

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

Volume 2: Community Area reports

MA03: Pickmere to Agden and Hulseheath

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MA03: Pickmere to Agden and Hulseheath



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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Structure of the HS2 Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

This report is part of the suite of documents that make up the SES2 and AP2 ES for the High Speed Rail (Crewe – Manchester) Bill. The SES2 and the AP2 ES are separate documents; however, they are bound together and presented in a number of volumes shown in Figure 1 and described below:

- **Non-technical summary (NTS).** This provides a summary in non-technical language of the SES2 (Part 1) and the AP2 ES (Part 2). It presents a summary of any likely residual significant environmental effects (i.e. effects which are likely to remain after mitigation measures are put in place), both beneficial and adverse, which are new, different or have been removed compared to those reported in the main ES or the SES1 and AP1 ES, where relevant;
- **Glossary of terms, list of abbreviations and references.** This contains any terms and abbreviations used throughout the SES2 and the AP2 ES, and provides all references cited in each of the volumes listed below;
- **Volume 1: Introduction to the SES2 and the AP2 ES.** This introduces the supplementary environmental information and changes to the design and to the construction assumptions included within the SES2 and amendments within the AP2 ES. The report explains the environmental impact assessment (EIA) process which has been applied;
- **Volume 2: Community area reports and map books.** These report the supplementary environmental information and changes to the design and to the construction assumptions included within the SES2 (Part 1), amendments within the AP2 ES (Part 2) and any new, different or removed likely significant environmental effects arising from these changes and amendments in the following community areas:
 - MA01: Hough to Walley's Green;
 - MA02: Wimboldsley to Lostock Gralam;
 - MA03: Pickmere to Agden and Hulseheath;
 - MA06: Hulseheath to Manchester Airport;
 - MA07: Davenport Green to Ardwick; and
 - MA08: Manchester Piccadilly Station.
- Note, through the SES1, the removal of the HS2 West Coast Main Line (WCML) connection, included in the original scheme, has removed the community areas of Broomedge to Glazebrook (MA04) and Risley to Bamfurlong (MA05) from the HS2 Phase 2b Western Leg. Where changes in the combined traffic assessment result in effects that would have been reported in these two community areas, they are instead reported in the Hulseheath to Manchester Airport (MA06) community area report;

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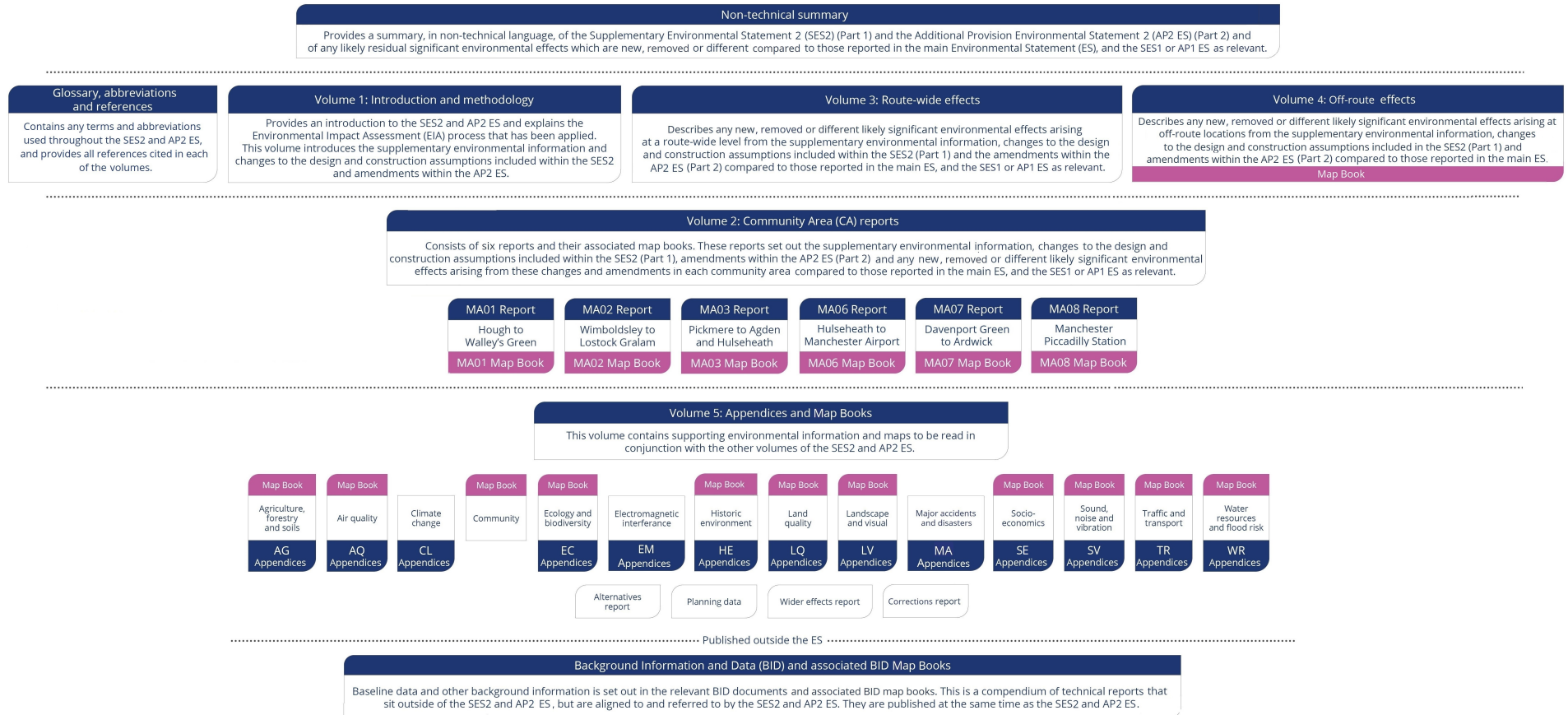
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- The environmental effects in the Volume 2 reports are compared to those reported in the main ES, the SES1 or AP1 ES as relevant. The maps relevant to each community area are provided in separate Volume 2 map books and should be read in conjunction with the relevant community area report;
- **Volume 3: Route-wide effects.** This describes any new, different or removed likely significant environmental effects arising at a route-wide level from the supplementary environmental information and changes to the design and to the construction assumptions included within the SES2 (Part 1) and the amendments within the AP2 ES (Part 2) compared to those reported in the main ES, the SES1 or AP1 ES as relevant;
- **Volume 4: Off-route effects.** Describes any new, different or removed likely significant environmental effects arising at locations beyond the route corridor between Crewe and Manchester from the supplementary environmental information, changes to the design and construction assumptions included in the SES2 (Part 1) and amendments within the AP2 (Part 2) compared to those reported in the main ES; and
- **Volume 5: Appendices and map books.** These contain supporting environmental information and associated maps.
- Certain reports and maps containing background information and data (BID) have been produced, which do not form part of the SES2 and AP2 ES. These documents are available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement>. The BID documents and maps present background survey information and other relevant background material.

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Figure 1: Structure of the SES2 and AP2 ES



Structure of this report

This volume of the SES2 and AP2 ES is divided into Community Area (CA) reports. Each of these reports is in turn divided into two parts.

Part 1 (SES2) provides supplementary environmental information, where relevant, relating to:

- new baseline information with respect to environmental surveys completed and additional information received since the production of the main ES and the SES1 and AP1 ES;
- changes to the design and construction assumptions that do not require changes to the Bill; and
- corrections to the main ES and the SES1 and AP1 ES.

Part 2 (AP2 ES) provides environmental assessment information relating to proposed amendments to the design that have resulted in the need to alter the powers conferred by the Bill and the Additional Provisions to the Bill.

Parts 1 and 2 also include the following, where relevant:

- a description of the SES2 changes (Part 1) or the proposed AP2 amendments (Part 2) within the community area that have triggered the need for reassessment;
- an assessment of the environmental effects of the SES2 changes (Part 1) or the proposed AP2 amendments (Part 2) for relevant environmental topics, considering the:
 - scope, assumptions and limitations of the assessment;
 - environmental baseline;
 - effects arising during construction;
 - effects arising from operation; and
 - mitigation and residual effects;
- a summary of any new, removed or different likely residual significant effects as a result of the SES2 changes (Part 1) and the proposed AP2 amendments (Part 2) compared to those reported in the main ES and the SES1 and AP1 ES (as relevant).

1 Introduction

- 1.1.1 The High Speed Rail (Crewe – Manchester) Bill was submitted to Parliament together with an Environmental Statement ('the main ES') in January 2022. The SES1 and AP1 ES, which was submitted in July 2022, updated the main ES and contained changes and amendments to the design of the original scheme (i.e. the scheme submitted in January 2022) for the following community areas:
- MA01: Hough to Walley's Green;
 - MA02: Wimboldsley to Lostock Gralam;
 - MA03: Pickmere to Agden and Hulseheath;
 - MA04: Broomedge to Glazebrook; and
 - MA05: Risley to Bamfurlong.
- 1.1.2 The Bill and the Additional Provisions to the Bill, if enacted by Parliament, will provide the powers to construct, operate and maintain the HS2 Phase 2b Western Leg.
- 1.1.3 Since submission of the main ES and SES1 and AP1 ES, a number of further updates or changes to environmental baseline information, to the design and to construction assumptions have occurred, which may lead to new, removed or different significant effects. These effects, depending on the type of change, are reported in the SES2 or the AP2 ES, which form Part 1 and Part 2 of this report respectively.
- 1.1.4 The SES2 (Part 1) contains updated environmental baseline information and scheme information relating to changes within the current limits and powers of the Bill, which therefore do not require an Additional Provision to the Bill. The SES2 changes within the Pickmere to Agden and Hulseheath area include:
- additional environmental baseline information (which may be relevant to the SES2 scheme and/or AP2 revised scheme) for: air quality; ecology and biodiversity; historic environment; land quality; socio-economics; sound, noise and vibration; traffic and transport; and water resources and flood risk;
 - changes to the design and to construction assumptions that do not require changes to the Bill; and
 - corrections to the main ES and the SES1 and AP1 ES.
- 1.1.5 These changes are described in Part 1 and are assessed on a topic by topic basis, where relevant.
- 1.1.6 The purpose of the SES2 is to describe the assessment and identify any new, removed or different likely significant environmental effects arising from the changes. These will be compared to the main ES or SES1 as relevant for each topic assessment.
- 1.1.7 The AP2 ES (Part 2) describes the likely significant effects of amendments to the design of the scheme which require the use of land outside the original limits of the Bill, additional

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access rights or other extensions to the powers conferred by the Bill, making it necessary to submit an Additional Provision to the Bill.

- 1.1.8 The AP2 ES reports the assessment of each amendment separately for all relevant topics. The purpose of the AP2 ES is to provide an assessment of any new, removed or different likely significant environmental effects arising from the amendments, as compared to the main ES, the SES1 or the SES2 as relevant. Consideration is also given to the interaction between AP1 amendments and AP2 amendments, where relevant.
- 1.1.9 A combined assessment of new, removed or different significant construction and operation traffic and traffic related effects, as a result of changes in traffic flows, is reported in Section 7. This is because alterations in traffic flows cannot generally be directly attributed to particular SES2 changes or AP2 amendments. Traffic and transport effects are reported first, since the effects arise from changes in traffic flows. Other topics affected by traffic and transport changes are then reported, as necessary.
- 1.1.10 All other new, removed or different significant traffic and transport effects are reported with the relevant SES2 change or AP2 amendment section of this report.
- 1.1.11 The standard measures that will be used to mitigate likely significant adverse environmental effects during construction and operation of the scheme are described in Section 9 of Volume 1 of the main ES and in the draft Code of Construction Practice (CoCP)¹ submitted in support of the Bill. Implementation of these measures has been assumed in this SES2 and AP2 ES.
- 1.1.12 In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes, the following terms are used throughout the SES2 and the AP2 ES to define the scheme:
- ‘the SES1 scheme’ – the original scheme with any changes described in SES1 that are within the existing powers of the Bill;
 - ‘the AP1 revised scheme’ – the original scheme as amended by SES1 changes and AP1 amendments;
 - ‘the SES2 scheme’ – the original scheme with any changes described in SES1 (submitted in July 2022) and SES2; and
 - ‘the AP2 revised scheme’ – the original scheme as amended by SES1 changes, SES2 changes and AP2 amendments.

¹ High Speed Two Ltd (2022), High Speed Rail (Crewe - Manchester), *Environmental Statement, draft Code of Construction Practice*, Volume 5, Appendix: CT-002-00000. Available online at: <https://www.gov.uk/government/collections/cross-topic-technical-appendices-for-high-speed-rail-crewe-manchester-environmental-statement#draft-code-of-construction-practice>.

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1.1.13 The following terms are used to differentiate between changes included in the SES2 and those included in the AP2 ES:

- ‘SES2 design changes’ – changes to the scheme design reported in the SES2 that do not require additional powers;
- ‘SES2 changes’ – all changes reported in the SES2 that do not require additional powers. This may include new baseline information, changes to the design and to construction assumptions, and corrections; and
- ‘AP2 amendments’ – amendments to the scheme reported in the AP2 ES that include requirements for additional powers in the Bill.

1.1.14 In addition, the following terms are used in the SES2 and AP2 ES, where relevant:

- ‘SES1 design changes’ – changes to the scheme design reported in the SES1 that do not require additional powers;
- ‘SES1 changes’ – all changes reported in the SES1 that do not require additional powers. These may include new baseline information, changes to the design and construction assumptions, and corrections; and
- ‘AP1 amendments’ – amendments to the scheme reported in the AP1 ES that include requirements for additional powers in the Bill.

Part 1: Supplementary Environmental Statement 2

2 Summary of changes in the Pickmere to Agden and Hulseheath area

2.1 New environmental baseline information

- 2.1.1 Since the main ES and SES1 and AP1 ES, updates to the environmental baseline information have occurred which may lead to new or different significant effects for the following environmental topics.
- 2.1.1 An update to the baseline information for traffic and transport effects is reported first, since this has implications for other topics. The other topics where updated baseline information may lead to new or different significant effects are then reported, in the following sequence:
- air quality;
 - ecology and biodiversity;
 - historic environment;
 - land quality;
 - socio-economics
 - sound, noise and vibration; and
 - water resources and flood risk.

Traffic and transport

- 2.1.2 Since the main ES and SES1 and AP1 ES, additional traffic information has been used in the development of updated baseline and future baseline models for the SES2 scheme and AP2 revised scheme in the Pickmere to Agden and Hulseheath area. This includes traffic data from National Highways and Trafficmaster journey time data from the Department for Transport (DfT), as set out in the Background Information and Data (BID)² report BID TR-004-00001 SES2 and AP2 ES. This data has been combined with the information collected for

² High Speed Two Ltd (2023), High Speed Rail (Crewe – Manchester), *Background Information and Data accompanying Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement, Transport Assessment policy and data*, BID TR-004-00001 SES2 and AP2 ES. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement>.

local junction modelling set out in the Background Information and Data (BID)³ report BID TR-004-00001 which accompanied the main ES.

- 2.1.3 The baseline and future baseline models have been updated for the assessment of the SES2 scheme and AP2 revised scheme to reflect:
- additional traffic information outlined above;
 - expansion of the area of the M6 junction 19 model, to include the M6 north of junction 20 and part of the M62, informed by additional traffic counts;
 - refinement of network coding to improve model performance in key areas of interest; and
 - the change in the future baseline forecast years from 2030 to 2031 and 2038 to 2039 (as described in Section 7 of this report).
- 2.1.4 The assessment of the changes to traffic flows associated with the updated baseline and future baseline models in combination with all SES1 changes, AP1 amendments, SES2 changes and AP2 amendments is reported in Section 7 of this report.

Air quality

- 2.1.5 Road traffic data, as discussed in Section 7, and air quality assessment years have been updated for both construction (2026 as a worst case earliest construction year) and operation (2039) for the Pickmere to Agden and Hulseheath (MA03) area. Details of the additional traffic data and associated background air pollution concentrations in this area are provided in the BID⁴ document BID AQ-002-0MA03 SES2 and AP2 ES, SES2 and AP2 ES Volume 5, Appendix: AQ-001-0MA03 and SES2 and AP2 ES Volume 5, Air Quality Map Book: Map Series AQ-01 Monitoring Locations and Receptors.

