Tony Johnson

WRITTEN REPRESENTATION

HIGHWAYS ENGLAND'S RESPONSE

ADDITIONAL COMMENTS FROM TONY JOHNSON

1.1 *At the hearing at Wycliffe Baptist Church, chaired by Ms Wendy Burden & supported by Mr Michael Ebert, & Ms Lorna Walker, I was positively impressed with the conduct of the meeting and the way in which the committee took comments from members of the public & their elected & un-elected representatives.*

Highways England Comment

1.1.1 No response required.

1.2 *It was also instructive to listen to the responses on behalf of the applicant. Most of which I felt to be helpful in clarifying matters.*

Highways England Comment

1.2.1 No response required.

1.3 *However, there were a couple of clarifications which struck me as incongruous at the time, but as this is the first of this type of meeting I've attended & I have little or no understanding of the process, I felt it better to write in to you prior to the deadline which I understand to be 26th November.*

Highways England Comment

1.3.1 Highways England comments are provided on the specific points raised below.

1.4 *The first clarification was the reference to sound levels, in which the speaker called upon by Mr Whales commented that a doubling in sound level was 3dB. While it is true that a doubling of power raises the level expressed in decibels by 3dB, that can be misleading in measuring sound pressure level, where a doubling of the sound pressure level corresponds with 6dB. Please see https://en.wikipedia.org/wiki/Decibel#Acoustics and https://en.wikipedia.org/wiki/Sound_pressure for a far better reasoned explanation that I would be able to convey in an email.*

Highways England Comment

1.4.1 Wikipedia is not considered to be an authoritative reference source. Highways England disagrees with Mr Johnson's analysis. Highways England approach is based on standard acoustic theory (as can be found in any introductory text on acoustics). The position can be illustrated by taking the situation where two identical noise sources are affecting a receptor. The sound pressure level at the receptor due to Source 1 operating alone is 60 dB. The sound pressure level at the receptor due to Source 2 operating alone is also 60 dB. The total sound pressure

level at the receptor due to Source 1 and Source 2 operating together is 60 dB plus 60 dB, which equals 63 dB. That is an increase of 3 dB.

1.4.2 When the Highways England noise specialist referred to an increase of 3 dB during the open floor hearing, this was in relation to the effects of changes in traffic flows on noise levels. Doubling the traffic flow on the motorway (speed and percentage of heavy goods vehicles remaining the same) would result in a 3 dB increase in emitted noise level.

1.5 The second clarification was explaining the effect of the increase in traffic flow on the 4 carriageways at the motorway junctions. I believe I heard the person clarifying the effect as saying that it would be neutral at the junctions (or words to that effect). This clarification struck me as being odd - perhaps to the point of error even. If one considers increasing the flow of water in a pipe by increasing the pipe diameter, then one will require more water at the entry and exit points to keep the water in the pipe flowing at the desired increased rate in terms of litres per second (analogous to vehicles per hour). If I heard & understood the clarifier correctly, then I fear that his clarification may be tantamount to balderdash.

Highways England Comment

1.5.1 Highways England agrees that for traffic flows to increase on the M4 as a result of the M4 Junctions 3 to 12 Smart Motorway scheme (the "Scheme"), it follows that there will be increases on some of the local roads that provide access to the M4. However, some of that increase joins the M4 west of junction 12, and will be re-assigned from other long-distance routes. Table A-14 in Appendix A to the Traffic Forecasting Report (submitted as Appendix 1 to Highways England's response to Written Representations at Deadline I) provides details of the traffic forecasts link-by-link along the M4 between junctions 2 and 13. From this it can be seen that there is forecast to be an increase in the 'with Scheme' situation between junctions 13 and 12, i.e. west of the Scheme extents. Table A-5 shows that there is minimal traffic induced (generated) by the Scheme and Tables A-31 and A-32 show that there is minimal change in mode share as a result of the Scheme. Taken together, it is concluded that the increases in traffic flow on the M4 attributable to the Scheme arise from traffic switching route.

