

## Appendix A17.6: Operational Residual Noise Impacts

### 1 Introduction

1.1.1 As stated in Paragraph 17.6.2 of Chapter 17 (Noise and Vibration), DMRB Noise and Vibration requires that a full assessment be undertaken of the residual noise impacts where noise mitigation is included. Accordingly, this appendix provides the residual noise impacts with the proposed mitigation measures outlined in Section 17.5 (Mitigation) of Chapter 17 (Noise and Vibration). For ease, the NSR specific mitigation is provided in Table 1, which is reproduced from Table 17.31 in Chapter 17 (Noise and Vibration).

**Table 1: NSR specific mitigation**

Mitigation Item	Approximate Chainage/Location	Minimum Height (m)	Minimum Length (m)	Type of Mitigation
P03-NV3	ch1500-1600 around garden boundary of Ledpetty Lodge	1.8	41	Noise barrier, bund or drystone wall
P03-NV4	ch2900-3000	1.4	61	Noise barrier, bund or drystone wall
P03-NV5	ch4070-4220	1.5	139	Stone mortar wall
P03-NV6	ch5200-5300	1.5	96	Noise barrier, bund or drystone wall
P03-NV7	ch5260-5300	2.4	24	Noise barrier, bund or drystone wall
P03-NV8	Beyond northern end of proposed scheme (including Inch of Tulliemet, Dalnabo Farm Cottage, Vine Cottage and Briar Cottage)	n/a	1022	Application of LNRS to existing A9 carriageways

1.1.2 This appendix follows the same format as Section 17.4 (Potential Impacts) of Chapter 17 (Noise and Vibration) and it is recommended this be read in conjunction with the main chapter in order to fully appreciate the residual noise impacts.

#### Sample NSR Locations

1.1.3 As a result of the proposed additional NSR specific mitigation there are differences at seven of the sample NSR in the predicted noise levels for the DM 2026 and the DS 2026 scenario and four of the sample NSR for the DM 2026 and the DS 2041 scenario during the daytime period. During the night-time period there are differences at a single sample NSR. These differences are presented in Table 2, Table 3 and Table 4 respectively.

**Table 2: Sample NSR – DM 2026 vs. DS 2026 – Day (with receptor specific mitigation)**

ID	Address/ Representative Location	Predicted L <sub>A10,18h</sub> (dB) Noise Level (Façade) and Significance of Impact					
		Ground Floor			First Floor		
		DM 2026	DS 2026	Significance of Impact	DM 2026	DS 2026	Significance of Impact
R3.003	The Mill	46.0	48.3	Slight/Moderate Adverse	47.2	49.4	Slight/Moderate Adverse
R3.004	1 Dowally Cottage	65.2	65.8	Slight Adverse	70.8	72.4	Slight/Moderate Adverse
R3.006	The Schoolhouse	45.8	47.4	Slight/Moderate Adverse	46.8	48.3	Slight/Moderate Adverse
R3.007	The Knoll	56.3	58.9	Slight/Moderate Adverse	58.2	61.6	Moderate/Large Adverse
R3.008	Morven	54.8	54.9	Slight Adverse	n/a	n/a	n/a
R3.009	Croftnascallaig Farmhouse	43.5	44.3	Slight Adverse	45.3	46.0	Slight Adverse
R3.011	Westhaugh of Tulliemet	51.4	50.2	Slight/Moderate Beneficial	53.0	51.6	Slight/Moderate Beneficial

**Table 3: Sample NSR – DM 2026 vs. DS 2041 – Day (with receptor specific mitigation)**

ID	Address/ Representative Location	Predicted L <sub>A10,18h</sub> (dB) Noise Level (Façade) and Significance of Impact					
		Ground Floor			First Floor		
		DM 2026	DS 2041	Significance of Impact	DM 2026	DS 2041	Significance of Impact
R3.003	The Mill	46.0	48.6	Slight Adverse	47.2	49.7	Slight Adverse
R3.004	1 Dowally Cottage	65.2	66.1	Slight Adverse	70.8	72.7	Slight Adverse
R3.006	The Schoolhouse	45.8	47.7	Slight Adverse	46.8	48.7	Slight Adverse
R3.007	The Knoll	56.3	59.2	Slight Adverse	58.2	61.9	Slight/Moderate Adverse

**Table 4: Sample NSR – DM 2026 vs. DS 2041 – Night (with receptor specific mitigation)**

ID	Address/ Representative Location	Predicted L <sub>night,outside</sub> (dB) Noise Level (Free Filed at Façade) and Significance of Impact					
		Ground Floor			First Floor		
		DM 2026	DS 2041	Significance of Impact	DM 2026	DS 2041	Significance of Impact
R3.004	1 Dowally Cottage	52.7	53.5	Slight Adverse	57.7	59.4	Slight Adverse

- 1.1.4 All other predicted noise levels at the 11 sample NSR are the same as those presented in Section 17.4 (Potential Impacts).