Ecology and biodiversity

- 2.1.6 Since the main ES and the SES1 and AP1 ES, additional Phase 1 habitat, hedgerow, protected and notable flora, pond and canal, great crested newt, bat, breeding bird, and otter surveys have been completed in the Pickmere to Agden and Hulseheath area.

³ High Speed Two Ltd (2022), High Speed Rail (Crewe - Manchester), *Background Information and Data, Transport Assessment policy and data report*, BID TR-004-00001. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-environmental-statement>.

⁴ High Speed Two Ltd (2023), High Speed Rail (Crewe - Manchester), *Background Information and Data, Additional data used in the air quality assessment*. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement>.

- 2.1.7 Details of these additional ecological surveys are provided in BID documents⁵ BID EC-017-00000, BID EC-007-00000 and BID EC-011-00000, and BID Ecology Map Book⁶: Map Series EC-02, EC-04, EC-05, EC-06, EC-08, EC-10, EC-11, and EC-12, which accompany the SES2 and AP2 ES.
- 2.1.8 Additional effects that are significant at the local/parish level that are likely to occur as a consequence of SES2 changes and AP2 amendments are identified in SES2 and AP2 ES Volume 5, Appendix: EC-015-00000.
- 2.1.9 Detailed supplementary ecological information that is relevant to the SES2 assessment is provided in Section 3.

Historic environment

- 2.1.10 The historic environment baseline information is as described in Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES.
- 2.1.11 Since the main ES and the SES1 and AP1 ES, additional geophysical survey has been completed in the Pickmere to Agden and Hulseheath area. This has identified one new heritage asset: Cottage off Hulseheath Lane (site of) (MA03_0186).
- 2.1.12 Details of additional historic environment baseline are provided in SES2 and AP2 ES Volume 5, Appendix: HE-002-00000, BID HE-001-00000 SES2 and AP2 ES and BID HE-004-00000 SES2 and AP2 ES.

Land quality

- 2.1.13 Environmental regulatory data has been updated. This data includes information on pollution incidents, radioactive and hazardous substances consents, environmental permits (previously integrated pollution control and integrated pollution prevention and control licences) and ecological receptors.
- 2.1.14 In the Pickmere to Agden and Hulseheath area, this includes 31 additional discharge consents to surface water associated with sewage and trade discharge, one additional substantiated pollution incident and two pollution incidents to controlled waters.

⁵ High Speed Two Ltd (2023), High Speed Rail (Crewe – Manchester), *Background Information and Data accompanying Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement, ecology and biodiversity baseline data*. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement>.

⁶ High Speed Two Ltd (2023), High Speed Rail (Crewe – Manchester), *Background Information and Data accompanying Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement, Ecology Map Book*: Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement>.

Additionally, there were two discharge consents to surface water that are no longer recorded within the study area associated with sewage discharge.

- 2.1.15 Further details of these are presented in the BID⁷ report (BID LQ-002-00000 SES2 and AP2 ES). No new, different or removed significant effects have been identified.

Socio-economics

- 2.1.16 Since the main ES, the following baseline information has been updated:
- datasets reflecting changes to the business and labour market from the Office for National Statistics (ONS), namely:
 - UK Business Counts (UKBC) (January – December 2021);
 - Business Register and Employment Survey (BRES) (January – December 2021); and
 - Annual Population Survey (APS) (January – December 2021).
 - vacancy rates for industrial and warehousing property and for office space, with information supplied by Estates Gazette.
- 2.1.17 This baseline information has been considered, where relevant, in the assessment and is presented in the SES2 and AP2 ES Volume 5, Appendix: SE-001-00000, Updated socio-economic baseline information.

Sound, noise and vibration

- 2.1.18 Road traffic information, such as flows and speeds, is used to determine the baseline sound levels. Additional road traffic information has been obtained for the SES2 scheme and AP2 revised scheme. Where relevant, this road traffic information has been used to update the existing and future baseline sound modelling. Details of the updated baseline information that is relevant to the assessment are provided in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000.

Water resources and flood risk

- 2.1.19 In July 2021, the Environment Agency published revised guidance and climate change allowances for peak river flows to reflect the UK Climate Projections 2018 (UKCP18)⁸. In May 2022 updated peak rainfall intensity allowances were published by the Environment Agency using UKCP local projections of extreme rainfall⁸. Further details are provided in the SES2 and AP2 ES Volume 5, Appendix: CT-001-00005: Water resources and flood risk technical

⁷ High Speed Two Ltd (2023), High Speed Rail (Crewe – Manchester), Background Information and Data accompanying *Supplementary Environmental Statement 2 and Additional Provision 2, Land quality baseline data*, BID LQ-002-00000 SES2 and AP2 ES. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement>.

⁸ Environment Agency (2022), *Flood risk assessments: climate change allowances*. Available online at: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>.

note: Updated guidance on flood risk assessment. The main changes to the guidance of relevance to SES2 and AP2 ES are:

- peak river flow and rainfall intensity allowances are given for ‘management catchments’ instead of river basin districts. The smaller geographical units better reflect variability of the catchment response to climate change impact;
- the ‘Higher central’ peak river flow allowance should be used for catchments which contain ‘essential infrastructure’, elsewhere the ‘Central’ allowance should be used; and
- the ‘Upper end’ peak rainfall intensity allowance should be used for all development with a lifespan beyond 2100.

2.1.1 This information has been used in the water resources and flood risk assessment, where relevant.

2.2 Changes to the design or to construction assumptions not requiring a change to the Bill

Introduction

2.2.1 The following have been identified for the Pickmere to Agden and Hulseheath area:

- changes to construction assumptions; and
- changes to the construction programme.

2.2.2 These changes, which are described below, do not require a change to the Bill.

Changes to construction assumptions

2.2.3 The main ES provided indicative details of the construction works to be managed from the construction compounds in the area – see Section 2 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES. This was updated to reflect changes to construction works associated with the AP1 revised scheme in the SES1 and AP1 ES. The information included the duration of works, number of workers and a summary of the works to be undertaken. A construction programme was also provided, which included indicative periods for each of the core construction activities.

2.2.4 A route-wide review of earthworks and the movement of materials has been undertaken since the main ES. Changes to assumed construction methods have also been made. The review and the changes have resulted in the need to alter the indicative construction programme. The revised programme is provided in Section 6 and described in Section 3 of the SES2 and Section 5 of the AP2 ES.

2.2.5 There will be changes to the construction workforce at one compound as a result of the AP2 revised scheme. An assessment of socio-economic effects on employment at a route-wide level is reported in Volume 3 of the SES2 and AP2 ES.

SES2 engineering design changes

2.2.6 There are no SES2 engineering or utility design changes which result in new or different significant effects in the Pickmere to Agden and Hulseheath area.

2.3 Corrections to the main ES and the SES1 and AP1 ES

2.3.1 The need for a number of corrections to the contents of the main ES and the SES1 and AP1 ES has been identified since submission of the Bill. Table 1 provides the following:

- corrections to the Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) that have the potential to alter the significant environmental effects previously reported;
- corrections to any factual inaccuracies relating to significant effects previously reported;
- clarifications to elements of the scheme description previously reported;
- the location of the text that is subject to the correction in the relevant report;
- the reason for the correction;
- the original text from the relevant report and, where applicable, revised text; and
- whether the correction changes a significant effect previously reported.

2.3.2 These corrections were considered, where relevant, in the technical assessments reported in Section 3 of this SES2.

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Table 1: Summary of corrections to the main ES, SES1 and AP1 ES in the Pickmere to Agden and Hulseheath area

Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
Overview of the area and description of the Proposed Scheme Paragraph 2.3.38 and 2.3.39, Volume 2, MA03 of the main ES	The need for a temporary closure on Footpath Tabley Inferior 1/1 during utility works should have been reported in the main ES.	Paragraph 2.3.38: The works to be managed from this compound will require the temporary realignment of Footpath Tabley Inferior 1/1 to the north of its existing alignment for a period of one year and six months, increasing journey length by 206m. On completion of construction, Footpath Tabley Inferior 1/1 will be permanently realigned through Footpath Tabley Inferior 1/1 accommodation underbridge.	Paragraph 2.3.38, first and second bullet: <ul style="list-style-type: none"> • The works to be managed from this compound will require the following works to PRoW: • temporary closure of Footpath Tabley Inferior 1/1 for a period of one year during utility works, users will be diverted via A556, Linnards Lane, Footpath Wincham 8/1, Footpath Pickmere 6/1, Spink Lane and B5391 Pickmere Lane, increasing journey length by up to 1.9km; • temporary realignment of Footpath Tabley Inferior 1/1 to the north of its existing alignment for a period of one year and six months, increasing journey length by 206m; and Paragraph 2.3.39: <ul style="list-style-type: none"> • On completion of construction, Footpath Tabley Inferior 1/1 will be permanently realigned through Footpath Tabley Inferior 1/1 accommodation underbridge. 	N/A
Landscape and visual Paragraph 11.4.12, Table 30: Construction phase significant visual effects, Volume 2, MA03 of the main ES		Paragraph 11.4.12, Table 30: Construction phase significant visual effects, first entry: View west from Footpath Tabley Inferior 1/1 (High sensitivity receptors) (VP 313-03-005) A section of Footpath Tabley Inferior 1/1 will be temporarily realigned.	Paragraph 11.4.12, Table 30: Construction phase significant visual effects, first entry: View west from Footpath Tabley Inferior 1/1 (High sensitivity receptors) (VP 313-03-005) In addition, Footpath Tabley Inferior 1/1 will be temporarily closed during construction	No change. This correction will not lead to a new or different significant effect.

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
			followed by a period of realignment, to facilitate utility work.	
Traffic and transport Paragraph 14.4.36, Volume 2, MA03 of the main ES		Paragraph 14.4.36, first bullet: Footpath Tabley Inferior 1/1 – minor adverse effect from an increase in journey length of up to 206m;	Paragraph 14.4.36, first bullet: <ul style="list-style-type: none"> Footpath Tabley Inferior 1/1 – moderate adverse effect from an increase in journey length of up to 1.9km; 	Yes. The effect changes from minor adverse to moderate adverse.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.38, Volume 2, MA03 of the main ES	The need for a temporary closure on Footpath Pickmere 8/1 during utility works should have been reported in the main ES.	None included.	Paragraph 2.3.38, third bullet: <ul style="list-style-type: none"> temporary closure of Footpath Pickmere 8/1 for a period of one year during construction, users will be diverted via the A556, Flittogate Lane and B5391 Pickmere Lane, increasing journey length by 827m. 	N/A
Landscape and visual Paragraph 11.4.12, Table 30: Construction phase significant visual effects, Volume 2, MA03 of the main ES		Paragraph 11.4.12, Table 30: Construction phase significant visual effects, third entry: View north-west from Footpath Tabley Inferior 2/2 (High sensitivity receptors) (VP 313-03-010) There will be near-distance views of construction activity from Footpath Tabley Inferior 2/2, contiguous with Footpath Tabley Inferior 3/1 and diverted to the north, as it crosses the Proposed Scheme via Footpath Pickmere 9/1 underbridge.	Paragraph 11.4.12, Table 30: Construction phase significant visual effects, third entry: View north-west from Footpath Tabley Inferior 2/2 (High sensitivity receptors) (VP 313-03-010) There will be near-distance views of construction activity from Footpath Tabley Inferior 2/2, contiguous with Footpath Pickmere 8/1 and Footpath Tabley Inferior 3/1, and diverted to the north, as it crosses the Proposed Scheme via Footpath Pickmere 9/1 underbridge.	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.4.36, Volume 2, MA03 of the main ES		None included.	Paragraph 14.4.36, second bullet: <ul style="list-style-type: none"> Footpath Pickmere 8/1 – moderate adverse effect from increase in journey length of up to 827m; 	Yes. This correction will lead to a new temporary moderate adverse significant effect

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
				with regards to changes in journey lengths for non-motorised users on Footpath Pickmere 8/1.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.46, Volume 2, MA03 of the main ES	The need for a temporary closure on Footpath Tabley Inferior 4/1 during utility works should have been reported in the main ES.	None included.	Paragraph 2.3.46, third bullet: <ul style="list-style-type: none"> temporary closure of Footpath Tabley Inferior 4/1 for a period of nine months during utility works, users will be diverted via Flittogate Lane and B5391 Pickmere Lane, increasing journey length by 164m; and 	N/A
Landscape and visual Paragraph 11.4.12, Table 30: Construction phase significant visual effects, Volume 2, MA03 of the main ES		Paragraph 11.4.12, Table 30: Construction phase significant visual effects, fifth entry: View north-east from Pickmere Lane (High sensitivity receptors) (VP 314-03-002) Footpath Tabley Inferior 3/1 and Footpath Tabley Inferior 4/1 will be diverted and footpath users will have clear views of construction activity and Pickmere Lane satellite compound in the near distance.	Paragraph 11.4.12, Table 30: Construction phase significant visual effects, fifth entry: View north-east from Pickmere Lane (High sensitivity receptors) (VP 314-03-002) A short section of Footpath Tabley Inferior 3/1 will be diverted and footpath users will have clear views of construction activity and Pickmere Lane satellite compound in the near distance. Footpath Tabley Inferior 4/1 will be temporarily closed during construction to facilitate utility works.	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.4.36, Volume 2, MA03 of the main ES		None included.	Paragraph 14.4.36, fourth bullet: <ul style="list-style-type: none"> Footpath Tabley Inferior 4/1 – minor adverse effect from an increase in journey length of up to 164m; 	Yes. This correction will lead to a new temporary minor adverse significant effect with regards to changes in journey lengths for non-

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
				motorised users Footpath Tabley Inferior 4/1.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.46, Volume 2, MA03 of the main ES	The need for a temporary closure on Footpath Pickmere 9/2 during construction should have been reported in the main ES.	None included.	Paragraph 2.3.46, fourth bullet: <ul style="list-style-type: none"> temporary closure of Footpath Pickmere 9/2 for a period of four years during construction, users will be diverted via Flittogate Lane and B5391 Pickmere Lane, increasing journey length by 164m. On completion of construction Footpath Pickmere 9/2 will be reinstated along its existing alignment. 	N/A
Landscape and visual Paragraph 11.4.12, Table 30: Construction phase significant visual effects, Volume 2, MA03 of the main ES		Paragraph 11.4.12, Table 30: Construction phase significant visual effects, fifth entry: View north-east from Pickmere Lane (High sensitivity receptors) (VP 314-03-002) Footpath Tabley Inferior 3/1 and Footpath Tabley Inferior 4/1 will be diverted and footpath users will have clear views of construction activity and Pickmere Lane satellite compound in the near distance.	Paragraph 11.4.12, Table 30: Construction phase significant visual effects, fifth entry: View north-east from Pickmere Lane (High sensitivity receptors) (VP 314-03-002) A short section of Footpath Tabley Inferior 3/1 will be diverted and footpath users will have clear views of construction activity and Pickmere Lane satellite compound in the near distance. Footpath Tabley Inferior 4/1 and Pickmere 9/2 will be temporarily closed during construction to facilitate utility works.	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.4.36, Volume 2, MA03 of the main ES		None included.	Paragraph 14.4.36, fifth bullet: <ul style="list-style-type: none"> Footpath Pickmere 9/2 – minor adverse effect from an increase in journey length of up to 164m; 	Yes. This correction will lead to a new temporary minor adverse significant effect with regards to changes in journey lengths for non-

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
				motorised users on Footpath Pickmere 9/2.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.46, Volume 2, MA03 of the main ES	The need for a temporary closure on Footpath Pickmere 8/1 during utility works results in the need for an alternate diversion route for Footpath Tabley Inferior 3/1 during the Footpath Pickmere 8/1 closure.	Paragraph 2.3.46, first bullet: <ul style="list-style-type: none"> temporary realignment of Footpath Tabley Inferior 3/1 to the east and west of the Proposed Scheme for a period of one year, increasing journey length by 1.2km. On completion of construction, Footpath Tabley Inferior 3/1 will be permanently realigned through Cheshire Showground South access and Cheshire Showground North access to join Footpath Pickmere 9/1 underbridge; and 	Paragraph 2.3.46, first bullet: <ul style="list-style-type: none"> temporary closure of Footpath Tabley Inferior 3/1 for a period of six months during utility works, users will be diverted via the A556, Flittogate Lane and B5391 Pickmere Lane, increasing, journey length by 827m. Footpath Tabley Inferior 3/1 will also require temporary realignment to the east and west of the Proposed Scheme for a period of one year, increasing journey length by 1.2km. On completion of construction, Footpath Tabley Inferior 3/1 will be permanently realigned through Cheshire Showground South access and Cheshire Showground North access to join Footpath Pickmere 9/1 underbridge; 	N/A
Landscape and visual Paragraph 11.4.12, Table 30: Construction phase significant visual effects, Volume 2, MA03 of the main ES		Paragraph 11.4.12, Table 30: Construction phase significant visual effects, fifth entry: View north-east from Pickmere Lane (High sensitivity receptors) (VP 314-03-002) Footpath Tabley Inferior 3/1 and Footpath Tabley Inferior 4/1 will be diverted and footpath users will have clear views of construction activity and Pickmere Lane satellite compound in the near distance	Paragraph 11.4.12, Table 30: Construction phase significant visual effects, fifth entry: View north-east from Pickmere Lane (High sensitivity receptors) (VP 314-03-002) Footpath Tabley Inferior 3/1 will be diverted and footpath users will have clear views of construction activity and Pickmere Lane satellite compound in the near distance. In addition, Footpath Tabley Inferior 3/1, Footpath Tabley Inferior 4/1 and Pickmere 9/2 will be temporarily closed and Footpath Tabley Inferior 3/1 will be temporarily realigned to the east and west of the	No change. This correction will not lead to a new or different significant effect.

