

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement

Volume 5: Appendix TR-001-00000

Traffic and transport

Transport Assessment Part 1 Addendum

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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 appendix is Part 1 of the Transport Assessment Addendum, which forms part of Volume 5 of the Supplementary Environmental Statement 1 (SES1) and Additional Provision 1 Environmental Statement (AP1 ES).
- 1.1.2 This report provides an update to the Transport Assessment (TA) (hereafter referred to as the main TA) presented in the High Speed Two (HS2) High Speed Rail (Crewe – Manchester) Environmental Statement (ES)¹, published in January 2022 (the main ES).
- 1.1.3 This SES1 and AP1 ES TA sets out the traffic and transport impacts resulting from changes to the original scheme (see definitions below) as reported in the main TA. Unless otherwise stated, the main TA remains unchanged.
- 1.1.4 If a table or figure in the main TA is completely replaced by a new table or figure in the SES1 and AP1 ES TA, the same table or figure number is used. This is irrespective of the chapter number in which the SES1 and AP1 ES TA table sits.
- 1.1.5 However, if additional supplementary information is included in a table in the SES1 and AP1 ES TA, the table number matches the table number in the main TA but suffixed with an ‘a’ in the SES1 and AP1 ES TA.
- 1.1.6 For completely new tables in the SES1 and AP1 ES TA, for which there is no equivalent in the main TA, the SES1 and AP1 ES TA table is allocated the nearest table number in sequence within the main TA, followed by a ‘.1’ (effectively indicating where the SES1 and AP1 ES TA table would sit in the main TA if it was inserted there). If additional new tables are provided before the next main TA table, they should be allocated the next sequential number, namely ‘.2’, ‘.3’ and so on.
- 1.1.7 This SES1 and AP1 ES TA is structured into four parts dealing with community areas (CA) and the route-wide assessment:
- Part 1 (this document) sets out changes to the context, methodology and mitigation;
 - Part 2 sets out changes to the baseline and future baseline conditions;
 - Part 3 sets out the changes to impacts for each of the CA either individually or in combination in station areas; and
 - Part 4 sets out changes to the route-wide impacts.

¹ 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>.

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- 1.1.8 In addition, SES1 and AP1 ES transport assessment policy and data are set out in Background Information and Data (BID) which accompanies the SES1 and AP1 ES (see BID TR-004-00001 SES1 and AP1 ES²).
- 1.1.9 This update should be read in conjunction with the following:
- the main TA Parts 1 – 4 in the main ES Volume 5, Appendices: TR-001, TR-002, TR-003, TR-005 (the main TA); and
 - the main TA transport assessment policy and survey data which are set out in BID which accompanied the main ES³ (referred to as the main TA BID report).
- 1.1.10 In order to differentiate between the original scheme 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 any changes described in the 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.
- 1.1.11 This SES1 and AP1 ES TA covers the following CA, as well as the route-wide assessment:
- Hough to Walley’s Green (MA01);
 - Wimboldsley to Lostock Gralam (MA02);
 - Pickmere to Agden and Hulseheath (MA03);
 - Broomedge to Glazebrook (MA04); and
 - Risley to Bamfurlong (MA05).
- 1.1.12 Maps referred to in the report are contained in the main ES and SES1 and AP1 ES Volume 5, Traffic and transport Map Books: Map Series TR-03, TR-04, and TR-08.

1.2 Background

- 1.2.1 The background to the original scheme is reported in Section 1.2 of the main TA. This section is unchanged with the exception of the removal of the section of the route through MA04 and MA05 and the connection onto the West Coast Main Line (WCML) at Bamfurlong.

² 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, Transport Assessment policy and data*, BID TR-004-00001 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>.

³ High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Background Information and Data, Transport Assessment policy and data*, BID TR-004-00001. Available online at: <https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement>.

1.3 The purpose of this report

1.3.1 This SES1 and AP1 ES TA provides updates to the main TA and includes, as necessary, updates to:

- changes to future baseline traffic forecasts as a result of changes to TEMPro;
- updates to transport models;
- a change in the future baseline year from 2046 to 2051;
- a summary of scheme changes relevant to traffic and transport; and
- the assessment of impacts in MA01, MA02, MA03, MA04 and MA05 as a result of the AP1 revised scheme, and other changes and corrections.

