

Tritax Symmetry (Hinckley) Limited

HINCKLEY NATIONAL RAIL FREIGHT INTERCHANGE

The Hinckley National Rail Freight Interchange Development Consent Order

Project reference TR050007

Aston Firs Technical Note [Appendix 4 (C) – Noise Modelling]

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Planning Act 2008

The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009
Regulation 5(2)(q)

Aston Firs Technical Note
Appendix C Acoustic Barrier Noise
Modelling Note

Project	Hinckley Rail Freight Interchange		
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A47 Link Road - Update to Development Generated Road Traffic Noise Assessment

1 Introduction

- 1.1 Following submission of the Development Consent Order (DCO), and receipt of the Examining Authority's Report and the Secretary of State's letter dated 10th September 2024, the Applicant has re-revisited the design of the road layout between Junction 2 M69 to the first roundabout on the proposed A47 link road, and the requirement for noise mitigation arising therefrom, in order to better mitigate impacts on the amenity of the residents of Aston Firs Traveller Site whilst ensuring adequate protection from road traffic noise arising from the proposed access road from M69 J2 leading into HNRFI taking into account the ExA's conclusions which the SoS was minded to agree with.
- 1.2 This note updates the noise assessment in so far as it relates to the residents of the Aston Firs Traveller Site taking into account the design principles set out in:
- 1.3 The Design Code (document reference: 13.1D) has been updated to include a set of design commitments which relocates the acoustic barrier adjacent to the A47 link road away from the Aston Firs gypsy and traveller site, reduces the height of the barrier to 3 metres and also sees the carriageway of the link road lowered by 1.5 metres adjacent to the acoustic barrier. It is these parameters upon which noise has been reassessed in this location. C]
- 1.4 An acoustic barrier is most effective in terms of the acoustic attenuation it provides when it is located near to the source or near to the receptor. The original mitigation scheme comprised 4m and 6m high acoustic barriers along the Northern and Eastern boundaries of the Aston Firs Traveller Site, i.e. close to the receptors at Aston Firs. As is made clear in the ExA's report, it was the 6m high barrier that gave rise to its concerns.
- 1.5 To facilitate the optimisation of the acoustic barriers in the vicinity of Aston Firs, the A47 link road has been realigned. Furthermore, the proposed topography has been revised to reduce the level of the road. The design now allows for the acoustic barrier to be closer to the road, providing more effective mitigation at the source. The acoustic barriers now comprise 4m barriers along the northern boundary, and then 3m along the south-eastern boundary. In the vicinity of Aston Firs, the barrier height has reduced to 3m, and now sits along the re-aligned link road (further from the receptors). To allow access to the bridleway and the crossing under the Link Road, the 3m high acoustic barrier adjacent to the Link Road terminates at the crossing, thus there is a small overlap in the barrier. However, there is a gap through which some noise can permeate.

- 1.6 Alternatives of a higher barrier were considered, but provided limited additional reduction in noise levels at Aston Firs when taking into account other factors, such as visual impact. Therefore a 3m high acoustic barrier provides a suitable solution to mitigate the effects of road noise whilst preserving a suitable level of visual amenity for the residents of Aston Firs.
- 1.7 The road realignment and proposed barrier locations are shown below in **Figure 1.1**.
- 1.8 These positive changes have been included within the noise model and the noise assessment has been updated. The assessment predicts the likely change in noise level as a result of development generated traffic, particularly as a result of the A47 Link Road, in the vicinity of Aston Firs and considers the potential effect. The assessment considers the change in noise level in both the short term and the long term. The methodology and modelling inputs are presented in the Noise and Vibration ES Chapter (Chapter 10, 6.1.10 Rev 09; referred to hereafter as the 'Chapter assessment').

Figure 1.1: A47 Link Road and Acoustic Barrier Locations



2 Assessment

Design Manual for Roads and Bridges (DMRB) LA111 Noise and Vibration Revision 2

- 2.1 The noise modelling and assessment of the updated Link Road design has been undertaken in accordance with Calculation of Road Traffic Noise and the principles of DMRB, which is the accepted guidance and methodology detailed within the Chapter assessment. This has been examined and accepted as appropriate by the ExA. The calculation and assessment methodology is detailed within the Chapter assessment and the DMRB methodology is included below for ease of reference.
- 2.2 The DMRB assessment methodology suggests that the magnitude of noise changes from a project should be classified into levels of impact. LA111 considers how the magnitude of change can be affected by whether a noise level change occurs in the short term (e.g. as a result of a sudden opening of a scheme), or in the long term (e.g. gradually over time, such as that associated with natural traffic growth).
- 2.3 The classification scale for short-term and long-term changes, as adopted in the Chapter assessment, are presented in **Table 2.1**.