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
		<p>Paragraph 11.4.12, Table 30: Construction phase significant visual effects, third entry:</p> <p>View north-west from Footpath Tabley Inferior 2/2 (High sensitivity receptors) (VP 313-03-010)</p> <p>There will be near-distance views of construction activity from Footpath Tabley Inferior 2/2, contiguous with Footpath Tabley Inferior 3/1 and diverted to the north, as it crosses the Proposed Scheme via Footpath Pickmere 9/1 underbridge</p>	<p>Proposed Scheme, during construction to facilitate utility works.</p> <p>Paragraph 11.4.12, Table 30: Construction phase significant visual effects, third entry:</p> <p>View north-west from Footpath Tabley Inferior 2/2 (High sensitivity receptors) (VP 313-03-010)</p> <p>There will be near-distance views of construction activity from Footpath Tabley Inferior 2/2, contiguous with Footpath Tabley Inferior 3/1 and diverted to the north, as it crosses the Proposed Scheme via Footpath Pickmere 9/1 underbridge. In addition, Footpath Pickmere 8/1 and Footpath Tabley Inferior 3/1, will be temporarily closed and Footpath Tabley Inferior 3/1 will be temporarily realigned to the east and west of the Proposed Scheme during construction, to facilitate utility works.</p>	
<p>Overview of the area and description of the Proposed Scheme</p> <p>Paragraph 2.3.67, Volume 2, MA03 of the main ES</p>	<p>The need for a temporary closure on Restricted Byway Mere 2/1 during utility works should have been reported in the main ES.</p>	<p>None included.</p>	<p>Paragraph 2.3.67:</p> <p>The works to be managed from this compound will require the temporary closure of Restricted Byway Mere 2/1 for a period of one year and six months.</p>	<p>N/A</p>
<p>Landscape and visual</p> <p>Paragraph 11.4.12, Table 30: Construction phase</p>		<p>Paragraph 11.4.12, Table 30: Construction phase significant visual effects, 15th entry:</p>	<p>Paragraph 11.4.12, Table 30: Construction phase significant visual effects, 15th entry:</p> <p>View east from Winterbottom Lane at Winterbottom Farm (High sensitivity receptors) (VP 315-02-005)</p>	<p>No change.</p> <p>This correction will not lead to a new or different significant effect.</p>

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
significant visual effects, Volume 2, MA03 of the main ES		<p>View east from Winterbottom Lane at Winterbottom Farm (High sensitivity receptors) (VP 315-02-005)</p> <p>The removal of a substantial block of woodland from Belt Wood, east of the receptor, will change the composition of the view in the far distance.</p>	The removal of a substantial block of woodland from Belt Wood, east of the receptor, will change the composition of the view in the far distance. Restricted Byway Mere 2/1 will be temporarily closed during construction to facilitate utility works.	
Traffic and transport Paragraph 14.4.36, Volume 2, MA03 of the main ES		None included.	<p>Paragraph 14.4.36, ninth bullet:</p> <ul style="list-style-type: none"> Restricted Byway Mere 2/1 – major adverse effect as a result of there being no viable alternative route during the temporary closure. Restricted Byway Mere 2/1 will be temporarily closed for a period of one year and five months. 	<p>Yes.</p> <p>This correction will lead to a new temporary major adverse significant effect with regards to changes in journey lengths for non-motorised users on Restricted Byway Mere 2/1.</p>
Overview of the area and description of the Proposed Scheme Paragraph 2.3.68 and 2.3.85, Volume 2, MA03 of the main ES	The need for a temporary closure on Bridleway Mere 1/1 during utility works should have been reported in the main ES.	None included.	<p>Paragraph 2.3.68,</p> <p>The works to be managed from this compound, along with A50 Main Compound, will require the temporary closure of Bridleway Mere 1/1 for a period of one year and nine months during utility works, users will be diverted via Chester Road, A50, Hoo Green Lane and Winterbottom Lane, increasing journey length by 2.2km.</p> <p>Paragraph 2.3.85</p> <p>The works to be managed from this compound, along with M6 viaduct south satellite compound, will require the temporary closure of Bridleway Mere 1/1 for a period of one year and nine months, users will be diverted via Chester Road, A50, Hoo</p>	N/A

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
			Green Lane and Winterbottom Lane, increasing journey length by 2.2km.	
Landscape and visual Paragraph 11.4.12, Table 30: Construction phase significant visual effects, Volume 2, MA03 of the main ES		Paragraph 11.4.12, Table 30: Construction phase significant visual effects, 14th entry: View west from Bentleyhurst Farm and Bridleway Mere 1/1 (High sensitivity receptors) (VP 315-03-004) Bridleway Mere 1/1 will be temporarily realigned. Views of construction will be near distance and open from the PRoW and filtered and more distant from Bentleyhurst Farm. The diversion of an existing overhead power line and high pressure gas pipeline will be clearly visible from Bentleyhurst Farm and the PRoW. PRoW users and residents will experience substantial changes to views due to the large-scale structures associated with construction including construction plant, earthworks and temporary material stockpiles. These will be out of character with existing views over the rural landscape. Views of M6 viaduct north satellite compound will be filtered by field boundary vegetation.	Paragraph 11.4.12, Table 30: Construction phase significant visual effects, 14th entry: View west from Bentleyhurst Farm and Bridleway Mere 1/1 (High sensitivity receptors) (VP 315-03-004) Bridleway Mere 1/1 will be temporarily realigned. Views of construction will be near distance and open from the PRoW and filtered and more distant from Bentleyhurst Farm. The diversion of an existing overhead power line and high pressure gas pipeline will be clearly visible from Bentleyhurst Farm and the PRoW. PRoW users and residents will experience substantial changes to views due to the large-scale structures associated with construction including construction plant, earthworks and temporary material stockpiles. These will be out of character with existing views over the rural landscape. Views of M6 viaduct north satellite compound will be filtered by field boundary vegetation. In addition, Bridleway Mere 1/1 will be temporarily closed during construction to facilitate utility works.	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.4.36, Volume 2, MA03 of the main ES		None included.	Paragraph 14.4.36, tenth bullet: <ul style="list-style-type: none"> Bridleway Mere 1/1 – moderate adverse effect from an increase in journey length of up to 2.2km; 	Yes. This correction will lead to a new temporary moderate adverse significant effect

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
				with regards to changes in journey lengths for non-motorised users on Bridleway Mere 1/1.
Sound, noise and vibration Paragraphs 3.8.12, Volume 2, MA03 of the SES1 and AP1 ES	The SES1 and AP1 ES reported that the dwelling at Ovenback Cottage, Agden Lane, High Legh (assessment location ref.: 612796) will no longer qualify or need to be offered noise insulation during operation due to the removal of the HS2 WCML connection (SES1-004-001). It should have also reported that the dwelling at Ovenback Cottage will no longer qualify or need to be offered noise insulation during construction due to the removal of the HS2 WCML connection.	None included.	Paragraph 3.8.12: The main ES identified the dwelling at Ovenback Cottage, Agden Lane, High Legh (assessment location ref.: 612796) as a location which is forecast to experience noise above the eligibility criteria for noise insulation. Removal of the HS2 WCML connection (SES1-004-001) will reduce the airborne noise level predicted at this property under the original scheme to below the eligibility criteria for noise insulation. It is anticipated, therefore, that this building will no longer qualify or need to be offered noise insulation as described in the main ES due to the removal of the HS2 WCML connection (SES1-004-001).	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 7.3.23, Table 18, Volume 2, MA03 of the SES1 and AP1 ES	The SES1 and AP1 ES incorrectly reported a new significant adverse effect on traffic-related severance for non-	Paragraph 7.3.23 – Table 18, 25th entry: Road Name B5569 Chester Road (between Chapel Lane and A556 southbound off-slip) Significant effect	None included – text removed.	Yes. The correction will remove the major adverse effect on traffic-related severance for non-motorised users on the

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
	motorised users on the B5569 Chester Road (between Chapel Lane and A556 southbound off-slip) during construction when no effect should have been reported.	Major adverse (Previously no effect) AP1 construction scenario Scenarios 1 and 4		B5569 Chester Road (between Chapel Lane and A556 southbound off-slip) during construction.
Traffic and transport Paragraph 7.3.23, Table 17, Volume 2, MA03 of the SES1 and AP1 ES	The SES1 and AP1 ES incorrectly reported a new significant adverse effect on traffic-related severance for non-motorised users on Millington Lane (between Booth Bank Lane and Chester Road)	Paragraph 7.3.23 – Table 17, 27th entry: Road Name Millington Lane (between Booth Bank Lane and Chester Road) Significant effect Moderate adverse (Previously no effect) AP1 construction scenario Scenario 4	None included – text removed.	Yes. The correction will remove the moderate adverse effect on traffic-related severance for non-motorised users on Millington Lane (between Booth Bank Lane and Chester Road) during construction.
Traffic and transport Paragraph 7.3.23, Table 18, Volume 2, MA03 of the SES1 and AP1 ES	during construction when no effect should have been reported.	Paragraph 7.3.23 – Table 18, 36th entry: Road Name Millington Lane (between Booth Bank Lane and Chester Road) Significant effect Moderate adverse (Previously no effect) AP1 construction scenario Scenarios 1, 2, 3, 4 and 5	None included – text removed.	
Traffic and transport Paragraph 7.3.23, Table 17, Volume 2, MA03 of the SES1	The SES1 and AP1 ES incorrectly reported a new significant adverse effect on traffic-related severance for non-	Paragraph 7.3.23 – Table 17, 16th entry: Road Name: Ashley Road (between A5034 Mereside Road and Rostherne Lane)	None included – text removed.	Yes. The correction will remove the moderate adverse effect due to all-vehicle movements and major adverse effect due

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Reference in the main ES or SES1 and AP1 ES	Reason for correction	Text in the relevant report	Revised text	Change to significant effects and mitigation
and AP1 ES Paragraph 7.3.23, Table 18, Volume 2, MA03 of the SES1 and AP1 ES	motorised users on Ashley Road (between A5034 Mereside Road and Rostherne Lane) during construction when no effect should have been reported.	Significant effect: Moderate adverse (Previously no effect) AP1 construction scenario: Scenario 2 Paragraph 7.3.23 – Table 18, 20th entry: Road Name: Ashley Road (between A5034 Mereside Road and Rostherne Lane) Significant effect: Major adverse (Previously no effect) AP1 construction scenario: Scenarios 1, 2 and 5	None included – text removed.	to HGV movements on traffic-related severance for non-motorised users on Ashley Road (between A5034 Mereside Road and Rostherne Lane) during construction.
Traffic and transport Paragraph 7.3.23, Table 18, Volume 2, MA03 of the SES1 and AP1 ES	The main ES incorrectly reported a major adverse significant effect on traffic-related severance for non-motorised users due to changes in HGV movements during construction on the B5391 Pickmere Lane (between Park Lane and School Lane). No effect should have been reported.	Paragraph 7.3.23 – Table 18, second entry: Road Name: B5391 Pickmere Lane (between Park Lane and School Lane) Significant effect: Major adverse (Previously moderate adverse) AP1 construction scenario: Scenarios 1, 2, 3 and 4	None included – text removed.	No. The correction will remove the major adverse effect due to HGV movements on traffic-related severance for non-motorised users on the B5391 Pickmere Lane (between Park Lane and School Lane) during construction. However, the B5391 Pickmere Lane (between Park Lane and School Lane) will continue experience a major adverse effect due to changes in all vehicle movements. As a result, the combined effect on traffic-related severance remains unchanged at Major Adverse.

3 Assessment of changes in the Pickmere to Agden and Hulseheath area

3.1 Introduction

3.1.1 This section describes the effects of the SES2 changes in the Pickmere to Agden and Hulseheath area on:

- ecology and biodiversity;
- historic environment; and
- water resources and flood risk.

3.1.2 Any new or different likely significant environmental effects as a result of the baseline and changes summarised in Section 2 are identified, compared to the original scheme and the SES1 scheme as relevant.

3.1.3 The assessment of the changes to traffic flows and traffic related effects as a result of all changes and amendments to the original scheme, is reported in Section 7.

3.2 Ecology and biodiversity

Introduction

3.2.1 The environmental baseline relevant to the ecology and biodiversity assessment is described below. Any new or different likely significant environmental effects as a result of the changes introduced in Section 2 are then identified, compared to those reported in the main ES and SES1.

Scope, assumptions and limitations

3.2.2 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1, and the EIA Scope and Methodology Report (SMR)⁹ of the main ES.

3.2.3 The SES2 changes of relevance to this assessment have the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for ecology and biodiversity.

⁹ 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/cross-topic-technical-appendices-for-high-speed-rail-crewe-manchester-environmental-statement#environmental-impact-assessment-scope-and-methodology-report>.

- 3.2.4 Ecology and biodiversity effects that result from the assessment of the changes to traffic flows as a result of all changes and amendments to the original scheme are reported in Section 7.

SES2 changes relevant to the assessment

- 3.2.5 New environmental baseline information resulting from additional ecological surveys in the Pickmere to Agden and Hulseheath area is relevant to the assessment.

Environmental baseline

Existing baseline

- 3.2.6 The baseline ecology and biodiversity information is as described in Section 7 of Volume 2, Community Area Report: Pickmere to Agden and Hulseheath (MA03) of the main ES and Section 3 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) SES1. A summary of the baseline information relevant to the assessment of SES2 scheme is provided below.

Designated sites

- 3.2.7 There are no changes to the baseline for designated sites reported in the main ES and SES1 as a result of the SES2 scheme in the Pickmere to Agden and Hulseheath area.

Habitats

- 3.2.8 The SES1 reported the total length of hedgerows within the land required for the SES1 scheme was 61.4km, comprising 25.1km of native species-poor hedgerow and 36.3km of native species-rich hedgerow (including 31.7km of un-surveyed hedgerows assumed to be species-rich on a precautionary basis). The hedgerow network was of county/metropolitan value.
- 3.2.9 Additional surveys at SES2 of 8.5km of hedgerows that were previously not surveyed and were assumed to be species-rich have confirmed that within the land required for the SES2 scheme, 361m of those hedgerows qualify as important hedgerows.
- 3.2.10 As a result of the updated baseline data and adjusting for improved data, the total length of hedgerows within the land required for the SES2 scheme is 60.4km, comprising 27.1km of native species-poor hedgerow and 33.3km of native species-rich hedgerow (including 28.8km of un-surveyed hedgerows assumed to be species-rich on a precautionary basis). The small reduction in length and composition of hedgerows reported does not change the value of the hedgerow network as a whole from that reported in the SES1.
- 3.2.11 The main ES reported the presence of veteran trees in Leonards and Smoker Wood Local Wildlife Site (LWS), Arley and Waterless Brook Corridor LWS and two further oak trees not within LWS, that are all within land required for the original scheme. A further five veteran

trees were identified within 100m of the original scheme. Additional surveys since the main ES and SES1 identified a further two veteran pedunculate oak trees within land required for the SES2 scheme. They are located south of Chapel Lane to the west of the A556 Chester Road. Each of these trees is of national value.

