Adran yr Economi a'r Seilwaith
Department for Economy and Infrastructure

Llywodraeth Cymru
Welsh Government

This document is an update to the 'Proof of Evidence – Noise and Vibration' document WG 1.14.1. It contains a scheme evidence update regarding the implications in relation to noise of the recent Department for Transport's announcement that tolls on the Severn Crossings will be removed by the 31st December 2018.

Scheme Evidence Update

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Welsh Government, Noise and Vibration

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1. AUTHOR

1.1 I am Philip Evans, a Senior Director in noise, vibration and acoustics at RPS Planning and Environment, a multi-disciplinary planning and environmental consultancy. My experience is described in my main Proof of Evidence.

1.2 On behalf of the Welsh Government, I am the author of the Noise and Vibration evidence for the local planning inquiry into the M4 Corridor around Newport Scheme – the Published Scheme.

1.3 The evidence which I provide in this proof of evidence is given in accordance with the guidance of my professional institution, and I confirm that the opinions expressed are my true and professional opinions. My professional qualifications are set out in my main Proof of Evidence (WG 1.14.1) and are not repeated here.

2. SCOPE AND PURPOSE OF THIS SCHEME EVIDENCE UPDATE

2.1. This document provides an update to the previous evidence given by myself in relation to the predicted noise and vibration effects of the Scheme (WG 1.14.1). The purpose is to provide an update of the assessment of noise impacts in terms of noise changes in light of the recent announcement from the Department for Transport (DfT) that the tolls on the Severn Crossing will be removed by 31st December 2018.

2.2. The traffic noise assessment provided in my main Proof of Evidence was based upon the traffic flow data used for the original March 2016 Environmental Statement but revised based upon the September 2016 ES Supplement (ESS1) traffic data. These data were based upon Tempro 6.2 with Half Tolls.

2.3. This new traffic noise assessment, as reported in this update Proof of Evidence, provides the noise effects that arise with the current much more refined DfT Tolls model and based upon Tempro 7.1 Interim for Wales. On this basis, the assessment information provided below is for the No Tolls situation with current best available data. This can be compared with the previous Half Tolls assessment provided in my main Proof of Evidence.

2.4. My Scheme Evidence Update is presented in the following structure.

1. Author

2. Scope and Purpose of this Scheme Evidence Update

3. Scheme Evidence Update

4. Summary and Conclusions

Appendix A – Updated Annex D, E and F from ESS3 Appendix R13.4

3. SCHEME EVIDENCE UPDATE

3.1 The March 2016 Environmental Statement (ES) included an assessment of the likely impacts on noise sensitive receptors (NSRs – mostly effects upon human receptors, i.e. occupants of dwellings) associated with the predicted noise changes as a result of the Scheme. This was subsequently summarised in my main evidence on Noise and Vibration (WG 1.14.1) and this, as mentioned in Section 2, was based upon a Half Tolls traffic scenario based upon Tempro 6.2.

3.2 The new No Tolls traffic data have been inserted into the Scheme noise model which also incorporates other recent changes to the Scheme in terms of junction layouts etc. The model has been re-run and the changes are described below; these are compared with the Half Tolls assessment provided in my main Proof of Evidence.

3.3 Noise levels at individual properties are generally predicted to change by only a fraction of a dB from the previous Half Tolls scenario to the new No Tolls more accurate scenario.

3.4 For example, considering the opening year and future year with scheme, only 28 NSRs have an increase of 1 dB or greater (maximum +1.6 dB); 24 NSRs have a decrease of 1 dB or greater (maximum -2.5 dB). The average change over all 20,820 NSRs was -0.03 dB for the opening year; and +0.04 dB for the future year. Despite these small changes, however, the overall change in numbers of NSRs falling within particular criteria bands can change by an appreciable number.

