

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



Llywodraeth Cymru
Welsh Government

**THE CHESTER TO BANGOR TRUNK ROAD (A55) (JUNCTIONS 16 AND 16A
IMPROVEMENT REALIGNMENT AND SLIP ROADS) ORDER 202-**

**THE CHESTER TO BANGOR TRUNK ROAD (A55) (JUNCTIONS 16 AND 16A
IMPROVEMENT REALIGNMENT AND SLIP ROADS) (SIDE ROADS) ORDER 202-**

**THE WELSH MINISTERS (THE CHESTER TO BANGOR TRUNK ROAD (A55)
(JUNCTIONS 16 AND 16A IMPROVEMENT REALIGNMENT AND SLIP ROADS))
COMPULSORY PURCHASE ORDER 202-**

PROOF OF EVIDENCE

CRAIG BARSON BEng (Hons), MIOA

WELSH GOVERNMENT, NOISE AND VIBRATION

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Appendix A

Glossary of Acoustics Terms

Appendix B

Long Term Operational Noise Impact Assessment

Appendix C

Short Term Noise Difference Maps in 1 dB Steps

1. Author

- 1.1 I am Craig Barson. I am a Director and Head of Acoustics at Ramboll UK Limited, where I have worked since 2018. I have over 25 years of acoustic consultancy experience in buildings and environmental acoustics, noise and vibration. During this time I have been involved in the design of a number of transport schemes, acted as expert witness and prepared evidence to present at Public Inquiry. I have a Bachelor of Engineering degree (BEng(Hons)) in Electroacoustics from the University of Salford. I am a corporate member of the Institute of Acoustics (MIOA).
- 1.2 My role on the A55 Junction 15 and 16 improvement works started in late 2019, overseeing the later part of preparation of the 2019 ES Chapter for Junction 15. I also reviewed the Junction 16 ES Chapter preparation late in 2020. I have also been involved in the preparation of the supplementary reports on impacts presented at this Inquiry including overseeing and checking calculations and reports.
- 1.3 I am a regular visitor to the North Wales coastline. I have also visited the area around junction 16 in my capacity as expert witness relating to matters of noise and vibration impact from the proposed Scheme.

2. Scope and Purpose of this Proof of Evidence

- 2.1 The project for improvements at Junction 15 and 16 has developed so that it encompasses Junctions 14 and 16A as well. Furthermore, the two sets of junctions, namely Junctions 14 and 15 to the west at Llanfairfechan, and Junctions 16 and 16A to the east at Dwygyfylchi and Penmaenmawr, are being treated under different sets of draft Orders and Environmental Statements. This proof of evidence addresses Junctions 16 and 16A, hereby referred in this proof of evidence as the ‘Scheme’ or the ‘Junctiion 16 Scheme’ as appropriate.
- 2.2 My Proof of Evidence provides an overview of the noise and vibration aspects of the Scheme and sets out the reasons for the proposed environmental mitigation. I refer to both the Environmental Statement Volume 1 Chapter 13 (Document Ref WG 3.01.01), Figures in Volume 2 (Document Ref WG 3.01.02) and also supplementary reports (Appendix B) prepared as part of my proof.
- 2.3 I will also be responding to objections raised in respect of the Scheme.
- 2.4 Appendix A sets out a glossary of acoustic terms and explanation of some of the terminology used in my evidence.
- 2.5 Appendix B of my proof set outs a supplementary assessment of the operational impact of the scheme for the 2037 Future Year scenario. This supplements the short term impact presented in Volume 1 Chapter 13 of the Environmental Statement.
- 2.6 Appendix C provides difference maps for the short term impact in 1 dB increments.
- 2.7 The opinions expressed are my own unless I state otherwise. I have been assisted by colleagues from within the project team in the various tasks that are reported in this document. Colleagues are also presenting evidence within their specialist environmental expertise. Where a topic is covered in detail by the proof of evidence of another specialist, I provide a cross reference to the relevant proof.
- 2.8 It is not my intention to reproduce large sections of text from the ES, but simply to cross refer to, or highlight key procedural and technical matters that are pertinent to the assessment of the published Scheme. Consequently, I will refer in this Proof of Evidence to supporting material contained within the ES and the ES Supplements where relevant.
- 2.9 It was noted in reviewing the submitted ES Chapter 13, that sections of text setting out the thresholds for significance for both construction and operational impact were missing from the published version of the document.