- 3.2.12 The SES1 reported 104 ponds located within, or partly within, the land required for the construction of the SES1 scheme in the Pickmere to Agden and Hulseheath area. On a precautionary basis it was assumed that all ponds could qualify as habitats of principal importance or local Biodiversity Action Plan (BAP) habitats and are of district/borough value. The SES2 baseline, accounting for OS mapping changes and further survey data, shows there are 102 ponds located within or partially within the land required for the SES2 scheme.

Species

Amphibians

- 3.2.13 The outcomes of additional ecological surveys undertaken for great crested newt have formed the basis of a review of the composition of metapopulations across the Pickmere to Agden and Hulseheath area. This review has considered the quality and connectivity of terrestrial habitat between ponds in order to determine the locations of distinct clusters of ponds that are likely to support metapopulations of great crested newt. Changes to the baseline to inform the SES2 scheme have resulted in the identification of two new populations/metapopulations and changes to the composition of five metapopulations and one population, in comparison with those reported in the main ES and SES1. Great crested newt metapopulations that are reported in the Amphibians BID EC-007-00000 SES2 and AP2 ES include metapopulations associated with AP2 amendments and which are not reported in this section as they are not relevant to the SES2 assessment.
- 3.2.14 The main ES reported a medium sized great crested newt metapopulation in a network of 47 ponds north of Lostock Gralam (GCNMP1.3.1), which was of county/metropolitan value. Additional surveys have confirmed that great crested newt are absent at seven ponds, which have subsequently been removed from this metapopulation. On the basis of this data, the revised metapopulation includes 40 ponds. This does not change the value of this metapopulation reported in the main ES.
- 3.2.15 The SES1 reported a revised medium sized great crested newt metapopulation in a network of 96 ponds north of Lostock Gralam (GCNMP1.3.3) which was of county/metropolitan value. Additional surveys at SES2 have confirmed absence of great crested newts in seven ponds, and an additional pond now forming part of this metapopulation has been identified which is assumed to support a medium population of great crested newt. The revised metapopulation therefore contains 90 ponds and the reduction in the number of ponds with confirmed or assumed populations of great crested newt does not change the value of GCNMP1.3.3 reported in the SES1.
- 3.2.16 The SES1 reported a revised assumed large sized great crested newt metapopulation in a network of 158 ponds south of High Legh (GCNMP1.3.4), which was of county/metropolitan

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value. Additional surveys at SES2 have confirmed the absence of great crested newts in a further nine ponds, which were subsequently removed from the metapopulation, and identified three new ponds on a precautionary basis relevant to the SES2 scheme, each of which are assumed to contain a medium population of great crested newt, and now form part of this metapopulation. One pond has been removed from this metapopulation due to spatial separation as a result of updated survey results, and now forms a new great crested newt population (GCNP1.3.26). The revised metapopulation therefore contains 151 ponds and the reduction in the number of ponds with confirmed or assumed populations of great crested newt does not change the value of GCNMP1.3.4 reported in the SES1.

- 3.2.17 Additional surveys have identified a confirmed medium sized great crested newt population in one pond located south-west of Hoo Green (GCNP1.3.26). This pond was previously part of GCNMP1.3.4. This population is of county/metropolitan value.
- 3.2.18 The main ES reported an assumed medium sized great crested newt metapopulation in a network of 16 ponds located north of Tatton Dale (GCNMP1.3.7) extending into MA06, which was of up to county/metropolitan value. Additional surveys at SES2 have confirmed the absence of great crested newts within three ponds, which have subsequently been removed from the metapopulation. One further pond has been removed from this metapopulation due to spatial separation as a result of updated survey results, and now forms a new great crested newt population (GCNP1.3.15). The revised metapopulation for GCNMP1.3.7 is present in 11 ponds, but the reduction in the number of ponds with confirmed or assumed populations of great crested newt does not change the value reported in the main ES.
- 3.2.19 The additional surveys at SES2 have identified an assumed great crested newt population in a single pond south of Bucklow Hill (GCNP1.3.15) that was previously included in GCNP1.3.7, located within 250m from the land required for the construction of the SES2 scheme. On a precautionary basis, the population size class is assumed as medium. This population is of up to county/metropolitan value.
- 3.2.20 The SES1 reported a revised assumed large sized great crested newt metapopulation within a network of 102 ponds located north of Tatton Dale (GCNMP1.3.9) extending into MA06, which was of county/metropolitan value. Additional surveys at SES2 have confirmed the absence of great crested newts in a further four ponds, which have subsequently been removed from the metapopulation, and have identified four additional ponds that are assumed to support medium populations of great crested newt and now form part of this metapopulation. The revised metapopulation therefore remains the same at 102 ponds which does not change the value reported in the SES1.
- 3.2.21 The SES1 reported a total of 104 waterbodies within land required for the SES1 scheme, of which 38 were not subject to survey and were assumed to support populations of great crested newt of up to county/metropolitan value. Of the 102 waterbodies within the land required for the construction of the SES2 scheme, 33 waterbodies have not been subject to survey and are assumed to support populations of great crested newt.

Bats

- 3.2.22 The SES1 reported an assemblage of at least 10 species of bats between Smoker Brook and the M6 within the Pickmere to Agden and Hulseheath area. The assemblage was considered to be of regional value on the basis of high levels of noctule, serotine, Leisler's bat and *Myotis* species activity. Additional surveys at SES2 have identified an additional possible maternity roost of *Myotis* species 5m east of the land required for the construction of the SES2 scheme at Tabley, and an increase in the number of individuals of *Myotis* species using a possible maternity roost at Pickmere within the land required for the construction of the SES2 scheme. Surveys also recorded additional occasional roosts of previously recorded species within the land required for the construction of the SES2 scheme, and an increase in foraging activity for *Myotis* and brown long-eared bats. The recording of these additional roosts and increased foraging activity does not change the value of the bat assemblage reported in the SES1.
- 3.2.23 The SES1 reported a bat assemblage of at least nine species bounded by the M6, the M56 and the A556 within the Pickmere to Agden and Hulseheath area and the Hulseheath to Manchester Airport area (MA06). The assemblage was considered to be of regional value on the basis of high levels of Nathusius' pipistrelle, noctule, Leisler's bat and *Myotis* species bat activity. Additional surveys at SES2 have identified a possible maternity roost for soprano pipistrelle at Bentleyhurst Lane, Mere, 40m north of the land required for the construction of the SES2 scheme. A confirmed maternity roost for soprano pipistrelle was also identified at Millington Lane, Little Bollington, 20m east of the land required for the construction of the SES2 scheme (in the Hulseheath to Manchester Airport area (MA06)). Surveys also recorded further occasional roosts for previously recorded species between 10 and 115m from the land required for the construction of the SES2 scheme. Rushy-pits Covert was recorded as being of moderate potential to support roosting bats. Increased foraging within this assemblage was also noted for noctule and soprano pipistrelle. The recording of these additional roosts and increased foraging activity does not change the value of the bat assemblage reported in the SES1.

Breeding birds

- 3.2.24 The SES1 reported five breeding bird assemblages of local/parish value within the Pickmere to Agden and Hulseheath area. Additional breeding bird surveys were carried out between Chapel Lane and Agden Bridge Farm to complete surveys in this area. A total of 37 bird species were recorded, including 18 notable species within and adjacent to the land required for the construction of the SES2 scheme. Breeding territories of 13 species were recorded of which four are notable, with two Red List species. This assemblage remains of local/parish value as reported in the SES1.

Otter

- 3.2.25 The main ES reported the otter population using Tabley Brook and associated watercourses to be of district/borough value. Since the main ES and SES1, additional otter surveys have been carried out in MA03 on Smoker Brook Tributary 2, Tabley Brook and Tributary of Tabley

Brook 2. Suitable habitat for otters was present; however the only evidence recorded was a single possible spraint along Tabley Brook. The additional surveys do not change the value of this otter population from that reported in the main ES.

Future baseline

- 3.2.26 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 3.2.27 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 3.2.28 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

- 3.2.29 No avoidance or mitigation measures additional to those reported in the main ES and the draft Code of Construction Practice (CoCP)¹⁰ are proposed.

Assessment of impacts and effects

Habitats

- 3.2.30 The SES1 assumed, on a precautionary basis, all hedgerows (61.4km) within the land required for the construction of the SES1 scheme in the Pickmere to Agden and Hulseheath area would be permanently lost, and the remaining hedgerow network would be fragmented. This would have a permanent adverse effect that was significant at county/metropolitan level. Following the SES2 changes, the total extent of hedgerows within the Pickmere to Agden and Hulseheath area that are assumed to be permanently lost has decreased to 60.4km. This will result in a different significant effect. However, there will be no change in the level of significance reported in the SES1.
- 3.2.31 The main ES reported that construction of the original scheme would, on a precautionary basis, result in the loss of at least two veteran trees within Arley and Waterless Brook

¹⁰ High Speed Two Ltd (2022), High Speed Rail (Crewe - Manchester), *Environmental Statement, draft Code of Construction Practice*, Volume 5, Appendix: CT-002-00000. Available online at: <https://www.gov.uk/government/collections/cross-topic-technical-appendices-for-high-speed-rail-crewe-manchester-environmental-statement#draft-code-of-construction-practice>.

Corridor LWS. The loss of these veteran trees would be significant at the national level. The additional surveys identified a further two veteran trees within land required for the SES2 scheme. This will lead to a new permanent adverse effect that will be significant at national level in each case.

- 3.2.32 The SES1 scheme resulted in the loss of 104 ponds which was a significant effect at the district/borough level in each case. The SES2 baseline, accounting for OS mapping changes and further survey, shows the number of ponds within land required for the SES2 scheme is 102. The reduction in the number of ponds that will be removed will result in a different significant effect to that reported in the SES1. However, there will be no change in the level of significance reported in the SES1.

Amphibians

- 3.2.33 The main ES reported a permanent adverse effect on the metapopulation of great crested newt in a network of 47 ponds north of Lostock Gralam (GCNMP1.3.1) that is significant at the county/metropolitan level. Following additional surveys, the number of ponds associated with this metapopulation has reduced to 40. The change in the composition of this metapopulation will result in a different significant effect to that reported in the main ES. However, there will be no change in the level of significance of the effect reported in the main ES.
- 3.2.34 The SES1 reported a permanent adverse effect on the metapopulation of great crested newt in a network of 96 ponds north of Lostock Gralam (GCNMP1.3.3) that was significant at the county/metropolitan level. Following additional surveys at SES2, the number of ponds in this metapopulation has reduced to 90. The change in the composition of this metapopulation will result in a different significant effect to that reported in the SES1. However, there will be no change in the level of significance of the effect reported in the SES1.
- 3.2.35 The SES1 reported a permanent adverse effect on the metapopulation of great crested newt in a network of 158 ponds south of High Legh (GCNMP1.3.4) that was significant at the county/metropolitan level. Following additional surveys at SES2, the number of ponds in this metapopulation has reduced to 151. The change in the composition of this metapopulation will result in a different significant effect to that reported in the SES1. However, there will be no change in the level of significance of the effect reported in the SES1.
- 3.2.36 A confirmed population of great crested newt in one pond, located south-west of Hoo Green (GCNP1.3.26), is within the land required for the SES2 scheme. The pond in this population was previously associated with GCNMP1.3.4. The loss of this pond and terrestrial habitat will result in a different significant effect to that reported in SES1. However, there will be no change in the level of significance of the effect reported in the SES1.
- 3.2.37 The main ES reported a permanent adverse effect on the metapopulation of great crested newt in a network of 16 ponds located north of Tatton Dale (GCNMP1.3.7) that was significant at the county/metropolitan level. Following additional surveys at SES2, the number of ponds in this metapopulation has reduced to 11. The change in the composition of this metapopulation will result in a different significant effect to that reported in the SES1.

However, there will be no change in the level of significance of the effect reported in the SES1.

- 3.2.38 The SES1 reported the loss of a total of 104 waterbodies providing potential breeding sites within land required for the SES1 scheme, of which 38 had not been subject to survey and were assumed to support populations of great crested newt of up to county/metropolitan importance. Of the 102 waterbodies within the land required for construction of the SES2 scheme, 33 waterbodies have not been subject to survey and are assumed to support populations of great crested newt. The loss of the water bodies supporting these populations could result in a permanent adverse effect on amphibian populations, in each case significant at up to county/metropolitan level. This will result in a different significant effect to that reported in the SES1. However, there will be no change in the level of significance of the effect reported in the SES1.

Bats

- 3.2.39 On a precautionary basis, the SES1 reported a permanent adverse effect on the assemblage of bats between Smoker Brook and the M6, significant at the regional level. Additional surveys recorded a further possible maternity roost of *Myotis* species and occasional roosts of common pipistrelle, soprano pipistrelle, *Pipistrellus* sp., brown-long eared and *Myotis* species. The loss of these roosts will result in an additional impact on the bat assemblage. This will result in a different significant effect to that reported in the SES1. However, there will be no change in the level of significance of the effect reported in the SES1.
- 3.2.40 On a precautionary basis, the SES1 reported a permanent adverse effect on the assemblage of bats bounded by the M6, the M56 and the A556 within the Pickmere to Agden and Hulseheath area and the Hulseheath to Manchester Airport area (MA06), significant at the regional level. Additional surveys recorded a possible and a confirmed maternity roost of soprano pipistrelle and occasional roosts of common pipistrelle, soprano pipistrelle, and brown long-eared bat. The loss of these roosts will result in an additional impact on the bat assemblage. This will result in a different significant effect to that reported in the SES1. However, there will be no change in the level of significance of the effect reported in the SES1.

Other mitigation measures

Hedgerows

- 3.2.41 The SES2 reports the loss of 60.4km of hedgerow which represents a small reduction in the loss of 61.4km at SES1. The SES1 reported a total of 21.2km of new hedgerows would be planted as mitigation for those lost as a result of the SES1 scheme in the Pickmere to Agden and Hulseheath area. This represented an overall net loss in hedgerow of 40.2km after mitigation and a residual adverse effect that was significant at county/metropolitan level. As a result of the reduced loss in hedgerow from the SES2 scheme, the overall net loss of hedgerow will decrease to 39.2km. This will result in a different residual effect to that

reported in the SES1. However, there will be no change in the level of significance of the effect reported in the SES1.

Veteran trees

- 3.2.42 The main ES reported the loss of veteran trees to represent a residual effect that was significant at the national level. Where practicable measures will be taken to protect veteran trees and where this is unavoidable, they will be soft felled with sections placed in retained habitats to provide a continued deadwood resource. The SES2 scheme identified two further veteran trees within the land required for the construction of the scheme. This will result in a new residual effect on the additional veteran trees that will each be significant at the national level.

Amphibians

- 3.2.43 The main ES and SES1 reported that significant effects on the great crested newt populations within the Pickmere to Agden and Hulseheath area would be addressed by the provision of measures within the ecological habitat creation areas north-east of Winterbottom, east of Goodiersgreen Farm, at Mere Court Hotel, west and east of Hoo Green North cutting. These measures will comprise provision of ponds and grassland that would be designed to compensate for the loss of breeding sites, foraging habitat and places of shelter used by great crested newt. The mitigation measures will take account of the different significant effects identified above. Therefore, implementation of the measures reported in the main ES and the SES1 and AP1 ES, once established, will reduce adverse effects on the amphibian populations in the Pickmere to Agden and Hulseheath area to a level that is not significant.

