
08/05/2025 19:00:00	01:00:00.000	89.0	39.3	70.1	78.1	74.4	64.1	50
08/05/2025 20:00:00	01:00:00.000	93.3	33.1	69.3	78.2	73.6	61.1	49.1
08/05/2025 21:00:00	01:00:00.000	91.3	31.2	68.1	77.5	72.7	57.5	45.6
08/05/2025 22:00:00	01:00:00.000	89.0	29.8	65.8	76.6	70.5	51.5	35.7
08/05/2025 23:00:00	01:00:00.000	89.3	28.4	63.1	75.4	64.1	42.7	30.6
09/05/2025 00:00:00	01:00:00.000	88.3	29.2	61.0	74.6	57.3	35.2	30.3
09/05/2025 01:00:00	01:00:00.000	78.6	28.6	51.6	63.3	38	30.8	29.8
09/05/2025 02:00:00	01:00:00.000	87.7	28.4	60.1	73	49.8	31.6	29.3
09/05/2025 03:00:00	01:00:00.000	90.1	28.6	64.3	77.6	58.9	37.8	30.2
09/05/2025 04:00:00	01:00:00.000	90.2	29.4	65.6	78.5	62.6	48.4	34.3
09/05/2025 05:00:00	01:00:00.000	98.2	39.6	71.6	83.2	74.2	57	48

Rear Monitoring Location [facade levels]

Start Date & time	Duration	L _{Amax,F}	L _{Amin}	L _{Aeq}	LA01	LA10	LA50	LA90
08/05/2025 10:00:00	01:00:00.000	72.6	40.4	57.4	64	60.1	56.1	51.3
08/05/2025 11:00:00	01:00:00.000	76.7	42.4	58.0	65.6	60.6	56.5	50.4
08/05/2025 12:00:00	01:00:00.000	74.1	42.0	57.9	64.4	60.5	56.7	50.8
08/05/2025 13:00:00	01:00:00.000	74.3	41.6	57.4	64	60.3	56.1	50.3
08/05/2025 14:00:00	01:00:00.000	76.0	43.1	58.3	65.2	60.8	57	52.5
08/05/2025 16:00:00	01:00:00.000	83.2	46.6	59.3	65.2	61	58	54.1
08/05/2025 17:00:00	01:00:00.000	71.3	45.5	58.7	65	61.1	57.8	53.5
08/05/2025 18:00:00	01:00:00.000	76.0	40.9	58.4	65.9	60.8	57.3	52.1
08/05/2025 19:00:00	01:00:00.000	73.3	40.4	56.7	63.2	59.5	55.5	49.5
08/05/2025 20:00:00	01:00:00.000	73.7	38.5	55.8	62.1	58.8	54.3	47.1
08/05/2025 21:00:00	01:00:00.000	72.4	38.1	54.4	61.4	57.5	52.7	44.2
08/05/2025 22:00:00	01:00:00.000	75.4	36.8	53.0	61.4	56.3	49.7	39.3
08/05/2025 23:00:00	01:00:00.000	70.0	35.3	49.9	59.4	53.7	42.7	36.9