**Summary Tables for all NSR within 600m Calculation Area**

Do-Minimum Scenario in the Baseline Year vs. Do-Something Scenario in the Baseline Year (Short-term Assessment)

- 1.1.5 With regard to the DMRB Noise and Vibration summary tables for all NSR (defined as 'High' sensitivity in Table 17.2 of Chapter 17 (Noise and Vibration)) within the 600m calculation area, the additional NSR specific mitigation has resulted in changes to the predicted noise levels at a number of NSR and therefore these are reported in full. For ease of reference where changes have occurred the text in the tables has been highlighted in light blue.
- 1.1.6 The magnitude of residual noise impacts at all dwellings and other sensitive NSR within the 600m calculation area for the DM 2026 scenario versus the DS 2026 (with mitigation) scenario, for the daytime period at ground and first floor are presented in Table 5.

**Table 5: Summary – DM 2026 vs. DS 2026 – Day (with NSR specific mitigation)**

Change in Noise Level L <sub>A10,18h</sub> dB	Magnitude of Impact	Ground Floor		First Floor		
		No. of Dwellings	No. of Other Sensitive Receptors	No. of Dwellings	No. of Other Sensitive Receptors	
Increase (Adverse) in Noise Level	0.1 - 0.9	Negligible	28	0	27	0
	1.0 – 2.9	Minor	45	4	45	4
	3.0 – 4.9	Moderate	1	0	3	0
	5.0 +	Major	0	0	0	0
No Change	0	No Change	8	0	4	0
Decrease (Beneficial) in Noise Level	0.1 – 0.9	Negligible	14	0	15	0
	1.0 – 2.9	Minor	5	0	9	0
	3.0 – 4.9	Moderate	2	0	0	0
	5.0 +	Major	0	0	0	0

Do-Minimum Scenario in the Baseline Year vs. Do-Something Scenario in the Future Assessment Year (Long-term Assessment)

- 1.1.7 The magnitude of residual noise impacts at all dwellings and other sensitive NSR (defined as 'High' sensitivity in Table 17.2 of Chapter 17 (Noise and Vibration)) within the 600m calculation area for the DM 2026 scenario versus the DS 2041 (with mitigation) scenario, for the daytime period at ground and first floor are presented in Table 6.
- 1.1.8 It should be noted that as in the Future Assessment Year all sections of the existing A9 will be upgraded with LNRS then there will not be as great a variation in the residual impacts than when compared to the short-term assessment, where existing stretches of the A9 will remain HRA unless otherwise specified.

**Table 6: Summary – DM 2026 vs. DS 2041 – Day (with NSR specific mitigation)**

Change in Noise Level $L_{A10,18h}$ dB	Magnitude of Impact	Ground Floor		First Floor		
		No. of Dwellings	No. of Other Sensitive Receptors	No. of Dwellings	No. of Other Sensitive Receptors	
Increase (Adverse) in Noise Level	0.1 - 2.9	Negligible	77	3	70	3
	3.0 – 4.9	Minor	1	1	3	1
	5.0 – 9.9	Moderate	0	0	0	0
	10.0 +	Major	0	0	0	0
No Change	0	No Change	5	0	7	0
Decrease (Beneficial) in Noise Level	0.1 - 2.9	Negligible	19	0	23	0
	3.0 – 4.9	Minor	1	0	0	0
	5.0 – 9.9	Moderate	0	0	0	0
	10.0 +	Major	0	0	0	0

- 1.1.9 The corresponding summary tables for the DM 2026 scenario versus the DS 2041 scenario, for the night-time period at the ground and first floor levels are presented in Table 7 and Table 8, respectively. These tables provide the magnitude of impacts for all dwellings within the 600m calculation area. In addition, the tables provide information on:
- the number of dwellings with noise levels below 55dB  $L_{night, outside}$  in the DM 2026 scenario which increase to above 55dB  $L_{night, outside}$  in the DS 2041 scenario;
  - the number of dwellings with noise levels above 55dB  $L_{night, outside}$  in both the DM 2026 and DS 2041 scenarios; and
  - the number of dwellings with noise levels above 55dB  $L_{night, outside}$  in the DM 2026 scenario which reduce to below 55dB  $L_{night, outside}$  in the DS 2041 scenario.