Bats

- 3.2.44 The SES1 reported that significant effects to the bat assemblage between Smoker Brook and the M6 would be addressed by mitigation which would be provided in accordance with the Ecological Principles of Mitigation within the SMR. This includes the provision of artificial roosts as well as woodland planting and creation of hedgerows, grassland, wetland habitat and ponds throughout this area. Replacement roosts will be provided within suitable habitat creation and enhancement areas south of Hollowood Lane and adjacent to Waterless Brook/Arley Brook. The loss of the additional possible maternity roost of *Myotis* species at School Lane, Tabley will be addressed through the provision of suitable replacement roosts within habitat creation areas to the west of the Arley Brook viaduct. Following implementation of these measures, the effects on the bat assemblage between Smoker Brook and the M6 will be reduced to a level that is not significant.
- 3.2.45 The SES1 reported that significant effects to the bat assemblage bounded by the M6, the M56 and the A556 within the Pickmere to Agden and Hulseheath area and the Hulseheath to Manchester Airport area (MA06) would be addressed by mitigation which will be provided in accordance with the Ecological Principles of Mitigation within the SMR. This includes the provision of artificial roosts, as well as a range of habitat creation measures that include woodland planting and creation of hedgerows, grassland, wetland habitat and ponds

throughout both community areas. Replacement roosts will be provided within habitat creation and enhancement areas west of the NPR London to Liverpool junction and south of Daisy Bank Farm. The loss of a possible maternity roost of soprano pipistrelle at Bentleyhurst Lane, Mere identified through additional surveys will be addressed through the provision of suitable replacement roosts within habitat creation and enhancement areas south of Winterbottom Lane as described in the main ES. The loss of a confirmed maternity roost of soprano pipistrelle at Millington Lane, Little Bollington identified through additional surveys will be addressed through the provision of suitable replacement roosts within habitat creation and enhancement areas adjacent to Agden Brook. Following implementation of these measures, the effects on the bat assemblage bounded by the M6, the M56 and the A556 within the Pickmere to Agden and Hulseheath area and the Hulseheath to Manchester Airport area (MA06) will be reduced to a level that is not significant.

Summary of likely residual significant effects

- 3.2.46 On a precautionary basis, it is assumed that there will be an overall net loss in hedgerows of 39.2km, which is 1km less than the overall net loss reported in the SES1. This will remain a permanent adverse residual effect that is significant at the county/metropolitan level, as reported in the SES1.
- 3.2.47 On a precautionary basis, it is assumed that as a result of the SES2 scheme there will be two further veteran trees lost compared to the main ES. This will result in a new residual effect that is significant at national level in each case.

Cumulative effects

- 3.2.48 No new or different significant cumulative effects have been identified.

3.3 Historic environment

Introduction

- 3.3.1 The environmental baseline relevant to the historic environment assessment is described below. Any new or different likely significant environmental effects as a result of the SES2 changes introduced in Section 2 are then identified, compared to those reported in the main ES and the SES1 and AP1 ES as relevant.

Scope, assumptions and limitations

- 3.3.2 The assessment scope, key assumptions and limitations for the historic environment are as set out in Volume 1 and the SMR of the main ES.

- 3.3.3 The SES2 change of relevance to this assessment only has the potential to result in new or different significant effects during construction. Therefore, there is no operational assessment for historic environment.

SES2 changes relevant to the assessment

- 3.3.4 New environmental baseline information resulting from additional geophysical surveys in the Pickmere to Agden and Hulseheath area is relevant to the assessment.

Environmental baseline

Existing baseline

- 3.3.5 The baseline historic environment information is as described in Section 9 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES and Section 3 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the SES1 ES.
- 3.3.6 In addition to the baseline described in the main ES, the asset of relevance to this assessment is the Cottage off Hulseheath Lane (site of) (MA03_0186), a non-designated asset of low value. The asset includes the archaeological evidence of the remains of the post-medieval cottage, its garden and activity in the surrounding agricultural fields. This asset was identified through further geophysical survey.

Future baseline

- 3.3.7 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 3.3.8 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 3.3.9 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on historic environment.

Effects arising during construction

Avoidance and mitigation measures

- 3.3.10 No mitigation measures additional to those reported in the main ES, and the draft CoCP are proposed.

Assessment of impacts and effects

- 3.3.11 The Cottage off Hulseheath Lane (site of) (MA03_0186) is an additional heritage asset and was not reported in the main ES or the SES1 and AP1 ES.
- 3.3.12 The Cottage off Hulseheath Lane (site of) (MA03_0186) is located within the land required for the SES2 scheme. As a result, the archaeological remains of the post-medieval cottage, its gardens and agricultural fields will be removed. This will constitute a new high adverse impact on a low value asset and result in a permanent moderate adverse significant effect.
- 3.3.13 The SES2 and AP2 ES Volume 5, Appendix: HE-002-00000 provides a summary of all historic environment effects that have been changed or added as a result of the SES2 scheme.

Other mitigation measures

- 3.3.14 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Summary of likely residual significant effects

- 3.3.15 The SES2 scheme will give rise to a new permanent moderate adverse residual significant effect on the Cottage off Hulseheath Lane (site of) (MA03_0186).

Cumulative effects

- 3.3.16 No new, removed or different significant cumulative effects have been identified.

3.4 Water resources and flood risk

Introduction

- 3.4.1 The environmental baseline relevant to the water resources and flood risk assessment is summarised below. Any new or different likely significant environmental effects as a result of the changes introduced in Section 2 are identified, compared to the main ES and SES1.

Scope, assumptions and limitations

- 3.4.2 The assessment scope, key assumptions and limitations for water resources and flood risk are as set out in Volume 1, and the SMR (Volume 5, Appendix: CT-001-00001) of the main ES. The scope and methodology for the updated flood risk assessment is set out in the SES2 and AP2 ES Volume 5, Appendix: CT-001-00005: Water resources and flood risk technical note: Updated guidance on flood risk assessment.
- 3.4.3 The baseline changes set out in Section 2 have the potential to result in new or different significant construction effects for flood risk only. Therefore, there is no construction

assessment for water resources and no operational assessment for water resources or flood risk.

Environmental baseline

Existing baseline

- 3.4.4 The baseline water resources and flood risk information is as described in Section 15 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES.
- 3.4.5 In the main ES, culvert design details were provided along with the estimated peak flow during the 1 in 100 year plus climate change event. These assessments were based on the guidance published by the Environment Agency in February 2016 which established a peak rainfall intensity allowance of 40% in line with UK Climate Projections 2009 (UKCP09). For the SES2 assessment the baseline environmental information has been updated to include the new climate change guidance for rainfall which was published by the Environment Agency in May 2022 and results in an increase in peak rainfall intensity allowance from 40% to 45%.
- 3.4.6 In the main ES, hydraulic analysis was carried out using simplified 2D modelling to assess the impacts of the original scheme on likely peak flood levels at the viaduct crossings. These assessments were carried out using the UK Climate Projections 2009 (UKCP09), with a climate change allowance of an upper end increase in peak flow of 70%. For SES2 the baseline environmental information applied the new climate change guidance for peak river flows published by the Environment Agency in July 2021⁸.
- 3.4.7 The revised guidance indicates that for essential infrastructure, the Environment Agency's 'Higher Central' allowance for peak river flow should be used. The revised guidance provides peak river flow allowance by management catchment instead of river basin district. Arley Brook is located within the Weaver Goway Management Catchment.
- 3.4.8 In accordance with this guidance, the corresponding peak river flow climate change allowance for the Weaver Goway Management catchment is 67%.

Future baseline

- 3.4.9 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 3.4.10 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

- 3.4.11 None of the identified developments affect the assessment of the AP2 revised scheme’s likely impacts on water resources and flood risk.

Effects arising during construction

Avoidance and mitigation measures

- 3.4.12 The avoidance and mitigation measures specific to water resources and flood risk are set out in the Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES. No further avoidance and mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

- 3.4.13 In the main ES, culvert design details were provided along with the estimated peak flow during the 1 in 100 year plus climate change event (the 1.0 Annual Exceedance Probability (AEP) + 40% CC peak flow). Taking into account the change to climate change allowances for increase in peak rainfall intensity, the estimated peak flow during the 1 in 100 year plus climate change event have been recalculated (the 1.0 AEP + 45% CC peak flow). These values have been used to ensure that the culverts in the original scheme have sufficient conveyance capacity to accommodate the estimated change in peak flow calculated using the new climate change allowances. The original scheme culverts are set out in Table 2, the size and location remains unchanged since the main ES. These values show that the culverts are of sufficient size to convey the estimated increase in peak flow.

Table 2: Details of original scheme culvert design and estimated increase in peak flow

Watercourse/ location	Structure name	Estimated 1.0% AEP peak flow (m ³ /s)	Estimated 1.0% AEP + 40% CC peak flow (m ³ /s) as reported in main ES	Estimated 1.0% AEP + 45% CC peak flow (m ³ /s) for SES2 ¹¹	Culvert location ¹²	Culvert/ channel capacity (m ³ /s) ¹³
Tributary of Tabley Brook 2	Bongs Wood culvert	0.34	0.51	0.61	CT-06-318 G6, G7	7.14

¹¹ The climate change allowance is applied to the rainfall intensity and the Revitalised Flood Hydrograph rainfall-runoff model version 2.2 (ReFH2) is used to determine the peak flow generated. Therefore, a 5% increase in peak rainfall intensity allowance can lead to a greater than 5% increase in peak river flow.

¹² The feature locations are indicated by the grid coordinates on the relevant Volume 2, MA03 Map Book: Map series CT-06 of the main ES.

¹³ The capacity of culvert quoted is the free flowing capacity of the culvert excluding the allowances for 300mm of substrate at the culvert invert, to allow for natural bed reinstatement, and 300mm freeboard to the culvert soffit above the design flood level. In some cases, the design capacity of the culverts is substantially greater than required to convey the estimated peak design flow. During design development, the culverts will be designed, where reasonably practicable, to achieve sediment equilibrium. Consideration will be given, where necessary, to culvert size and/or the installation of benching to create a low flow channel to minimise sediment accumulation and increased risk of blockage. Designs will be in accordance with HS2 Technical Standards alongside consideration of guidance such as CIRIA C786 Culvert, screen and outfall manual.

Watercourse/ location	Structure name	Estimated 1.0% AEP peak flow (m ³ /s)	Estimated 1.0% AEP + 40% CC peak flow (m ³ /s) as reported in main ES	Estimated 1.0% AEP + 45% CC peak flow (m ³ /s) for SES2 ¹¹	Culvert location ¹²	Culvert/ channel capacity (m ³ /s) ¹³
Tributary of Tabley Brook 8	Winterbottom culvert	2.12	3.41	3.82	CT-06-319 F6	4.2
Millington Clough	Millington Clough offline underbridge	2.3	3.90	4.14	CT-06-321 D8, D9	7.6
Millington Clough	Millington Clough underbridge	2.3	3.90	4.14	CT-06-321 D8	7.6
Tributary of Millington Clough 3	Millington Clough culvert	0.38	0.57	0.68	CT-06-321 B5	3.38
Tributary of Millington Clough 2	Millington Clough offline culvert No.1	1.26	1.85	2.27	CT-06-321 D7	6.06
Tributary of Millington Clough 1	Millington Clough offline culvert No. 2	0.34	0.50	0.61	CT-06-321 C8	7.08
Tributary of Millington Clough 1 - offline	Millington Clough offline culvert No. 3	0.17	0.25	0.31	CT-06-321 B9	4.66

3.4.14 In the main ES, hydraulic analysis was carried out using simplified 2D modelling to assess the impacts of the original scheme on likely peak flood levels at the viaduct crossings of Arley Brook. This was assessed for the 'Upper end' climate change allowance of 70% increase in peak river flow. Under the updated guidance, the corresponding updated climate change allowance for a higher central increase in peak river flow is 67%. Since the updated climate change allowance corresponds to a slight reduction in peak river flow it is considered that the assessments presented in the main ES the SES1 and AP1 ES remain precautionary. No new or different significant effects are anticipated due to the change in peak river flow climate change allowance.

Other mitigation measures

3.4.15 No mitigation measures additional to those reported in the main ES, the SES1 and AP1 ES and the draft CoCP are proposed.

Summary of likely residual significant effects

3.4.16 No new, different or removed significant effects are anticipated for water resources and flood risk as a result of the SES2 changes.

Cumulative effects

3.4.17 No new, removed or different significant cumulative effects have been identified.

3.5 Summary of new or different likely residual significant effects as a result of the SES2 changes

- 3.5.1 The SES2 changes will result in the following new or different likely residual significant effects.

Construction

Ecology and biodiversity

- 3.5.2 On a precautionary basis, it is assumed that there will be an overall net loss in hedgerows of 39.2km, which is 1km less than the overall net loss reported in the SES1. This will remain a permanent adverse residual effect that is significant at the county/metropolitan level, as reported in the SES1.
- 3.5.3 It is assumed that as a result of the SES2 scheme there will be two further veteran trees lost. This will result in a new permanent adverse residual effect that is significant at national level in each case.

Historic environment

- 3.5.4 The SES2 scheme will give rise to a new permanent moderate adverse residual significant effect on the Cottage off Hulseheath Lane (site of) (MA03_0186).

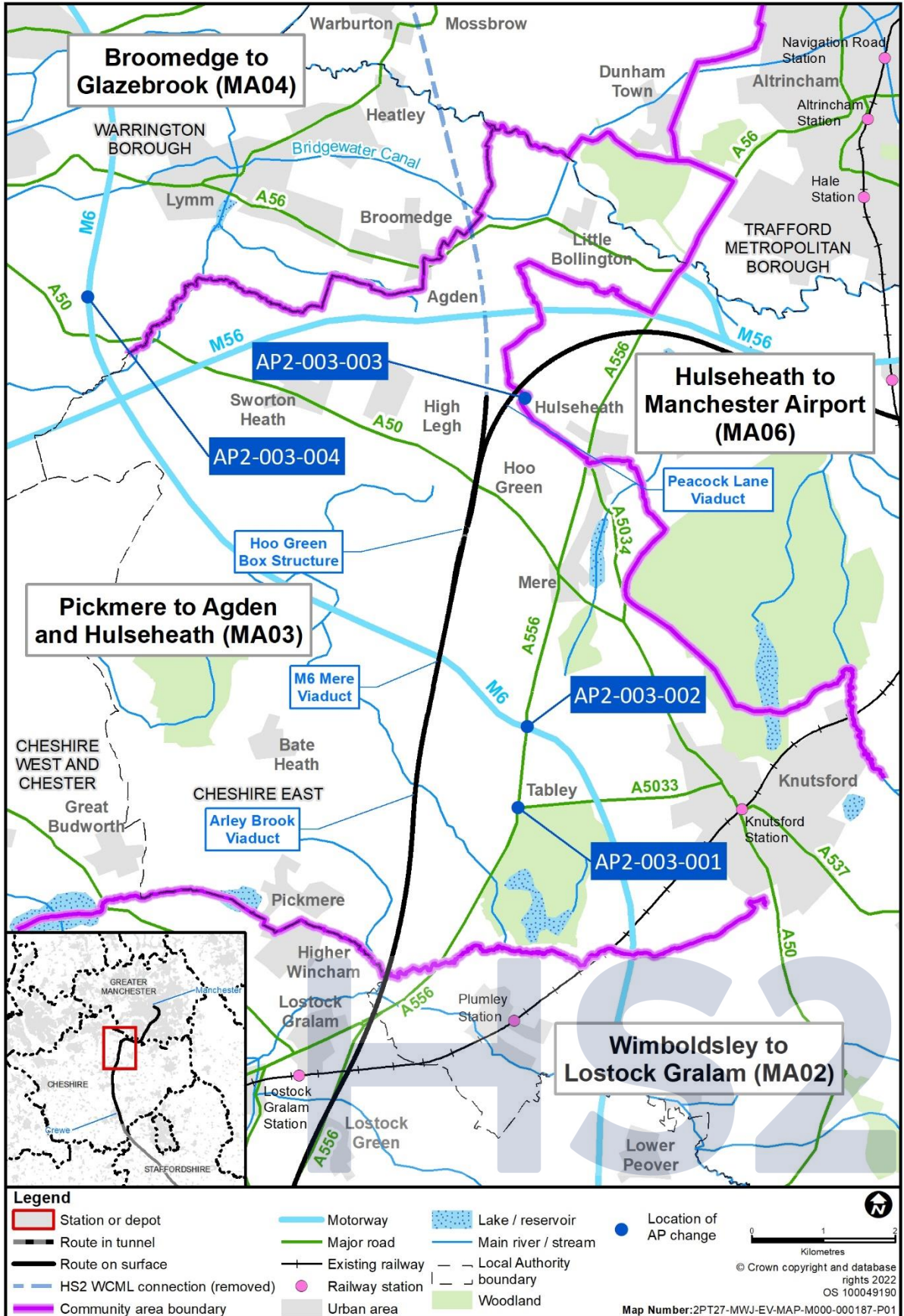
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4 Summary of AP2 amendments in the Pickmere to Agden and Hulseheath area

4.1 Engineering amendments

- 4.1.1 Amendments will be required in the Pickmere to Agden and Hulseheath area that will result in changes to the land or Bill powers required for the SES2 scheme. Table 3 provides a summary of the engineering amendments and Figure 2 shows their locations.
- 4.1.2 Please note that all dimensions in the following sections are approximate.