3.5 Updated tables of predicted noise levels (both summary and complete) and noise assessment results are included in Appendix A of this Evidence Update, equivalent to Annexes D – F published in ESS3 Appendix R13.4: Operational Noise and Vibration Assessment:

a) Annex D: Noise Model Results – Summary

b) Annex E: Noise Model Results – Complete

c) Annex F: Noise Assessment Results Annex D

3.6 From these results, the effects of the Scheme, comparing previous traffic data to current No Tolls with Barriers and Committed mitigation, have been considered. The key findings of the noise assessment for the two scenarios using the previous style of reporting are provided below:

Do-Minimum scenario in the opening year against Do-Something scenario in the opening year (short-term)

3.7 Out of the 20,708 residential receptors included in the noise model, during the daytime period, a significant noise increase (of at least 1 dB) is likely to occur at 2,226 receptors, with a maximum noise increase of up to 17 dB. A significant noise decrease (of at least 1 dB) is likely to occur at 12,479 receptors, with a maximum noise decrease of up to -8 dB. There was therefore no significant change likely to occur at 6,003 receptors. The full figures are summarised in

3.8 Table 3.1 below.

Short term with Scheme 2022 Do Something <- 2022 Do Minimum	Maximum change / dB	Major 5+ dB	Moderate 3-4.9 dB	Minor 1-2.9 dB	Negligible 0.1-0.9 dB	No Change +-0.1 dB	SubTotal
Decrease	-8	967	1477	10035	3505	-	15984
Increase	+17	460	571	1195	1761	-	3987
Neutral	-	-	-	-	-	737	737
						Total:	20708

Table 3.1 Residential Property Count – With Committed and Additional Mitigation

Short term with Scheme	Maximum change	Major	Moderate	Minor	Negligible	No Change	SubTotal
2022 Do Something <- 2022 Do Minimum	/ dB	5+ dB	3-4.9 dB	1-2.9 dB	0.1-0.9 dB	+-0.1 dB	
Decrease	-8	967	1477	10035	3505	-	15984
Increase	+17	460	571	1195	1761	-	3987
Neutral	-	-	-	-	-	737	737
						Total:	20708

3.9 Out of the 68 non-residential sensitive receptors (buildings - e.g. religious buildings, educational facilities, medical facilities, community facilities, etc.) identified and included in the noise model, a significant noise increase is likely to occur at 5 receptors, with a maximum noise increase of up to 4 dB; a significant noise decrease is likely to occur at 48 receptors, with a maximum noise decrease of up to -6 dB; and no significant change is likely to occur at 15 receptors.

3.10 Based on the predicted noise change, the magnitude of impact is considered to range between major beneficial to major adverse in the short-term, although more receptors are likely to experience a noise decrease rather than a noise increase.

Do-Minimum scenario in the opening year against Do-Something scenario in the future assessment year (long term)

3.11 Out of the 20,708 residential receptors included in the noise model, during the daytime period, a significant noise increase (of at least 3 dB) is likely to occur at 1,256 receptors, with a maximum noise increase of up to 18 dB. A significant noise decrease (of at least 3 dB) is likely to occur at 1,675 receptors, with a maximum noise decrease of up to -8 dB. There was therefore no significant change likely to occur at 17,777 receptors. The full figures are summarised in Table 3.2 below.

Table 3.2 Residential Property Count – With Committed and Additional Mitigation

Long-term with scheme 2037FYDSB2 <- 2022OYDM	Maximum change / dB	Major 10+ dB	Moderate 5-9.9 dB	Minor 3-4.9 dB	Negligible 0.1-2.9 dB	No Change +-0.1 dB	SubTotal
Decrease	-8	0	460	1215	12573	-	14248
Increase	+18	30	553	673	4308	-	5564
Neutral	-	-	-	-	-	896	896
						Total:	20708

3.12 Out of the 68 non-residential sensitive receptors (buildings - e.g. religious buildings, educational facilities, medical facilities, community facilities, etc.) identified and included in the noise model, a significant noise increase is likely to occur at 3 receptors, with a maximum noise increase of up to 4 dB; a significant noise decrease is likely to occur at 6 receptors, with a maximum noise decrease of up to -5 dB; and no significant change is likely to occur at 59 receptors.

3.13 Based on the predicted noise change, the magnitude of impact is considered to range between moderate beneficial to major adverse in the long term, although more receptors are likely to experience a noise decrease rather than a noise increase.

