

# **High Speed Rail (Crewe – Manchester)**

## **Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement**

### **Volume 5: Appendix AQ-001-0MA05**

#### **Air quality**

Air quality report

MA05: Risley to Bamfurlong

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Department  
for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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# 1 Introduction

## 1.1 Structure of this appendix

- 1.1.1 This report is an appendix to the air quality assessment which forms part of Volume 5 of the Supplementary Environmental Statement 1 (SES1) and Additional Provision 1 Environmental Statement (AP1 ES) for the Risley to Bamfurlong area (MA05).
- 1.1.2 This appendix provides details of changes to the air quality assessment since the High Speed Two (HS2) High Speed Rail (Crewe – Manchester) Environmental Statement (ES)<sup>1</sup> published in 2022 (the main ES).
- 1.1.3 This report should be read in conjunction with Volume 5, Appendix: AQ-001-0MA05, which accompanied the main ES.
- 1.1.4 In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes, the following terms are used:
- ‘the original scheme’ – the Bill scheme submitted to Parliament in January 2022, which was assessed in the main ES;
  - ‘the SES1 scheme’ – the original scheme with the changes described in SES1 that are within the existing powers of the Bill; and
  - ‘the AP1 revised scheme’ – the original scheme as amended by the SES1 changes and AP1 amendments.
- 1.1.5 Maps referred to in this appendix are contained in the SES1 and AP1 ES, Volume 5, Air quality Map Book: Map Series AQ-01.
- 1.1.6 In addition, the traffic data used for the air quality assessment is set out in Background Information and Data (BID)<sup>2</sup> which accompanies the SES1 and AP1 ES (see BID AQ-002-0MA05 SES1 and AP1 ES).
- 1.1.7 Where it has been possible to differentiate the air quality assessment between the SES1 changes and the AP1 amendments, this has been done and presented in this report. However, the assessment of road traffic emissions is a combined assessment of both SES1 changes and AP1 amendments in this area.

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<sup>1</sup> High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement*. Available online at: <https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement>.

<sup>2</sup> High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Background Information and Data accompanying Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement, Additional data used in the air quality assessment*, BID AQ-002-0MA05 SES1 and AP1 ES. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-1-and-additional-provision-1-environmental-statement>.

## 1.2 Scope, methodology, data sources, assumptions and limitations

1.2.1 The assessment scope, key assumptions and limitations are as set out in the main ES Environmental Impact Assessment Scope and Methodology Report (SMR)<sup>3</sup> (see main ES Volume 5, Appendix: CT-001-00001).

1.2.2 The air quality standards for this assessment are:

- 40µg/m<sup>3</sup> as an annual mean for nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter (PM<sub>10</sub>);
- 200µg/m<sup>3</sup> one-hour mean NO<sub>2</sub> concentrations, not to be exceeded more than 18 times a year (equivalent to the 99.8<sup>th</sup> percentile of the one-hour mean);
- 50µg/m<sup>3</sup> 24-hour mean PM<sub>10</sub> concentrations, not to be exceeded more than 35 times a year (equivalent to the 90.4<sup>th</sup> percentile of the 24-hour mean); and
- 20µg/m<sup>3</sup> as an annual mean for very fine particulate matter (PM<sub>2.5</sub>).

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<sup>3</sup> High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Environmental Impact Assessment Scope and Methodology Report*, Volume 5, Appendix: CT-001-00001. Available online at: <https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement>.

## **2 Construction dust assessment**

- 2.1.1 The AP1 revised scheme does not include any activities within the Risley to Bamfurlong area (MA05) which require a dust assessment to be undertaken.

## 3 Assessment of road traffic emissions

### 3.1 Overview

- 3.1.1 This section provides details of the assessment of road traffic emissions during construction of the AP1 revised scheme. The assessment considers the combined effects of the AP1 revised scheme in other community areas during construction.

### 3.2 Assessment of construction traffic emissions

- 3.2.1 The assessment of construction traffic emissions has used traffic data based on an estimate of the average daily flows in the peak year during the construction period (2025 – 2037). However, vehicle emissions and background concentrations have been taken for the first construction year in 2025. One construction scenario has been assessed for air quality to capture peak construction traffic activity at different times in the construction period. It has been assumed that the changes in construction traffic will occur for the whole year. In some cases, this is a conservative approach, as the duration of the peak traffic flows may well be much shorter. This scenario has been assessed against the relevant future baseline case without the AP1 revised scheme.
- 3.2.2 Traffic data in the study area have been screened to identify roads that require further assessment and to confirm the likely effect of the change in emissions from vehicles using these roads during construction of the AP1 revised scheme. Additional roads have also been included in the assessment where relevant to account for their emissions at nearby receptors.

