

**2A Cardiff Road
Dinas Powys
CF64 4DH**

**Environmental Noise Survey
4760/ENS1**

14th December 2017

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Contents

1.0	Introduction.....	3
2.0	Planning Condition.....	3
3.0	Environmental Noise Surveys	4
3.1	Procedure.....	4
3.2	Equipment Used.....	5
3.3	Weather Conditions.....	5
4.0	Results.....	6
4.1	Sample Measurements.....	6
Appendix A - Graphs, Tables and Diagrams		9
Appendix B - Acoustic Terminology.....		10



1.0 Introduction

Planning conditions for the new residence at 2a Cardiff Road, Dinas Powys include a noise criterion for 50% of the garden area. The site lies adjacent to the Cardiff-Barry rail line to the south, with Cardiff Road running along the northern boundary.

This report has been commissioned to assess traffic noise levels in the garden area for comparison with the conditioned figure.

Appendix A contains graphs, tables and diagrams referenced in this report.

Appendix B explains acoustic terminology used in this report.

2.0 Planning Condition

We understand the following planning condition has been included on the site;

7. The dwelling hereby permitted shall be fully implemented in accordance with the noise mitigation measures outlined in the Noise Survey received 11 October 2016, and supporting agent letter dated 7 November 2016. Upon completion of the development, and before first beneficial occupation, a post construction report, which confirms that at least 50% of the outdoor living area achieves an LAeq16hour of 50dB, shall be submitted to and agreed in writing by the Local Planning Authority.

Reason:

To ensure that adequate noise mitigation is implemented to safeguard the future occupiers in accordance with Policies ENV27-Design of New Developments, and ENV29-Protection of Environmental Quality of the Unitary Development Plan, plus national guidance contained in TAN11-Noise.

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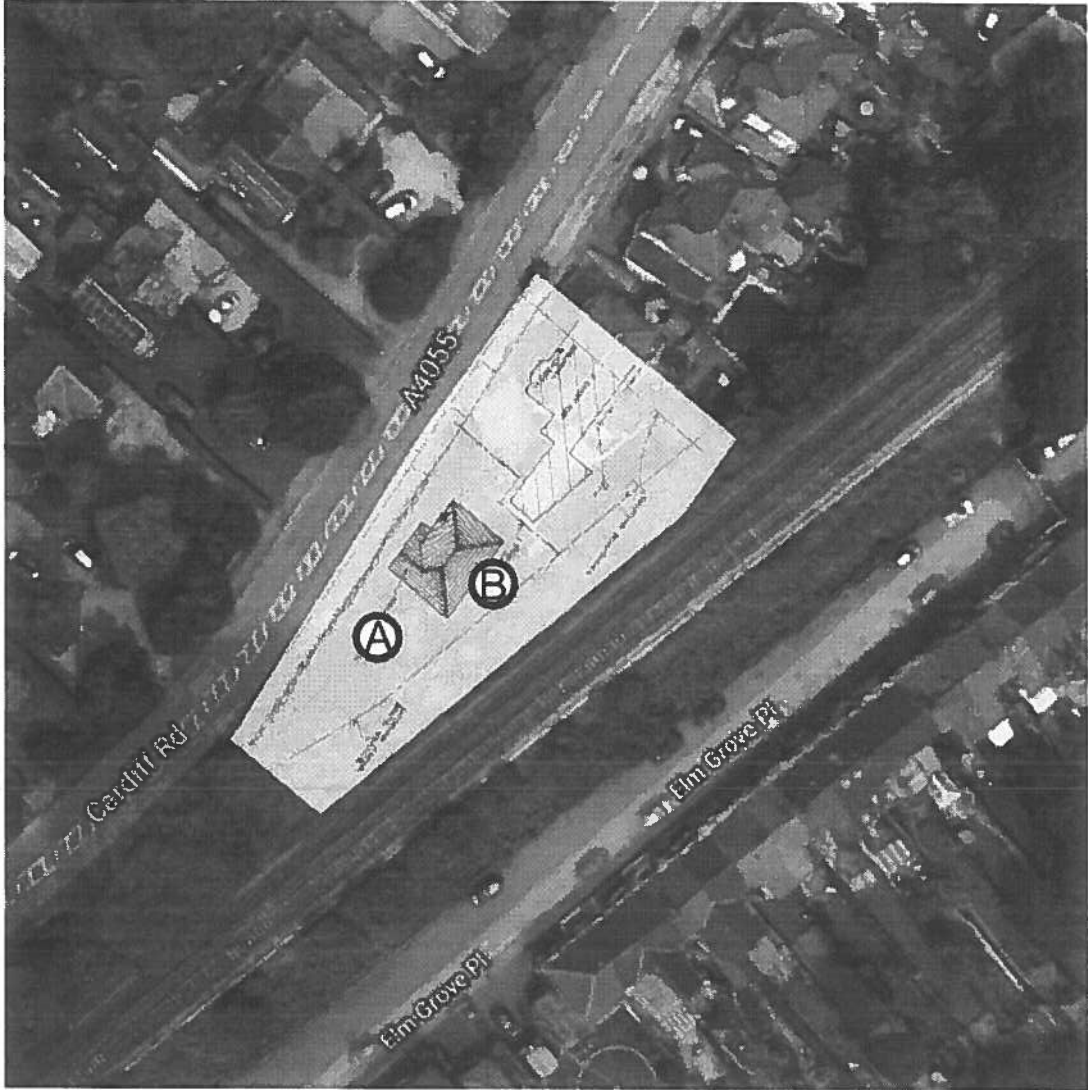
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3.0 Environmental Noise Surveys