These omissions have no bearing on the outcome of the assessment, but for completeness I have included the significance thresholds in my proof here.

2.10 My Proof of Evidence covers Noise and Vibration and is structured in the following manner:

Part 3 Summary of the Noise and Vibration Assessment

Part 4 Assessment Methodology

Part 5 Summary of Identified Impacts and Effects

Part 6 Operational Impact Mitigation

Part 7 Consultation

Part 8 Response to Objections – This provides a summary of the matters raised in the objections that are relevant to my Proof of Evidence

Part 9 Conclusion and Declaration

Links with other Proofs of Evidence

2.11 I will rely on the following expert witnesses to cover their respective specialist fields:

Nigel Roberts – Traffic and Economics (WG 1.03)

Jon Stoddard – Landscape and Visual Impact (WG 1.07)

3. Summary of the Noise and Vibration Assessment

- 3.1 This part of my evidence provides an overview of the noise and vibration assessment set out in Chapter 13 of the ES (Document Ref WG 3.01.05). The Scheme removes the existing roundabout at Junction 16 where the A55 dual carriageway meets Conway Rd in Penmaenmawr and replaces it with west bound on and off slip roads only. The Scheme provides a grade-separated junction for both A55 carriageways at Junction 16A. A detailed description of the Scheme is provided in Chapter 2 of the ES.
- 3.2 Short term noise and vibration effects will arise as a result of the construction of the new road. Short and long term operational noise effects will result for road traffic using the new road and changes in traffic flow on surrounding roads as a result of the scheme.
- 3.3 My evidence assesses the likely significance of these effects as a result of the construction and operation of the proposed scheme in terms of noise and vibration in the immediate community. The assessment makes reference to local and national policy as set out in Volume 1 ES Chapter 13 and the receptors and study area are also defined in accordance with Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 HD213/11¹ (Document Ref WG 4.01.95). I have assessed the impact of noise and vibration from construction activities and its significance. I have then assessed the operational impact as a result of changes in traffic flows on new and affected routes and assessed the significance at each sensitive receptor based on the change in anticipated noise level. Finally, mitigation for construction and operational effects is discussed.
- 3.4 The outcome of my construction noise assessment is that following the proposed mitigation there are short term moderate impacts at closest receptors to the Scheme during limited elements of the construction stage.
- 3.5 The outcome of my assessment on operational noise impact in the 2022 opening year and 2037 future year scenarios is that the scheme impact will not result in significant impacts at any receptors.
- 3.6 The evidence which I have prepared and provide for this Public Inquiry in this proof of evidence is true and has been prepared and is given in accordance with guidance of my professional institutions and I confirm the opinions expressed are my true and professional opinions.

¹ Design Manual for Roads and Bridges (DMRB) Volume 11 Section 3 Part 7 HD213/11 Noise and Vibration Revision 1

4. Assessment Methodology

Methodology

- 4.1 Noise and vibration impact arising from the construction and operation of the Scheme has been assessed. This assessment follows industry best practice to predict noise levels and prescribed methodology to assess the significance of these impacts to nearby sensitive receptors; in this case residential properties.
- 4.2 The same methodology has been used successfully for many years to determine the impact of new and altered road developments in residential areas and accurately reflects the human response to short term and long term noise effects.
- 4.3 Assessment of impact is broken down into two phases, which are the short term construction phase and then operational noise impact due to road traffic using the scheme for the opening year (short term). Further information on the long term impact in the 2037 future design year is also provided in Appendix B . Reference is made to the appropriate British and International standards, codes of practice and industry guidance for each phase using the latest 3D noise modelling software to undertake noise predictions.

Short Term Impact from Construction

- 4.4 Assessment of construction noise impact has been undertaken in accordance with the BS 5228-1:2009+A1:2014² (Document Ref WG 4.01.96), using the 5 dB(A) change method (given in Annex E.3.3 of BS 5228-1:2009+A1:2014) to set significance thresholds for impact. This is the appropriate standard for use in assessment of the short term impact of construction activities associated with infrastructure projects such as the Scheme. Construction noise limits are determined based on the pre-existing ambient noise levels at receptors established as part of the baseline and are therefore relative to current conditions.
- 4.5 The criterion for the assessment of construction noise affecting NSRs was established relative to the baseline noise levels and based upon the '5 dB change' method presented in BS 5228-1:2009+A1:2014. The 5 dB change method states site activities are deemed to be potentially significant if the total noise, i.e. combination of pre-construction ambient noise and site noise exceeds the pre-construction ambient noise by 5 dB or more. The '5 dB change' method provides a lower cut-off value for the predicted site noise of 65 dBA, i.e. any predicted construction noise at an NSR below 65 dBA is not considered significant.

