# Hampshire Water Transfer and Water Recycling Project

# Environmental Statement – Appendix 15.2 Construction traffic noise assessment

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# Contents



# Tables

# 1 Introduction

1.1.1 This report has been prepared to present the details of the construction road traffic noise assessment for the Hampshire Water Transfer and Water Recycling Project (hereafter referred to as the 'Proposed Development') including the assessment methodology, traffic data, calculation procedures and results.

1.1.2 This report is a technical appendix of the Environmental Statement (ES) Chapter 15 Noise and vibration, Volume I (Document reference 6.1, DCO Volume 6).

# 2 Assessment methodology

2.1.1 Construction traffic noise impacts along existing roads are estimated based on the Calculation of Road Traffic Noise (CRTN) [1] methodology for the calculation of the Basic Noise Level (BNL) at a reference distance of 10m from the nearside carriageway. Predictions are undertaken for both the 'with' and 'without' construction traffic scenarios, for each road link in the construction traffic model.

2.1.2 The future baseline data (i.e. without construction traffic scenario) are provided for the year 2031, as this is assumed to represent the peak in construction traffic flows for the overall Proposed Development, based on an assumed commencement in 2028. Construction could commence later than 2028, depending on various elements including the Development Consent Order (DCO) programme and detailed design following DCO approval. Baseline flows generally increase over time; hence, assuming the earliest likely commencement ensures that the predicted change in traffic flows is maximised; hence the assessment captures potential likely worst case effects. Peak construction traffic on each link is predicted for the busiest month of the construction period, which varies between 2029 and 2032 depending on the link. The 'with construction traffic' scenario is the sum of the baseline and the peak construction traffic.

2.1.3 Details of the road network study area for the construction phase traffic assessment has been provided by the traffic Environmental Impact Assessment (EIA) specialists for the Proposed Development, along with Annual Average Weekday Traffic (AAWT) 18 hour (hr) flows, % Heavy Goods Vehicles (HGVs) and speed data for each road link. This data has been used to undertake the BNL calculations. The Transport Research Laboratory (TRL) publication 'Converting the UK traffic noise level $L_{A10,18h}$ to EU noise indices for noise mapping' [2] (TRL, 2002) has been used to determine night-time traffic noise levels.

2.1.4 In order to determine impacts, the assessment of construction traffic noise compares the calculated BNLs with and without the construction traffic. Any changes in day or night-time noise levels due to a corresponding change in volume and composition is assessed using the impact magnitude criteria detailed in Table 2-1, which is reproduced from Table 3.17 of the Design Manual for Roads and Bridges LA111 Noise and Vibration (2020) (DMRB) [3].

**Table 2-1 Traffic noise magnitude of impact at receptors**

| Magnitude of impact | Increase in BNL of closest public road used for construction traffic (dB) |
|---|---|
| Negligible | Less than 1.0 |
| Minor | Greater than or equal to 1.0 and less than 3.0 |
| Moderate | Greater than or equal to 3.0 and less than 5.0 |
| Major | Greater than or equal to 5.0 |

2.1.5 For those links on which the predicted traffic flows are below the validated CRTN calculation range (less than 1000 vehicles per 18hrs), the calculation method detailed in BS 5228-1:2009 + A1:2014 Code of practice for noise and vibration control on open sites [4] Annex F 'Method for mobile plant using a regular well-

defined route (e.g. haul roads)' has been used. This methodology predicts the noise level at receiving position by accounting for vehicle average speed, number of vehicles per hour, the plant $L_{WA}$ and the receptor distance to the middle of the road. The likely change in HGV noise emissions from the link has been assessed using the criteria in Table 2-1.

2.1.6 The same analysis undertaken for assessing potential magnitude of impact for construction noise in ES Appendix 15.1 Construction noise and vibration assessment, Volume II (Document reference 6.2, DCO Volume 6), has been used to determine the magnitude of impact for construction traffic noise impacts.

