

DAVID GREEN

WRITTEN REPRESENTATION

HIGHWAYS ENGLAND'S RESPONSE

1.1 *The Do Nothing peak hour forecasts of significant traffic flow increases seem totally unrealistic based on personal experience of the M4 locally. Highways England (HE) agree that the M4 is already close to practical capacity which makes these forecasts even more puzzling. (para 3.1.1 et al of their response) Significant increases up to 2022 are surely even more unlikely when the M4 would be subject to 50 Km of road works, narrow lanes and traffic management. I would expect to see evidence of future peak hour spreading under these conditions rather than significant peak hour growth.*

Highways England Comment

1.1.1 In its response to Mr Green's Written Representation Highways England agreed (paragraph 3.2.1, APP 3-023) with Mr Green's interpretation of the published traffic forecasts in Table A-15 of the Traffic Forecasting Report and, in particular, that the forecast increase in two-way flow between 2013 and 2022 without the M4 Junctions 3 to 12 Smart Motorway scheme (the "Scheme") was a quoted 13.7%. This particular statistic represented the forecast flow between junctions 10 and 11 between 8am and 9am. Reference to Table A-14 for the preceding hour and a similar calculation would show that between the same two junctions for the same two years, flows are forecast to increase by a lesser 6.3%. This is a reflection of the flows at the western end of the Scheme being higher between 7am and 8am than between 8am and 9am. Accordingly, the later hour has a greater capacity for growth and this is reflected in the statistics above. It is also to be noted that the forecast flows in 2022 are similar for both the modelled morning peak hours and are effectively at capacity.

1.1.2 This demonstrates that Highways England's traffic forecasts take the available capacity for growth into account and, as is also demonstrated by the above differential growth between the two morning peak hours, allow for the suggested peak spreading in response to capacity limitations.

1.1.3 The traffic forecasts quoted in the Traffic Forecasting Report for 2022 provide a direct comparison between the with- and without-Scheme situations. Should consent be given to allow the Scheme to proceed then the Do Minimum conditions would no longer apply. During the period 2017 to 2022 during the construction of the Scheme, the actual growth on this section of the M4 could be less than the forecast Do Minimum flows due to a combination of some trips diverting to other strategic routes and/or further peak spreading during some of the roadworks. This has been taken account of in the construction impact assessment.

1.2 *In contrast, the further 25% peak hour traffic increase for the J10-11 section, forecast following major expenditure on the new scheme, represents a relatively small return on investment over the Do Nothing. Similar increases are also forecast over the full day which is counterintuitive given that more "spare" motorway capacity exists off peak presenting more potential for peak hour spreading and greater overall growth.*

Highways England Comment

- 1.2.1 Highways England does not agree that the Scheme represents a small return on investment. The forecast increases in traffic provide a sufficient return on investment to provide a positive benefit to cost ratio of 2.2, as assessed by the Department for Transport. (“DfT”). This represents a return of “high value for money” in accordance with the DfT’s value for money assessment advice (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255126/value-for-money-external.pdf).
- 1.2.2 The increased traffic forecasts over the full day reflect the levels of demand forecast over each of the modelled time periods and take into account the available capacity during that time. Whilst individual hours are modelled, the peak hour flows are each factored up to nominal three-hour peak periods when calculating the total daily flows. This is a reflection of the level of peak spreading that has already occurred as the once traditional peak hour now extends over three hours.
- 1.3 *DfT’s Road Transport Forecasts 2015 suggests traffic demand rises across the UK of 29-60% by 2040 on the Strategic Road Network (SRN) with up to 53% on remaining roads. The high levels of economic activity, affluence and car use across the South East in general, combined with high levels of committed and ongoing development locally across Berkshire, would suggest that the higher end of the range would be a plausible outcome locally. As a result, HE’s design figure increases for the M4 from 2013 of around 43% are, in all probability, low estimates of the likely demand for traffic movement suggesting that the scheme may have a limited effective life.*