1.3.2 Where not specifically stated all paragraph, table and figure references are references to the main TA.

2 Policy and guidance

2.1 Introduction

2.1.1 Section 2.1 of the main TA sets out how the transport assessment for the main TA was developed in the context of national and local policy priorities and requirements. This section of the main TA is unchanged.

2.2 National policy

- 2.2.1 National and local policy priorities and requirements are reported in the main TA BID (see BID TR-004-00001³) which provides an overview of the relevant transport aspects of policy documents and guidance that have been considered in the design of the original scheme and preparation of the main ES.
- 2.2.2 All national and local policies remain valid for the SES1 and AP1 ES TA with the exception of the National Planning Policy Framework (NPPF), which was updated in July 2021 and National Highways Circular 02/2013 which has been withdrawn. The updated policies are set out in BID TR-004-00001 SES1 and AP1 ES².
- 2.2.3 The principal changes in the July 2021 NPPF centre around an increased emphasis on design quality and terminology to protect and enhance the environment and promote a sustainable pattern of development. Whilst the paragraph numbering has changed, changes relevant to transport are very limited.
- 2.2.4 Since the publication of the main TA BID report, Circular 02/2013, which sets out National Highways approach to development which could have an impact on the strategic road network (SRN), has been withdrawn. However, it is not considered that this change has a material impact on the assessment of either the original scheme or AP1 revised scheme.

2.3 Regional and local planning and transport policy

- 2.3.1 This section lists the relevant planning and policy proposals of regional and local planning authorities and other key stakeholders that have been updated since the publication of the main TA BID report. The updated policies are set out in BID TR-004-00001 SES1 and AP1 ES.
- 2.3.2 The revisions to these policies are not considered to have a material impact on the approach to or conclusions of this TA. Those regional and local policy documents that have been used to inform the assessment since the main TA are:
- Transport for Greater Manchester: Greater Manchester Transport Strategy 2040: Our Five Year Transport Delivery Plan 2021-2026, January 2021; and
 - Liverpool City Region: Combined Authority Transport Plan, June 2019.

3 Methodology

3.1 Introduction

- 3.1.1 The background to the methodology adopted to undertake the transport assessment for the main TA, together with how strategic and local transport models were used is set out in Section 3.1 of the main TA. This section of the main TA is unchanged with the exception of the updating of the 2046 future baseline in the main TA to 2051 in the SES1 and AP1 ES TA.

3.2 Areas of consideration and key impacts

- 3.2.1 Areas of consideration and key impacts are reported in Section 3.2 of the main TA. This section of the main TA is unchanged.

3.3 Assessment years

- 3.3.1 In the main TA, future baseline traffic volumes were calculated for 2030, 2038 and 2046. The 2046 future baseline in the main TA has been updated to 2051 for the SES1 scheme and AP1 revised scheme in order to give greater resilience to long term growth in travel demand. Consequently, the operational assessment of the AP1 revised scheme has been undertaken for 2038 and 2051.

Baseline

- 3.3.2 The baseline assessment year is reported in Section 3.3 of the main TA. This section of the main TA is unchanged.

Future baseline

- 3.3.3 Future baseline scenarios for 2030, 2038 and 2051 were determined either from local authority models or using growth factors for population and development forecasts based on recognised good practice sources that are generally used for this purpose by planning and transport authorities. The approach set out in the main TA is unchanged although the transport models and committed and planned developments and committed transport schemes have been updated for this SES1 and AP1 ES TA.
- 3.3.4 The forecasts used in the assessment have been produced prior to the development of a full understanding of the likely impact of COVID-19 on economic growth and travel behaviour. The full impact of COVID-19 is not yet known but is considered likely to result in lower travel demand in the medium term than the forecasts used in the assessment for background traffic and rail, including HS2. Consequently, the assessment is considered to overstate travel demand for both construction and operation scenarios and therefore to present a robust case for traffic and transport.

Construction

- 3.3.5 The construction assessment year is reported in Section 3.3 of the main TA. This section of the main TA is unchanged.