² BS 5228-1:2009 + A1 2014 "Code of practice for noise and vibration control on construction and open sites" Part 1: Noise

- 4.6 The classification of magnitude of impacts is reproduced in Table 1. It has been adopted that a Moderate or Major impact would constitute a significant effect. Significant noise effects should be mitigated.

Table 1: Classification of Construction Noise Impacts

Magnitude of Impact	Construction Noise Above Pre-existing Ambient Level (dB)	Significance of Effect
Negligible	< 0	Not significant
Minor	0 - 5	
Moderate	6 – 10	Significant
Major	> 10	

- 4.7 Construction vibration impact has been assessed by looking at offset distances from elements of the works with high levels of vibration in accordance with BS5229-2: 2009 + A:2014³ (Document Ref WG 4.01.97).
- 4.8 The significance scale has been adopted from the threshold values for perceptible vibration and is presented in Table 2.

Table 2: Significant Vibration Effects

Vibration PPV	Effect	Significance of Effect
< 0.14 mm/s	Negligible	Not significant
0.14 – 0.3 mm/s	Minor	
0.3 – 1.0 mm/s	Moderate	
> 1.0 mm/s	Major	Significant

Operational Noise Impact

- 4.9 Operational impact from road traffic has been based on Design Manual for Roads and Bridges DMRB Volume 11 Section 3 Part 7 HD 213/11. HD 213/11 was replaced after the scoping for this scheme was undertaken by LA 111 – Noise and Vibration (2020)⁵ (Document Ref WG 4.01.98). Commentary on the minor difference between the two documents is given in ES Chapter 13. DMRB sets the benchmark methodology by which all UK road schemes are assessed. Together with Calculation of Road Traffic Noise

³ BS 5228-2:2009 + A1 2014 “Code of practice for noise and vibration control on construction and open sites” Part 2: Vibration

⁵ Design Manual for Roads and Bridges (DMRB) LA111 Sustainability and Environment Appraisal, Revision 2. Available online: [LA 111 - Noise and vibration - DMRB \(standardsforhighways.co.uk\)](https://standardsforhighways.co.uk) [Accessed 20/08/2021]

1988 (CRTN)⁶ (Document Ref WG 4.01.99) and the latest modelling software to predict noise strictly in accordance with CRTN, HD213/11 provides guidance on the impact significance based on the noise level change experienced at sensitive receptors. This sets the criteria for potential mitigation to be explored.

- 4.10 The assessment of operational noise level changes has been made by reference to guidance in DMRB and considered short-term effects. The guidance presented in DMRB provides the classification of magnitude of noise impacts, which is intended to assist in establishing significant effects. The DMRB classification of magnitude of impacts is reproduced in Table 3 **Error! Reference source not found.** It has been adopted that a Moderate or Major impact would constitute a significant effect. Significant noise effects should be mitigated.

Table 3: Classification of Operational Impacts

Magnitude of Impacts	Noise Level Change in the Short-term (dB)	Adopted Significance
Negligible	< 1	Not significant
Minor	1 – 2.9	
Moderate	3 – 4.9	Significant
Major	≥ 5	

- 4.11 Traffic noise predictions use industry standard noise mapping Software CADNA L. This considers the full 3D geometry of the surrounding area, including existing and proposed topography around the A55 and implements the CRTN procedures for calculation of noise from traffic flows taking into account the speed and composition (%HGVs), road surface, gradient, distance attenuation and screening. Air and ground absorption are also accounted for along with the effect of buildings.
- 4.12 The CRTN methodology assumes steady flows of traffic on individual road links. The links considered in our assessment are identified in ES Volume 2 Figure 13.6.
- 4.13 Traffic flow, composition and speed data used to prepare the acoustic model and noise predictions was prepared by Nigel Roberts. Traffic flows and speeds are reproduced for each of the considered links in Table 13.5 of the ES Volume 1 Chapter 13 for the opening year and baseline year cases.
- 4.14 Future year traffic predictions (2037) have now been produced by Traffic Expert Nigel Roberts which allow a comparison of long term impact against

⁶ Department for Transport, Welsh Office, Calculation of Road Traffic Noise (CRTN), 1988

the baseline. This data and subsequent assessment is provided in Appendix B including the revised thresholds for significance of long term impact in accordance with DMRB.

