

THE PLANNING ACT 2008

**M4 (JUNCTIONS 3 TO 12) (SMART MOTORWAY) DEVELOPMENT CONSENT
ORDER APPLICATION**

TR010019

**Issue Specific Hearing - Environment - Traffic
Forecasting Addendum**

**Appendix B - TRADS & Model Comparisons 2009 &
2013**

Deadline VII - 17 February 2016

TECHNICAL NOTE

Project:	M4 J3-12 SM - ALR	Date:	24/07/14
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Subject:	TRADS & Model Comparisons 2009 & 2013		
Author:	David Whittle	Project Ref:	TBA
Reviewed:	Steve Werrett		

Overview

To provide a basis for a decision on the forward strategy for delivery of the M4 J3-12 SM scheme, it is necessary to complete an assessment of potential air quality impacts. Previous scheme air quality forecasts have been based on 2009 traffic data however revised guidelines and the removal of the 2009 emission factors by Defra / DfT have required the production of a 2013 traffic forecast to support air quality modelling. This Note provides comparisons of the 2009 and 2013 traffic forecasts with data abstracted from TRADS for the same two years.

Results of the comparisons:

Table 1 overleaf provides a summary of the various comparisons. The comparisons illustrate that:

- There is an increase in flows between the two years in the order of 2%.
- The model consistently underestimates flows in comparison to TRADS;
- The percentage difference between the TRADS and model flows remains consistent between 2009 and 2013;
- The match is close to 100% at the western end and increases to a difference of 15% at the eastern end;
- Whilst the percentage HGVs in TRADS and the model are different, the resulting two sets of flows closely match.

As stated above, compared to TRADS data, the model underestimates AADT flows along the M4 in both 2009 and 2013. This is understood to be presenting problems in establishing a validated air quality assessment model. However, in comparison, the 2009 model flows against TRADS for the M3 (J2 – J4a) show a good fit, in the range 96% to 101%.

Possible reasons for this variability are:

- The factors used to convert modelled hours to AADT were derived from TRADS data from both the M3 and M4 motorways and are applied globally across the model to all motorway links.
- Given there are differences in flows between the two motorways, the inclusion of M3 TRADS data in the global model average could be the cause of the underestimate for AADT on the M4. Route-specific factors may provide a closer match.

- In addition, a single conversion factor is applied across all links on each motorway, which may not best represent any variations in traffic flow profiles between the western and eastern sections of the M4.

Conclusions

The traffic model was successfully validated for the base year of 2009 and appropriate factors were derived for that year to convert the modelled hours to AADT. The modelled flow forecasts for 2013 are consistent with those produced for the 2009 model validation. However, to improve the basis of the air quality modelling, further analyses of the 2013 TRADS data may provide alternative conversion factors that give an improved match for the M4 between recorded and modelled values of AADT in 2013. Sensitivity tests are to be undertaken at selected locations to see if this would be beneficial.

Table 1 Comparisons of TRADS and Model flows, 2009 & 2013

Location / Year	TRADS			MODEL			Model / TRADS	
	AADT Flow	HGV Flow*	% of HGV	AADT Flow	HGV Flow	% of HGV	AADT Flow	HGV Flow
J3 to J4 2009	74124	4373	5.9%	62842	4261	6.8%	85%	97%
J3 to J4 2013	73900	4138	5.6%	62553	4144	6.6%	85%	100%
J4 to J3 2009	72225	4189	5.8%	59714	4155	7.0%	83%	99%
J4 to J3 2013	73372	4182	5.7%	62044	4181	6.7%	85%	100%
Thro J4 eb 2009	50413	3025	6.0%	42128	2912	6.9%	84%	96%
Thro J4 eb 2013	51976	3119	6.0%	44070	3002	6.8%	85%	96%
Thro J4b eb 2009	36968	1848	5.0%	33112	1982	6.0%	90%	107%
Thro J4b eb 2013	37020	1962	5.3%	34619	2085	6.0%	94%	106%
Thro J4b wb 2009	36654	1869	5.1%	33141	2222	6.7%	90%	119%
Thro J4b wb 2013	36572	1975	5.4%	33727	2173	6.4%	92%	110%
J4b to J5 2009	71756	5310	7.4%	67499	5791	8.6%	94%	109%
J4b to J5 2013	74951	5771	7.7%	68508	5572	8.1%	91%	97%
Thro J5 wb 2009	58766	4584	7.8%	53396	4800	9.0%	91%	105%
Thro J5 wb 2013	59024	4722	8.0%	53928	4705	8.7%	91%	100%
Thro J6 wb 2009	54737	4926	9.0%	47495	4464	9.4%	87%	91%
Thro J6 wb 2013	51058	4238	8.3%	47999	4254	8.9%	94%	100%
J6 to J7 2009	61951	4646	7.5%	57040	5033	8.8%	92%	108%
J6 to J7 2013	62937	5287	8.4%	58277	4745	8.1%	93%	90%
J7 to J6 2009	63555	4767	7.5%	58113	5238	9.0%	91%	110%
J7 to J6 2013	64943	4936	7.6%	58786	5090	8.7%	91%	103%
Thro J7 wb 2009	54535	4363	8.0%	50023	4519	9.0%	92%	104%
Thro J7 wb 2013	56746	4823	8.5%	50839	4330	8.5%	90%	90%
Thro J7 eb 2009	54278	4559	8.4%	50277	4741	9.4%	93%	104%
Thro J7 eb 2013	56876	5176	9.1%	51305	4672	9.1%	90%	90%
J8/9 to J10 2009	58422	4440	7.6%	54946	4691	8.5%	94%	106%
J8/9 to J10 2013	58608	4396	7.5%	54999	4236	7.7%	94%	96%
J10 to J8/9 2009	58164	4653	8.0%	56545	4926	8.7%	97%	106%
J10 to J8/9 2013	57984	4929	8.5%	56985	4816	8.5%	98%	98%

*TRADS HGV numbers are derived using the percentage and total flow figures provided in the yearly classified report