Operation

- 3.3.6 The operational assessment years are 2038 and 2051. Both operational assessments consider the expected changes to travel patterns at and near to HS2 Phase 2b stations and the consequential impacts on public transport and traffic together with the impacts of changes to the transport network across the route of the SES1 scheme and AP1 revised scheme. The changes resulting from the SES1 scheme and AP1 revised scheme have been overlaid on the future baseline flows. For the relevant year, as with the construction assessment, 08:00–09:00 and 17:00–18:00 have been used as the assessment hours representing a reasonable worst case.
- 3.3.7 With the exception of the use of 2051 as the final design year, the approach set out in the main TA is unchanged.

3.4 Data collection

- 3.4.1 Since the main TA, additional traffic information has been used to update strategic transport models. This includes new traffic data from National Highways, as set out in BID TR-004-00001 SES1 and AP1 ES, together with existing information collected for local junction modelling for the original scheme, as set out in the main TA BID TR-004-00001³.

3.5 Background traffic growth

- 3.5.1 Background traffic growth for the 2030, 2038 and 2051 future baselines has been derived from either TEMPro Version 7.2 or, where robust network traffic models exist and the impacts of HS2 are expected to require network modelling, from transport models⁴.

3.6 Trip generation and distribution

Construction

- 3.6.1 Construction related trips include worker trips to and from construction compounds, together with construction vehicles transporting excavated and construction materials. The method for estimating trip generation estimates is unchanged from the main TA with the exception of the removal of some construction compounds and the re-classification of a

⁴ These models comprise the Greater Manchester Transport Model; the Winsford and Middlewich Model the A500 Crewe Model; the Northwich Traffic Model; National Highways M6 J19 Model; and the Warrington Western Link Road Model.

number of construction compounds used in the main TA which affects the number of worker/person trips travelling to/from these sites.

Operation

- 3.6.2 The methodology used to assess operation is reported in Section 3.6 of the main TA. This section of the main TA is unchanged.

3.7 Construction assessment assumptions

Construction vehicles

- 3.7.1 Assumptions relating to construction vehicles are reported in Section 3.7 of the main TA. This section of the main TA is unchanged.

Construction workforce

- 3.7.2 The AP1 revised scheme removes the requirement for a number of construction compounds which were included in the original scheme. The AP1 revised scheme includes the removal of MA02 Borrow Pit D, north of Moss Lane (SES1-002-002). The removal of the HS2 West Coast Main Line connection (SES1-004-001) also removes the requirement for the Agden Lane satellite compound, M56 West satellite compound, Agden Brow satellite compound and A56 Lymm Road satellite compound in MA03 and all of the compounds in MA04 and MA05 that were included in the original scheme.
- 3.7.3 In addition, in response to stakeholder feedback, the classification of a number of construction compounds assumed in the main TA has been updated taking account of the compounds' accessibility by public transport and the availability of walking and cycling connections. For most of the affected compounds, the classification has changed from 'suburban' in the main TA to 'rural' in the SES1 and AP1 ES TA. However, at a small number of compounds, the classification has changed from 'rural' in the main TA to 'suburban' in the SES1 and AP1 ES TA.

Excavated materials

- 3.7.4 The methodology used to assess excavated material is reported in Section 3.7 of the main TA. This section of the main TA is unchanged.