- 4.15 Traffic flow predictions for the baseline and future year have been updated for this Inquiry. Further information is provided in Nigel Roberts' proof of evidence. I have reviewed the new traffic data and confirm some small changes for the 2022 opening year assessment compared with the numbers used in ES Volume 1 Chapter 13. These changes would result in small reduction in the scheme impact. The data presented for the 2037 future year scenario in Appendix B is the latest traffic data.
- 4.16 For completeness, an ES Addendum will be produced prior to the public inquiry covering the changes in the road traffic modelling presented in Nigel Roberts' proof of evidence. This ES addendum will also take the opportunity to capture the significance of short term effects that were excluded in error from the published ES Chapter 13.
- 4.17 The approved methodology of CRTN does not account for the effects of acceleration or deceleration, waiting traffic, roundabouts of other road features such as rumble strips or traffic calming.
- 4.18 The methodology is robust and appropriate for use in determining the operation impacts of the scheme.

Baseline

- 4.19 Baseline noise measurements were made in 2019 at 8 locations representative of Nearest Sensitive Receptors (NSR). This noise levels have been used to assess the construction noise impact thresholds.
- 4.20 Operational vibration impact (vibration from traffic on the completed road network being perceptible in residential properties) was scoped out.

5. Summary of Identified Impacts and Effects

Construction Noise and Vibration Impact Assessment

- 5.1 Assessment of construction noise begins by defining the background noise levels at the nearby sensitive receptors. Background noise monitoring was undertaken in 2019 and reported in ES Volume 1 Chapter 13. Monitoring locations are shown in ES Volume 2 Figure 13.2.
- 5.2 Based on the results of the baseline monitoring, suitable threshold levels at each receptor are determined in accordance with the “5 dB(A) change” method in BS 5228:2009+A1:2014, as detailed in ES Volume 1 Chapter 13.
- 5.3 Detailed noise calculations are then carried out looking at the demolition/breaking out, earthworks and road construction phases. On site construction traffic is also assessed. Off-site construction traffic is assumed to use the A55 forming a very small part of the overall traffic flow and therefore a separate assessment of this was scoped out of the assessment.
- 5.4 Predicted noise impact is then compared with the identified thresholds to consider impact.
- 5.5 Predicted vibration impact looks at the offset distance between potential works that can create high levels of vibration and sensitive receptors. Using reference data in BS 5228:2009 Part 2, Ramboll has assessed the likelihood of significant impact.
- 5.6 Finally, where an exceedance of the threshold is noted, suitable mitigation is proposed, where appropriate and practical, and in line with Best Practical Means (BPM). BPM involves, but is not limited to, the selection of quieter methods of working along with communication about potential impacts with the local community.
- 5.7 Construction vibration effects are assessed at 13.5.4 of the ES Volume 1 Chapter 13. Significance of effects for construction vibration are based on Peak Particle Velocity (PPV) levels that are expected to be experienced at the receptor. A significant vibration effect is noted where the predicted vibration level exceeds the threshold for human perception. It should be noted that this threshold is several orders of magnitude below the levels which could cause any damage to dwellings.

Construction Vibration Impacts

- 5.8 Significant vibration impacts are detailed at Section 13.5.4 of Chapter 13. Impact locations are shown in ES Volume 2 Figure 13.1 These are limited to finishing works activity of Phase 2 works due to the use of vibratory compactors at locations P2 Ysguborwen Road and P4 Maes-y-Llan. Such impacts are expected to be short term and temporary in nature.

Construction Noise Impacts

- 5.9 Construction noise effects are noted at Section 13.5.2 of the ES Chapter 13. No significant construction noise effects are predicted.

Operational Noise Impact Assessment Prior to Mitigation

- 5.10 Operational noise impact as a result of traffic on the altered junctions and affected road network within the study area and changes in road traffic on affected routes is provided in Chapter 13 Table 13.3 as increase in noise levels in the short term without mitigation. The table is recreated below for clarity.
- 5.11 ES Chapter 13 Table 13.3: Changes in road traffic noise in the short-term without mitigation.