# 3 Data and assessment

## 3.1 Off-site construction traffic data

3.1.1 This section outlines the traffic data provided by the traffic EIA specialists for the Proposed Development. This data included 18hr AAWT, along with speed data, total vehicles and percentage HGVs. Baseline and peak construction road traffic data is shown in Table 3-1.

3.1.2 The following roads/links were omitted from the noise assessment as they did not present any change in traffic flow:

1. Middle Park Way
2. Bishopstoke Lane
3. Scivier's Lane
4. B2149 (M)

**Table 3-1 Peak construction road traffic data (18-hour Annual Average Weekday Traffic)**

| Link ID | Description | Speed (mph) | 2031 Baseline | | 2031 Baseline Plus Committed Development | | 2031 baseline plus Committed Development plus peak construction traffic | |
|---|---|---|---|---|---|---|---|---|
| | | | 18-hour AAWT | Total HGV | 18-hour AAWT | Total HGV | 18-hour AAWT | HGV |
| 6 | B2149 (S) | 25 | 26534 | 2301 | 27665 | 2399 | 27668 | 2399 |
| 8 | B2177 (1) | 28 | 14517 | 1512 | 15236 | 1587 | 15469 | 1587 |
| 17 | Harts Farm Way (1) | 32 | 10947 | 1485 | 11333 | 1538 | 12317 | 1748 |
| 19 | B2177 (2) | 39 | 14840 | 1616 | 17190 | 1871 | 17632 | 1903 |
| 20 | A3 (S) | 32 | 21442 | 1931 | 24337 | 2191 | 24646 | 2209 |
| 21 | A27 | 70 | 40744 | 1311 | 40744 | 1311 | 41054 | 1329 |
| 26 | B2177 (3) | 38 | 11677 | 1247 | 13206 | 1411 | 13376 | 1411 |
| 29 | New Down Lane | 18 | 160 | 47 | 160 | 47 | 540 | 60 |
| 31 | B2177 (4) | 47 | 6808 | 920 | 9249 | 1250 | 9414 | 1268 |
| 32 | Boarhunt Road | 37 | 3924 | 950 | 4764 | 1153 | 4982 | 1167 |
| 33 | A32 (S) | 41 | 23974 | 2860 | 14120 | 1684 | 14699 | 1707 |
| 34 | A32 (C) | 45 | 19347 | 2008 | 16903 | 1754 | 17295 | 1771 |
| 35 | A334 (E) | 33 | 15380 | 1894 | 15617 | 1923 | 15991 | 1935 |
| 36 | A334 (C) | 43 | 9136 | 1168 | 9231 | 1180 | 9358 | 1180 |
| 37 | Titchfield Lane | 36 | 6437 | 745 | 6469 | 749 | 6655 | 751 |
| 38 | Blind Lane | 31 | 1277 | 173 | 1277 | 173 | 1406 | 178 |
| 39 | B2177 (5) | 42 | 10524 | 1379 | 10564 | 1384 | 10736 | 1387 |
| 40 | Shirell Heath High St | 36 | 2968 | 423 | 2968 | 423 | 3061 | 425 |
| 41 | B3035 | 48 | 7742 | 910 | 7803 | 917 | 8070 | 931 |

