A47 North Tuddenham to Easton Dualling

Scheme Number: TR010038

Volume 6
6.3 Environmental Statement Appendices
Appendix 11.4 - Traffic data comparison and model validation

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

March 2021

Infrastructure Planning

Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

The A47 North Tuddenham to Easton Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT APPENDICES
Appendix 11.4 – Traffic data comparison and model validation

Regulation Number:	5(2)(a)
Planning Inspectorate Scheme Reference	TR010038
Application Document Reference	TR010038/APP/6.3
BIM Document Reference	HE551489- GTY-ENV-000-RP-LA-30006
Author:	A47 North Tuddenham to Easton Dualling Project Team, Highways England

Version	Date	Status of Version
Rev 0	March 2021	Application Issue

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Appendix 11.4

11.1. Traffic data comparison and model validation

Traffic data comparison

11.1.1. The baseline noise survey undertaken in September 2020 occurred during the global Covid-19 pandemic. The UK lockdown restrictions at the time of the survey were however relatively relaxed (before the introduction of the three tier system).

11.1.2. To ensure the validity of the measured results publicly available traffic data has been sourced from the following website; https://webtris.highwaysengland.co.uk/ at TMU Sites 6342/1 and 6342/2.

11.1.3. Table 11.4-1 presents a comparison of traffic data from September 2020 with traffic data from September 2019 (before UK lockdown). The purpose of this comparison was to understand the potential impact of any differences in traffic volume during the month of the baseline noise survey, compared to typical traffic flows from the previous year in the absence of the COVID-19 pandemic.

Table 11 4-1: Traffic data comparison

	September 2019		September 2020	
	Eastbound	Westbound	Eastbound	Westbound
Number of weekdays with flow data	17	17	15	15
Total flow (06:00 to 24:00)	226283	229566	180173	182452
Average weekday (06:00 - 24:00) flow	13311	13504	12012	12163
Combined average weekday (06:00 - 24:00) flow	26815		24175	
Basic noise level (dB $L_{A10,18h}$)	73.4		72.9	

11.1.4. The calculated basic noise level for September 2019 is 73.4 dB $L_{A10,18hr}$ and for September 2020 is 72.9 dB $L_{A10,18hr}$, marginally less.

11.1.5. The calculated basic noise levels above assume a speed of 75km/h, 0% heavy vehicles and no road gradient in accordance with CRTN.

11.1.6. Given the marginal difference of 0.5 dB in the calculated basic noise level between September 2019 and September 2020 the noise survey is considered to be robust and fit for use within this assessment.

Model validation

11.1.7. Measured baseline survey results have been compared with the predicted road traffic noise index for the Do-Minimum Opening Year scenario. This comparison is shown in Table 11 4-2.

Table 11 4-2: Comparison of noise measurements and predictions (DMOY scenario)

Noise monitoring positions	Predicted dB $L_{A10,18hr}$ (DMOY model output)	Measured dB $L_{A10,18hr}$ (2020 noise survey)	Difference dB $L_{A10,18hr}$
LT1	53	50	+2
LT2	51	49	+2
LT3	55	54	+1
LT4	53	50	+3
ST1	61	59	+1
ST2*	53	54	-1
ST3	69	68	+1
ST4	67	64	+4
ST5	60	60	-1
ST6	70	69	+1
ST7	66	62	+4

*Data collected with façade measurement and subsequently corrected to free field values

11.1.8. The above comparison demonstrates that there is a good correlation at all long-term measurement results with a difference of no more than 3 dB. There is also a reasonably good correlation at the remaining measurement positions.

11.1.9. Considering only the long-term measurement results, the predicted road traffic noise level is on average 1.6 dB above the measured road traffic noise level. Traffic flows during the time of the survey were marginally lower compared with September 2019, as shown in the previous section. The differences in traffic volume result in a difference in road traffic noise of -0.5 dB from a typical September. Considering these two factors together, the predicted road traffic noise levels are within 1 dB of the 2019 baseline road traffic noise level.

11.1.10. It should be noted that there will rarely be perfect agreement between predicted and measured noise levels due to the comparison of relatively short-term measurement data against predicted noise levels using annual average traffic data. In addition, short-term measurement data is subject to even greater uncertainty than long-term measurement data due to the reduced measurement duration. The measured noise levels are influenced by the local traffic conditions and the meteorological conditions at the time of the survey. In addition, the CRTN prediction method assumes light downwind propagation to every prediction point in the model. This is unlikely to occur in reality at all measurement positions. This can result in some variation between measured noise levels and predicted baseline noise levels.

11.1.11. On the basis of the above, the modelled results are considered robust for representing the do-minimum opening year scenario and no amendments to the road traffic noise model were considered necessary.