### Receptors assessed and background concentrations

- 3.2.3 Only human receptors which were reported in the main ES as having significant adverse effects have been considered. This is because, compared to the original scheme, changes in traffic during the construction phase are predicted to be generally lower for the AP1 revised scheme with the highest traffic flows predicted along the M6. The location of all receptors is shown in the accompanying SES1 and AP1 ES, Volume 5, Air quality Map Book: Map Series AQ-01.
- 3.2.4 There were 13 modelled human receptors reported within the main ES as having significant adverse effects, due to increases in annual mean NO<sub>2</sub> concentrations. Only ecological receptors from the main ES along the M6 were considered. There were no ecological receptors relevant to the air quality assessment along the M6 in MA05.
- 3.2.5 Details of the assessed receptors and the background concentrations used in the assessment remain as reported within the main ES, Volume 5, Appendix: AQ-001-0MA05.



## Assessment results

- 3.2.6 Table 1 to Table 3 provide the summary of the modelled pollutant concentrations at the assessed receptors. The magnitude of change and impact descriptor are also provided along with a comparison against the main ES. These were derived following the Institute of Air Quality Management (IAQM)/Environmental Protection UK (EPUK) methodology<sup>4</sup>.

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<sup>4</sup> Institute of Air Quality Management (2017), *Land-use planning & development control: Planning for air quality, v1.2*. Available online at: <https://iaqm.co.uk/guidance/>.

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**Table 1: Predicted annual mean NO<sub>2</sub> concentrations and impacts (construction phase)**

Receptor	Description/location	NO <sub>2</sub> concentrations (µg/m <sup>3</sup> )		Change in NO <sub>2</sub> concentrations (µg/m <sup>3</sup> )	Impact descriptor	Impact descriptor in the main ES	Significance
		2025 without the AP1 revised scheme	2025 with the AP1 revised scheme				
05-C-H008	Houghwood Grange, Ashton-in-Makerfield	42.2	42.5	0.3	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H011	Houghwood Grange, Ashton-in-Makerfield	43.6	43.9	0.3	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H013	Skitters Grove, Ashton-in-Makerfield	44.4	44.7	0.3	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H016	M6, Ashton-in-Makerfield	42.5	42.8	0.3	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H018	Downhall Green Road, Ashton-in-Makerfield	41.2	41.5	0.3	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H020	Downhall Green Road, Ashton-in-Makerfield	44.6	44.9	0.3	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H021	Downhall Green Road, Ashton-in-Makerfield	49.5	49.9	0.4	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H023	Downhall Green Road, Ashton-in-Makerfield	53.1	53.5	0.4	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H024	Downhall Green Road, Ashton-in-Makerfield	49.5	49.9	0.4	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H025	Downhall Green Road, Ashton-in-Makerfield	46.7	47.1	0.4	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H026	Downhall Green Road, Ashton-in-Makerfield	45.6	46.0	0.4	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H027	Downhall Green Road, Ashton-in-Makerfield	44.4	44.7	0.3	Moderate adverse	Moderate adverse	Significant (not new)
05-C-H028	Downhall Green Road, Ashton-in-Makerfield	41.3	41.6	0.3	Moderate adverse	Moderate adverse	Significant (not new)

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**Table 2: Predicted annual mean PM<sub>10</sub> concentrations and impacts (construction phase)**

Receptor	Description/location	PM <sub>10</sub> concentrations (µg/m <sup>3</sup> )		Change in PM <sub>10</sub> concentrations (µg/m <sup>3</sup> )	Impact descriptor	Impact descriptor in the main ES	Significance
		2025 without the AP1 revised scheme	2025 with the AP1 revised scheme				
05-C-H008	Houghwood Grange, Ashton-in-Makerfield	18.4	18.4	< 0.1	Negligible	Negligible	Not significant
05-C-H011	Houghwood Grange, Ashton-in-Makerfield	18.7	18.8	0.1	Negligible	Negligible	Not significant
05-C-H013	Skitters Grove, Ashton-in-Makerfield	17.8	17.9	0.1	Negligible	Negligible	Not significant
05-C-H016	M6, Ashton-in-Makerfield	17.3	17.3	< 0.1	Negligible	Negligible	Not significant
05-C-H018	Downhall Green Road, Ashton-in-Makerfield	17.0	17.1	0.1	Negligible	Negligible	Not significant
05-C-H020	Downhall Green Road, Ashton-in-Makerfield	17.6	17.7	0.1	Negligible	Negligible	Not significant
05-C-H021	Downhall Green Road, Ashton-in-Makerfield	18.3	18.4	0.1	Negligible	Negligible	Not significant
05-C-H023	Downhall Green Road, Ashton-in-Makerfield	18.9	19.1	0.2	Negligible	Negligible	Not significant
05-C-H024	Downhall Green Road, Ashton-in-Makerfield	18.4	18.5	0.1	Negligible	Negligible	Not significant
05-C-H025	Downhall Green Road, Ashton-in-Makerfield	17.9	18.0	0.1	Negligible	Negligible	Not significant
05-C-H026	Downhall Green Road, Ashton-in-Makerfield	17.7	17.7	< 0.1	Negligible	Negligible	Not significant
05-C-H027	Downhall Green Road, Ashton-in-Makerfield	17.6	17.6	< 0.1	Negligible	Negligible	Not significant
05-C-H028	Downhall Green Road, Ashton-in-Makerfield	17.1	17.2	0.1	Negligible	Negligible	Not significant