| Link ID | Description | Speed (mph) | 2031 Baseline | | 2031 Baseline Plus Committed Development | | 2031 baseline plus Committed Development plus peak construction traffic | |
|---|---|---|---|---|---|---|---|---|
| | | | 18-hour AAWT | Total HGV | 18-hour AAWT | Total HGV | 18-hour AAWT | HGV |
| 42 | Curdridge Lane | 36 | 3636 | 518 | 3636 | 518 | 3721 | 524 |
| 43 | B3037 (W) | 24 | 22294 | 1690 | 26348 | 1997 | 26565 | 1997 |
| 44 | B3354 (S) | 37 | 10637 | 1582 | 13064 | 1943 | 13401 | 1950 |
| 45 | B3037 | 47 | 5965 | 770 | 10182 | 1315 | 10415 | 1315 |
| 46 | B2177 (6) | 43 | 11349 | 2825 | 11553 | 2876 | 11785 | 2884 |
| 47 | Winters Hill | 40 | 4564 | 763 | 4564 | 763 | 4666 | 784 |
| 48 | B3335 (N) | 42 | 14888 | 2109 | 17183 | 2434 | 17478 | 2547 |
| 49 | B3354 (N) | 41 | 19223 | 2077 | 21526 | 2326 | 21654 | 2338 |
| 50 | B2177 (7) | 48 | 7766 | 1933 | 7806 | 1943 | 7927 | 1950 |
| 51 | B2177 (9) | 36 | 17271 | 1988 | 17482 | 2012 | 17638 | 2041 |
| 52 | Otterbourne Hill (N) | 26 | 12720 | 1849 | 12720 | 1849 | 12825 | 1849 |
| 53 | Kiln Lane | 32 | 2977 | 304 | 2977 | 304 | 3151 | 308 |
| 54 | Church Lane | 33 | 9439 | 1006 | 9448 | 1007 | 9476 | 1035 |
| 56 | B3335 (S) | 41 | 9816 | 1042 | 9824 | 1043 | 10194 | 1148 |
| 57 | A335 | 46 | 20620 | 2279 | 20879 | 2307 | 21156 | 2307 |
| 63 | Harts Farm Way (2) | 29 | 10183 | 1238 | 10569 | 1285 | 10617 | 1286 |
| 64 | Otterbourne Road | 39 | 9202 | 964 | 9202 | 964 | 9270 | 968 |
| 65 | Hockley Link | 33 | 19347 | 2008 | 21450 | 2226 | 21517 | 2230 |
| 66 | Southmoor Lane | 26 | 4023 | 778 | 4033 | 780 | 4079 | 780 |
| 67 | Otterbourne Hill (S) | 27 | 11218 | 1055 | 11218 | 1055 | 11490 | 1059 |

| Link ID | Description | Speed (mph) | 2031 Baseline | | 2031 Baseline Plus Committed Development | | 2031 baseline plus Committed Development plus peak construction traffic | |
|---|---|---|---|---|---|---|---|---|
| | | | 18-hour AAWT | Total HGV | 18-hour AAWT | Total HGV | 18-hour AAWT | HGV |
| 69 | A334 (W) | 30 | 18504 | 2013 | 18650 | 2029 | 19019 | 2043 |
| 70 | Winchester Road Link | 29 | 23725 | 2000 | 23725 | 2000 | 23997 | 2004 |

## 3.2 Noise from off-site construction traffic assessment

3.2.1 Off-site construction traffic noise impacts along existing roads have been estimated based on the CRTN methodology for the calculation of the BNL at a reference distance of 10m from the nearside carriageway. Calculations have been undertaken for the forecast '2031 baseline + committed development' and '2031 baseline plus committed development plus peak construction traffic' scenarios, for each road link on which construction traffic data has been supplied. The magnitude of impact depends on the change in BNL between these scenarios. The results of these calculations are provided in Table 3-2.

3.2.2 Calculations of potential cumulative traffic noise impacts have also been undertaken for the forecast '2031 baseline' scenario, for comparison with the '2031 baseline plus committed plus peak construction traffic' scenario, for each road link on which construction traffic data has been supplied. The magnitude of the cumulative impact depends on the change in BNL between these scenarios. The results of these calculations are provided in Table 3-3.