Figure 2: Locations of AP2 amendments in the Pickmere to Agden and Hulseheath area



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Table 3: Summary of AP2 engineering amendments in the Pickmere to Agden and Hulseheath area

Name of AP2 amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 revised scheme
<p>Additional land temporarily required for modifications to the A556 Chester Road and A5033 Northwich Road junction.</p> <p>AP2-003-001</p> <p>Map CT-05-318-R2, A1 to C3, in the SES2 and AP2 ES Volume 2, MA03 Map Book.</p>	<p>The main ES did not propose any mitigation works in this location for road users.</p>	<p>The junction of the A556 Chester Road and the A5033 Northwich Road will be temporarily modified to include lengthening of the dedicated left-turn lane on the A5033 Northwich Road westbound approach to the junction and creation of a dedicated left-turn lane on the A556 Chester Road southbound approach to the junction.</p>
<p>Additional land permanently required for modifications to M6 junction 19.</p> <p>AP2-003-002</p> <p>Map CT-06-318-R1, F10 to H9 and Map CT-06-318-R2, F5 to H1, in the SES2 and AP2 ES Volume 2, MA03 Map Book.</p>	<p>The main ES did not propose any mitigation works in this location for road users.</p>	<p>M6 junction 19 will be permanently modified to include carriageway widening to enable an additional lane on the northbound through-about (i.e. the circular road junction bisected by traffic lanes) and changes to the northbound M6 junction 19 off-slip road.</p>
<p>Additional land permanently required for the diversion of three high pressure gas pipelines near Millington Clough Ancient Woodland.</p> <p>AP2-003-003</p> <p>Map CT-06-319 E7 to CT-06-321 I8 in the SES2 and AP2 ES Volume 2, MA03 Map Book.</p>	<p>The diversion of three underground gas pipelines HP45, TX43 and TX44 would be required, resulting in the removal of 0.2ha of Millington Clough Ancient Woodland Inventory (AWI) site.</p>	<p>Engagement with utility providers has resulted in realignment of the proposed diversions. The new alignment of the diversions will take the three gas pipelines to the west of Millington Clough AWI site, avoiding the loss of woodland within the AWI site.</p>
<p>Additional land permanently required for modifications to M6 junction 20a.</p> <p>AP2-003-004</p> <p>Map CT-05-322a-L1, D3 to J8, in the SES2 and AP2 ES Volume 2, MA03 Map Book.</p>	<p>The main ES did not propose any mitigation works in this location for road users.</p>	<p>M6 junction 20a will be permanently modified to include carriageway widening to enable an additional northbound lane for merging traffic.</p>

5 Assessment of engineering amendments in the Pickmere to Agden and Hulseheath area

5.1 Additional land temporarily required for modifications to the A556 Chester Road and A5033 Northwich Road Junction (AP2-003-001)

- 5.1.1 Since the main ES, further work has identified modifications to the existing A556 Chester Road junction with the A5033 Northwich Road that will increase capacity and reduce the impact of construction traffic and workforce movements on road users.
- 5.1.2 The junction will be temporarily modified to include carriageway widening of both the A556 Chester Road and the A5033 Northwich Road by up to 4m to enable:
- the lengthening of the dedicated left-turn lane on the A5033 Northwich Road westbound approach to the junction with the A556 Chester Road; and
 - creation of a dedicated left-turn lane on the A556 Chester Road southbound approach to the junction with the A5033 Northwich Road.
- 5.1.3 In addition, modifications to the existing kerb lines, traffic island and road markings will be required. Highway drainage will need to be relocated along the new kerb lines.
- 5.1.4 The carriageway will be extended within the existing highway boundary in the vicinity of the junction.
- 5.1.5 Minor temporary utility diversions will be required to enable works to the carriageway.
- 5.1.6 The modification and widening of the A556 Chester Road and A533 Northwich Road junction will be constructed over a period of up to six months, commencing in 2027 and remain in place during the construction works. The original configuration of the junction will be reinstated within the indicative construction programme provided in Section 6.
- 5.1.7 The land required for the amendment is outside the limits of the Bill. The amendment will result in the temporary requirement for an additional 1.2ha of land (see SES2 and AP2 ES Volume 2, MA03 Map Book: maps CT-05-318-R1, A9 to C10).

Topics included in the AP2 assessment

- 5.1.8 The amendment is not considered to require a reassessment of the environmental effects or mitigation set out in the main ES, as amended by SES1 and SES2, with respect to any environmental topics.
- 5.1.9 The assessment of changes to traffic flows and traffic related effects as a result of all the changes and amendments to the original scheme is reported in Section 7. Topics where a significant effect has been identified due to changes to traffic flows are reported in Section 7

and include: air quality; community; ecology and biodiversity; health; socio-economics; and sound, noise and vibration.

5.2 Additional land permanently required for modifications to M6 junction 19 (AP2-003-002)

- 5.2.1 The Bill provides for construction traffic routes and construction compounds in the Pickmere to Agden and Hulseheath area. The main ES reported that movement of excavated or fill material and construction vehicles accessing construction compounds during the construction of the original scheme together with temporary road closures and diversions would result in changes in daily traffic flows. These activities would impact existing users of M6 junction 19. The main ES did not propose any mitigation works in this location for road users.
- 5.2.2 Since the main ES, further work has identified mitigation for the impacts of HS2 construction on existing users of M6 junction 19.
- 5.2.3 The junction layout will be permanently modified to include carriageway widening by up to 4m to enable an additional lane on the northbound through-about (i.e. the circular road junction bisected by traffic lanes) and changes to the northbound M6 junction 19 off-slip road.
- 5.2.4 In addition, modifications to the existing embankment slopes, kerb lines and road markings will be required. Highway drainage will need to be relocated along the new kerb lines.
- 5.2.5 A working area and access road will be located adjacent to, and to the south-east of, M6 junction 19. Access to the working area will be created from Tabley Hill Lane.
- 5.2.6 Whilst no utility diversions have been identified, some National Highways equipment will be relocated.
- 5.2.7 The modification and widening of M6 junction 19 will be constructed over a period of up to eleven months, commencing in 2026.
- 5.2.8 The land required for the amendment is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 14.7ha of land and the temporary requirement for an additional 1.4ha of agricultural land (see SES2 and AP2 ES Volume 2, MA03 Map Book: maps CT-06-318-R2, F6 to H1 and CT-06-318-R1, F10 to H8).

Topics included in the AP2 assessment

- 5.2.9 The assessment of this amendment has identified new, different or removed likely significant effects for the following topics: agriculture, forestry and soils; ecology and biodiversity; landscape and visual; and socio-economics.
- 5.2.10 The assessment of changes to traffic flows and traffic related effects as a result of all changes and amendments to the original scheme is reported in Section 7. Topics where a

significant effect has been identified due to changes to traffic flows are reported in Section 7 and include: air quality; community; ecology and biodiversity; health; socio-economics; and sound, noise and vibration.

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.2.11 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1 and the SMR of the main ES. The amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for agriculture, forestry and soils.
- 5.2.12 All agriculture, forestry and soils effects arising from this amendment are reported in SES2 and AP2 ES Volume 5, Appendix: AG-001-00000.

Environmental baseline

Existing baseline

- 5.2.13 The agricultural land associated with this amendment has soil in the Salop association. These soils are developed in reddish glacial deposits (i.e., till and glaciofluvial sand and gravel deposits) and are slowly permeable and seasonally waterlogged soils (WC III to IV). The quality of the agricultural land is limited by soil wetness to mainly Subgrade 3a or Subgrade 3b.
- 5.2.14 Two agricultural holdings, which were not impacted by the original scheme, will be affected by this amendment and are summarised in Table 4.

Table 4: Summary characteristics of the holdings affected by the additional land permanently required for modifications to M6 junction 19 (AP2-003-002)

Holding reference/name	Holding type	Holding size (ha)	Diversification	Agri-environment scheme	Sensitivity to change
MA03/45 Vale Farm*	Grassland	28	Not known	None	Medium
MA03/46 Holly Tree Farm*	Grassland	14	Not known	None	Medium

* It has not been possible to arrange farm impact assessment interviews with these holdings. Publicly available sources have been used to obtain the information presented.

Future baseline

- 5.2.15 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.

- 5.2.16 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 5.2.17 None of the identified developments affect the assessment of the AP2 revised scheme’s likely impacts on agriculture, forestry and soils.

Effects arising during construction

Avoidance and mitigation measures

- 5.2.18 No mitigation measures additional to those reported in the main ES and the draft Code of Construction Practice (CoCP)¹⁴ are proposed.

Assessment of impacts and effects

- 5.2.19 The amendment will require 1.4ha of agricultural land in the Pickmere to Agden and Hulseheath area, which is classified as Subgrade 3b.
- 5.2.20 The impacts on the holdings affected are set out in Table 5 and Table 6.

Table 5: Temporary impacts and effects on holdings arising from the additional land permanently required for modifications to M6 junction 19 (AP2-003-002)

Holding reference/name	Total area required from holding	Construction severance	Disruption	Scale of construction effect	Change in effect from main ES or SES1 and AP1 ES as relevant
MA03/45 Vale Farm	0.5ha, 2% Negligible	Negligible	Negligible	Negligible	New holding affected – no significant effect
MA03/46 Holly Tree Farm	0.9ha, 6% Low	Negligible	Negligible	Minor adverse	New holding affected – no significant effect

¹⁴ High Speed Two Ltd (2022), High Speed Rail (Crewe - Manchester), *Environmental Statement, draft Code of Construction Practice*, Volume 5, Appendix: CT-002-00000. Available online at: <https://www.gov.uk/government/collections/cross-topic-technical-appendices-for-high-speed-rail-crewe-manchester-environmental-statement#draft-code-of-construction-practice>.

Table 6: Permanent impacts and effects on holdings arising from the additional land permanently required for modifications to M6 junction 19 (AP2-003-002)

Holding reference/name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES or SES1 and AP1 ES as relevant
MA03/45 Vale Farm	<0.1ha, <1% Negligible	Negligible	Negligible	Negligible	New holding affected – no significant effect
MA03/46 Holly Tree Farm	0.3ha, 2% Negligible	Negligible	Negligible	Negligible	New holding affected – no significant effect

Other mitigation measures

- 5.2.21 The land required temporarily for construction will be restored to its former agricultural condition once the works are completed, following good practice techniques in handling, storing and reinstating soils on that land, as set out in the draft CoCP. No other mitigation is proposed.

Summary of likely residual significant effects

- 5.2.22 The amendment will not result in any new or different residual significant effects for agriculture, forestry and soils.

Cumulative effects

- 5.2.23 No new, removed or different significant cumulative effects have been identified.

Ecology and biodiversity

Scope, assumptions and limitations

- 5.2.24 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1 and the SMR of the main ES.
- 5.2.25 This amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for ecology and biodiversity.
- 5.2.26 Where there are limitations in data, a precautionary baseline has been taken following the approach set out in the SMR which constitutes a ‘reasonable worst-case’ scenario for the subsequent assessment.
- 5.2.27 Ecology and biodiversity effects that result from the assessment of the changes to traffic flows as a result of all changes and amendments to the original scheme are reported in Section 7.

Environmental baseline

Existing baseline

- 5.2.28 The baseline ecology and biodiversity is as described in Section 7 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES, and in the SES1 and SES2. A summary of baseline information relevant to the assessment of the AP2 amendment is provided below.

Habitats

- 5.2.29 Habitats within the land required for the amendment include broadleaved semi-natural woodland, scrub, hedgerow, mature trees, agricultural land and improved/poor semi-improved grassland. The habitats of relevance to the assessment of the amendment are described further below.
- 5.2.30 Broadleaved semi-natural woodland is located in one isolated patch along the M6 northbound on-slip. This contributes to a wider resource of this habitat within the Pickmere to Agden and Hulseheath area and is of local/parish value.
- 5.2.31 Within the land required for the amendment, there are small sections of hedgerow that (based on aerial photography) are intact and are assumed to be species-rich. These hedgerows may qualify as a habitat of principal importance and a conservation priority of the Cheshire Biodiversity Action Plan (BAP). These hedgerows contribute to a wider hedgerow network across the Pickmere to Agden and Hulseheath area that is of county/metropolitan value.

Species

- 5.2.32 Protected and notable species that are known or assumed to occur within the land required for construction of the amendment include great crested newts and bats. The species of relevance to the assessment of the amendment are described in further detail below.
- 5.2.33 The main ES reported an assumed great crested newt metapopulation of medium size in a network of 16 ponds located west of Knutsford (GCNMP1.3.2). The land required for the amendment includes terrestrial habitat associated with this metapopulation. This metapopulation is considered to be up to county/metropolitan value.
- 5.2.34 The SES2 baseline reports an assumed great crested newt metapopulation of large size in a network of 151 ponds located south of High Legh (GCNMP1.3.4). The land required for the amendment includes sub-optimal terrestrial habitat associated with this metapopulation. This metapopulation is considered to be of county/metropolitan value.
- 5.2.35 An assumed great crested newt metapopulation of medium size in a network of 24 ponds is located east of Over Tabley (GCNMP1.3.24). The land required for the amendment includes terrestrial habitat associated with this metapopulation. This metapopulation is considered to be up to county/metropolitan value.

- 5.2.36 The land required for the amendment includes trees which, on a precautionary basis, are assumed to support roosting bats. Several species of bat are species of principal importance and a conservation priority of the Cheshire BAP. In the absence of survey information, on a precautionary basis, assumed roosts present within the land required for the amendment are assumed to form part of the bat assemblage bounded by the M6, the M56 and the A556, which is of up to regional value.

Future baseline

- 5.2.37 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 5.2.38 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 5.2.39 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

- 5.2.40 No further avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

Habitats

- 5.2.41 On a precautionary basis, the SES2 reports a net loss of 39.2km of hedgerow habitat, taking account of mitigation, within the land required for construction in the Pickmere to Agden and Hulseheath area, resulting in a permanent adverse effect, significant at the county/metropolitan level. The amendment will result in the loss of an additional 232m of assumed species-rich hedgerow. This will result in a different significant effect on hedgerows to that reported in the SES2, but there will be no change in the level of significance of the effect reported in the SES2.

Species

- 5.2.42 The main ES reported that habitat loss resulting from the construction of the original scheme would result in an adverse effect on the population of great crested newt in a network of 16 ponds located west of Knutsford (GCNMP1.3.2), which would be significant up to the county/metropolitan level. As a result of the amendment, there will be an

approximately 0.4ha increase in the loss of terrestrial habitat associated with this metapopulation. The amendment will result in a different significant effect, but there will be no change in the level of significance of the effect reported in the main ES.