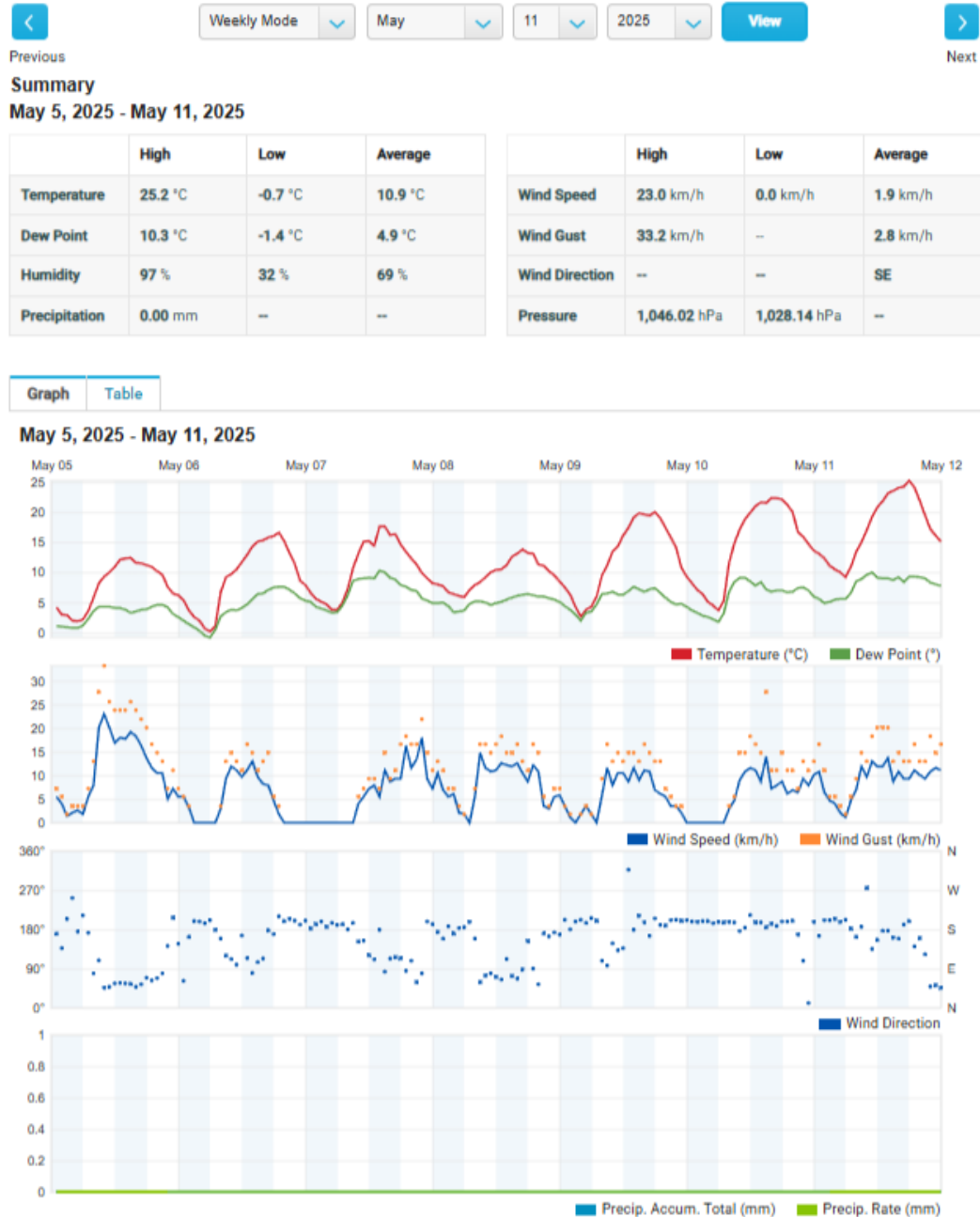
Road Traffic Noise Assessment

09/05/2025 00:00:00	01:00:00.000	68.1	35.3	47.8	58.6	51.7	38.7	36.5
09/05/2025 01:00:00	01:00:00.000	59.2	34.3	40.5	52	39.2	37.1	36.1
09/05/2025 02:00:00	01:00:00.000	67.4	32.9	46.8	59.3	48.7	35	33.8
09/05/2025 03:00:00	01:00:00.000	66.8	33.2	49.7	61.4	53.8	37.3	34.4
09/05/2025 04:00:00	01:00:00.000	72.6	33.7	53.3	64.2	57.1	47.2	36.8
09/05/2025 05:00:00	01:00:00.000	80.0	40.7	58.4	68.6	60.2	54.8	47.1
09/05/2025 06:00:00	01:00:00.000	75.0	39.8	58.2	65.5	61.4	56.6	50
09/05/2025 07:00:00	01:00:00.000	74.14	44.98	59.03	65	61.6	58.1	53.5
09/05/2025 08:00:00	01:00:00.000	74.89	41.64	59.15	65.1	61.6	58.3	53.6
09/05/2025 09:00:00	01:00:00.000	70.35	44.8	58.5	65	61.2	57.4	52.5
09/05/2025 10:00:00	01:00:00.000	72.26	44.49	58.39	65.2	61	57.2	53.1
09/05/2025 11:00:00	01:00:00.000	77.94	44.89	58.9	67.5	61.2	56.8	52.3
09/05/2025 12:00:00	01:00:00.000	73.12	39.68	57.94	66.2	60.3	56.4	51.1
09/05/2025 13:00:00	01:00:00.000	68	42.35	57.28	64.3	60.1	56.1	50.2
09/05/2025 14:00:00	01:00:00.000	77.37	42.98	58.18	66.2	60.4	56.7	52.1
09/05/2025 15:00:00	01:00:00.000	80.88	43.49	58.1	65.3	59.9	56.3	51.9
09/05/2025 16:00:00	01:00:00.000	78.73	40.75	58.17	65.6	60.2	56.7	52
09/05/2025 17:00:00	01:00:00.000	72.58	39.55	57.52	63.7	60	56.7	52.3
09/05/2025 18:00:00	01:00:00.000	71.14	37.85	56.88	62.4	59.5	56.1	50.9
09/05/2025 19:00:00	01:00:00.000	69.98	39.9	56.05	62.6	59.1	54.8	48.8
09/05/2025 20:00:00	01:00:00.000	76.24	38.27	55.31	62.2	58.2	53.4	46.2
09/05/2025 21:00:00	01:00:00.000	82.62	37.6	55.21	61.8	58.1	53	45