**Table 3-2 Calculated Proposed Development off-site construction traffic noise impacts**

| Link ID | Road | 2031 baseline + committed development BNL (CRTN dB $L_{A10,18hr}$) | 2031 baseline + committed development + peak construction BNL (CRTN dB $L_{A10,18hr}$) | Overall change (dB) | Magnitude of impact |
|---|---|---|---|---|---|
| 6 | B2149 (S) | 72.8 | 72.8 | 0.0 | Negligible |
| 8 | B2177 (1) | 70.9 | 70.9 | 0.0 | Negligible |
| 17 | Harts Farm Way (1) | 70.7 | 71.2 | 0.5 | Negligible |
| 19 | B2177 (2) | 72.8 | 72.9 | 0.1 | Negligible |
| 20 | A3 (S) | 73.0 | 73.1 | 0.1 | Negligible |
| 21 | A27 | 79.5 | 79.5 | 0.0 | Negligible |
| 26 | B2177 (3) | 71.5 | 71.5 | 0.0 | Negligible |
| 31 | B2177 (4) | 71.6 | 71.6 | 0.0 | Negligible |
| 32 | Boarhunt Road* | 69.0 | 69.1 | 0.1 | Negligible |
| 33 | A32 (S) | 72.4 | 72.5 | 0.1 | Negligible |
| 34 | A32 (C) | 73.4 | 73.5 | 0.1 | Negligible |
| 35 | A334 (E) | 72.0 | 72.0 | 0.0 | Negligible |
| 36 | A334 (C) | 70.9 | 71.0 | 0.1 | Negligible |
| 37 | Titchfield Lane | 68.3 | 68.4 | 0.1 | Negligible |
| 38 | Blind Lane* | 59.2 | 59.8 | 0.6 | Negligible |
| 39 | B2177 (5) | 71.5 | 71.5 | 0.0 | Negligible |
| 40 | Shirell Heath High St* | 65.3 | 65.3 | 0.0 | Negligible |
| 41 | B3035 | 70.8 | 70.9 | 0.1 | Negligible |
| 42 | Curdridge Lane* | 66.3 | 66.3 | 0.0 | Negligible |
| 43 | B3037 (W) | 72.2 | 72.2 | 0.0 | Negligible |
| 44 | B3354 (S) | 72.0 | 72.1 | 0.1 | Negligible |

| Link ID | Road | 2031 baseline + committed development BNL (CRTN dB $L_{A10,18hr}$) | 2031 baseline + committed development + peak construction BNL (CRTN dB $L_{A10,18hr}$) | Overall change (dB) | Magnitude of impact |
|---|---|---|---|---|---|
| 45 | B3037 | 71.9 | 72.0 | 0.1 | Negligible |
| 46 | B2177 (6) | 73.6 | 73.6 | 0.0 | Negligible |
| 47 | Winters Hill | 68.2 | 68.3 | 0.1 | Negligible |
| 48 | B3335 (N) | 73.8 | 73.9 | 0.1 | Negligible |
| 49 | B3354 (N) | 74.1 | 74.1 | 0.0 | Negligible |
| 50 | B2177 (7) | 72.5 | 72.5 | 0.0 | Negligible |
| 51 | B2177 (9) | 72.6 | 72.6 | 0.0 | Negligible |
| 52 | Otterbourne Hill (N) | 70.8 | 70.8 | 0.0 | Negligible |
| 53 | Kiln Lane* | 64.1 | 64.2 | 0.1 | Negligible |
| 54 | Church Lane | 69.4 | 69.5 | 0.1 | Negligible |
| 56 | B3335 (S) | 70.6 | 70.8 | 0.2 | Negligible |
| 57 | A335 | 74.6 | 74.6 | 0.0 | Negligible |
| 63 | Harts Farm Way (2) | 69.8 | 69.8 | 0.0 | Negligible |
| 64 | Otterbourne Road | 70.0 | 70.0 | 0.0 | Negligible |
| 65 | Hockley Link | 73.0 | 73.0 | 0.0 | Negligible |
| 66 | Southmoor Lane | 66.6 | 66.7 | 0.1 | Negligible |
| 67 | Otterbourne Hill (S) | 69.2 | 69.3 | 0.1 | Negligible |
| 68 | B2177 (8) | 69.3 | 69.3 | 0.0 | Negligible |
| 69 | A334 (W) | 72.1 | 72.2 | 0.1 | Negligible |
| 70 | Winchester Road Link | 72.5 | 72.5 | 0.0 | Negligible |
| * AAWT total vehicular 18hr flows between more than or equal to 1000 to less than or equal to 4000 vehicles; Low flow correction applied | | | | | |

