



27/02/2018

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Dear Mario

Project ID: The Old Ticket Master's Office, Hill Street, Elsecar, Barnsley, S74 8EL
Doc Ref: 02974-550100
Doc Type: Response to Environmental Health Comments

Barnsley MBC Comments

Further to our recent receipt of Barnsley MBC Environmental Health Officer comments in relation to the above site, please find our comments on noise issues set out in this letter. The EHO comments are reproduced below for reference.

"I have assessed the noise impact assessment submitted with the application and would like to make the following comments;

The noise assessment has identified the main source of noise to the site will be that from trains on the railway. The report has suggested acceptable sound levels for the properties as 55dB LAeq T for the gardens and 50dB LAF Max within bedrooms. I would disagree that these are acceptable.

The World Health Organisation states that any event over 45dB LAF Max is likely to wake people up and given that trains can start as early as 530am the noise from these at a level of 50dB LAF Max is likely to wake the occupants up. I would therefore suggest a limit of 45dB LAF Max is more suitable. I would therefore like to see information provided that demonstrates noise from trains will not exceed 45dB LAF Max in the bedrooms within the properties.

With regard to noise levels in the gardens I believe a figure of 50dB LAeq is a more suitable limit as this allows for some uncertainty that there may be in the measurements results (none provided in the report). I would therefore like to see information detailing what the noise levels will be in each of the different plot's gardens, with acoustic barrier if necessary."

Bedroom L_{AFmax} Noise Levels

An increase in the proposed bedroom glazing and ventilation specification is required to meet the Council's desired criterion of 45dB L_{AFmax} during nighttime. Calculations show that increasing the bedroom specification to glazing comprising 10mm glass / minimum 12mm airspace / 6.8mm acoustic laminate glass, and acoustic ventilators of minimum 44dB D_{n,e,w} sound insulation (e.g. Greenwood EHA574), is suitable.

The bedroom noise ingress calculation in accordance with BS8233:2014, as referenced in our report, is presented below.

In order to determine the internal noise level that would result from external noise ingress into a room, the following equation from BS8233:2014 is used:

$$L_{eq,2} \approx L_{eq,ff} + 10 \log \left\{ \frac{A_0}{S} 10^{\frac{-D_{n,e}}{10}} + \frac{S_{wi}}{S} 10^{\frac{-R_{wi}}{10}} + \frac{S_{ew}}{S} 10^{\frac{-R_{ew}}{10}} + \frac{S_{rr}}{S} 10^{\frac{-R_{rr}}{10}} \right\} + 10 \log \left\{ \frac{S}{A} \right\} + 3$$

Calculations in accordance with BS8233:2014 are presented below. Calculations assume windows are closed with vents are open and typical furnished room conditions. In the following tables, white cells denote the information required by BS8233:2014 over the frequency range of 125Hz -2kHz; the octave bands in greyed cells are not used in the calculation.

The BS8233:2014 calculation method requires L_{eq} sound levels and is presented below using the measured octave band L_{eq} sound levels at Location 1. Although use of L_{max} levels is not strictly in accordance with the BS8233:2014 method, the calculation is also presented below using the measured octave band L_{Amax} data for the highest measured nighttime sound level attributable to a train of 82dB L_{AFmax} . This calculation predicts an internal noise level of 44dB L_{AFmax} .

It should be noted that this is based on assessment at the nearest 1st floor window at Plot 14 (i.e. measurement Location 1); all other plots will be at greater distance and screening from the railway, and so will be less exposed to the railway and therefore will experience lower L_{Amax} sound levels from passing trains.