Borrow pits

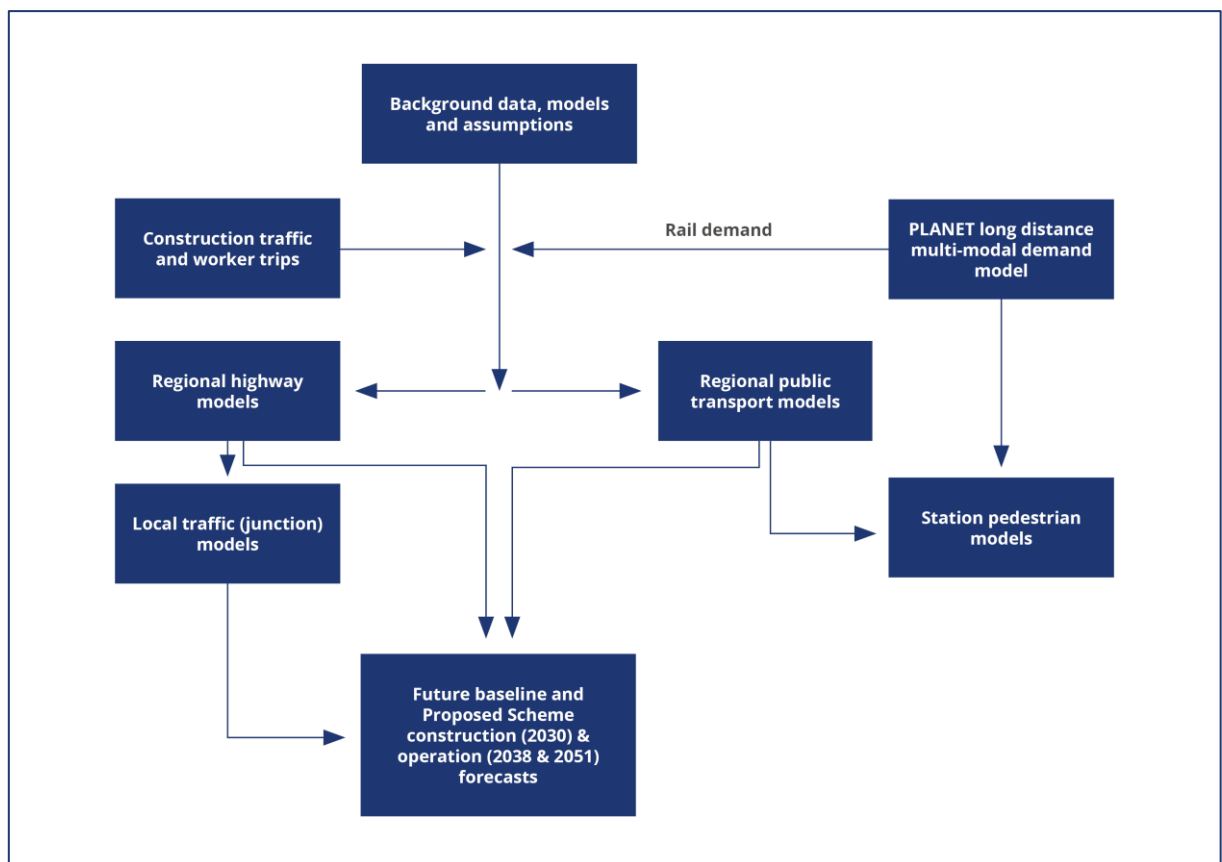
- 3.7.5 While MA02 Borrow Pit D, north of Moss Lane, has been removed (SES1-002-002) from the AP1 revised scheme, three borrow pits remain as part of the AP1 revised scheme and therefore the methodology used to assess borrow pits reported in Section 3.7 of the main TA is unchanged.

3.8 Modelling approach

Modelling framework

3.8.1 The modelling framework for the SES1 scheme and AP1 revised scheme is shown in Figure 3-1. The key forecasting elements have not changed from the main TA with the exception of updates to regional highway and public transport modelling tools and the change from a 2046 operation baseline to a 2051 operation baseline.

Figure 3-1: Modelling framework for the AP1 revised scheme



PLANET

3.8.2 The background to the Planet Framework Model (PFM) is set out in Section 3.8 of the main TA. This section of the main TA is unchanged.

Strategic transport models

3.8.3 The strategic transport models used to assess the impacts of the SES1 scheme and AP1 revised scheme are the:

- A500 Crewe model;
- the Winsford and Middlewich Model;
- the Northwich Traffic Model; and

- National Highways M6 J19 Model.