Table Error! No text of specified style in document..1 Classification of magnitude of noise impacts in the short term and long term

Short Term		Long Term	
Noise Change, dB LA10, 18h	Magnitude of Impact	Noise Change, dB LA10, 18h	Magnitude of Impact
0	No Change	0	No Change
0.1 to 0.9	Negligible	0.1 to 2.9	Negligible
1.0 to 2.9	Minor	3.0 to 4.9	Minor
3.0 to 4.9	Moderate	5.0 to 5.9	Moderate
5.0+	Major	10.0+	Major

Proposed Acoustic Barriers

- 2.4 As the updated design of the A47 Link Road forms part of the mitigation strategy to reduce noise, the unmitigated assessment considers the design alignment as presented during the Examination. Therefore, the unmitigated results remain unchanged from the Chapter assessment, which is detailed in the Chapter assessment (paragraphs 10.217 to 10.249).
- 2.5 The with mitigation assessment has been updated to reflect the updated design of the A47 Link Road (as this forms part of the mitigation strategy). Cross sections showing the updated road and acoustic barrier positions are shown in Drawing HRF-BWB-GEN-XX-CH-SK184-Aston Firs Acoustic Fence Cross Sections S2 P02.
- 2.6 In addition, the with mitigation assessment has been updated in relation to the optimisation of the acoustic barriers required to protect the amenity of residents at Aston Firs;
- a 4m high acoustic barrier is proposed along the northern boundary, which is in line with that detailed in the Chapter assessment and found to be acceptable by the ExA.
 - 3m high acoustic barriers are proposed adjacent to the south-eastern boundary of Aston Firs, and adjacent to the western carriageway of the A47 Link Road and northern carriageway of the realigned B4669, as they both pass Aston Firs. These are reduced from 6m as originally proposed immediately adjacent to the Aston Firs boundary. The section of the barrier that runs along the boundary is aligned to the extent of the section of 6m barrier which was found to be acceptable by the ExA.
- 2.7 The location and height of the revised acoustic barriers is shown in **Figure 1.1**. The design and material used to construct the acoustic barriers will be defined at detailed design stage. The minimum acoustic performance of this barrier will be achieved irrespective of construction method.
- 2.8 The road traffic noise predictions at the receptors at Aston Firs have been re-calculated within the noise model, including the revised mitigation strategy as summarised above.

Short-term Development Generated Road Traffic Assessment

- 2.9 Noise contour maps have been produced for with the Proposed Development, with mitigation, and are shown in **Figure 2.1** for the short-term. Noise contours have also been produced for the short-term scenario to show the difference between the 'with' and 'without' development scenarios with mitigation in place. This is shown in **Figure 2.2**.

Figure 2.1: Short-term Development Generated Road Traffic Assessment with Mitigation - Noise Contours 'with development' dB LA10, 18hr – Grid Height at 1.5m