**Table 3-3 Calculated cumulative off-site construction traffic noise impacts**

| Link ID | Road | 2031 baseline BNL (CRTN dB $L_{A10,18hr}$) | 2031 baseline + committed development + peak construction BNL (CRTN dB $L_{A10,18hr}$) | Overall change (dB) | Magnitude of impact |
|---|---|---|---|---|---|
| 6 | B2149 (S) | 72.6 | 72.8 | 0.2 | Negligible |
| 8 | B2177 (1) | 70.7 | 70.9 | 0.2 | Negligible |
| 17 | Harts Farm Way (1) | 70.5 | 71.2 | 0.7 | Negligible |
| 19 | B2177 (2) | 72.2 | 72.9 | 0.7 | Negligible |
| 20 | A3 (S) | 72.5 | 73.1 | 0.6 | Negligible |
| 21 | A27 | 79.5 | 79.5 | 0.0 | Negligible |
| 26 | B2177 (3) | 71.0 | 71.5 | 0.5 | Negligible |
| 31 | B2177 (4) | 70.2 | 71.6 | 1.4 | Minor |
| 32 | Boarhunt Road* | 68.2 | 69.1 | 0.9 | Negligible |
| 33 | A32 (S) | 74.7 | 72.5 | -2.2 | Negligible** |
| 34 | A32 (C) | 74.0 | 73.5 | -0.5 | Negligible** |
| 35 | A334 (E) | 71.9 | 72.0 | 0.1 | Negligible |
| 36 | A334 (C) | 70.9 | 71.0 | 0.1 | Negligible |
| 37 | Titchfield Lane | 68.3 | 68.4 | 0.1 | Negligible |
| 38 | Blind Lane* | 59.2 | 59.8 | 0.6 | Negligible |
| 39 | B2177 (5) | 71.5 | 71.5 | 0.0 | Negligible |
| 40 | Shirell Heath High St* | 65.3 | 65.3 | 0.0 | Negligible |
| 41 | B3035 | 70.8 | 70.9 | 0.1 | Negligible |
| 42 | Curdridge Lane* | 66.3 | 66.3 | 0.0 | Negligible |
| 43 | B3037 (W) | 71.5 | 72.2 | 0.7 | Negligible |
| 44 | B3354 (S) | 71.2 | 72.1 | 0.9 | Negligible |