BS8233:2014 Noise Ingress Calculation Based on Measured L_{eq} Sound Levels

		L_{eq} @ Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
$L_{eq,ff}$	Sound pressure level outside		53	50	48	50	47		
$D_{n,e}$	Insulation of the ventilator		39	45	44	48	54		
R_{wi}	Window sound reduction index		27	28	36	45	53		
R_{ew}	Wall sound reduction index		41	48	54	62	69		
R_{rr}	Roof/ceiling sound reduction index		38	44	51	59	62		
A	Absorption area of room		7.5	8.6	9.5	10.4	10.4		
S_f	Facade area (including window)		12.0	12.0	12.0	12.0	12.0		
S_{wi}	Window area		3.0	3.0	3.0	3.0	3.0		
S_{ew}	$S_f - S_{wi}$		9.0	9.0	9.0	9.0	9.0		
S_{rr}	Area of Ceiling		12.0	12.0	12.0	12.0	12.0		
S	$S_f + S_{rr}$		24.0	24.0	24.0	24.0	24.0		
A_0	Given in BS EN 20140-10		10.0	10.0	10.0	10.0	10.0		

	Reference Letter	Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
$L_{eq,ff}$	A		53	50	48	50	47		
$\frac{A_0}{S} 10^{-\frac{D_{n,e}}{10}}$	B		5.2E-05	1.3E-05	1.7E-05	6.6E-06	1.7E-06		
$\frac{S_{wi}}{S_f} 10^{-\frac{R_{wi}}{10}}$	C		2.5E-04	2.0E-04	3.1E-05	4.0E-06	6.3E-07		
$\frac{S_{ew}}{S_f} 10^{-\frac{R_{ew}}{10}}$	D		3.0E-05	5.9E-06	1.5E-06	2.4E-07	4.7E-08		
$\frac{S_{rr}}{S_f} 10^{-\frac{R_{rr}}{10}}$	E		7.7441E-05	1.9905E-05	4.2557E-06	7.0627E-07	2.8772E-07		
$10 \log_{10} (B + C + D + E)$	F		-34	-36	-43	-49	-56		
$10 \log \left(\frac{S}{A} \right)$	G		5.05	4.46	4.02	3.63	3.63		
$L_{eq,2}$	A + F + G + 3		27	21	12	7	-2		
A-weighting dB			-16	-9	-3	0	1		
$L_{eq,2} + A\text{-weighting}$	L_{Aeq}	16							

BS8233:2014 Noise Ingress Calculation Based on Measured L_{max} Sound Levels

		L_{max} @ Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
$L_{eq,ff}$	Sound pressure level outside		81	75	76	79	74		
$D_{n,e}$	Insulation of the ventilator		39	45	44	48	54		
R_{wi}	Window sound reduction index		27	28	36	45	53		
R_{ew}	Wall sound reduction index		41	48	54	62	69		
R_{rr}	Roof/ceiling sound reduction index		38	44	51	59	62		
A	Absorption area of room		7.5	8.6	9.5	10.4	10.4		
S_f	Facade area (including window)		12.0	12.0	12.0	12.0	12.0		
S_{wi}	Window area		3.0	3.0	3.0	3.0	3.0		
S_{ew}	$S_f - S_{wi}$		9.0	9.0	9.0	9.0	9.0		
S_{rr}	Area of Ceiling		12.0	12.0	12.0	12.0	12.0		
S	$S_f + S_{rr}$		24.0	24.0	24.0	24.0	24.0		
A_0	Given in BS EN 20140-10		10.0	10.0	10.0	10.0	10.0		

	Reference Letter	Octave Band Centre Frequency (Hz)							
		63	125	250	500	1k	2k	4k	8k
$L_{eq,ff}$	A		81	75	76	79	74		
$\frac{A_0}{S} 10^{-\frac{D_{n,e}}{10}}$	B		5.2E-05	1.3E-05	1.7E-05	6.6E-06	1.7E-06		
$\frac{S_{wi}}{S_f} 10^{-\frac{R_{wi}}{10}}$	C		2.5E-04	2.0E-04	3.1E-05	4.0E-06	6.3E-07		
$\frac{S_{ew}}{S_f} 10^{-\frac{R_{ew}}{10}}$	D		3.0E-05	5.9E-06	1.5E-06	2.4E-07	4.7E-08		
$\frac{S_{rr}}{S_f} 10^{-\frac{R_{rr}}{10}}$	E		7.7441E-05	1.9905E-05	4.2557E-06	7.0627E-07	2.8772E-07		
$10 \log_{10} (B + C + D + E)$	F		-34	-36	-43	-49	-56		
$10 \log \left(\frac{S}{A} \right)$	G		5.05	4.46	4.02	3.63	3.63		
$L_{eq,2}$	A + F + G + 3		55	46	41	37	25		
A-weighting dB			-16	-9	-3	0	1		
$L_{eq,2} + A\text{-weighting}$	L_{Amax}	44							