1.5.2 The reference to the effect of the Scheme on local roads being neutral is based on an assessment of the effects on all travellers undertaken in accordance with the Design Manual for Roads and Bridges as part of the environmental impact assessment of the Scheme. This is reported in Chapter 13 of the Environmental Statement ("ES") (Document Reference APP-153). One of the metrics used for the assessment was driver stress, which is based on flow per lane and speed. The changes in traffic flows across the local road network directly joining M4 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 I was also interested to hear the comment of Mr Norman Jorgensen and Dr Cockes in connection with high noise levels at Lower Earley. As a resident of Winnersh, I would hope that the committee will be aware of the situation slightly closer to London, in an area where a new development has been given Outline Panning Permission by Wokingham Borough Council (O/2006/8687 - Hatch Farm Dairies).

Highways England Comment

1.6.1 Highways England confirms that the Scheme's traffic forecasts have taken account of the four Strategic Development Locations identified within the Wokingham Borough Council Core Strategy (i.e. South of M4, Arborfield Garrison, North Wokingham and South Wokingham) which together total 10,000 housing units. The Hatch Farm Dairies site was identified in the former Wokingham District Local Plan, and the allocation for 400 housing units has been brought forward into the Core Strategy where it forms part of the general 1,000 units within the Managing Development Delivery Development Plan Document which will be located at suitable sites to be identified across the Borough. These latter units have been taken into account in the general population growth forecasts for the Borough.

1.6.2 With respect to proposed new developments (assumed to be residential) affected by road traffic noise, it is the responsibility of the developer in question to commission a noise survey and propose noise mitigation to provide an acceptable noise climate (external and internal) for future residents.

1.6.3 However, Highways England confirms that Winnersh was included in the enhanced noise mitigation study to decide if additional noise mitigation would be provided within that area, over and above the Scheme's current proposals as outlined on Sheet 5 of Drawing 12.2 of the ES (Application Document Reference 6-2, APP-258).

1.6.4 The quantitative assessment for this enhanced noise mitigation study was based on a detailed cost/benefit analysis and the results of the assessment are provided with the submission at Deadline V.

1.6.5 The confirmed barrier provision in the Winnersh area is detailed within Appendix E of the Enhanced Noise Mitigation Study Report (Ref 514451-MUH-00-ZZ-RP-EN-400158), Sheet 5 is relevant to this area.

1.6.6 The results of the enhanced noise mitigation study proposes to increase the height of the 1188m long noise barrier, at Winnersh, to 3.5m and provide 297m of new 3.5m high noise barrier in the Mill Lane area. The provision of this mitigation will provide further noise decreases to properties in Winnersh, in addition to the negligible to minor noise decreases on Scheme opening (without enhanced mitigation) presented on Sheet 5 of Drawing 12.4 of the ES (Application Document Reference 6-2, APP-266).

1.7 In case it may be of any interest to the members of the panel, as that planning application has now moved forward to Reserved Matters stage, I have been measuring & recording Noise Levels at various points alongside the M4 from the overpass at King Street Lane in Winnersh to a location close to the junction of the A329 and Lower Earley Way.

1.8 In answer to the Chairperson's question as to whether the noise form the motorway is continuous, I can state from personal observation that this is not quite the case. At peak times - for example 6:30 in the morning when traffic is still flowing freely at the national speed limits, it is possible to see fluctuations in noise levels quite easily at distances of 50m to 150m from the carriageway. Having also recorded measurements at 4am on a Saturday morning, those fluctuations become even more clear as individual vehicles go by.

Highways England Comment

1.8.1 For much of the time, noise from the motorway will be reasonably continuous (which does not mean that the noise level at a particular receptor will remain at a constant level). However, there will be measurable fluctuations, such as during the early hours of each day, when individual noise events may be heard.

1.9 Although I've only been measuring the levels for a few days, I can already make two other observations.

1.10 Firstly, that the noise from the eastbound carriageway is significantly higher (at least 3dB) than from the westbound carriageway. My initial speculation is that this may be related to the eastbound carriageway being uphill and the westbound correspondingly downhill.