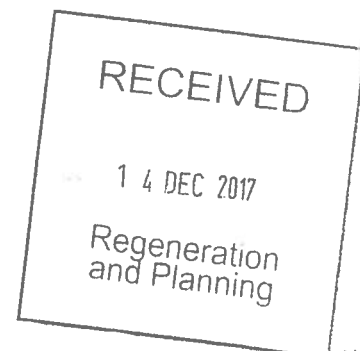
3.1 Procedure

Site plan 4760/SP1 shows the development site.

4760/SP1 – Site Plan showing Monitoring Locations



The survey was carried out on Thursday 7/12/17. Data including L_{max} , L_{eq} , L_{10} and L_{90} were logged



3.1.1 Sample Measurements

Two monitoring positions were used as shown on site plan 4760/SP1 above;

Position A Located to the south-west of the property on the lawn approximately 13m from the Dinas Powys Railway line and 7m from the A4055 Cardiff Road. Continuous monitoring was carried out at position A from 12:45 to 15:00hrs, with results logged at 15 minute intervals. A 2m closed boarded fence runs along around the garden area removing line of sight to traffic on Cardiff Road.

Position B Located on the patio to the rear of the property (relative to Cardiff Road), approximately 11m from the Dinas Powys railway line which is elevated by approximately 2.5m above site ground level. Consecutive 15 minute sample measurements were carried out at position B over the same overall period as position A.

Measurements were taken 1.2m above ground level at both positions.

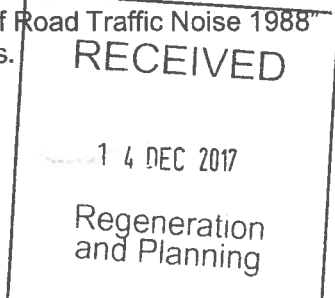
Results of the monitoring have been assessed in line with the shortened measurement procedures outlined in Department of Transport's "Calculation of Road Traffic Noise 1988" (CRTN), covering the 3-hour period between 1200 and 1500hrs.

3.2 Equipment Used

The following equipment was used;

4760/T1 – Equipment List

Make	Description	Model	Serial Number	Last Calibrated	Certificate No.	Calibration Due
Norsonic AS	Type 1 - Integrating - averaging Sound Level Meter	140	1403003	03-Oct-17	26740	03-Oct-19
Norsonic AS	Preamplifier	1209	12403	03-Oct-17	Included	03-Oct-19
Norsonic AS	Microphone	1225	91797	03-Oct-17	26739	03-Oct-19
Norsonic AS	Calibrator (114.06 dB @ 1000 Hz)	1251	31429	10-Mar-17	UCRT17/1119	10-Mar-18
NTi	Type 1 - Sound Level Meter	XL2-TA	A2A-10021-E0	24-Aug-17	UCRT17/1722	24-Aug-19
NTi	Preamplifier	MA220	5435	24-Aug-17	UCRT17/1722	24-Aug-19
NTi	Microphone	Capsule	8547	24-Aug-17	UCRT17/1722	24-Aug-19



Measurement systems were calibrated before and after the surveys, no variation occurred.