3.8.4 The performance of these models for the purposes of the assessment of the original scheme are reported in a series of model performance reports in Annexes B to G of the main TA. Those models relevant to the assessment of the SES1 scheme and AP1 revised scheme have been updated, with the model performance reported in Annexes D to G in the SES1 and AP1 ES TA Part 4 Addendum (see Volume 5, Appendix: TR-005-00000). The model updates reflect:

- the refinement of network coding and generalised cost parameters to improve validation with any base year network refinements incorporated into the future year models;
- updated and extended count data for matrix estimation;
- inclusion of recently committed transport schemes and development proposals;
- a review of the accessibility to compound by public transport and the availability of walking and cycling connections;
- refinements to the approach to developing future year baseline demand matrices; and
- updating the future baseline demand from 2046 to 2051.

Overview of strategic models

A500 Crewe model (MA01)

3.8.5 The model updated for the SES1 scheme and AP1 revised scheme shows a good correlation between observed and modelled traffic flows. Both the AM and PM peak hour time periods exceed the DfT TAG⁵ criteria of greater than 85% of link flow comparisons achieving a flow range or GEH⁶ less than five with values of 96% and 100% for all vehicles in the AM and PM peak hours respectively.

3.8.6 Future year baseline models have been developed to represent forecast traffic conditions for the assessment years of 2030, 2038 and 2051.

3.8.7 The future year highway networks have been updated to take account of the base year network coding updates. The latest future year model versions (2025 and 2040) received from Cheshire East Council (CEC) include the Crewe Green Roundabout scheme, the Sydney Road Bridge improvement scheme, the proposed A500 improvement scheme between Meremoor Moss roundabout and M6 junction 16 to dual carriageway standard, the North West Crewe Package of Schemes in Leighton and the Middlewich Eastern Bypass.

Winsford and Middlewich model (MA02)

3.8.8 The model updated for the SES1 scheme and AP1 revised scheme shows a good correlation between observed and modelled traffic flows. Both the AM and PM peak hour time periods exceed the DfT TAG criteria of greater than 85% of link flow comparisons achieving a flow

⁵ Department for Transport (DfT) Transport analysis guidance (TAG).

⁶ The GEH statistic is a formula used in traffic engineering, forecasting and modelling to compare two sets of traffic volumes.

range or GEH less than five, with values of 92% and 94% for all vehicles in the AM and PM peak hours respectively.

- 3.8.9 Future year baseline models have been developed to represent forecast traffic conditions for the assessment years of 2030, 2038 and 2051.
- 3.8.10 The future year highway networks have been updated to take account of the base year network coding updates. In addition, the future year highway network has been reviewed to check that committed (near certain or more than likely) highway schemes are appropriately represented. In particular, the Middlewich Eastern Bypass scheme has been reviewed and the model updated to reflect the latest scheme design.

Northwich Traffic model (MA03)

- 3.8.11 The model updated for the SES1 scheme and AP1 revised scheme shows a good correlation between observed and modelled traffic flows. Both the AM and PM peak hour time periods exceed the DfT TAG criteria of greater than 85% of link flow comparisons achieving a flow range or GEH less than five, with values of 96% and 92% for all vehicles in the AM and PM peak hour time periods respectively.
- 3.8.12 The future year highway networks have been updated to take account of base year network coding updates. Future year baseline models have been developed to represent forecast traffic conditions for the HS2 assessment years of 2030, 2038 and 2051.

M6 Junction 19 Highway model (MA03 and MA06)

- 3.8.13 The model updated for the SES1 scheme and AP1 revised scheme shows a good correlation between observed and modelled traffic flows. The AM peak hour exceed and the and PM peak hour is close to the DfT TAG criteria of greater than 85% of link flow comparisons achieving a flow range or GEH less than five with values of 93% and 89% for all vehicles in the AM and PM peak periods respectively.
- 3.8.14 The future year highway networks have been updated to take account of the base year network coding updates. Future year baseline models have been developed to represent forecast traffic conditions for the HS2 assessment years of 2030, 2038 and 2051.

Local junction models

- 3.8.15 The methodology used for local junction modelling is described in Section 3.8 of the main TA. The approach is that local models are developed for locations potentially substantially affected that are not included within strategic models and where there are proposals for physical changes to a junction or a new junction is proposed. This section of the main TA is unchanged.

4 Mitigation measures

- 4.1.1 The mitigation strategy is set out in Section 4 of the main TA. This section of the main TA is unchanged.

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