Highways England Comment

- 1.3.1 The assertions made in this written representation are based on supposition, rather than tested evidence and calculated assumptions.
- 1.3.2 Highways England’s design figure (agreed as around 43%) results from the growth assumptions input to the travel demand model. These growth assumptions are derived from the National Trip End Model (“NTEM”) and are applied within the modelling on a local authority district basis. The growth factors for each district are supplied to DfT by the relevant local planning authority and take into account projected levels of development. Similarly, the income and car ownership statistics used within the model are based on local values. Accordingly, the traffic forecasts take into account South East (or more specifically, Thames Valley) levels of economic activity, affluence and car use. Therefore, Highways England considers that the estimate of growth is accurate for the specific area and the Scheme will function effectively throughout its projected design life.
- 1.4 *For any increased traffic demand to materialise on the newly improved M4 it must, in practice, travel on a mix of feeder roads to access or exit the motorway via existing junctions. In turn, this suggests that these junctions and the adjacent road network will experience similar volumes of increased traffic demand. Quite clearly, many of these motorway junctions, particularly those involving roundabouts, and much of the adjacent road network are already congested and will struggle to carry more traffic. However, HE’s response places great store (para3.8.3) on much of this increased traffic being already present on the local network and simply reassigning to the freed up M4 route. This may indeed be partly true but, in reality, reassigned traffic to the M4 will still provide new movements around the key and*

most heavily congested road network in the vicinity of and through existing M4 junctions. In turn these key points are the focus for natural traffic growth and also growth associated with major development now committed or in the pipeline across the area. HE conclude (in their para 3.10.1) that:-

1.5 *“The scheme is predicted to have a neutral effect on the local road network”*

1.6 *In context I take this to encompass the motorway junctions, the A404T and the M25 as well as the Local Authority Network although this is far from explicit. As a professional who has worked in these fields locally for 27 years, who has an insight into the scale of local development pressures and who has been heavily involved with several of the current M4 junctions I find this conclusion totally unrealistic.*

Highways England Comment

1.6.1 Highways England considers that the assessment it has made is calculated and accurate. The assertion that the conclusions reached by Highways England are "totally unrealistic" is unsupported by any evidence or analysis of the figures provided by Highways England, or indeed, any other sources.

1.6.2 An assessment of the effects on all travellers was undertaken in accordance with the Design Manual for Roads and Bridges as part of the Environmental assessment of the Scheme. This is reported in Chapter 13 of the Environmental Statement (“ES”) (Application Document Reference 6-1, APP-153). One of the metrics used for the assessment was driver stress, which is based on flow per lane and speed. The changes across the local road network directly joining the M4 (which included the A404M and M25) in these terms were insufficient to move the assessed level of stress from one category to another and hence the overall net effect was assessed as “neutral”.

1.6.3 Highways England accepts that for traffic flows to increase on the M4 as a result of the Scheme, it follows that there will be increases on some of the roads that provide access to the M4. However, some of that increase joins the M4 west of junction 12, and is re-assigned from other long-distance routes. There is forecast to be an increase in flow on the A404 route of 2% and only some 1% typically on the M25 between junctions 10 and 17. The latter limited impact is a reflection of capacity constraints on this section of the M25.

1.7 *HE also contend that they are not responsible for any necessary improvements to the local network in view of this neutral impact. As a result, if my concerns prove accurate then any necessary further improvements will need to be funded by the Local Highway Authorities. As the existing roundabouts at Junctions 5, 6, 11 and 12 are technically local highway then this will presumably apply equally to improvements at those junctions. How would this work be funded?*

Highways England Comment

1.7.1 As detailed in paragraph 1.6.3 above, Highways England acknowledge that there will be some increases in traffic on routes that provide access to the M4. However, Highway England’s traffic assessment does not indicate any increase requiring junction improvements as part of delivering the Scheme and on that basis will not be funding any junction improvements. The funding arrangements

for improvements to the local highway network are not a matter for Highways England.

- 1.8 *I remain concerned at the safety of All Lane Running as outlined in my submission and agree with HE that it is still premature to draw conclusions from the limited experience to date. Doesn't it then follow that it is equally premature to take this and other schemes forward?*

Highways England Comment

- 1.8.1 Highways England is confident of the robustness of the approach undertaken for the Scheme's safety assessment, which is based on experience from the M42 Pilot and early smart motorway schemes, which operated with hard shoulder running. Monitoring data and operational feedback has enabled Highways England to undertake appropriate safety assessments, which have fed into the design process of the Scheme. In addition, the Hazard Log Report (Annex E of the Engineering and Design Report (Application Document Reference 7-4, APP-113)) confirms that it takes account of work from other ALR schemes, e.g. M1 J28-31 and M1 J32-35a).
- 1.8.2 Therefore, due to the confidence in the approach undertaken for the safety assessment along with the experience and knowledge gained from other Smart Motorway schemes, Highways England does not agree that it is premature to take the Scheme forward.
- 1.8.3 The response to question 4 in the hearing and submitted for Deadline IV (Examination Reference REP4-002) explained that the monitoring results from the initial all lane running ("ALR") scheme on the M25 will provide important evidence to feed into the M4 Junctions 3 to 12 Smart Motorway scheme (the "Scheme") safety assessment. The monitoring results will include consideration of the initial safety performance, which will provide greater confidence in the predicted level of safety for the M4 J3-12 Scheme. Highways England hopes to be able to provide the Examination with a copy of the M25 J23 -27 twelve month evaluation report in due course.