3.3 Weather Conditions

Approximate weather conditions for the site are shown in the weather history graph 4760/WH1 in Appendix A.

To summarise, the weather was dry with occasional gusts of wind during the monitoring period. Wind noise was not assessed significant compared with traffic.

4.0 Results

4.1 Sample Measurements

Results of our sample measurements are shown in table 4760/T2 & T3 for positions A & B respectively. The Tables go on to predict the $L_{eq,16hr}$ daytime road traffic noise level using methodology specified in CRTN.

Position A : The L_{eq} levels shown below in 4760/T2 exclude train pass bys. By analysing the audio recording at position A we have confirmed train pass-by levels equate to 58.6dB $L_{Aeq/hr}$ based on 6 sprinter pass-by events per hour.

4760/T2 – Position A : $L_{eq,16hr}$ Daytime Road Traffic Noise Prediction

CRTN Position A	L_{Aeq} (dB)	L_{A10} (dB)	$L_{Amax,F}$ (dB)
12:45-13:00hrs	62.9	65.8	69.3
13:45-14:00hrs	63.9	66.7	79.3
14:45-15:00hrs	62.6	65.3	77.4
Mean L_{10}		65.9	
**16hr L_{eq}		62.9	

Position B : The levels shown in 4760/T3 include train pass byes, however the L_{10} indice used in the 3 hour CRTN prediction of 16 hour L_{eq} levels should ignore the occasional train events. (Train pass-by event periods represent less than 10% of the overall measurement period)

4760/T3 – Position B : $L_{eq,16hr}$ Daytime Road Traffic Noise Prediction

CRTN Position B	L_{Aeq} (dB)	L_{A10} (dB)	$L_{Amax,F}$ (dB)
12:45-13:00hrs	64.2	65.8	86.6
13:45-14:00hrs	59.9	62.7	75.5
14:45-15:00hrs	65.5	61.6	92.7
Mean L_{10}		63.4	
**16hr L_{eq}		60.4	



Overall therefore, traffic noise levels measured at positions A and B equate to;

Position A (Lawn) : 62.9dB $L_{Aeq(16\text{ hour})}$

Position B (Patio) : 60.4dB $L_{Aeq(16\text{ hour})}$

7.0 Conclusions

Road and Rail noise measurements have been taken in the garden areas of 2A Cardiff Road, Dinas Powys. Results indicate the 50dB L_{Aeq} (16 hour) planning condition limit is not being met.

We can confirm a 2m high closed boarded fence has been included along the boundary with Cardiff Road, removing line of sight to road traffic from the Garden.

We believe the Local Authority planning condition limit has been set referring to World Health Organisation's (WHO) Guidelines for Community Noise (1999) which states,

"To protect the majority of people from being seriously annoyed during the daytime, the sound pressure level on balconies, terraces and outdoor living areas should not exceed 55 dB LAeq for a steady, continuous noise. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound pressure level should not exceed 50 dB LAeq."

However BS 8233:2014 'Guidance on Sound Insulation & Noise Reduction for Buildings' states,

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.

It should also be noted that Cardiff Road is a residential road with multiple residences in similar positions to No 2A, relative to the rail line and road traffic – refer to 4755/SP2 below showing satellite view of site and surrounding residential both sides of Cardiff Road and backing on to the rail line...PTO



Site Plan 4755/SP2 : Surrounding Residential



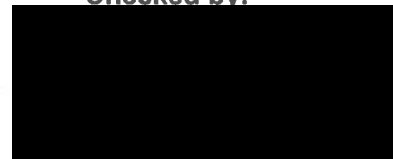
Overall therefore we would suggest external road/rail noise levels should not preclude residential use of this site.