Table 4: Short-term Operational Noise Impact - No Mitigation

Change in Noise Level		Number of Dwellings
Increase in noise level, dBL _{A10,18h}	5 +	0
	3 - 4.9	0
	1.0 - 2.9	8
	0.1 - 0.9	75
No change		75
Decrease in noise level, dBL _{A10,18h}	0.1 - 0.9	381
	1 - 2.9	103
	3 - 4.9	0
	5 +	0

- 5.12 The Scheme is predicted to result in a noise level decrease at the majority of receptors. This is attributed to a diversion of traffic from Glan-Yr-Afon Road in Dwygyfylchi into a new bypass road. Where a noise level increase is predicted, this is attributed to an increase in traffic speed around the existing junction and realignment of the roads with introduction of additional carriageways closer to the receptors. No receptors are predicted to experience a significant decrease effect.
- 5.13 The supplementary report in Appendix B includes an updated noise assessment which addresses changes in projected traffic flow for the long term 15-year scenario. (2037). This further assessment was not possible when the original ES was submitted as the traffic data was not available. The long term impacts are given below. Note that for the long term impact, a change of 5 dB or more is gauged as significant in accordance with DMRB HD213/11.

Table 5: Long Terms Operational Noise Impact Prior to Mitigation

Change in Noise Level		Number of Dwellings
Increase in noise level, dBL _{A10,18h}	10 +	0
	5.0 – 9.9	0
	3.0 – 4.9	0
	< 3.0	28
no change		4
Decrease in noise level, dBL _{A10,18h}	< 3.0	610
	3.0 – 4.9	0
	5.0 – 9.9	0
	10 +	0

- 5.14 The outcome of the long term assessment is that no properties would experience a change in noise level in the long term that would be classed as significant when assessed using DMRB HD213/11.
- 5.15 Both long and short term assessments do not show any significant increase in noise levels in the Noise Action Plan Priority Area (NAPPA) around Maes-y-Llan. Here the change in noise level for both long term and short term is less than 3 dB.

6. Operational Impact Mitigation

Noise Action Plan Priority Area (NAPPA)

- 6.1 Noise Priority areas were identified in the Noise and Soundscape Action Plan 2018 – 2023⁷ (Document Ref WG 4.01.103) Environmental Noise Directive (END) noise mapping, last updated in Wales in 2017. NAPPA areas containing noise sensitive uses such as residential accommodation are identified as having existing high levels of noise exposure and mitigation measures should be considered a high priority.
- 6.2 Within the study area a NAPPA is identified around Maes-y-Llan. The extents of the priority area are identified on the Extrium Noise Mapping website⁸.
- 6.3 There are no defined levels of reduction in noise to achieve in these areas although reference is made to Noise Insulation Regulations requirements and the outcome of the DMRB HD213/11 assessment.

Noise Insulation Regulations 1975 (NIR)

- 6.4 The Noise Insulation Regulations 1975¹⁰ (Document References WG 4.01.101 and 4.01.102) set out the conditions under which dwellings are eligible for external building fabric sound insulation measures to control internal noise levels. The conditions relate to the traffic noise level at the façade of any habitable spaces for existing residential buildings. There is an absolute noise level that must be exceeded and the change in noise level must be more than 1 dB as a result of the scheme. A summary of the requirements is set out below. The change in noise level applies for the future year (+ 15 years) but should be assessed through calculation in accordance with CRTN.
- The façade noise threshold of 68 dB $L_{A10, 18 \text{ hour}}$ is met or exceeded. This is the traffic noise level at any window to a habitable room, determined 1 m from the window and including reflections of noise off the façade;
 - There must be a noise increase of at least 1 dBA compared to the prevailing noise level immediately before the construction of a highway or additional carriageway is begun;

⁷ Welsh Government. Noise and Soundscape Action Plan 2018 – 2023. Available online: <https://gov.wales/sites/default/files/publications/2019-04/noise-and-soundscape-action-plan.pdf> [Accessed 20/08/2021]

⁸ <http://extrium.co.uk/walesnoiseviewer.html>

¹⁰ Noise Insulation (Amendment) Regulations 1988, SI 1988/2000. Available online: [The Noise Insulation \(Amendment\) Regulations 1988 \(legislation.gov.uk\)](https://www.legislation.gov.uk/si/1988/2000) [Accessed 20/08/2021]

- c) The noise caused by traffic on the new or altered roads makes an effective contribution of at least 1 dBA and;
- d) The property is 300 m or less from the nearest point on a carriageway or highway to which the regulations apply