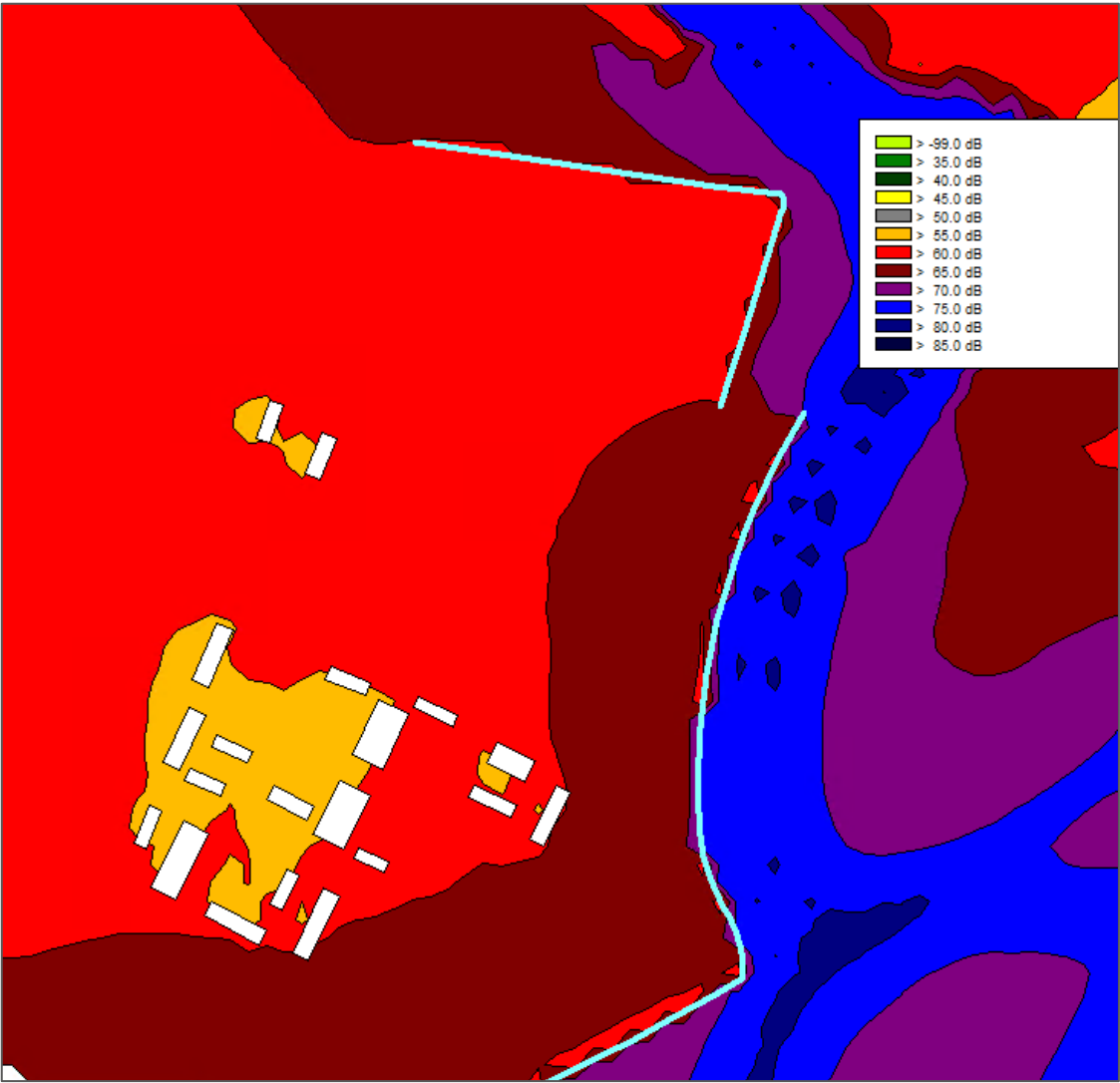
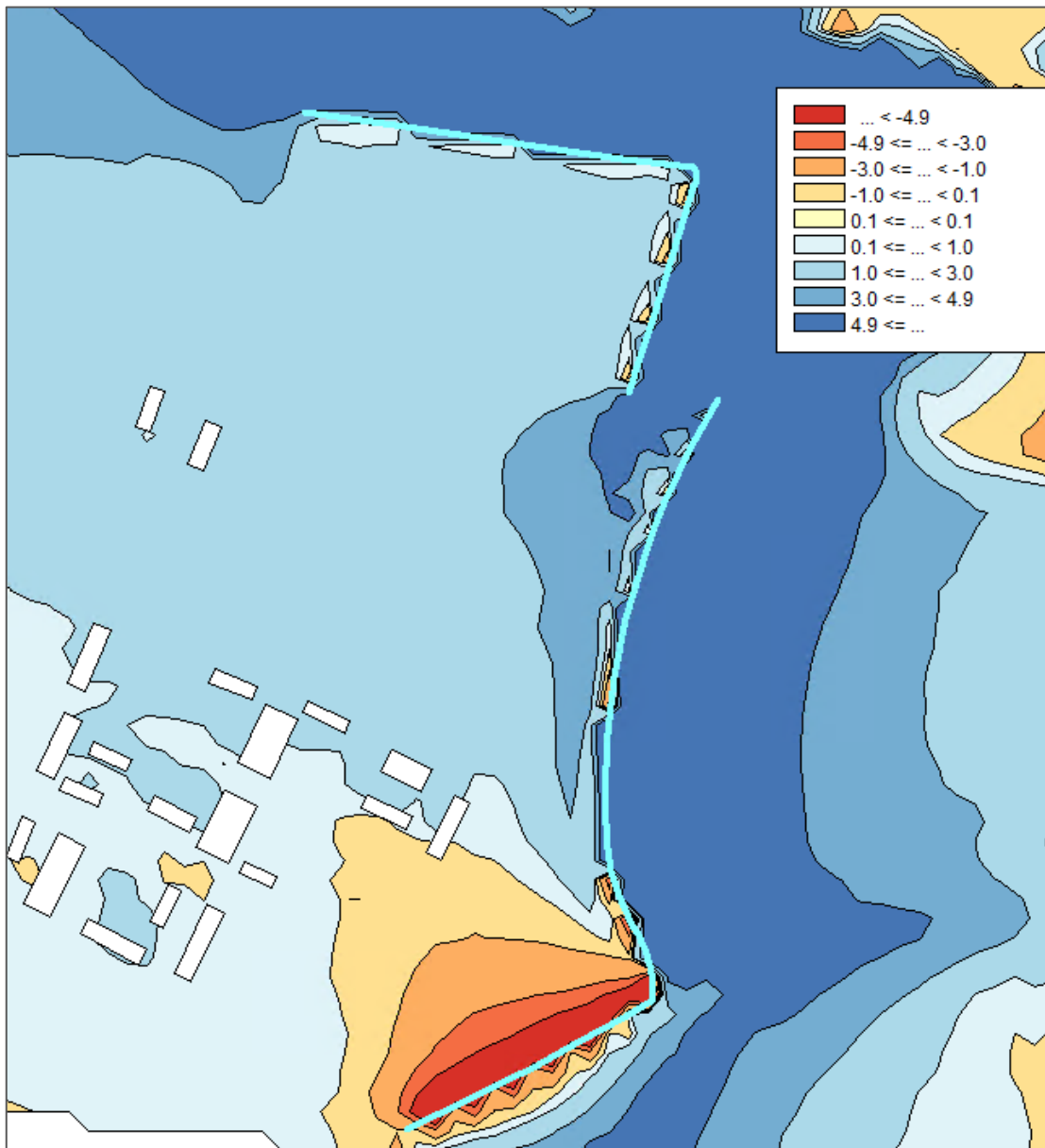