Highways England Comment

1.10.1 Highways England confirms that road gradient does have an effect on road traffic noise levels, as Mr Johnson has observed.

1.10.2 The method used to calculate road traffic noise levels is that given in Calculation of Road Traffic Noise Levels ("CRTN"), as required by paragraph 5.191 of the National Policy Statement for National Networks ("NNNPS"). The CRTN methodology includes a correction for the effects of traffic on a gradient. Thus, the results of the noise assessment, as reported in Chapter 12 of the ES (Application Document Reference 6-1, APP-152), include the effects of road gradient on the M4 motorway and all surrounding roads in the assessment study area.

1.11 The second observation is that the noise does not seem to decay in a way which is consistent with the spherical (technically hemispherical) spreading losses that I had originally expected. Instead, it seems (subjectively) to correspond more closely to cylindrical spreading. What this means in simple terms is that the noise does not die down with distance from the motorway as swiftly as expected. While this may be related to the "amphitheatre" matter that Mr Jorgensen mentioned for Lower Earley, I'm doubtful because instead of rising up from the motorway, the land at Hatch Farm Dairies is below the level of the M4 & decreases in height the further one walks away from the motorway.

Highways England Comment

1.11.1 Highways England agrees that Mr Johnson is correct in his observations. A stretch of road is more akin to a line noise source than a point noise source. Theoretically, for a point noise source, noise decays at a rate of 6 dB per doubling of distance. For a line source, noise decays at a rate of 3 dB per doubling of distance. Hence, the reduced decay observed by Mr Johnson.

1.12 I do however support the comments made by various people in relation to the sound levels from the M4 varying with the weather ! If the M4 carriageway is wet, and there is a southwesterly breeze / wind, along with cloud cover & type bing "just right", the noise level at our house some 250 - 300m from the carriageway is very very much louder than it can otherwise be on good days.

Highways England Comment

1.12.1 The CRTN methodology does not account for changes in traffic noise levels as a result of a wet road surface. As is evident from observation near any road, traffic on a wet surface is noisier than on a dry surface. However, the effects of a wet road surface would be evident in the Do Minimum scenario (i.e. without the Scheme) as well as in the Do Something scenario (i.e. with the Scheme), and the changes in noise levels from Do Minimum to Do Something will be roughly comparable for a wet road surface and a dry road surface.

1.12.2 The CRTN methodology assumes a reasonable worst case in that a moderate wind is assumed to be blowing from the noise source (i.e. any section of road) to all receptors within the study area, wherever those receptors are located in relation to the noise source.

1.12.3 The effects of wind direction would be evident in the Do Minimum scenario (i.e. without the Scheme) as well as in the Do Something scenario (i.e. with the Scheme), and therefore are incorporated into the assessment that examines the change between the two scenarios.

1.13 To give the committee some idea of the sound levels at or near our house, I've compared the figures with those which I noted during last night's hearing

1.14 Here are the figures that I've measured in a downstairs extension at the front of the house (ie. opposite direction to the M4) but with a side door which opens in a direction directly facing the motorway.

Back Door closed Measurement device approx 2.5 - 3m from door 33dB SPL (A weighting, Fast)

Back Door open Measurement device approx 2.5 - 3m from door 55dB SPL (A weighting, Fast) M4 dry

Back Door open Measurement device approx 1cm inside door aperture 62dB SPL (A weighting, Fast) M4 dry

1.15 These compare this with sound levels measured during the hearing

Quiet - nobody speaking <44dB SPL SPL (A weighting, Fast) see note 1 below

Ms Burden speaking 55dB up to 60db

Mr Moneylaws speaking 60dB up to 63dB

Mr Enrico Petruccio speaking 62dB to 67dB

Mr Whales speaking 63dB to 68dB

1.16 Note 1 the sound level meter takes around 4 or 5 seconds on Fast weighting to reach a steady state level. By nature of a hearing, there was never a silence which was that long and thus I have recorded the lowest level I saw on screen.