Prepared by:

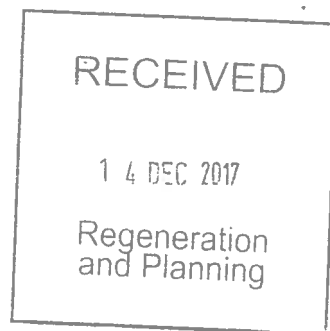


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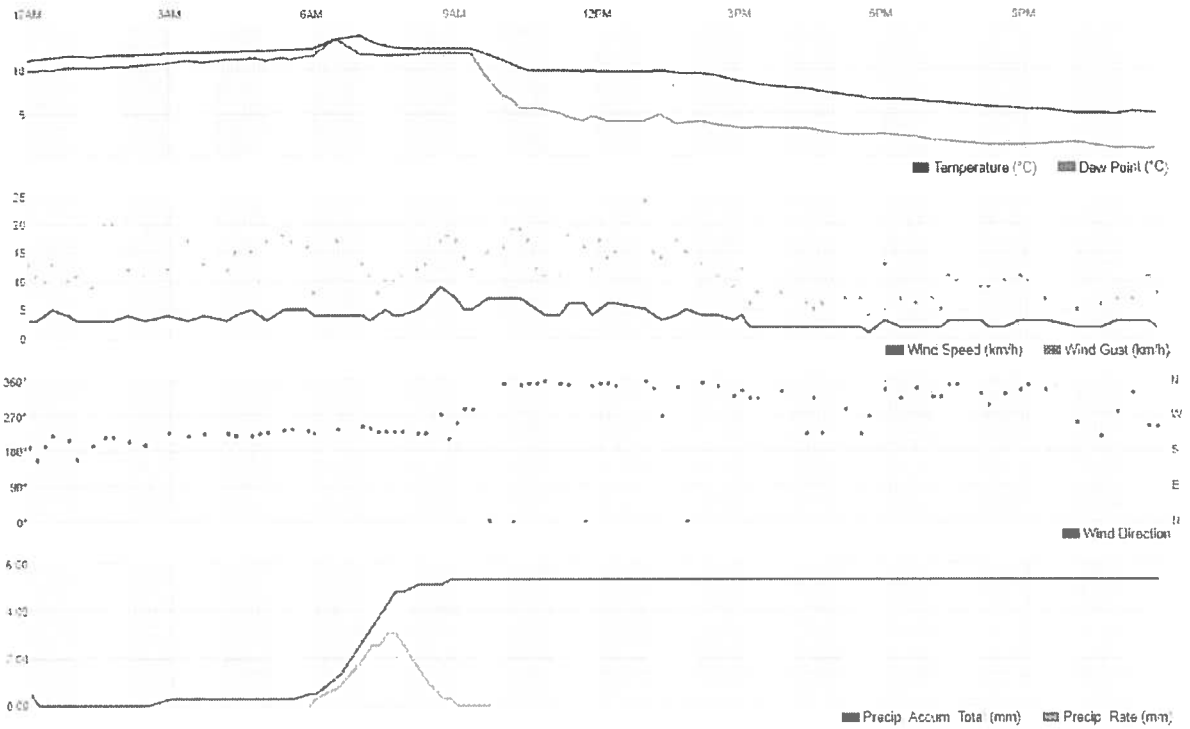
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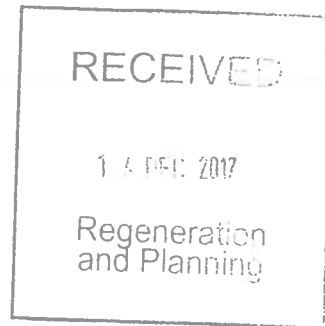
Appendix A - Graphs, Tables and Diagrams

4760/WH1 – Approximate Weather Data for Survey Period

Weather History Graph
December 7, 2017



* Taken from www.wunderground.com - weather station IPENARTH5 located in Penarth N 51 ° 25 ' 41 " , W 3 ° 10 ' 37 "



Appendix B - Acoustic Terminology

Human response to noise depends on a number of factors including; loudness, frequency content, and variations in level with time. Various frequency weightings and statistical indices have been developed in order to objectively quantify 'annoyance'. The following units have been used in this report:

- dB(A): The sound pressure level weighted to correspond with the frequency response of the human ear, and therefore a persons subjective response to frequency content.
- Leq: The equivalent continuous sound level is a notional steady state level which over a quoted time period would have the same acoustic energy content as the actual fluctuating noise measured over that period.
- L₉₀: The sound level which is exceeded for 90% of the measurement period. i.e. The level exceeded for 54-minutes of a 1-hour measurement. It is often used to define the background noise level.
- L₁₀: The sound level which is exceeded for 10% of the measurement period. i.e. The level exceeded for 6-minutes of a 1-hour measurement
- SEL: 'Sound Exposure Level', the dB(A) level which, if it lasted 1-second, would produce the same sound energy as the event in question (e.g. a train pass-by).