- 1.9 *In my submission I drew out the limitations of the standard noise assessment methodology which has remained largely unchanged for 40 years and may now perhaps be seen as out of step with current views on environmental pollution. The process produces a generalised picture of a noise environment rather than highlighting the scale of regular peaks and troughs in noise caused by traffic fluctuations, wind direction, surface conditions etc. Put simply the methodology tends to underestimate the true scale of the problem for individuals, the true impact on their quality of life and the real need for effective noise mitigation. Indeed, recently, I have seen several international reports suggesting that the impact of persistent traffic noise on community wellbeing has been underestimated!*

Highways England Comment

- 1.9.1 Highways England is required to carry out noise assessments in accordance with the procedures given in the Design Manual for Roads and Bridges ("DMRB"), Volume 11, Section 3, Part 7 (HD213/11 Revision 1). DMRB states that noise level calculations should be carried out in accordance with the procedures given in Calculation of Road Traffic Noise ("CRTN") (http://www.noiseni.co.uk/calculation_of_road_traffic_noise.pdf), which is also required by paragraph 5.191 of the National Policy Statement for National

Networks (“NNNPS”). Paragraph 9 of CRTN states that the traffic flows to be used in the calculation of noise levels are Average Annual Weekly Traffic (“AAWT”) flows.

1.9.2 Paragraph A3.11 of DMRB, Volume 11, Section 3, Part 7 (HD213/11 Revision 1) states:

“.....The index adopted by the Government to assess traffic noise is $L_{A10,18h}$ which is the arithmetic mean of the noise levels exceeded for 10% of the time in each of the 18 one hour periods between 6AM and midnight.... A reasonably good correlation has been demonstrated between this index and residents’ expressed dissatisfaction with traffic noise over a wide range of exposures.....”

1.9.3 Consequently, Highways England considers that the methodology specified in DMRB is an appropriate method to assess the noise effects of the Scheme and is representative of the noise levels actually experienced by receptors.

1.10 *Most properties in Lower Earley are 30 years old and planning decisions were made in the late 1970s or early 80s presumably on the basis of M4 traffic forecast over the next 15 years to say the mid 90s. So for a further 20 years residents have endured massive, unpredicted increases in traffic and noise. However, the current approach projects traffic growth to 2022---yet another 7 years of potential traffic growth and unrestrained noise ----and then takes that as the base for assessing the impact of major traffic growth over a further 15 years. The conclusion is that the noise impact is neutral and no further mitigation is justified. Is this really fair and reasonable?*

Highways England Comment

1.10.1 Highways England is required to mitigate the noise impact of the Scheme, and not the noise impacts of the M4 motorway, which remain, and indeed, worsen in the Do Minimum scenario, as set out in the Chapter 12 of the ES (Application Document Reference 6-1, APP-152).

1.10.2 Highways England is required to carry out noise assessments in accordance with the procedures given in DMRB, Volume 11, Section 3, Part 7 (HD213/11 Revision 1). The required assessment years are the opening year for the Scheme (2022) and 15 years after opening (2037) and Highways England consider that the full impacts of the Scheme have been properly assessed. There is no requirement to assess the change in noise levels back to a 1970s / 1980s baseline.

1.10.3 Whilst not a requirement of DMRB, Highways England confirms that there is the potential to improve further the noise climate within the Scheme corridor through enhanced noise mitigation, as noted in paragraph 12.4.112 of the ES (Application Document Reference 6-1, APP-152). This enhanced noise mitigation study, a qualitative appraisal of which is provided in Appendix 12.5 of the ES (Application Document Reference 6-3, APP-351), comprises the provision of additional noise barriers and the replacement of some existing noise barriers with higher noise barriers.

1.10.4 Work has been undertaken to provide a quantitative assessment of this enhanced noise mitigation study, based on a detailed cost/benefit analysis, and the results of this assessment are provided with the submission at Deadline V.

1.10.5 Highways England confirms that Lower Earley was subject to the assessment undertaken as part of the enhanced noise mitigation study. The confirmed barrier provision at Lower Earley is detailed within Appendix E of the Enhanced Noise Mitigation Study Report (Ref 514451-MUH-00-ZZ-RP-EN-400158), sheet 4 is relevant to the Lower Early area.