1.17 Note 2 I have many more data points than those given in the example above. I will be happy to share these prior to the 26th in the form of photos of my notebook. I will be happy to make

this data more accessible by typing up my notes after Nov 27th. I'm sorry not to be able to give more time to matters associated with your hearing, but the closing date for comments on the Hatch Farm Dairies Application is 27th November and this is a matter that I have been working on quite intensively since April this year.

Highways England Comment

1.17.1 Highways England thanks Mr Johnson for his interest and the provision of his measurement data.

1.18 Having lived in our house since 1987, sleeping in a bedroom which faces the M4 and usually with the window open, one has grown used to the unceasing roar coming from the motorway. It is sometimes possible to tell the hour at night just from the sound level alone. However, in monetising the health effects, Mr Moneylaws may wish to take into account the effect which long term exposure to 55dB or higher sound levels has had on my hearing. I now have a permanent whistle form of tinnitus could with approx 30dB hearing loss at 8kHz. The ENT department has offered me a hearing aid. As more & more people are exposed to higher and higher levels, so the cost to the NHS will rise, as will the social costs due to interrupted or disturbed sleep, along with the consequent impact on business the following day.

Highways England Comment

1.18.1 Highways England cannot comment on the causes of Mr Johnson's hearing loss.

1.18.2 To put the 55 dB noise level quoted by Mr Johnson (and the noise levels quoted in 1.14 and 1.15) in context, the Control of Noise at Work Regulations 2005 defines two exposure action values (which are daily or weekly personal noise exposure values). The Lower Exposure Action Value is 80 dB. The Upper Exposure Action Value is 85 dB.

1.18.3 An employer is required to provide employees with hearing protectors and make sure they use them fully and properly when their noise exposure exceeds the Upper Exposure Action Value.

1.18.4 An employer is required to provide employees with hearing protectors if they ask for them, and their noise exposure is between the Lower and Upper Exposure Action Values.

1.18.5 Paragraph 4.7.2 of the Health Impact Assessment ("HIA") (REP3-012) notes that noise and vibration can contribute to a wide range of health issues ranging from low level annoyance to more sever impacts on mental and physical health including hearing impairments, increase in stress levels and disruption to sleep patterns and behaviour.

1.18.6 Table 22 of the HIA records a minor positive impact on human health as a result of the Scheme during operation. The justification for the scoring is based on the fact that the majority of receptors within the study area experience a negligible or minor decrease in traffic noise levels in the short-term (2022), with the majority of residential properties experiencing a negligible decrease in traffic noise levels in the long-term (from 2022 to 2037). With respect to Winnersh and the surrounding area, Drawing 12.4, Sheet 5 of the ES (Application Document Reference 6-2, APP-266) shows the noise reductions across this area resulting from the operation of the Scheme on opening. Drawing 12.5, Sheet 5 of the ES

Application Document Reference 6-2, APP-270) shows the noise reductions across this area resulting from the operation of the Scheme in the long term.

1.18.7 The calculation for the monetisation of health effects does not take into account tinnitus or hearing loss. It does however take into account sleep disturbance, annoyance/amenity, acute myocardial infarction (heart disease), stroke, stress and dementia.

1.19 Therefore, and in support of the noise reducing surfaces, sound fences and noise reducing bunds, please will you do all that you can ? Every decibel helps - and will prevent the health costs being passed on to increasing numbers among our future generations.

Highways England Comment

1.19.1 Highways England can confirm that the enhanced noise mitigation study was based on a health benefits approach.

1.19.2 As stated above in the response to paragraph 1.6, the results of the enhanced noise mitigation study are provided with the submission at Deadline V and the confirmed barrier provision for the Winnersh area is detailed within Appendix E of the Enhanced Noise Mitigation Study Report (Ref 514451-MUH-00-ZZ-RP-EN-400158).