Figure 2.2: Short-term Development Generated Road Traffic Assessment with Mitigation - Noise Contours 'difference contours' dB LA10,18hr – Grid Height at 1.5m



- 2.10 The difference contours show that for the majority of the Aston Firs Traveller Site, the change in noise level is predicted to be up to +2.4dB in the short-term. In accordance with the methodology detailed in the Chapter assessment (reiterated in Table 2.1 of this technical note), the magnitude of impact is likely to be Low which will result in a Minor, Adverse Effect, which is not significant.
- 2.11 There are some small areas close to the north-western and eastern boundaries where a difference of up to 4.0dB is predicted. However, these areas are small and there are no residential receptors located within these areas. It is also worth noting that some small areas in the south-eastern area of Aston Firs are predicted to experience a reduction in noise levels of up to -0.6dB.

Long-term Development Generated Road Traffic Assessment

- 2.12 Noise contour maps have been produced for with the Proposed Development, with mitigation, and are shown in **Figure 2.3** for the long-term. Noise contours have also been produced for the long-term scenario to show the difference between the 'with' and 'without' development scenarios with mitigation in place. This is shown in **Figure 2.4**.

Figure 2.3: Long-term Development Generated Road Traffic Assessment with Mitigation - Noise Contours 'with development' dB LA10,18hr – Grid Height at 1.5m