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**Table 3: Predicted annual mean PM<sub>2.5</sub> concentrations and impacts (construction phase)**

Receptor	Description/location	PM <sub>2.5</sub> concentrations (µg/m <sup>3</sup> )		Change in PM <sub>2.5</sub> concentrations (µg/m <sup>3</sup> )	Impact descriptor	Impact descriptor in the main ES	Significance
		2025 without the AP1 revised scheme	2025 with the AP1 revised scheme				
05-C-H008	Houghwood Grange, Ashton-in-Makerfield	11.4	11.4	< 0.1	Negligible	Negligible	Not significant
05-C-H011	Houghwood Grange, Ashton-in-Makerfield	11.6	11.6	< 0.1	Negligible	Negligible	Not significant
05-C-H013	Skitters Grove, Ashton-in-Makerfield	11.2	11.2	< 0.1	Negligible	Negligible	Not significant
05-C-H016	M6, Ashton-in-Makerfield	10.8	10.9	0.1	Negligible	Negligible	Not significant
05-C-H018	Downhall Green Road, Ashton-in-Makerfield	10.7	10.7	< 0.1	Negligible	Negligible	Not significant
05-C-H020	Downhall Green Road, Ashton-in-Makerfield	11.0	11.1	0.1	Negligible	Negligible	Not significant
05-C-H021	Downhall Green Road, Ashton-in-Makerfield	11.5	11.6	0.1	Negligible	Negligible	Not significant
05-C-H023	Downhall Green Road, Ashton-in-Makerfield	11.9	12.0	0.1	Negligible	Negligible	Not significant
05-C-H024	Downhall Green Road, Ashton-in-Makerfield	11.5	11.6	0.1	Negligible	Negligible	Not significant
05-C-H025	Downhall Green Road, Ashton-in-Makerfield	11.3	11.3	< 0.1	Negligible	Negligible	Not significant
05-C-H026	Downhall Green Road, Ashton-in-Makerfield	11.1	11.2	0.1	Negligible	Negligible	Not significant
05-C-H027	Downhall Green Road, Ashton-in-Makerfield	11.0	11.1	0.1	Negligible	Negligible	Not significant
05-C-H028	Downhall Green Road, Ashton-in-Makerfield	10.7	10.8	0.1	Negligible	Negligible	Not significant

- 3.2.7 The annual mean NO<sub>2</sub> concentrations are predicted to be above the air quality standard at all modelled receptors during construction of the AP1 revised scheme. PM<sub>10</sub> and PM<sub>2.5</sub> concentrations are predicted to be within the air quality standards during construction of the AP1 revised scheme.
- 3.2.8 Annual mean NO<sub>2</sub> concentrations are predicted to be below 60µg/m<sup>3</sup> at all receptors. Therefore, the hourly mean standard is expected to be met. Similarly, since the annual mean PM<sub>10</sub> concentrations are predicted to be below 35µg/m<sup>3</sup>, the daily mean standard is also expected to be met.
- 3.2.9 Moderate adverse impacts are predicted at all reported receptors for annual mean NO<sub>2</sub>. Negligible impacts are predicted at all receptors for annual mean PM<sub>10</sub> and PM<sub>2.5</sub> concentrations.

## **Assessment of significance**

- 3.2.10 Significant adverse effects are predicted at 13 receptors along the M6 near Ashton-in-Makerfield for annual mean NO<sub>2</sub> concentrations. No significant effects are predicted in relation to PM<sub>10</sub> or PM<sub>2.5</sub> concentrations.
- 3.2.11 Compared to the main ES, significant adverse effects on annual mean NO<sub>2</sub> concentrations are the same for the AP1 revised scheme.

## **3.3 Assessment of operational traffic emissions**

- 3.3.1 There are no operational impacts as a result of the AP1 revised scheme in the Risley to Bamfurlong area (MA05).

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