

TECHNICAL MEMORANDUM

Project	11863 M002		
Date	11 October 2019	Memo No	M002
Memo to	Mark Berry (JSA Planning)	Copies to	
From	Michael Cheong MIOA	Checked by	Adrian James FIOA
Filename	11863 M001.docx		

We have been appointed by Grundon Waste Management Ltd to undertake a noise assessment for a proposed residential development at Higham Way, Banbury. The site is predominantly brownfield with noise from a number of sources including the M40 approximately 950m east of the site, a railway line to the South of the site, and the Chiltern Railway's Light Maintenance Depot (LMD) which operates primarily at night.

We issued our noise assessment report on 16 May 2019. On 8 August 2019 we received questions from Mr Trevor Dixon, Environmental Protection & Licensing Manager, Cherwell District Council. We replied to these questions in our technical memorandum M001 dated 1 September. On 19 September 2019 we received a request for further information from Mr Dixon and this technical memorandum provides replies to these questions.

1 RANGE OF BACKGROUND SOUND LEVELS

Mr Dixon asks:

"In answer to my previous questions on this AJA have confirmed they have taken the average for each day and night time monitoring period and referred to figures 8, 9, 10 and 11 in the report. What I was after was the range of levels measured during the night time periods in particular, to be clear that a representative level has been used and not just the average for the monitoring period."

Section 8.1.4 of BS 4142:2014 states:

"In practice, there is no "single" background sound level as this is a fluctuating parameter. However, the background sound level used for the assessment should be representative of the period being assessed.....To obtain a representative background sound level a series of either sequential or disaggregated measurements ought to be carried out for the period(s) of interest, possibly on more than one occasion. A representative level ought to account for the range of background sound levels and ought not automatically to be assumed to be either the minimum or modal value."

We have followed this guidance. Figure 1 shows the statistical distribution of daytime background sound levels with the noise from the Light Maintenance Depot excluded. The distribution shows a peak (the mode) at 49 dB $L_{AF90,15 \text{ minutes}}$. However we have selected 45dB $L_{AF90,T}$ as the representative background sound level as this provides a robust assessment of the noise. This is well below the mode, the linear average and the logarithmic average value.

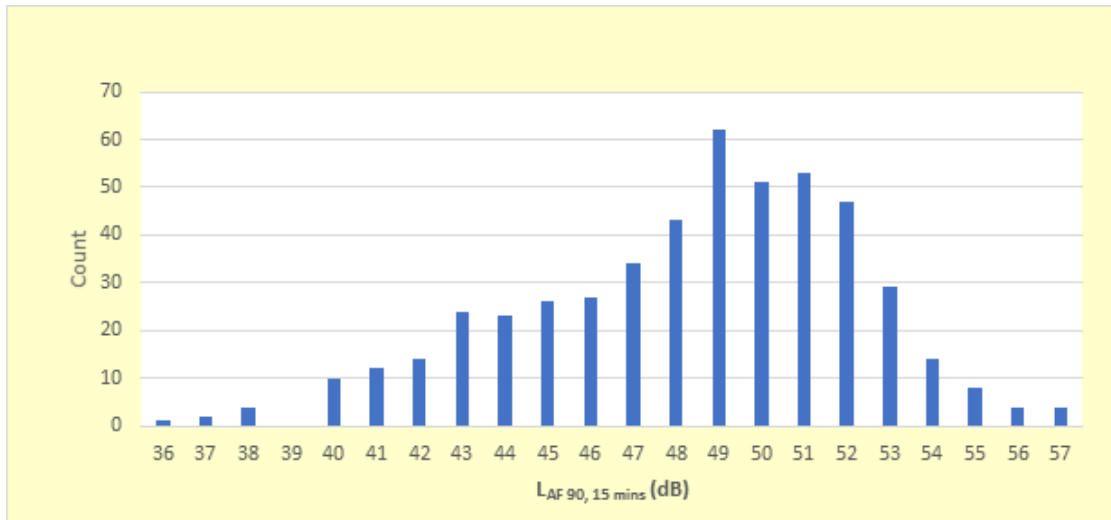


Figure 1 -Statistical distribution of daytime background sound levels (LMD noise excluded)

Figure 2 shows the statistical distribution of night-time background sound levels with the noise from the Light Maintenance Depot excluded. The distribution shows a wide range with 2 peaks at 54 and 66dB $L_{AF90,15 \text{ minutes}}$. However we have selected 48dB $L_{AF90,T}$ as the representative background sound level as this again provides a robust assessment of the noise and is again well below the mode, the linear average and the logarithmic average value.

