

Appendix 8.4

Verification of Railway and Road Traffic Noise Models

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Railway Noise Model

The results of the baseline noise survey have been used to verify the railway noise model for the 2017 baseline scenario by predicting railway noise levels at appropriate survey locations and comparing the results with the measured values.

As shown in Table 1 below, in general there is an acceptable correlation between the measured and predicted LAeq,18hr and LAeq,6hr railway noise levels when the differences between the two datasets are considered, including that the surveys were undertaken in 2016 as well as 2017, the input assumptions for the model are based on typical train numbers and speeds, and the model assumes downwind propagation which may not have always been present during the surveys, as well as other adverse weather conditions.

It is noted that there are differences greater than 3 dB(A) between the measured and predicted noise levels at L5. Though relatively close to the railway lines, the measurements at this location were significantly affected by other local sources, such as farming activities, vegetation and wildlife. This is further illustrated by there being little difference between the average measured 18 hour daytime and 6 hour night noise levels. This is unlikely to have affected the background sound levels (LA90,T) to the same extent.

Table 1 Comparison of predicted and measured LAeq,18hr and LAeq,6hr railway noise levels

Monitoring Location	Predicted dB LAeq,18hr (2017 baseline scenario)	Average Measured dB LAeq,18hr	Difference	Predicted dB LAeq,6hr (2017 baseline scenario)	Average Measured dB LAeq,6hr	Difference
L5 West Lodge Farm	43.4	50.7	+7.3	37.5	50.2	+12.7
L6 Lodge Farm	56.7	54.1	-2.6	52.8	52.8	0
L7 Collingtree Rd	58.8	60.3	+1.5	55.1	56.4	+1.3
L13 Bailey Brooks Ln	50.6	49.3	-1.3	44.0	44.2	+0.2

Road Traffic Noise Model

The results of the baseline noise survey have been used to verify the road traffic noise model for the 2015 baseline scenario by predicting road traffic noise levels at appropriate survey locations and comparing the results with the measured values.

As shown in Table 2 below, in general there is an acceptable correlation between the measured and predicted LA10,18hr road traffic noise levels when the differences between the two datasets are considered, including that the surveys were undertaken in 2016 and 2017, the traffic flow data used for the model is a yearly average whereas the surveys had a typical duration of 2 to 4 weeks, and the model assumes downwind propagation which may not have always been present during the surveys, as well as other adverse weather conditions..

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It is noted that there are differences greater than 3 dB(A) between the measured and predicted noise levels at S8 and S9, which were next to the A508 as it passed through Roade. The measurements at these locations were in accordance with the shortened measurement procedure as described in CRTN which is based on three 1 hour measurements between the hours of 10:00 and 17:00.

During the measurements, congestion was noted at both S8 and S9 resulting in significant periods of queuing, stationary road traffic. CRTN assumes that traffic is free flowing, with a speed of 34 km/h on this road. It is likely that this congestion resulted in increased noise levels at both measurement positions, which were in close proximity to the road. The shorter sampling time of 3 hours would likely have increased this effect when compared to measurements taken over a full day.

Table 2 Comparison of predicted and measured $L_{A10,18hr}$ road traffic noise levels

Monitoring Location	Predicted dB $L_{A10,18hr}$ (2015 baseline scenario)	Average Measured dB $L_{A10,18hr}$	Difference
L1 Collingtree Rd	60.6	62.3	+1.7
L2 High St	71.7	69.8	-1.9
L7 Collingtree Rd	57.9	60.2	+2.3
L10 West Lodge Cottages	60.8	58.0	-2.8
L11-1 Windingbrook Ln	57.7	55.8	-1.9
L11-2 Windingbrook Ln	58.4	55.8	-2.6
L12 Woodleys Farm	59.5	59.3	-0.2
L14 Blisworth Road nr Hyde Farm	50.3	52.7	+2.4
L15 Dovecote Road	46.3	48.5	+2.2
S3 Hilton Hotel	70.5	69.9 [^]	-0.6
S8 London Rd	70.0	70.6 [*]	+0.6
S9 Stratford Rd	67.5	75.2 [*]	+7.7
S11 Stratford Rd	67.2	71.5 [*]	+4.3

Notes:
[^] LA10 estimated from arithmetic average of five 15 minute measurements.
^{*} LA10, 18 hour calculated using CRTN shortened measurement procedure.