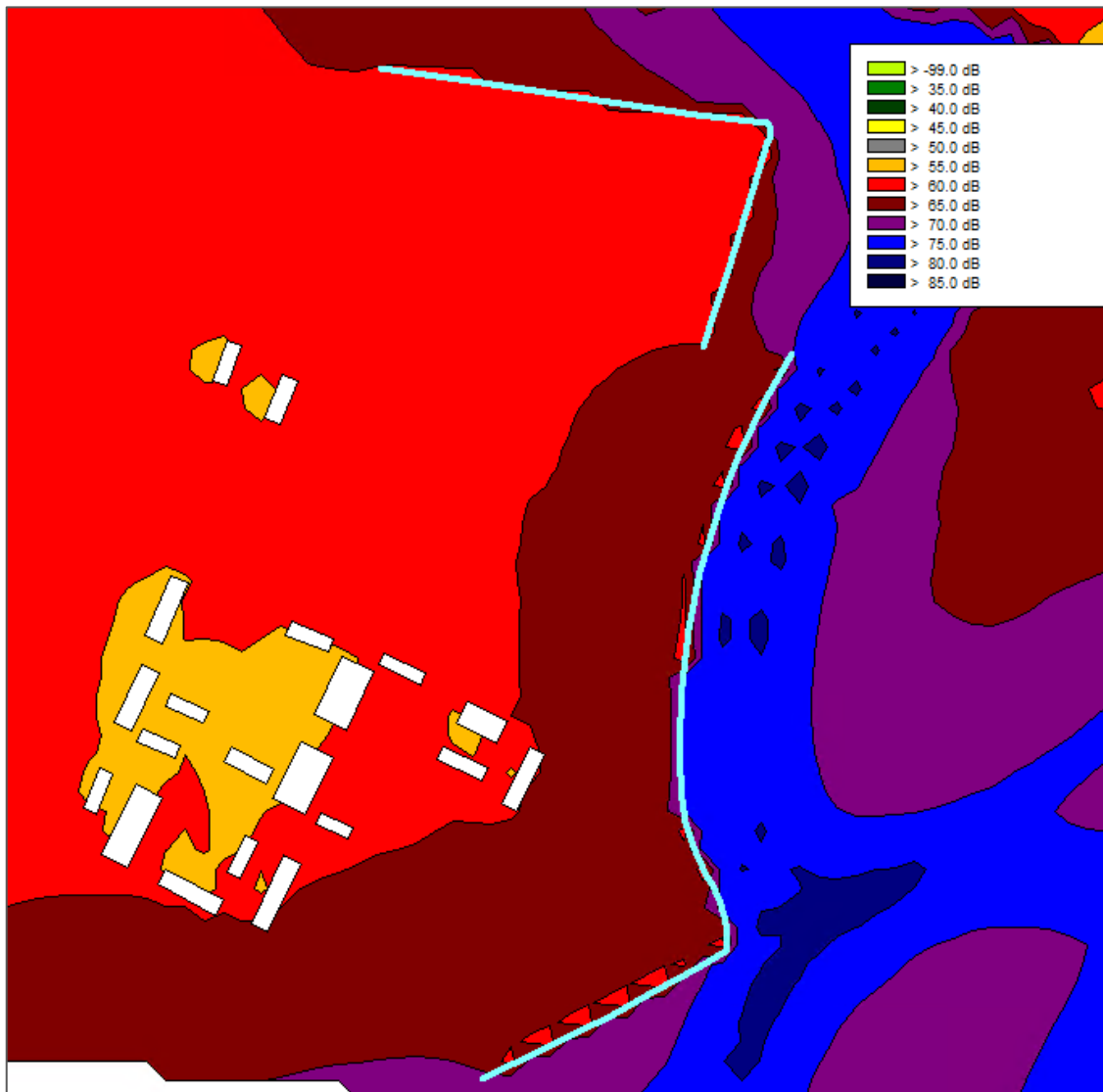
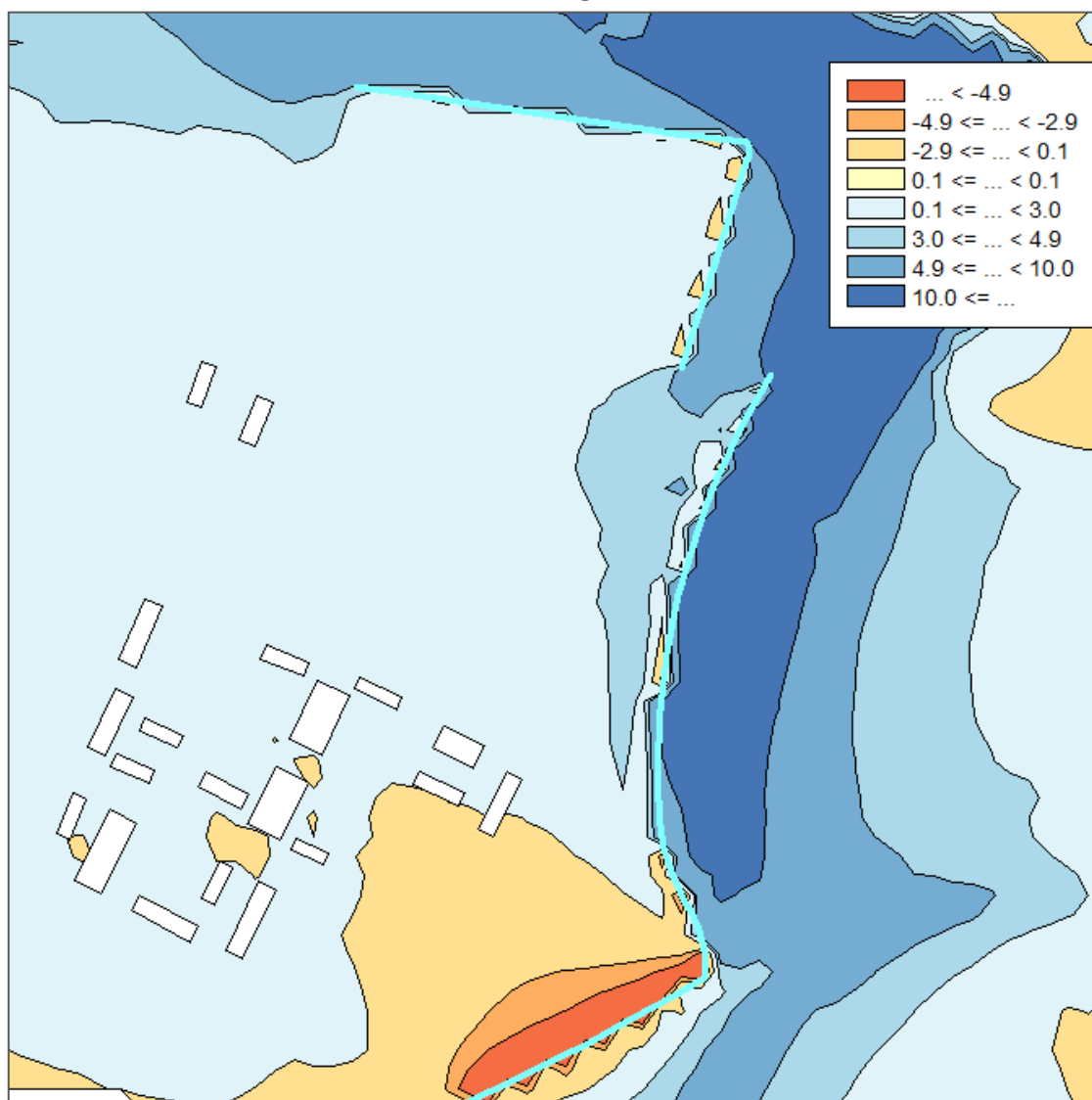