- 5.2.43 The SES2 reports that the loss of habitat resulting from the construction of the SES2 scheme would result in an adverse effect on the metapopulation of great crested newt in a network of 151 ponds (GCNMP1.3.4), which would be significant at county/metropolitan level. As a result of the amendment, there will be approximately 0.13ha increase in the loss of sub-optimal terrestrial habitat associated with this metapopulation. The amendment will result in a different significant effect, but there will be no change in the level of significance of the effect reported in the SES2.
- 5.2.44 The amendment will result in the loss of approximately 1.87ha of suitable terrestrial habitat associated with the metapopulation of great crested newt in a network of 24 ponds located east of Over Tabley (GCNMP1.3.24). The amendment will result in a new adverse effect that will be significant up to county/metropolitan level.
- 5.2.45 The SES2 reports that the construction of the SES2 scheme would result in the loss and fragmentation of foraging and commuting habitat, and roosts, from within the bat assemblage bounded by the M6, the M56 and the A556 within the Pickmere to Agden and Hulseheath area and the Hulseheath to Manchester Airport area (MA06). This would result in a permanent adverse effect that would be significant at a regional level. The amendment will result in the loss of trees which, on a precautionary basis, are assumed to support roosting bats. The amendment will result in a different significant effect on this bat assemblage, but there will be no change in the level of significance of the effect reported in the SES2.

Other mitigation measures

- 5.2.46 The SES2 baseline reports that significant effects on the great crested newt populations within the Pickmere to Agden and Hulseheath area will be addressed by creating areas of suitable ecological habitat creation areas. These measures will comprise the provision of ponds and grassland that will be designed to compensate for the loss of breeding sites, foraging habitat and places of shelter used by great crested newt and other amphibian species. The mitigation measures will take account of the different significant effects identified above. Therefore, following implementation of these measures, the effects on the amphibian populations in the Pickmere to Agden and Hulseheath area will be reduced to a level that is not significant.
- 5.2.47 To replace bat roosts that will be lost to construction, artificial roosts will be provided in retained areas as close to the roost being lost as possible, in accordance with the Ecological Principles of Mitigation within the SMR. The mitigation measures will take account of the different significant effects identified above. Following the implementation of these measures, the effects of the potential loss of roosts on the bat assemblage will be reduced to a level that is not significant.

Summary of likely residual significant effects

- 5.2.48 On a precautionary basis, it is assumed that there will be a net loss in hedgerows of 39.2km at SES2 taking into account mitigation, and the amendment will result in a further loss of 232m. This will result in a different permanent adverse residual effect that will remain significant at the county/metropolitan level. Opportunities will be sought for additional retention and replacement of hedgerow within the land required for the temporary works.

Cumulative effects

- 5.2.49 No new, removed or different significant cumulative effects have been identified.

Landscape and visual

Scope, assumptions and limitations

- 5.2.50 The assessment scope, key assumptions and limitations for landscape and visual are as set out in Volume 1 and the SMR of the main ES.
- 5.2.51 This amendment has the potential to result in new construction and operational effects for the visual assessment only. Therefore, there are no construction or operational phase landscape assessments.
- 5.2.52 All visual effects arising from this amendment are reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA03. The locations of significantly affected viewpoints during construction and operation are shown in the SES2 and AP2 ES Volume 2, MA03 Map Book: Map Series LV-03 and LV-04, respectively.

Environmental baseline

Existing baseline

- 5.2.53 The baseline visual information is as described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA03. A summary of the visual baseline information relevant to the assessment of the amendment is provided below.

Visual baseline

- 5.2.54 The amendment has the potential to significantly affect one new viewpoint. This viewpoint is described in the SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA03 and summarised below.

View north from Tabley Hill Lane (high sensitivity receptors) (315-02-006)

- 5.2.55 This new viewpoint is located in an area where there will be changes from the original scheme. It is representative of the views experienced by residents of properties near the junction of Tabley Hill Lane, the B5391 Pickmere Lane and the A556 Chester Road, road

users along Tabley Hill Lane and patrons of The Windmill public house and service station. Tabley Hill Lane is lined by hedgerows with trees, which partially screen views over the farmland to the north and south. Moving vehicles on the M6, pylons and scattered buildings are visible in the middle distance to the north. Views from the north side of Tabley Hill Lane are largely open, with near-distance views to vegetation alongside the M6 slip road. Views from the properties on the A556 Chester Road are dominated by the road, service station and junction in the near-distance. West of the A556 Chester Road, views are heavily screened by mature vegetation alongside M6 junction 19. North of M6 junction 19, views south-west are dominated by the through-about and motorway slip roads.

Future baseline

- 5.2.56 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025 and 2038.
- 5.2.57 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 5.2.58 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts for landscape and visual.

Effects arising during construction

Avoidance and mitigation measures

- 5.2.59 No avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

Visual assessment

View north from Tabley Hill Lane (high sensitivity receptors) (315-02-006)

- 5.2.60 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of properties near the junction of Tabley Hill Lane, the B5391 Pickmere Lane and the A556 Chester Road, of **high** susceptibility and road users and visitors to The Windmill public house of lower susceptibility, all with **medium** value views, will experience a noticeable change to near-distance views as a result of the amendment. Residents on the north side of Tabley Hill Lane will experience noticeable changes to near-distance views due to the introduction of construction activity and the loss of vegetation, which will open up views of existing road infrastructure. For residents on the south side of Tabley Hill Lane,

construction works will be perceptible, although partially screened by intervening buildings and vegetation. Construction activity will be visible beyond the existing roads in the near distance of the view for residents on the A556 Chester Road, south-west of M6 junction 19. However, for residents to the west, including residents of Holly Grove, views of the amendment will be heavily screened by intervening mature vegetation. North of M6 junction 19, residents of the B5569 Chester Road will view construction activity beyond the existing junction and slip roads. For road users of Tabley Hill Lane, construction activity will be partially filtered by roadside hedgerows and trees to the east, and largely screened by buildings at the west end of the lane. Construction activity will be visible in near-distance views for road users on the M6 slip road and on the adjacent sections of the A556 Chester Road. There will be a **medium** magnitude of change and a **moderate** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.

Other mitigation measures

- 5.2.61 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Summary of likely residual significant effects

- 5.2.62 The amendment will give rise to a new likely residual significant construction effect at view north from Tabley Hill Lane (315-02-006), after implementation of construction phase mitigation. The effect will be **moderate** adverse (significant).

Cumulative effects

- 5.2.63 No new, removed or different significant cumulative effects have been identified.

Effects arising from operation

Avoidance and mitigation measures

- 5.2.64 Landscape mitigation and hedgerow planting is proposed to the south-east of the junction, adjacent to the northbound through-about and widened slip road. These mitigation measures are additional to those reported in the main ES.

Assessment of impacts and effects

Visual assessment

View north from Tabley Hill Lane (high sensitivity receptors) (315-02-006)

- 5.2.65 This new viewpoint is located in an area where there will be changes from the original scheme. At year 1, residents of properties near the junction of Tabley Hill Lane, the B5391 Pickmere Lane and the A556 Chester Road, of **high** susceptibility, and road users and visitors to The Windmill public house of lower susceptibility, all with **medium** value views, will

experience a noticeable change to views. As a result of vegetation lost during construction, residents on the north side of Tabley Hill Lane will have more open views of highway infrastructure and traffic on the M6 slip road, including the additional lane on the northbound through-about and widened slip road, which will be visible across much of the view. Residents to the south-west of M6 junction 19 will experience a perceptible change to near-distance views of roads as a result of the amendment as intervening buildings and vegetation will partially screen views. However, the loss of vegetation south-east of M6 junction 19, removed during construction, will reduce the level of screening available of traffic on the M6 slip road.

- 5.2.66 The baseline view from residential properties west of the A556 Chester Road will remain largely unchanged, due to heavy screening by existing intervening mature vegetation. North of M6 junction 19, the amendment will be seen beyond the existing junction and slip roads. The loss of vegetation south-east of M6 junction 19, removed during construction, will reduce the backdrop of vegetation in the middle distance of the view. At year 1, the landscape mitigation planting and replacement hedgerow will not be sufficiently established to provide any screening or visual integration. There will be a **medium** magnitude of change and a **moderate** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.
- 5.2.67 At year 15 and 30, the level of significance of the effect will reduce to non-significant as reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA03.

Other mitigation measures

- 5.2.68 No mitigation measures, additional to those reported in the main ES, are proposed.

Summary of likely residual significant effects

- 5.2.69 No likely residual significant operation effects are reported at year 15 operation after implementation of proposed mitigation planting.

Cumulative effects

- 5.2.70 No new, removed or different significant cumulative effects have been identified.

Socio-economics

Scope, assumptions and limitations

- 5.2.71 The assessment scope, key assumptions and limitations for socio-economics are as set out in Volume 1 and the SMR of the main ES.
- 5.2.72 This amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for socio-economics.

Environmental baseline

Existing baseline

- 5.2.73 The baseline socio-economics information is as described in the SES2 and AP2 ES Volume 5, Appendix: SE-001-00000, Updated socio-economic baseline information.

Future baseline

- 5.2.74 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 5.2.75 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 5.2.76 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on socio-economics.

Effects arising during construction

Avoidance and mitigation measures

- 5.2.77 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

- 5.2.78 The amendment will result in a new adverse significant in-combination effect on The Windmill, a public house located north of Tabley, as a result of a new significant visual effect. This new significant visual effect is in addition to the significant effects from HGV construction traffic congestion and delays for road users reported in the main ES. The sensitivity of The Windmill is assessed to be medium as customers may be sensitive to impacts on the local environment and setting. The construction works may discourage them from using this business. Given the duration of effects and the medium level of sensitivity, the amendment will result in a new temporary adverse in-combination effect on The Windmill, which is significant. The locations of significantly affected resources are shown in the SES2 and AP2 ES Volume 5, Socio-economics Map Book: Map Series SE-01.

Other mitigation measures

- 5.2.79 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Summary of likely residual significant effects

- 5.2.80 The amendment will result in a new temporary adverse significant in-combination effect on The Windmill public house.

Cumulative effects

- 5.2.81 No new, removed or different significant cumulative effects have been identified.

Summary of new or different likely residual significant effects as a result of the amendment

Construction

Ecology and biodiversity

- 5.2.82 On a precautionary basis, it is assumed that there will be a net loss in hedgerows of 39.2km at SES2 taking account of mitigation, and the amendment will result in a further loss of 232m. This will remain as a different permanent adverse residual effect that is significant at the county/metropolitan level.

Landscape and visual

- 5.2.83 The amendment will give rise to a new likely residual significant construction effect at view north from Tabley Hill Lane (315-02-006), after implementation of construction phase mitigation. The effect will be **moderate** adverse (significant).

Socio-economics

- 5.2.84 The amendment will result in a new temporary adverse significant in-combination effect on The Windmill public house.

5.3 Additional land permanently required for the diversion of three high pressure gas pipelines near Millington Clough Ancient Woodland (AP2-003-003)

5.3.1 The Bill provides for the following utility works:

- diversion of an underground Cadent Gas 300mm high pressure gas pipeline for 3.5km in length, to allow the pipeline to be relocated away from the HS2 route, 200m east of Bridleway Mere 1/1 accommodation underbridge (see Volume 2, MA03 Map Book: map CT-06-319, E7 to map CT-06-321, I8 in the main ES);
- diversion of an underground National Grid 900mm high pressure gas pipeline for 2.8km in length, to pass under the Hulseheath North embankment (see Volume 2, MA03 Map Book: map CT-06-320, H7 to I10 to map CT-06-321, F10 to H7 in the main ES); and
- diversion of an underground National Grid 900mm high pressure gas pipeline for 4.9km in length, to pass under the Hulseheath North embankment (see Volume 2, MA03 Map Book: map CT-06-320, I7 to J9 to map CT-06-322a, A8 to D8 in the main ES).

5.3.2 Diversion of the Cadent Gas 300mm high-pressure gas pipeline would result in the permanent loss of 0.2ha (20%) of Millington Clough AWI site and the remaining area would be isolated from other woodland habitats. This would result in a permanent adverse effect on the structure and function of irreplaceable ancient woodland habitat at Millington Clough, which would be significant at the national level.

5.3.3 Since the main ES, engagement with utility providers has resulted in realignment of the proposed diversions. The new alignment of the diversions will take the three gas pipelines to the west of Millington Clough AWI site (in the Hulseheath to Manchester Airport area (MA06)), avoiding the loss of woodland within the AWI site.

5.3.4 The amended works will include:

- diversion of an underground Cadent Gas 300mm high pressure gas pipeline for 2.4km in length, to pass under the Hulseheath North embankment approximately 74m south-west of the crossing point in the original scheme (see SES2 and AP2 ES Volume 2, MA03 Map Book: map CT-06-319, E7 to map CT-06-321, C10 to H7);
- diversion of an underground National Grid 900mm high pressure gas pipeline for 2.9km in length, to pass under the Hulseheath North embankment approximately 220m south-west of the crossing point in the original scheme (see SES2 and AP2 ES Volume 2, MA03 Map Book: map CT-06-320, G7 to I10 to map CT-06-321, F10 to I8); and
- diversion of an underground National Grid 900mm high pressure gas pipeline for 4.9km in length, to pass under the Hulseheath North embankment approximately 38m south-west of the crossing point in the original scheme (see SES2 and AP2 ES Volume 2, MA03 Map Book: map CT-06-319, G8 to I7 to map CT-06-321, A10 to G6).

- 5.3.5 The three gas pipelines will start and finish in the Pickmere to Agden and Hulseheath area. However, the diversion routes cross the boundary with the Hulseheath to Manchester Airport area (MA06) and therefore the amendment also has the potential to impact receptors in that area. The significant effects for that area are described in the SES2 and AP2 Volume 2, Community Area report: Hulseheath to Manchester Airport (MA06).
- 5.3.6 The construction of the amendment will be managed from the A50 Warrington Road main compound and Wrenshot Lane satellite construction compound and will be constructed within the period set out in the indicative construction programme provided in Section 6.
- 5.3.7 The land required for this amendment is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 8.1ha of land. However there will be an overall net reduction of 30.3ha in the amount of land permanently required (see SES2 and AP2 ES Volume 2, MA03 Map Book: maps CT-06-319, E7 to CT-06-321, A10 to I8).

Local alternatives

- 5.3.8 The SES2 and AP2 ES Alternatives report (see SES2 and AP2 ES Volume 5, Appendix: CT-003-00000) describes the local alternatives considered as part of the design development of this amendment.

Topics included in the AP2 assessment

- 5.3.9 The assessment of this amendment has identified new, different or removed likely significant effects for the following topics: agriculture, forestry and soils; and ecology and biodiversity.
- 5.3.10 The assessment of changes to traffic flows and traffic related effects as a result of all changes and amendments to the original scheme is reported in Section 7. Topics where a significant effect has been identified due to changes to traffic flows are reported in Section 7 and include: air quality; community; ecology and biodiversity; health; socio-economics; and sound, noise and vibration.

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.3.11 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1 and the SMR of the main ES. The amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for agriculture, forestry and soils.
- 5.3.12 All agriculture, forestry and soils effects, arising from this amendment, are reported in SES2 and AP2 ES Volume 5, Appendix: AG-001-00000.