Garden Noise Levels

We understand that a 1.8m high acoustic fence is proposed to be provided along the western site boundary with the railway. The fence shall be of close-boarded construction as described in our report and shall extend from the existing ticket office building to the western corner of the development site.

As requested, the table below sets out the calculated sound levels from passing trains, and Hill Street traffic, in private garden areas. Calculations are based on the measured daytime sound levels at site and include corrections for distance and acoustic screening from the boundary fencing and intervening houses. As mentioned in our report, Plots 1-4 are flats and do not have gardens.

House Plot	Level dB LAeq,(0700-2300)	Distance to garden (m)	Barrier Attenuation (dBA)	Sound Level in garden (dBA)	Total dB LAeq,(0700-2300)
5	Railway - 51.8 at 16m	60	-7	39.1	47.7
	Road Traffic - 57.7 at 11m	40	-5	47.1	
6	Railway - 51.8 at 16m	50	-7	39.9	45.4
	Road Traffic - 57.7 at 11m	82	-5	44.0	
7	Railway - 51.8 at 16m	30	-7	42.1	46.4
	Road Traffic - 57.7 at 11m	74	-5	44.4	
8	Railway - 51.8 at 16m	50	-7	39.9	44.9
	Road Traffic - 57.7 at 11m	96	-5	43.3	
9	Railway - 51.8 at 16m	45	-7	40.3	44.5
	Road Traffic - 57.7 at 11m	116	-5	42.5	
10	Railway - 51.8 at 16m	45	-7	40.3	44.1
	Road Traffic - 57.7 at 11m	135	-5	41.8	
11	Railway - 51.8 at 16m	45	-7	40.3	43.7
	Road Traffic - 57.7 at 11m	160	-5	41.1	
12	Railway - 51.8 at 16m	39	-8	39.9	49.6
	Road Traffic - 57.7 at 11m	25	-5	49.1	
13	Railway - 51.8 at 16m	32	-8	40.8	49.7
	Road Traffic - 57.7 at 11m	25	-5	49.1	
14	Railway - 51.8 at 16m	23	-8	42.2	49.9
	Road Traffic - 57.7 at 11m	25	-5	49.1	

The calculations show that daytime railway and Hill Street traffic noise levels are expected to be no greater than 50dB LAeq in the private garden areas. It can be seen that noise impact from road traffic is greater than that predicted from trains, although this is generally perceived as a more anonymous noise source. It should be noted that the measured and predicted ambient noise levels for the new house plots are relatively modest when compared to many residential and urban areas, i.e. the daytime ambient sound level at Location 1, with line of sight to the railway and station platform is 54dB LAeq,16hr. Indeed, there are existing properties in the vicinity of the site that will experience equivalent, or greater, exposure to rail and/or road traffic noise.



With regard to uncertainty, the above calculations are based on the attended measurements made during the busier day period of 0830-1030 hours. The full 16 hour daytime L_{Aeq} sound level is likely to be around 3dB less than this, as evidenced by the 24 hour logging data at Location 1, which shows L_{Aeq} sound levels around 3dB higher during the busier day periods than the full 16 hour average level. On this basis, the predictions are conservative, and uncertainty is not expected to adversely affect the predicted noise impact.

Please do not hesitate to contact me if you require anything further.

Yours sincerely

Owen Downey BSc(Hons) MIOA
Senior Consultant