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HEPWORTH ACOUSTICS
Noise and Vibration Consultants

Our ref : 31715.2v1
15 October 2014

Matthew Sharp
Newport City Council

Via email to: Matthew.Sharp@newport.gov.uk

Dear Matthew,

Re: Gypsy/Traveller Sites, Newport

Further to the hearing at Newport Civic Centre of 13 October 2014, I write with clarification of my discussions immediately after the hearing with Mr Frank Western regarding the Hepworth Acoustics Ltd report (report ref 30394.1v1, dated April 2013) relating to three separate sites in Newport for potential use as Gypsy/Traveller sites.

Whilst the hearing was clearly in relation to the Ringland Allotments site, Mr Weston's query related to the assessment of railway noise at another site at Hartridge Farm Road. The report referenced above included assessments for both these sites.

The query was in regard to Mr Weston not understanding how, from the raw noise data reported in Appendix II of the report for Location 3.3, which is close to the railway line at the south of the Hartridge Farm Road, I arrived at the overall daytime noise level of 60dB $L_{Aeq,16hr}$ at this location, as stated in Table 3 within the main body of the report. Mr Weston explained that he could not understand this as the values given in Appendix II are mostly in excess of 80dB, some substantially so. The implication appeared to be that I may have made a calculation error in this regard, and if so that I may have also made further errors in the assessment of noise at Ringland Allotments.

As explained to Mr Weston in person, there is a difference in how road traffic and rail noise assessments are typically carried out, which is relevant to the approach adopted for my assessment. As opposed to the road traffic noise assessments for all sites covered in the report, which are based on direct measurement of L_{Aeq} noise levels at different times of the day and night over representative periods, each railway noise measurement lasted only the duration of each individual train pass-by that occurred in the time I was in this location, which itself was adequate to obtain a good sample of the different train types that use the line.

What perhaps Mr Weston did not observe in looking at Appendix II of the report, is that the railway noise levels to which he referred in his query are stated in terms of the L_{AE} measurement parameter. This is sometimes annotated as SEL_A which stands for 'single event level' (or sometimes 'sound exposure level').

L_{AE} is the total A-weighted sound energy produced by an event and is effectively the L_{Aeq} of an event normalised to a duration of 1 second. L_{AE} is commutable to L_{Aeq} over any given time period for any number of events by way of the following relationship:

$$L_{Aeq} = L_{AE} - 10\log(t) + 10\log(n)$$

where t = time in seconds and n = the number of events in that time period.

Accordingly, as is appropriate, to find representative values of L_{AE} I have logarithmically averaged the measured L_{AE} value for all samples of each type of train (local, intercity and freight), and for each of these for each direction of travel. I have further used timetable information to determine the number of trains that pass the site over a daytime (0700-2300hrs) and night-time (2300-0700hrs) period.

For each of the above 6 scenarios, I have calculated the daytime and night-time L_{Aeq} noise levels based on the relationship provided above, and finally logarithmically added the contribution of each scenario to provide overall daytime and night-time L_{Aeq} noise levels.

This is summarised in the table below.

Train Type	**Direction of Travel**	**Logarithmic Average of L_{AE} samples (dB)**	**Number of Daytime Events**	**Number of Night-time Events**	**$L_{Aeq,16hr}$ Daytime Noise Level**	**$L_{Aeq,8hr}$ Night-time Noise Level**
Local	Eastbound	81	70	10	52	46
	Westbound	83	70	10	53	48
Intercity	Eastbound	88	30	2	55	46
	Westbound	87	30	2	54	45
Freight	Eastbound	83	20	6	48	46
	Westbound	82	20	6	47	45
				TOTAL =	**60**	**54**

I trust that the above is sufficiently clear in demonstrating that no error has occurred in the calculation queried by Mr Weston. The above was described to Mr Weston in person, who appeared satisfied with my explanation of this calculation, and hence the relationship between the values stated in the main body and the appendix of the report.

If you have any questions please contact me.

Yours sincerely
for Hepworth Acoustics

Graham Bowland BSc MIOA
Chief Consultant