**Table 7: Summary – Ground floor DM 2026 vs. DS 2041 – Night (with NSR specific mitigation)**

Change in Noise Level $L_{night, outside}$ dB	Magnitude of Impact	No. of Dwellings	No. of Dwellings (DM 2026 < 55dB, DS 2041 ≥ 55dB)	No. of Dwellings (DM 2026 ≥ 55dB, DS 2041 ≥ 55dB)	No. of Dwellings (DM 2026 ≥ 55dB, DS 2041 < 55dB)	
Increase (Adverse) in Noise Level	0.1 – 2.9	Negligible	77	0	1	n/a
	3.0 – 4.9	Minor	1	0	0	n/a
	5.0 – 9.9	Moderate	0	0	0	n/a
	10.0+	Major	0	0	0	n/a
No Change	0	No Change	5	0	0	0
Decrease (Beneficial) in Noise Level	0.1 – 2.9	Negligible	19	n/a	0	1
	3.0 – 4.9	Minor	1	n/a	0	0
	5.0 – 9.9	Moderate	0	n/a	0	0
	10.0+	Major	0	n/a	0	0

**Table 8: Summary – First floor DM 2026 vs. DS 2041 – Night (with NSR specific mitigation)**

Change in Noise Level L <sub>night,outside</sub> dB		Magnitude of Impact	No. of Dwellings	No. of Dwellings (DM 2026 < 55dB, DS 2041 ≥ 55dB)	No. of Dwellings (DM 2026 ≥ 55dB, DS 2041 ≥ 55dB)	No. of Dwellings (DM 2026 ≥ 55dB, DS 2041 < 55dB)
Increase (Adverse) in Noise Level	0.1 – 2.9	Negligible	69	2	2	n/a
	3.0 – 4.9	Minor	3	0	0	n/a
	5.0 – 9.9	Moderate	0	0	0	n/a
	10.0+	Major	0	0	0	n/a
No Change	0	No Change	7	0	0	0
Decrease (Beneficial) in Noise Level	0.1 – 2.9	Negligible	24	n/a	2	1
	3.0 – 4.9	Minor	0	n/a	0	0
	5.0 – 9.9	Moderate	0	n/a	0	0
	10.0+	Major	0	n/a	0	0

### Noise Nuisance

- 1.1.10 The DM 2026 scenario versus the DM 2041 scenario and the DM 2026 scenario versus the DS 2041 scenario, with additional NSR specific mitigation, have been determined, and are summarised in Table 9 to illustrate the residual noise nuisance impacts (based on maximum façade noise levels). Furthermore, where a change has occurred compared with out mitigation this has been highlighted in light blue.

**Table 9: Summary of traffic noise nuisance (with NSR specific mitigation)**

Change in Traffic Induced Noise Nuisance		Number of Dwellings			
		Ground Floor		First Floor	
		DM2026 vs DM2041	DM2026 vs DS2041	DM2026 vs DM2041	DM2026 vs DS2041
Increase (Adverse) in Noise Nuisance	< 10%	21	18	21	11
	10 < 20%	0	24	0	23
	20 < 30%	0	46	0	46
	30 < 40%	0	1	0	3
	> 40%	0	0	0	0
No Change	0%	26	2	10	7
Decrease (Beneficial) in Noise Nuisance	< 10%	56	12	72	13
	10 < 20%	0	0	0	0
	20 < 30%	0	0	0	0
	30 < 40%	0	0	0	0
	> 40%	0	0	0	0

### Vibration Nuisance

- 1.1.11 As a result of the NSR specific mitigation the noise the predicted DMRB Noise and Vibration defined airborne vibration nuisance has also changed when compared without mitigation.
- 1.1.12 The predicted DMRB Noise and Vibration defined airborne vibration nuisance for the DM 2026 scenario versus the DM 2041 scenario, and the DM 2026 scenario versus the DS 2041 scenario, with additional NSR specific mitigation, have been determined and are summarised in Table 10. This table includes predictions for all properties that are within 40m of affected roads with a predicted noise level greater than L<sub>A10,18h</sub> 58dB.

**Table 10: Summary of Traffic Induced Airborne Vibration Nuisance (with NSR Specific Mitigation)**

Change in Traffic Induced Airborne Vibration Nuisance		Number of Dwellings			
		Ground Floor		First Floor	
		DM2026 vs DM2041	DM2026 vs DS2041	DM2026 vs DM2041	DM2026 vs DS2041
Increase (Adverse) in Noise Nuisance	< 10%	9	5	9	3
	10 < 20%	0	10	0	6
	20 < 30%	0	1	0	5
	30 < 40%	0	0	0	0
	> 40%	0	0	0	0
No Change	0%	8	2	7	4
Decrease (Beneficial) in Noise Nuisance	< 10%	4	3	5	3
	10 < 20%	0	0	0	0
	20 < 30%	0	0	0	0
	30 < 40%	0	0	0	0
	> 40%	0	0	0	0