1.11 *HE's eventual decision to provide low noise surfacing across all traffic lanes is, of course, welcomed. However, a barely perceptible reduction of only 3.5dB(A) will be practically meaningless to residents against the relentless scale and inherent variability of the noise source. In addition, the effectiveness of this surfacing has been shown by TRL to disappear completely with wear. Both points were covered in my submission and appear to be broadly accepted by HE despite the technical semantics involved. My comments are also supported by the standard DMRB advice manual, TRL research and general literature on traffic noise. In effect the measure will be seen by residents as far too little and definitely far too late!*

Highways England Comment

1.11.1 The Scheme is not required to mitigate general motorway noise. It is required to mitigate against the noise impacts created by the Scheme. The assessment indicates that there will be no significant adverse noise impacts which require mitigation.

1.11.2 Highways England also notes that it is not the case that a 3.5 dB reduction in noise level in the short term will be barely perceptible. A change of 1 dB in the short term is the smallest that is considered perceptible. The noise reductions on opening of the Scheme (2022) will be evident in many areas within the Scheme corridor.

1.11.3 A 3 dB increase in noise levels would result from a doubling of the traffic flow (assuming speed and percentage of heavy goods vehicles remained the same). This provides some context to the potential relief from noise in relation to likely traffic growth over the last 20 years mentioned by Mr Green in paragraph 1.10 of his representation.

1.11.4 DMRB defines a change in noise level of less than 3 dB as negligible in the long term. Much of the noise reduction achieved for Scheme opening (comparing "Do Minimum 2022" (i.e. without the Scheme) with "Do Something 2022" (i.e. with the Scheme)) will be maintained in the long term (comparing "Do Minimum 2022" with "Do Something 2037").

1.11.5 All road surface types degrade over time, with consequent increases in tyre/road noise. However, like any surfacing, low noise surfacing is replaced periodically with the life expectancy determined by the specific constituents, quality of construction and amount of traffic and environmental conditions. The typical life expectancy is between 10 and 15 years (ref paragraph 6.20 of DMRB Volume 7, Section 5, Part 2 (HD37/99 Amendment No. 1)). The surfacing will be regularly monitored following installation using a variety of tests (e.g. skid resistance) and will be maintained to a high standard and then replacement scheduled once its performance is no longer satisfactory, in accordance with Highways England's standard procedures and in accordance with the requirements of its Strategic Licence.

- 1.11.6 Research has indicated that new low noise surfaces provide on average between 4 and 6 dB(A) benefit over tested hot road asphalt (“HRA”) surfaces. In spite of the better acoustic durability of the HRA surfaces, the research concluded that low noise surfaces still outperformed the HRA surfaces by 1 to 3 dB(A) after 10 years (TRL Report PPR485: The Performance of Quieter Surfaces Over Time).
- 1.11.7 The -3.5 dB correction for a low noise surface, as prescribed in DMRB, is a reasonable average over the life of the surface for calculation and assessment purposes.
- 1.12 *The fact remains, and was observed during recent site visits, that local residents already suffer from what can be best described as totally unreasonable noise intrusion from the M4. The scheme, as proposed, will do little, if anything, to change this and even the status quo suggested by HE does not stand up to objective scrutiny. I remain of the view that a major, strategically important infrastructure scheme designed in Britain today, and costing around £0.8Bn, should be properly engineered to mitigate extensive traffic noise rather than merely attempting to accommodate future traffic demand.*

Highways England Comment

- 1.12.1 Highways England does not agree with the terminology used by Mr Green regarding the noise conditions to the Lower Earley area, but accepts that the noise levels are elevated as a result of the motorway. As detailed in response to paragraph 1.10 above, additional noise mitigation to Lower Earley has been considered as part of an enhanced noise mitigation study, which comprises the provision of a significant number of additional noise barriers and the replacement of a significant number of existing noise barriers with higher noise barriers.
- 1.12.2 The results of the enhanced noise mitigation study are provided with the submission at Deadline V. The confirmed barrier provision is detailed within Appendix E of the Enhanced Noise Mitigation Study Report (Ref 514451-MUH-00-ZZ-RP-EN-400158). Sheet 4 is relevant to the Lower Earley area.
- 1.12.3 The results of the enhanced noise mitigation study show that an additional 2126 metres of 2.5 metre high noise barrier will now be provided at this location. The provision of this mitigation will provide further noise decreases to properties in Lower Earley, in addition to those presented in Sheet 4 of Drawing 12.4 of the ES (which showed minor noise decreases across Lower Earley on Scheme opening, without enhanced mitigation).