Figure 2.4: Long-term Development Generated Road Traffic Assessment with Mitigation - Noise Contours 'difference contours' dB LA10,18hr – Grid Height at 1.5m



- 2.13 The difference contours show that for the majority of the Aston Firs Traveller Site, the change in noise level is predicted to be up to +2.9dB for the long-term. In accordance with the methodology detailed in the Chapter assessment (shown in Table 2.1), the magnitude of impact is likely to be Very Low which will result in a Negligible, Adverse Effect, which is not significant.
- 2.14 There are some small areas close to the north-western and eastern boundaries where a difference of up to +4dB is predicted. However, these areas are small and there are no residential receptors located within these areas. It is also worth noting that some small areas in the south-eastern area of Aston Firs are predicted to experience a reduction in noise levels of up to -1.0dB.
- 2.15 In accordance with paragraph 10.54 of the Chapter assessment, the magnitude of impact can be modified through consideration of a combination of other contextual

factors or local circumstances to determine final significance. These are discussed below.

- 2.16 The predicted increase in the noise level over the short-term sits in the middle of the Low band. The predicted increase in the long-term sits at the top of the Very Low band. The predicted level of change is considered marginal and would barely be perceptible to the human ear with changes of 3dB only just perceptible under conditions 'in the field' (i.e. in practical or 'real world' conditions).
- 2.17 The absolute noise level at the worst-affected receptor is 66dB LA10,18h for the short-term and 67dB LA10,18h for the long-term which are below the Significant Observed Adverse Effect Level (SOAEL) as defined in DMRB. Furthermore, the existing noise climate is dominated by road traffic noise and will continue be dominated by road traffic noise in the future should the Proposed Development be granted consent. Taking the above into account, no modification of the initial magnitude of impact is required. Overall. The magnitude of impact remains at Low, which results in effects which are not significant, in both the short-term and long-term scenarios.
- 2.18 Government policy on noise¹ is based on demonstrating how significant adverse effects have been avoided, and adverse effects have been mitigated and minimised in the context of Government Policy on sustainable development. Therefore, an assessment has been undertaken comparing the unmitigated impacts to the mitigated impacts to demonstrate the attenuation afforded by the proposed mitigation.
- 2.19 **Table 2.2** shows the increase in noise levels with and without mitigation in place for the opening (short-term) and future years (long-term).

Table 2.2: Increase in Short-Term and Long-Term Noise Levels – With and Without Mitigation

Noise Level Increase dB			
Short-term Increase Without Mitigation – Opening Year *	Short-term Increase With Mitigation – Opening Year	Long-Term Increase Without Mitigation – Future Year*	Long-Term Increase With Mitigation – Future Year
+4 to +7	+2.4	+4 to +8	+2.9
*There is a greater range for these scenarios without mitigation in place as can be seen by the contour maps in Appendix A			

- 2.20 The results show that without mitigation in place, the resultant magnitude of impact would be up to High in the short-term and up to Medium in the long-term. This would result in effects which are significant. With the revised mitigation scheme, the magnitude of impact is Low, which results in effects which are not significant, in both the short-term and long-term scenarios.
- 2.21 The results of the assessment indicate that the proposals do not change the magnitude of impact in the short-term or long-term, from what has previously been stated within the ES Chapter. The, the revised mitigation scheme is considered to comply with Government Policy on noise as set out in the NPS and NPSE as well as safeguarding the amenities of the residents of Aston Firs Traveller Site.

¹ *National Policy Statement for National Networks (2014), Department for Environment, Food and Rural Affairs (2010); Noise Policy Statement for England (NPSE)*

