

Appendix A17.6: 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 the main noise chapter.

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.

1.1.3 It should be noted that if there is no difference between the predicted residual noise impacts and the predicted noise levels presented in Section 17.4 (Potential Impacts) then they have been omitted from this appendix.

Sample Noise Sensitive Receptors (NSR) Locations

1.1.4 As a result of the proposed additional NSR specific mitigation there are some differences at two NSR in the predicted noise levels for the DM 2026 v DS2026 scenario. These differences are presented in Table 1.

Table 1: Sample NSRs – DM 2026 vs. DS 2026 – Day (with Receptor Specific Mitigation)

| ID | Address/ Representative Location | Predicted $L_{A10,18h}$ (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 |
| R4.002 | Littleton of Fonab | n/a | n/a | n/a | 52.0 | 53.2 | Slight/ Moderate Adverse |
| R4.008 | Gardener's Cottage | 45.8 | 46.0 | Slight Adverse | 48.9 | 49.1 | Slight Adverse |

1.1.5 All other predicted noise levels 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)

1.1.6 With regard to the DMRB Noise and Vibration summary tables for all NSR within the calculation area, the additional NSR specific mitigation has resulted in changes to the predicted noise levels at certain 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.

1.1.7 The magnitude of residual noise impacts at all dwellings and other 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 2.

Table 2: Summary – DM 2026 vs. DS 2026 – 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) | 0.1 - 0.9 | Negligible | 559 | 30 | 551 | 26 |

| 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 |
| in Noise Level | 1.0 – 2.9 | Minor | 64 | 11 | 67 | 17 |
| | 3.0 – 4.9 | Moderate | 1 | 1 | 5 | 0 |
| | 5.0 + | Major | 5 | 0 | 2 | 0 |
| No Change | 0 | No Change | 6 | 1 | 13 | 0 |
| Decrease (Beneficial) in Noise Level | 0.1 – 0.9 | Negligible | 79 | 3 | 75 | 3 |
| | 1.0 – 2.9 | Minor | 4 | 0 | 5 | 0 |
| | 3.0 – 4.9 | Moderate | 0 | 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)

- 1.1.8 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 2041 (with mitigation) scenario, for the daytime period at ground and first floor are presented in Table 3.
- 1.1.9 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 3: 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 | 626 | 42 | 616 | 42 |
| | 3.0 – 4.9 | Minor | 2 | 1 | 6 | 1 |
| | 5.0 – 9.9 | Moderate | 5 | 0 | 2 | 0 |
| | 10.0 + | Major | 0 | 0 | 0 | 0 |
| No Change | 0 | No Change | 13 | 0 | 11 | 0 |
| Decrease (Beneficial) in Noise Level | 0.1 - 2.9 | Negligible | 72 | 3 | 83 | 3 |
| | 3.0 – 4.9 | Minor | 0 | 0 | 0 | 0 |
| | 5.0 – 9.9 | Moderate | 0 | 0 | 0 | 0 |
| | 10.0 + | Major | 0 | 0 | 0 | 0 |

Health and Educational Establishments

- 1.1.10 As a result of the proposed additional NSR specific mitigation there is no difference between the predicted noise levels in Section 17.4 (Potential Impacts) and the residual noise impacts at any Health and Education NSR.

Noise Nuisance

- 1.1.11 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 4 to illustrate the residual noise nuisance impacts (based on maximum façade noise levels). furthermore, where a change has occurred this has been highlighted in Table 4.

Table 4: 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% | 179 | 31 | 177 | 48 |
| | 10 < 20% | 0 | 500 | 0 | 494 |
| | 20 < 30% | 0 | 105 | 0 | 89 |
| | 30 < 40% | 0 | 6 | 0 | 7 |
| | > 40% | 0 | 0 | 0 | 0 |
| No Change | 0% | 303 | 52 | 229 | 34 |
| Decrease (Beneficial) in Noise Nuisance | < 10% | 236 | 24 | 312 | 46 |
| | 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

- 1.1.12 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.
- 1.1.13 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 5. This table includes predictions for all properties that are within 40m of all modelled roads with a predicted noise level greater than $L_{A10,18h}$ 58.0dB.

Table 5: 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 Vibration Nuisance | < 10% | 89 | 5 | 92 | 2 |
| | 10 < 20% | 0 | 91 | 0 | 100 |
| | 20 < 30% | 0 | 28 | 0 | 27 |
| | 30 < 40% | 0 | 0 | 0 | 0 |
| | > 40% | 0 | 0 | 0 | 0 |
| No Change | 0% | 46 | 17 | 42 | 12 |
| Decrease (Beneficial) in Vibration Nuisance | < 10% | 10 | 4 | 11 | 4 |
| | 10 < 20% | 0 | 0 | 0 | 0 |
| | 20 < 30% | 0 | 0 | 0 | 0 |
| | 30 < 40% | 0 | 0 | 0 | 0 |
| | > 40% | 0 | 0 | 0 | 0 |