Proposed Mitigation Strategy NAPPA Areas

- 6.5 The Noise Action Plan Priority area within the Junction 16 study area is subject to façade noise levels established through modelling that are above the 68 dB $L_{A10\ 18\ \text{hour}}$ in the future year. Mitigation is being proposed to provide a reduction in noise levels at these properties to below the Noise Insulation Regulations threshold.
- 6.6 Mitigation measures explored include screening and low noise surfacing.
- 6.7 A thin road surface treatment (Low Noise Surfacing or LNS) is proposed for all new road links as mitigation to reduce noise levels. The full benefits of thin surface treatment are only realised at traffic speeds above 75 km/h (around 47 mph) (-3.5 dB correction according to the CRTN calculation procedure and DMRB, HD213/11). At speeds below 75 km/h, DMRB advises that a -1 dB correction should be assumed rather than -3.5 dB but states that the benefit of low noise surfacing is likely to be better than this at lower speeds, but little research was available at the time the document was produced.
- 6.8 Further studies presented by TRL and Scottish Government¹¹ (Document Ref WG 4.01.100) shows that for major routes, the estimated benefit of low noise surfacing at speeds of 60 km/h is between -4 dBA and -5.5 dBA depending on aggregate size used in LNS relative to Hot Rolled Asphalt (HRA).
- 6.9 It is therefore considered appropriate and robust to apply the full CRTN surface correction (-3.5 dB) at traffic speeds above 60 km/h.
- 6.10 At lower speeds, engine noise begins to outweigh the noise of tyre interaction with the road surface.
- 6.11 The proposed initial mitigation solutions to reduce noise impacts to acceptable levels is set out in ES Chapter 13 Figure 13.4. This sets out the location and height of noise barriers around Maes-y-Llan. Further details of the barrier extents and heights is provided in ES Chapter Appendices Environmental Masterplan and in the proof of my colleague Jon Stoddard Landscape and visual impact.
- 6.12 Noise barrier options around the NAPPA area at Maes-y-Llan are currently being evaluated. These will balance the requirements to provide a modest reduction in noise levels and maintain the views out to the coastline. A

¹¹ TRL and Scottish Government “A review of current research on road surface noise reduction techniques”, January 2010

number of options are being explored in response to feedback from residents. The aim will be to reduce noise levels at affected properties to below the trigger level set out in Noise Insulation Regulations where these works can be accommodated as part of the scheme.

- 6.13 The residual future year impact of the scheme with the mitigation proposed in ES Chapter 13 Figure 13.4 is presented in Appendix B and included below.

Table 6: Long Term Operational Noise Impact with Mitigation

Change in Noise Level		Number of Dwellings
Increase in noise level, $dBL_{A10,18h}$	10 +	0
	5.0 – 9.9	0
	3.0 – 4.9	0
	< 3.0	26
no change		0
Decrease in noise level, $dBL_{A10,18h}$	< 3.0	605
	3.0 – 4.9	7
	5.0 – 9.9	4
	10 +	0

- 6.14 No properties are expected to experience an increase in noise level of more than 3 dB in the short term or the long term.
- 6.15 With the proposed mitigation, over 600 properties will experience a reduction in traffic noise over the baseline. Appendix B Figure B1 presents these reductions.

7. Consultation

- 7.1 An EIA Scoping Report was issued to Welsh Government and all other statutory consultees including the environment health team at Conwy County Council in 2019.
- 7.2 Welsh Government confirmed in their response to both Scoping Reports that the approach and scope of assessment are acceptable. No objections were raised from any of the consultees.
- 7.3 Public consultation was also undertaken as part of the WelTAG Stage Two Public Consultation commencing 4 June 2018 (Document Ref WG 4.02.01).

8. Response to Objections

- 8.1 I have grouped together the Objectors' responses and responded to each theme.

“The Stage 3 Scheme Assessment Report (Welsh Government, 2021e) also states that the roundabouts at Junction 15 and 16 “currently impede the traffic flow”. However, deliberately slowing traffic down is not necessarily a bad thing:..... It reduces noise”

- 8.2 Response: Assessment of noise impact of the scheme is done in accordance with DMRB (Core Document List) and Calculation of Road Traffic Noise (1988) (Core Document List). This methodology accounts for steady traffic flows of given speed, road surface, gradient and vehicle type. The calculation procedure does not allow for the presence of road junctions, roundabouts or traffic lights where traffic flows are interrupted. For Junction 16, it would be expected that the reduction in speed up to the roundabout would reduce noise levels, but that is would be partly offset by increased vehicle acceleration off the roundabout and heavy braking up to the roundabout. In addition, the increase in noise from the currently installed rumble strips would be expected to partially outweigh the benefit of the roundabout in reducing noise.