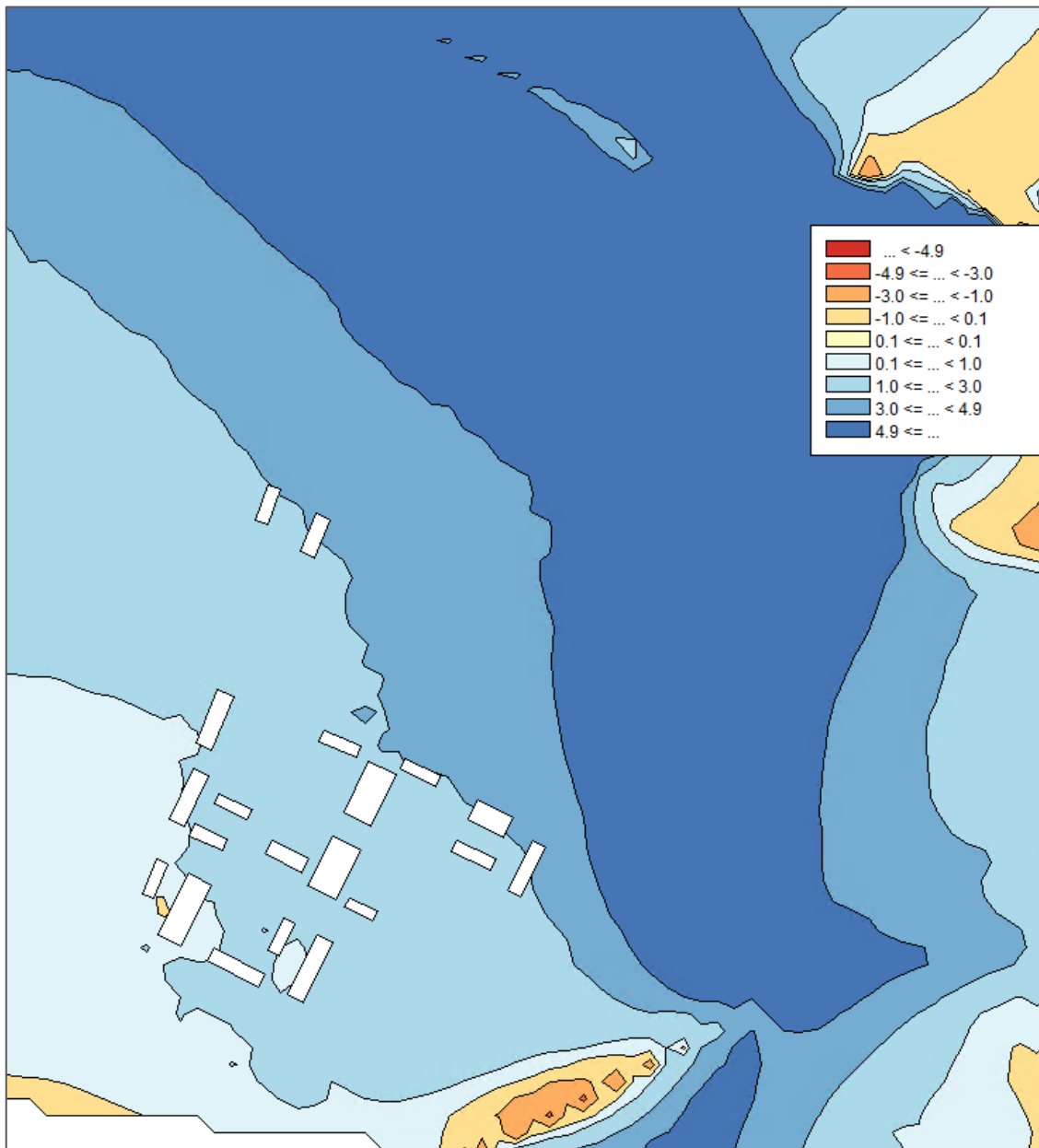
- 2.22 This note and its contents have been reviewed by BDC and HBBC. Their consultant, MEC, has stated in their response to the first draft of this note (document name "Combined Responses from Consultants to HNRFI Documentation 28th October 2024", p3), *"the impacts on the whole are similar to that presented within the ES, and the marginal differences at these locations are unlikely to be of great relevance in the overall scheme."*

3 Summary

- 3.1 In response to the Examining Authority's Report and the Secretary of State's letter dated 10th September 2024, the Applicant has revisited the design of the road layout from Junction 2 into HNRFI, and the requirement for noise mitigation arising therefrom, in order to satisfactorily protect the amenity of the residents of Aston Firs Traveller Site.
- 3.2 The scale and position of the proposed acoustic barriers have been optimised as part of the updated design of the A47 Link Road. A 4m high acoustic barrier is proposed along the northern boundary, while 3m high acoustic barriers are proposed adjacent to the north-eastern boundary of Aston Firs, and adjacent to the western carriageway of the A47 link road and northern carriageway of the realigned B4669 (see Figure 1.1 for A47 Link Road and Acoustic Barrier Locations).
- 3.3 The resultant noise levels associated with the A47 Link Road do not exceed the SOAEL threshold and are predicted to be between the Lowest Observed Adverse Effect Level (LOAEL) and SOAEL effect levels. Therefore, the subsequent effects should be mitigated and minimised, where possible, which has been achieved.
- 3.4 The revised assessment indicates that with the revised mitigation strategy in place, road traffic on the A47 Link Road as it passes Aston Firs, is predicted to result in effects which are not significant, in both the short-term and long-term scenarios. Therefore, the revised mitigation scheme is considered to comply with Government Policy on noise as set out in the NPS and NPSE as well protecting the amenity of the residents of Aston Firs Traveller Site.