| Link ID | Road | 2031 baseline BNL (CRTN dB $L_{A10,18hr}$) | 2031 baseline + committed development + peak construction BNL (CRTN dB $L_{A10,18hr}$) | Overall change (dB) | Magnitude of impact |
|---|---|---|---|---|---|
| 45 | B3037 | 69.6 | 72.0 | 2.4 | Minor |
| 46 | B2177 (6) | 73.5 | 73.6 | 0.1 | Negligible |
| 47 | Winters Hill | 68.2 | 68.3 | 0.1 | Negligible |
| 48 | B3335 (N) | 73.2 | 73.9 | 0.7 | Negligible |
| 49 | B3354 (N) | 73.6 | 74.1 | 0.5 | Negligible |
| 50 | B2177 (7) | 72.4 | 72.5 | 0.1 | Negligible |
| 51 | B2177 (9) | 72.5 | 72.6 | 0.1 | Negligible |
| 52 | Otterbourne Hill (N) | 70.8 | 70.8 | 0.0 | Negligible |
| 53 | Kiln Lane* | 64.1 | 64.2 | 0.1 | Negligible |
| 54 | Church Lane | 69.4 | 69.5 | 0.1 | Negligible |
| 56 | B3335 (S) | 70.6 | 70.8 | 0.2 | Negligible |
| 57 | A335 | 74.5 | 74.6 | 0.1 | Negligible |
| 63 | Harts Farm Way (2) | 69.6 | 69.8 | 0.2 | Negligible |
| 64 | Otterbourne Road | 70.0 | 70.0 | 0.0 | Negligible |
| 65 | Hockley Link | 72.5 | 73.0 | 0.5 | Negligible |
| 66 | Southmoor Lane | 66.6 | 66.7 | 0.1 | Negligible |
| 67 | Otterbourne Hill (S) | 69.2 | 69.3 | 0.1 | Negligible |
| 68 | B2177 (8) | 68.5 | 69.3 | 0.8 | Negligible |
| 69 | A334 (W) | 72.1 | 72.2 | 0.1 | Negligible |
| 70 | Winchester Road Link | 72.5 | 72.5 | 0.0 | Negligible |
| * AAWT total vehicular 18hr flows between more than or equal to 1000 to less than or equal to 4000 vehicles; Low flow correction applied | | | | | |

| Link ID | Road | 2031 baseline BNL (CRTN dB $L_{A10,18hr}$) | 2031 baseline + committed development + peak construction BNL (CRTN dB $L_{A10,18hr}$) | Overall change (dB) | Magnitude of impact |
|---|---|---|---|---|---|
| ** Committed development is forecast to reduce flows on this link, with the forecast reduction greater than the forecast construction traffic flows that will use the link; hence, the cumulative impact is a net reduction (i.e. benefit) in noise levels, although this is not due to the Proposed Development. This has been taken to show that the cumulative impact is negligible. | | | | | |

3.2.3 The traffic flow on link 29 (New Down Lane) is below 1000 vehicles per 18hr AAWT. The closest residential dwelling to this link has been identified to be 20m from the centre of the carriageway. The results of the calculations of HGV noise from this link are provided in Table 3-4 (2031 baseline plus committed development) and Table 3-5 (2031 baseline plus committed development plus peak construction traffic) respectively.

**Table 3-4 Predicted $L_{Aeq,1h}$ 2031 baseline**

| Link ID | Road | Road Lorry $L_{WA}$ (dB) | Vehicle/hr | Speed (km/h) | Distance from receptor (m) | Predicted $L_{Aeq,1h}$ dB (façade) |
|---|---|---|---|---|---|---|
| 29 | New Down Lane | 108 | 3 | 30 | 20 | 51.9 |

**Table 3-5 Predicted $L_{Aeq,1h}$ 2031 baseline and construction traffic**

| Link ID | Road | Road Lorry $L_{WA}$ (dB) | Vehicle/hr | Speed (km/h) | Distance from receptor (m) | Predicted $L_{Aeq,1h}$ dB (façade) |
|---|---|---|---|---|---|---|
| 29 | New Down Lane | 108 | 4 | 30 | 20 | 53.5 |

3.2.4 The calculated change in HGV noise due to the construction traffic on New Down Lane is 1.6 dB, equating to a minor impact. Hence, construction traffic noise impacts on all but one links are negligible. Minor impacts are not considered significant in EIA terms.

# References

[1] Department of Transport, Welsh office, *Calculation of Road Traffic Noise (CRTN),* London: HMSO, 1988.

[2] Transport Research Laboratory, “Converting the UK traffic noise level LA10,18h to EU noise indices for noise mapping,” 2002. [Online]. Available: https://programmeofficers.co.uk/Aylesbury/CD/CD%209.11.pdf. [Accessed June 2024].

[3] Highways England, *LA 111 Noise and Vibration Revision 2,* 2020.

[4] British Standards Institution, *British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings,* London: BSI, 2014.


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