09/05/2025 22:00:00	01:00:00.000	70.98	35.88	53.15	60.5	56.6	51.1	41.6
09/05/2025 23:00:00	01:00:00.000	65.45	34.75	50.89	59.5	55	46.8	37.2
10/05/2025 00:00:00	01:00:00.000	69.87	35.32	48.56	59	52.7	39.6	36.5
10/05/2025 01:00:00	01:00:00.000	67.52	34.8	47.09	58.3	51	38.6	36
10/05/2025 02:00:00	01:00:00.000	65.49	34.09	46.75	58.1	51.1	37	35.2
10/05/2025 03:00:00	01:00:00.000	75.05	34	48.67	60.3	50.8	36.6	35.1
10/05/2025 04:00:00	01:00:00.000	66.29	34.71	52.28	62.1	56.5	46.4	37.2
10/05/2025 05:00:00	01:00:00.000	70.52	37.99	55.24	63.6	58.9	52.2	44.5
10/05/2025 06:00:00	01:00:00.000	68.9	37.67	54.69	62.6	58.3	52.4	44.7
10/05/2025 07:00:00	01:00:00.000	77.18	39.42	55.57	62.1	58.5	53.6	47
10/05/2025 08:00:00	01:00:00.000	70.47	40.48	56.56	63	59.5	55.3	49.8
10/05/2025 09:00:00	01:00:00.000	79.35	38.41	57.78	64.1	60	56.5	51.7
10/05/2025 10:00:00	01:00:00.000	76.2	42.11	57.58	65	59.9	56	50.8
10/05/2025 11:00:00	01:00:00.000	72.49	41.83	56.97	64.8	59.5	55.6	50.3
10/05/2025 12:00:00	01:00:00.000	72.62	39.4	56.94	65.7	59.3	55.4	49.6
10/05/2025 13:00:00	01:00:00.000	77.38	39.75	57.31	66.1	59.6	55.3	50.4
10/05/2025 14:00:00	01:00:00.000	73.04	39.81	57.14	66.2	59.3	55.4	49.5
10/05/2025 15:00:00	01:00:00.000	75.91	39.59	56.41	65.2	58.8	54.5	48
10/05/2025 16:00:00	01:00:00.000	70.98	40.22	56.44	64.1	59.1	55.1	48.8
10/05/2025 17:00:00	01:00:00.000	80.9	39.6	57.55	67.1	59.7	54.9	48.9
10/05/2025 18:00:00	01:00:00.000	69.72	38.56	55.73	63.7	58.5	54.3	47.7

APPENDIX 5

Weather Data

Weather History for ILEEK16



APPENDIX 6

Example Acoustic Barrier Detail