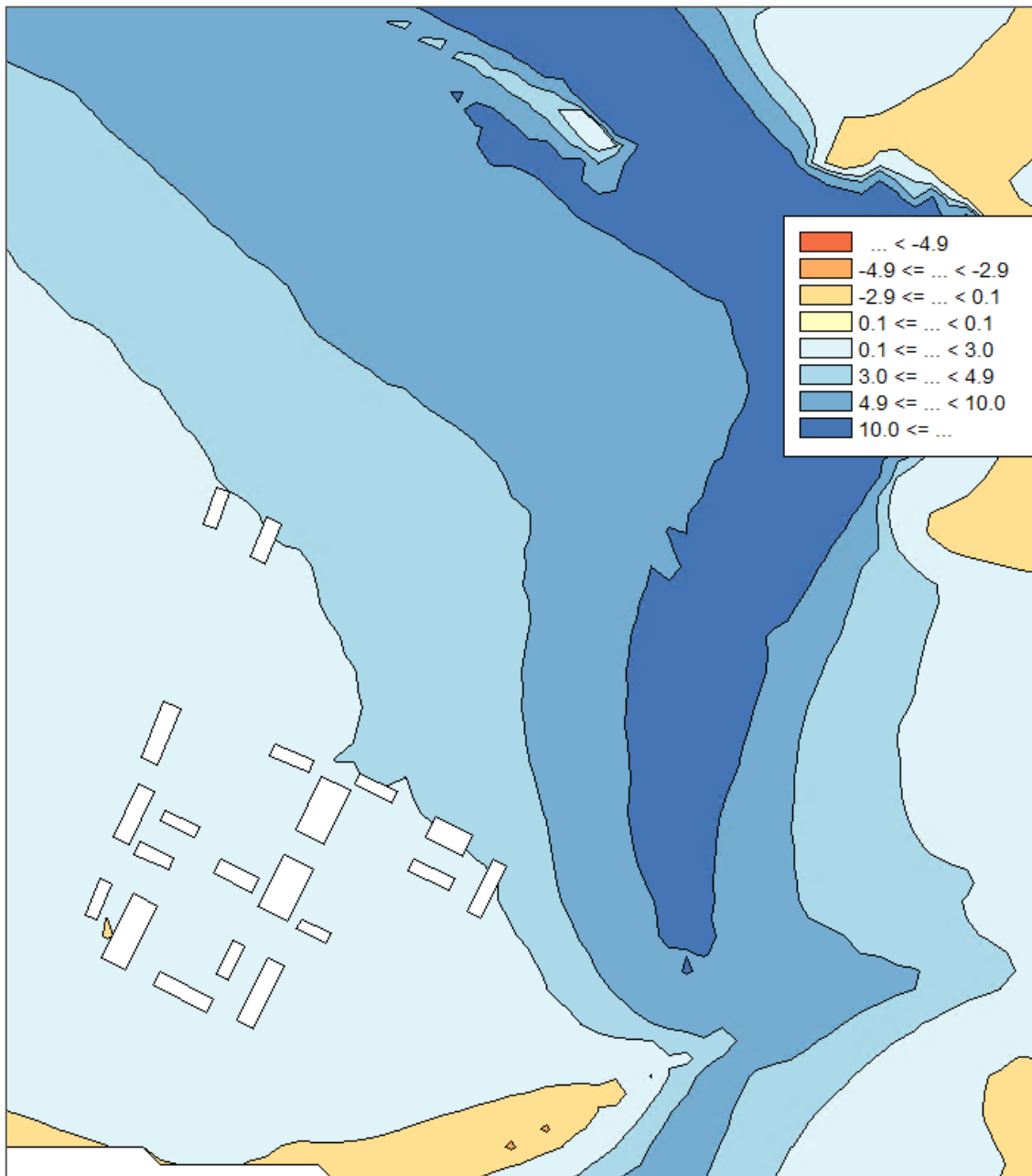
Appendix A

Figure A1: Short-term Development Generated Road Traffic Assessment without Mitigation - Noise Contours 'difference contours' dB LA10,18hr – Grid Height at 1.5m



Noise contours showing the difference in the short term between the original scheme as previously proposed, and the optimised scheme without acoustic barriers.

Figure A2: Long-term Development Generated Road Traffic Assessment without Mitigation - Noise Contours 'difference contours' dB LA10,18hr – Grid Height at 1.5m



Noise contours showing the difference in the long term between the original scheme as previously proposed, and the optimised scheme without acoustic barriers.