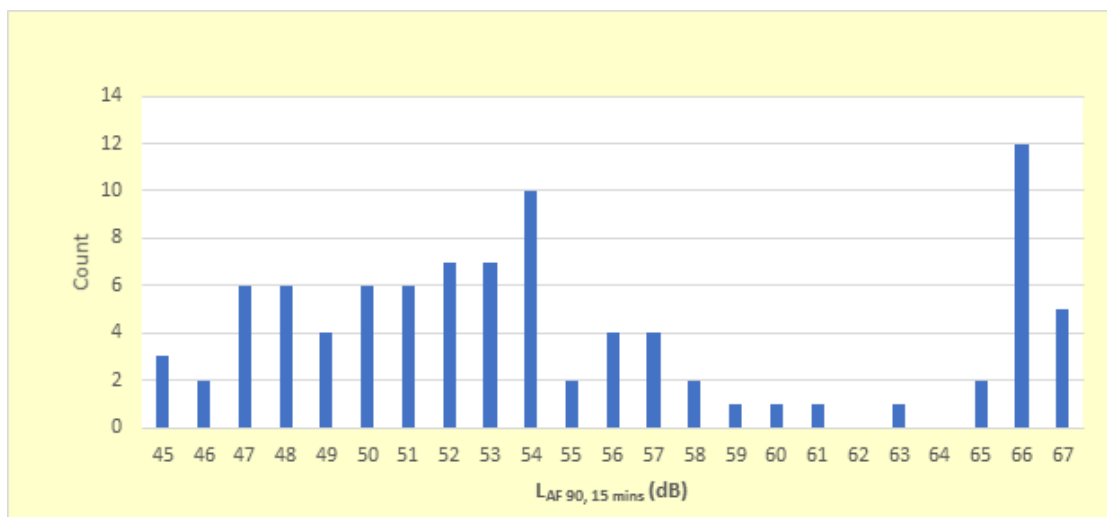


Figure 2-Statistical distribution of night-time background sound levels (LMD noise excluded)

2 ROAD TRAFFIC NOISE

Mr Dixon asks:

“In answer to my question 5 about the night-time background level being higher in the absence of all noise sources attributable to the rail line and LMD, ADA [sic] replied that night-time road traffic on motorways and trunk roads can contain a greater proportion of Large Goods Vehicles than during the day, with a corresponding increase in low frequency noise. In section 4.2 paragraph 2 of the report ADA have stated that the noise contribution from the M40 was assessed using the most recently available traffic count data (2016) available from the Department for Transport website. The traffic data used should therefore be provided to show if this was the case for this site, that is, a greater proportion of Large Goods Vehicles movements at night.”

Table 1 shows the traffic count data downloaded from public domain DfT website <https://roadtraffic.dft.gov.uk/downloads>

AADF Year	Motorcycles	Cars & Taxis	Buses & Coaches	Light Goods Vehicles	All HGVs	All Motor Vehicles
2000	215	70007	368	7190	10260	88040
2001	336	56459	352	7225	8546	72918
2002	272	77954	386	8845	9469	96926
2003	239	63322	276	7844	8805	80486
2004	329	61547	335	8615	10150	80976
2005	269	61991	389	8019	8973	79641
2006	246	60610	572	8949	12922	83299
2007	194	63476	262	8508	11421	83861
2008	262	61832	285	8750	9796	80925
2009	279	63684	323	7899	8809	80994
2010	260	62538	365	7978	8676	79817
2011	343	65072	331	9330	8933	84009
2012	313	63872	348	9565	8919	83017
2013	182	60676	327	8549	8328	78062
2014	180	61202	346	9384	8396	79508
2015	390	64163	293	11534	10074	86454
2016	378	64305	300	12337	10309	87630

Table 1 - Dft traffic count data

The actual percentage of HGVs is 11.7% over a 24 hour period. As we explained in Section 4.2 of our report 11863 Report 2b, these are average annual daily flows and do not include hourly figures or a breakdown between day-time and night-time figures. The day and night values were therefore derived in accordance with the standard method set out in the Transport Research Laboratory’s ‘Method for Converting the UK Road Traffic Noise Index LA_{10,18h} to the EU Noise Indices for Road Noise Mapping’. As stated in Section 4.2 of our report, for our day-time and night-time calculations we took the pessimistic (realistic worst case) view that there could be up to 25% HGVs during the day and 45% at night.

3 BS4142 NOISE RATING LEVELS

Mr Dixon asks:

“Although we have specified that noise levels within dwellings and external amenity areas should not exceed the levels set out in BS 8233:2014 this is generally applied to steady sources of an anonymous nature such as those due to road traffic, the rating level outside from BS 4142 still needs to be addressed.”

We assume that Mr Dixon is here referring to noise from the Light Maintenance Depot (LMD) as this is the only noise source to which BS 4142:2014 “Method for rating and assessing industrial and commercial sound” is could be applied; this standard is specifically not to be used for the assessment of noise from roads or railways.

Again, this has been addressed in our report. The whole of Section 5.4 is an assessment of noise from the LMD in accordance with BS4142. Specifically, Table 4 sets out the BS4142 rating level outside the properties (which is what Mr Dixon states still needs to be addressed):

Rating level Lr (dB)	Background sound level LAF90, 15 mins (dB)	Difference of Rating over Background (dB))	Initial assessment
74	48	+26	Significant Adverse impact

Table 4 – BS 4142:2014 initial impact assessment for the Light Maintenance Depot

In Section 5.4 we proceed to derive the resulting noise levels inside the dwellings taking account of the proposed sound insulation treatment. This is in accordance with Section 11 of BS4142:2014, again as explained in Section 5.4 of our report.

These are all night-time noise levels because the LMD only generates significant levels of noise at night. This is why it is the internal noise levels in bedrooms which are relevant, rather than the outdoor levels in amenity areas which be relevant if this were a daytime noise source.

Again as explained in Section 5.4, the sound insulation requirements for the building envelope are primarily determined by night-time maximum noise levels from train pass-bys, which are significantly higher than maximum noise levels from the LMD. With the façade sound insulation designed to reduce night-time train noise to acceptable levels, the noise levels from the LMD are therefore very low, and again quoting from Section 5.4:

“With the noise mitigation measures set out in Section 7.2 and façade insulation measures set out in Section 8.3 of this report, the contribution of the Light Maintenance Depot to the internal noise levels of the closest rooms on the upper storeys of the proposed developments would be 23dB L_{Aeq, 15 mins} with maximum levels from compressed air releases of 27 dB L_{AF Max,T}. These levels are significantly below the BS8233:2014 guideline levels.”

Report Status

Revision	Date	Prepared by	Checked by
-	11 October 2019	Michael Cheong MIOA	Adrian James FIOA

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