- 8.3 When assessed in accordance with the recommended standards and guidance, and increase of up to 3 dB in noise levels in the short term would be assessed as being not significant. In the long term increases of up to 5 dB would also not be considered significant. In accordance with recommended standards and guidance, further noise mitigation beyond that proposed is not appropriate.

- 8.4 It should be noted that the impact of the scheme at residential property locations is overwhelmingly positive. In the long term over 600 properties will experience a reduction in noise as a result of the scheme. The limited increases in noise due to higher traffic speeds close to the existing Junction 16 roundabout do not impact residential receptor locations.

- 8.5 As further information, we have provided a figure showing the noise level change in 1 dB steps as further refinement to the information presented. This is presented in Appendix C.

“Maes-y-Llan Residents – “we have concerns about the 3 m high noise reduction barrier that will be situated at the bottom of Maes y Llan because it looks really out of place, solid and high in the drawings/plans. Please can you pass on our concerns and ask that they consider purchasing the most discreet (transparent) noise reduction barrier to minimise the disruption of the views and to reduce the impact on residents of the street.”

- 8.6 Response: Our team have met with residents at Maes-y-Llan and understand the important of the visual impact of any barrier and any impediment to the view. We are working on a number of mitigation options to reduce the visual impact of any acoustic screen looking at combination of barriers close to the A55 and some earthworks to create a “soft” parapet that does not impact views.

“All tarmac should be ‘quiet tarmac’ to help reduce noise pollution – this will help with the noise pollution.”

- 8.7 Response: The use of low noise surfacing will have benefit where speeds on roads exceed 60km/h. We are investigating the use of low noise surfacing on links included as part of the scheme and for main carriageway resurfacing between Junction 16 and 16A where it would be most beneficial to the NAPPA area. The benefit of low noise surfacing has to be weighed against the increased maintenance required and the cost of alternative solutions with similar acoustic outcomes.

“The North Wales coast is blighted by road noise from the A55 motorway along its length and nothing has ever been done to address this. So now you're going to get the traffic to go faster and create even more noise. The speed limit should be reduced to 50mph through all towns and villages (not just Colwyn Bay) and noise barrier walls/fencing should be erected along as much of it as possible.”

- 8.8 Response: The scope of this scheme is limited to the improvements at Junctions 16 and 16A of the A55 and cannot therefore include an assessment of or provide mitigation for the whole of A55. The assessment of the Scheme in accordance with the government requirements indicates that the proposed mitigation (which includes low noise surfacing and noise barriers where required) is appropriate to reduce impacts to a level which is not significant within the study area. Please see Chapter 13 of the Environmental Statement (ES) for further details. It should be noted that the impact of the Scheme at residential property locations is overwhelmingly positive. In the long term over 600 properties will experience a reduction in noise as a result of the scheme. The limited increases in noise due to higher traffic speeds close to the existing Junction 16 roundabout due not impact residential receptor locations. It should also be noted that noise barriers are only effective if they provided effective line of sight screening to noise sources. Where properties are elevated relative to the road, effective noise barriers can be of very significant height and visual impact and these aspects should be carefully considered.

9. Conclusion and Declaration

- 9.1 My proof of evidence includes facts which I regard as being relevant to the opinions which I have expressed, and the Inquiry's attention has been drawn to any matter which would affect the validity of that opinion.
- 9.2 As Acoustic expert, I have liaised and sought with the engineering and other environmental specialists in the team, to minimise impacts of the Scheme and to optimise the effectiveness of proposed mitigation to NAPPA areas
- 9.3 In my opinion the Noise and Vibration Assessment, has been carried out and published in accordance with legislation and professional guidance.
- 9.4 In my opinion there are no significant effects as a result of the operation of the scheme.
- 9.5 I believe the facts I have stated in this proof of evidence are true and that the opinions expressed are correct.
- 9.6 I understand my duty to the Inquiry to assist it with matters within my expertise and believe that I have complied with that duty.

10. Appendices (Separate Volume)

Appendix A

Glossary of Acoustics Terms

Appendix B

Long Term Operational Noise Impact Assessment

Appendix C

Short Term Noise Difference Maps in 1 dB Steps