Do-Minimum Scenario in the future year and Do-Something Scenario in the future assessment year with mitigation (long term)

3.14 Out of the 20,708 residential receptors included in the noise model, during the daytime period, a significant noise increase (of at least 3 dB) is likely to occur at 1,031 receptors, with a maximum noise increase of up to 18 dB. A significant noise decrease (of at least 3 dB) is likely to occur at 1,641 receptors, with a maximum noise decrease of up to -7 dB. There was therefore no significant change likely to occur at 18,036 receptors. The full figures are summarised in Table 3.3 below.

Table 3.3 Residential Property Count – With Committed and Additional Mitigation

Long-term with scheme 2037FYDSB2 <- 2022OYDM	Maximum change / dB	Major 10+ dB	Moderate 5-9.9 dB	Minor 3-4.9 dB	Negligible 0.1-2.9 dB	No Change +-0.1 dB	SubTotal
Decrease	-7	0	618	1023	13828	-	15469
Increase	+18	27	419	585	3094	-	4125
Neutral	-	-	-	-	-	1114	1114
						Total:	20708

3.15 Out of the 68 non-residential sensitive receptors (buildings - e.g. religious buildings, educational facilities, medical facilities, community facilities, etc.) identified and included in the noise model, a significant noise increase is likely to occur at 2 receptors, with a maximum noise increase of up to 3 dB; a significant noise decrease is likely to occur at 6 receptors, with a maximum noise decrease of up to -5 dB; and no significant change is likely to occur at 60 receptors

3.16 These results can be compared with the results presented in my main Proof of Evidence. In general, there is a lessening of change, either beneficial or adverse with these latest No Tolls traffic flows. Considering the short-term change, the number of major or moderate beneficial changes as a result of the Scheme decreases by around 15 %, with an increase in the minor beneficial effects. Similarly, the

number of major disbenefits (short-term) decrease, with an increase in the number of NSRs with a minor disbenefit.

3.17 For the long term change, the effect is different, due to the wider bands for Major/Moderate/Minor. No major benefits remain unchanged; the number of NSRs experiencing a moderate beneficial decrease by approximately 50%, with a corresponding increase in the number of minor or negligible benefits as a result of the Scheme. One fewer NSR is now predicted to experience a major long term disbenefit; with fewer moderate disbenefits also predicted.

3.18 A summary of the changes on key links is provided below:

a) For the M4CaN, comparing the previous Half Tolls to new No Tolls, noise changes by +0.0 to +0.4 dB in the opening year and -0.1 to +0.3 dB in the future year, i.e. generally slightly noisier.

b) For the downgraded, existing M4, comparing the previous Half Tolls to new No Tolls, noise changes by -0.7 to +0.5 dB in the opening year and -0.4 to +0.5 dB in the future year, i.e. no systematic change.

c) For the existing M4 east of the Scheme, the difference is between 0.0 and +0.3 dB, i.e. a very slight increase.

d) For the existing M4 west of the Scheme, the difference is between -0.1 and -0.3 dB, i.e. little change.

3.19 Removal of the Tolls obviously effects the road network in a wide area of south Wales and western England. This would increase traffic using the M4 Severn Crossing relative to the previous situation where local traffic may have been using routes to avoid the Tolls.

4. SUMMARY AND CONCLUSIONS

4.1 I have examined the implications of the predicted changes in noise levels relative to the published Scheme, as reported in my main Proof of Evidence, which would result from the predicted traffic flow changes arising from the removal of tolls from the Severn Crossing.

4.2 In summary of the above, the change to the noise assessment based on the previous Half Tolls scenario to the new No Tolls scenarios is that:

a) noise along the M4CaN gets very slightly worse but by an imperceptible amount;

b) noise along the existing M4 doesn't change systematically either increasing or decreasing; this could be due to different changes to flows eastbound/westbound, one increasing, one decreasing with consequential effects on NSRs;

c) noise along the existing M4 east of the Scheme would increase very slightly; and

d) noise along the existing M4 west of the Scheme would not systematically or significantly change.

4.3 Based upon this updated traffic noise assessment, which considers the previously reported assessment provided in the March 2016 ES, as revised by the September 2016 traffic data, as reported in my main Proof of Evidence for the original Half Tolls scenario relative to the new No Tolls scenario, the changes are insignificant and not likely to be perceptible at NSRs.