Environmental baseline

Existing baseline

- 5.3.13 The agricultural land associated with this amendment has soil predominantly in the Salop association, with soil in the Blackwood association in the north between the M6 and Agden Brook Farm; the southern end of this amendment has soil in the Wick association.
- 5.3.14 Salop soils are developed in till and glaciofluvial sand and gravel deposits and are slowly permeable and seasonally waterlogged soils (WC III to IV). The quality of the agricultural land is limited by soil wetness to mainly Subgrade 3a or Subgrade 3b. Soils in the Blackwood association are commonly seasonally waterlogged (WC IV) and limited by soil wetness to Subgrade 3b, unless the land is drained. Soils in the Wick 1 association are typically well drained (WC I) light loamy and sandy with variable stoniness and the grading varies from Grade 2 to Subgrade 3b depending on drought calculations.
- 5.3.15 15 holdings will be affected by this amendment in this community area, as detailed in Table 7. This amendment will also affect holdings in the Hulseheath to Manchester Airport community area (MA06); the impacts and effects on these holdings are reported in SES2 and AP2 ES Volume 2, Community Area report: Hulseheath to Manchester Airport (MA06)

Table 7: Summary characteristics of the holdings affected by the additional land required for the diversion of three high pressure gas pipelines near Millington Clough Ancient Woodland Inventory Site (AP2-003-003)

Holding reference/name	Holding type	Holding size (ha)	Diversification	Agri-environment scheme	Sensitivity to change
MA03/3 Frog Lane Farm	Dairy, arable and potatoes	645	Milk tank repairs and tyre repairs	None	High
MA03/19 Knowlspit Farm with Bentleyhurst Farm	Dairy	130	None	None	High
MA03/20 Winterbottom Farm	Sheep	80	None	None	Medium
MA03/22 Yew Tree Farm	Dairy and arable	81	Land let to model aeroplane club	None	High
MA03/23 Moss Farm and Park Farm	Arable and beef cattle	87	None	None	Medium
MA03/24 Brookheyes Farm*	Grassland	11	Not known	None	Medium
MA03/25	Arable and grassland	81	None	None	Medium

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Holding reference/name	Holding type	Holding size (ha)	Diversification	Agri-environment scheme	Sensitivity to change
Hulme Barn Farm					
MA03/28 Land at Mere Hall Farm*	Arable	50	Not known	None	Medium
MA03/29 Land at Hulse Heath Lane, Bucklow Hill*	Grassland	4.4	Not known	None	Medium
MA03/30 Hulse Heath Farm*	Grassland	0.8	Not known	None	Low
MA03/31 Land at Chapel Lane, Bucklow Hill (1)*	Grassland	1.6	Not known	None	Low
MA03/32 Land at Peacock Lane, Millington (1)	Grassland let	15	None	None	Low
MA03/40 Agden Brook Farm	Dairy, beef arable and potatoes	877	Property rentals	None	High
MA03/41 Booth Bank Farm*	Grassland	8.6	Children's activity farm	None	Medium
MA03/47 Land at Thowler Lane*	Grassland	1.0ha	Not known	None	Low

* It has not been possible to arrange farm impact assessment interviews with these holdings. Publicly available sources have been used to obtain the information presented.

Future baseline

- 5.3.16 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 5.3.17 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 5.3.18 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on agriculture, forestry and soils.

Effects arising during construction

Avoidance and mitigation measures

5.3.19 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

5.3.20 This amendment will affect an additional 3.1ha of agricultural land but will be offset by a reduction of 15.7ha, resulting in an overall reduction of 12.6ha agricultural land required, of which 8.7ha is classified as best and most versatile agricultural land.

5.3.21 The impacts on the holdings affected are set out in Table 8 and Table 9.

Table 8: Temporary impacts and effects on holdings arising from the diversion of three high pressure gas pipelines near Millington Clough Ancient Woodland Inventory Site (AP2-003-003)

Holding reference/ name	Total area required from holding	Construction severance	Disruption	Scale of construction effect	Change in effect from main ES or SES1 and AP1 ES as relevant
MA03/3 Frog Lane Farm	The amendment will result in a marginal reduction in the area of land required compared to the SES1 and AP1 ES. However, factoring in rounding, the total area required from this holding remains 9.4ha (1%). Negligible	Negligible	Negligible	Minor adverse	No change
MA03/19 Knowlspit Farm with Bentleyhurst Farm	The amendment will result in a reduction in the area of land required by 1ha compared to the SES1 and AP1 ES. The total area required from this holding is 16.7ha (13%). Medium	Low	Negligible	Major/moderate adverse due to the proportion of holding required.	No change
MA03/20 Winterbottom Farm	The amendment will result in a reduction in the area of land required by 1ha compared to the SES1 and AP1 ES. The total area required from this holding is 74.4ha (93%). High	Negligible	Low	Major/moderate adverse due to the proportion of holding required.	No change
MA03/22 Yew Tree Farm	The amendment will result in a reduction in the area of land required by 0.5ha compared to the SES1 and AP1 ES. The total area required from this holding is 11.7ha (14%). Medium	Medium	Low	Major/moderate adverse due to the proportion of holding required.	No change

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Holding reference/ name	Total area required from holding	Construction severance	Disruption	Scale of construction effect	Change in effect from main ES or SES1 and AP1 ES as relevant
MA03/23 Moss Farm and Park Farm	The amendment will result in a reduction in the area of land required by 0.4ha compared to the SES1 and AP1 ES. The total area required from this holding is 9.4ha (11%). Medium	Negligible	Negligible	Moderate adverse due to the proportion of holding required.	No change
MA03/24 Brookheyes Farm	The amendment will result in an increase in the area of land required by 0.1ha compared to the SES1 and AP1 ES. The total area required from this holding is 10.8ha (98%). High	Negligible	Negligible	Major/moderate adverse due to the proportion of holding required.	No change
MA03/25 Hulme Barn Farm	The amendment will result in a reduction in the area of land required by 3ha compared to the SES1 and AP1 ES. The total area required from this holding is 47.5ha (59%). High	Low	Negligible	Major/moderate adverse due to the proportion of holding required.	No change
MA03/28 Land at Mere Hall Farm	The amendment will result in a reduction in the area of land required by 0.3ha compared to the SES1 and AP1 ES. The total area required from this holding is 7.5ha (15%). High	Negligible	Negligible	Moderate adverse due to the proportion of land required.	No change
MA03/29 Land at Hulse Heath Lane, Bucklow Hill	The amendment will result in a reduction in the area of land required by 0.1ha compared to the SES1 and AP1 ES. The total area required from this holding is 4ha (91%). High	Negligible	Negligible	Major/moderate adverse due to the proportion of land required.	No change
MA03/30 Hulse Heath Farm	The amendment will result in a reduction in the area of land required by 0.3ha compared to the SES1 and AP1 ES. The total area required from this holding is 0.1ha (13%). Medium	Negligible	Negligible	Minor adverse	Reduction from moderate adverse
MA03/31 Land at Chapel Lane,	The amendment will result in an increase in the area of land required by 0.2ha compared to the SES1 and AP1 ES.	Negligible	Negligible	Moderate adverse due to the proportion	No change

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Holding reference/ name	Total area required from holding	Construction severance	Disruption	Scale of construction effect	Change in effect from main ES or SES1 and AP1 ES as relevant
Bucklow Hill (1)	The total area required from this holding is 1.6ha (97%). High			of land required.	
MA03/32 Land at Peacock Lane, Millington (1)	The amendment will result in a reduction in the area of land required by 0.1ha compared to the SES1 and AP1 ES. The total area required from this holding is 12ha (80%). High	High	Negligible	Moderate adverse due to the proportion of land required and severance.	No change
MA03/40 Agden Brook Farm	The amendment will result in a reduction in the area of land required by 12.6ha compared to the SES1 and AP1 ES. The total area required from this holding is 7.5ha (<1%). Negligible	Negligible	Negligible	Negligible	Reduction from moderate adverse
MA03/41 Booth Bank Farm	The amendment will result in a reduction in the area of land required by 2.2ha compared to the SES1 and AP1 ES. The total area required from this holding is 4.7ha (55%). High	Negligible	Negligible	Major/moderate adverse due to the proportion of holding required.	No change
MA03/47 Land at Thowler Lane	The amendment will require 0.7ha (70%) of the holding. High	Negligible	Negligible	Moderate adverse due to the proportion of holding required.	New holding affected – new significant effect

Table 9: Permanent impacts and effects on holdings arising from the additional land required for the diversion of three high pressure gas pipelines near Millington Clough Ancient Woodland Inventory Site (AP2-003-003)

Holding reference/ name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES or the SES1 and AP1 ES as relevant
MA03/3 Frog Lane Farm	The amendment will result in a marginal reduction in the area of land permanently required compared to the SES1 and AP1 ES. However, factoring in rounding, the total area	Negligible	Negligible	Minor adverse	No change

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Holding reference/ name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES or the SES1 and AP1 ES as relevant
	permanently required from this holding remains 1.5ha (<1%). Negligible				
MA03/19 Knowlspit Farm with Bentleyhurst Farm	The amendment will not alter the area of land required on a permanent basis compared to the SES1 and AP1 ES. The total land required permanently will remain 1.3ha (1%). Negligible	Low	Negligible	Moderate adverse due to severance.	No change
MA03/20 Winterbottom Farm	The amendment will reduce the area of land permanently required by 0.5ha compared to the SES1 and AP1 ES. The total land required permanently will be 33.7ha (42%). High	Low	Negligible	Major/ moderate adverse due to the proportion of holding required.	No change
MA03/22 Yew Tree Farm	The amendment will reduce the area of land permanently required by 0.4ha compared to the SES1 and AP1 ES. The total land required permanently will be 7.1ha (9%). Low	Negligible	Negligible	Moderate adverse due to the proportion of land required.	No change
MA03/23 Moss Farm and Park Farm	The amendment will reduce the area of land permanently required by 0.6ha compared to the SES1 and AP1 ES. The total land required permanently will be 6.2ha (7%). Low	Negligible	Negligible	Minor adverse	No change
MA03/24 Brookheyes Farm	The amendment will not alter the area of land required on a permanent basis compared to the SES1 and AP1 ES. The total land required permanently from this holding will remain 3.3ha (30%) High	Negligible	Negligible	Major/ moderate adverse due to the proportion of holding required.	No change
MA03/25	The amendment will reduce the area of land permanently	Negligible	Negligible	Moderate adverse due	No change

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Holding reference/ name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES or the SES1 and AP1 ES as relevant
Hulme Barn Farm	required by 0.1ha compared to the SES1 and AP1 ES. The total land required permanently will be 14.5ha (18%) Medium			to the proportion of holding required.	
MA03/28 Land at Mere Hall Farm	The amendment will reduce the area of land permanently required by 0.3ha compared to the SES1 and AP1 ES. The total land required permanently will be 0.4ha (<1%) Negligible	Negligible	Negligible	Negligible	No change
MA03/29 Land at Hulse Heath Lane, Bucklow Hill	The amendment will not alter the area of land permanently required compared to the SES1 and AP1 ES. The total land required permanently will remain 0ha (0%) Negligible	Negligible	Negligible	Negligible	No change
MA03/30 Hulse Heath Farm	The amendment will not alter the area of land permanently required compared to the SES1 and AP1 ES. The total land required permanently will remain 0ha (0%) Negligible	Negligible	Negligible	Negligible	No change
MA03/31 Land at Chapel Lane, Bucklow Hill (1)	The amendment will not alter the area of land permanently required compared to the SES1 and AP1 ES. The total land required permanently will remain 0.1ha (8%) Low	Negligible	Negligible	Negligible	No change
MA03/32 Land at Peacock Lane, Millington (1)	The amendment will not alter the area of land permanently required compared to the SES1 and AP1 ES. The total land required permanently will remain 7.8ha (52%) High	Medium	Negligible	Moderate adverse due to the proportion of land required.	No change

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Holding reference/ name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES or the SES1 and AP1 ES as relevant
MA03/40 Agden Brook Farm	The amendment will not alter the area of land permanently required compared to the SES1 and AP1 ES. The total land required permanently will remain 0ha (0%) Negligible	Negligible	Negligible	Negligible	No change
MA03/41 Booth Bank Farm	The amendment will not alter the area of land permanently required compared to the SES1 and AP1 ES. The total land required permanently will remain <0.1ha (<1%) Negligible	Negligible	Negligible	Negligible	No change
MA03/47 Land at Thowler Lane	The amendment will not require any land on a permanent basis. The total land required permanently will be 0ha (0%) Negligible	Negligible	Negligible	Negligible	New holding affected – no significant effect

Other mitigation measures

5.3.22 The land required temporarily for construction will be restored to its former agricultural condition once the works are completed, following good practice techniques in handling, storing and reinstating soils on that land, as set out in the draft CoCP. No other mitigation is proposed.

Summary of likely residual significant effects

5.3.23 Overall, the amendment will:

- remove a temporary moderate adverse significant effect at Hulse Heath Farm (MA03/30);
- remove a temporary moderate adverse significant effect at Agden Brook Farm (MA03/40); and
- introduce a new temporary moderate adverse significant effect for Land at Thowler Lane (MA03/47).

Cumulative effects

5.3.24 No new, removed or different significant cumulative effects have been identified.

Ecology and biodiversity

Scope, assumptions and limitations

- 5.3.25 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1 and the SMR of the main ES.
- 5.3.26 Where there are limitations in data, a precautionary baseline has been taken following the approach set out in the SMR which constitutes a 'reasonable worst-case' scenario for the subsequent assessment.
- 5.3.27 This amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for ecology and biodiversity.
- 5.3.28 Ecology and biodiversity effects that result from the assessment of the changes to traffic flows as a result of all changes and amendments to the original scheme are reported in Section 7.

Environmental baseline

Existing baseline

- 5.3.29 The baseline ecology and biodiversity is as described in Section 7 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) and Hulseheath to Manchester Airport (MA06) of the main ES, SES1 and SES2. A summary of baseline information relevant to the assessment of the amendment is provided below.

Designated sites

- 5.3.30 There is one LWS of relevance to the assessment of the amendment in MA03, which is of county/metropolitan value. This is Belt Wood LWS, which is located partly within land required for the original scheme, and partly within land required for the amendment.
- 5.3.31 Belt Wood Ancient Woodland Inventory (AWI) site is located adjacent to the land required for the original scheme, and approximately 8m from the land required for the amendment. This ancient woodland is of national value.

Habitats

- 5.3.32 In addition to the ancient woodland described above, the following habitats are also located within the land required for the amendment within the Pickmere to Agden and Hulseheath area: broadleaved and mixed woodland, hedgerows, scrub, improved/poor semi-improved grassland, ponds, arable and amenity areas. The habitats of relevance to this assessment of the amendment are described further below.

- 5.3.33 An area of semi-natural mixed woodland qualifying as a habitat of principal importance is located in Belt Wood LWS, which is described in the main ES as being of district/borough value.
- 5.3.34 Small areas of semi-natural broadleaved woodland are located throughout the land required for the amendment within the Pickmere to Agden and Hulseheath area. These woodlands contribute to a wider resource of this habitat within the Pickmere to Agden and Hulseheath area and are considered to be up to local/parish value.
- 5.3.35 Within the land required for the amendment, there is 450m of hedgerow that (based on aerial photography) are intact and contain trees, and that are assumed to be species rich. These hedgerows may qualify as a habitat of principal importance and as a conservation priority in the Cheshire BAP. The hedgerows contribute to a wider network across the Pickmere to Agden and Hulseheath area that is of county metropolitan value.

Species

- 5.3.36 The SES2 baseline reports an assumed great crested newt metapopulation of large size in a network of 158 ponds located south of High Legh (GCNMP1.3.4). The land required for the construction of the amendment includes terrestrial habitat associated with this metapopulation. This metapopulation is considered to be of county/metropolitan value.
- 5.3.37 The SES2 baseline reports an assumed great crested newt metapopulation of large size in a network of 102 ponds located north of Tatton Dale (GCNMP1.3.9), extending into the Hulseheath to Manchester Airport area (MA06). The land required for the construction of the amendment includes terrestrial habitat associated with this metapopulation and one pond with confirmed great crested newt presence. This metapopulation is considered to be of county/metropolitan value.
- 5.3.38 The SES2 baseline reports a bat assemblage of at least nine species bounded by the M6, the M56 and the A556 within the Pickmere to Agden and Hulseheath area and the Hulseheath to Manchester Airport area (MA06). The land required for the construction of the amendment contains small areas of woodland, hedgerows and water bodies which are considered to support roosting and foraging bats. The bat assemblage is considered to be of regional value.

Future baseline

- 5.3.39 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 5.3.40 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

- 5.3.41 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

- 5.3.42 No further avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

Designated sites

- 5.3.43 As reported in SES1, the original scheme was amended to relocate the utilities diversions away from Belt Wood AWI site. This removed the nationally significant effect caused by the loss of ancient woodland habitat at Belt Wood. The additional land required for this amendment provides a greater distance between the land required for the construction of the AP2 revised scheme and the woodland edge. The amendment will not change the outcome of the assessment reported in SES1.
- 5.3.44 The main ES reported a loss of 2.9ha (22%) of Belt Wood LWS as a result of utility works that would be significant at the county/metropolitan level. The amendment will reduce this loss by approximately 900m². The loss of approximately 2ha of habitat from the LWS will result in a different significant effect, but there will be no change in the level of significance of the effect reported in the main ES.

Habitats

- 5.3.45 On a precautionary basis, the SES2 reports a net loss of 39.2km of hedgerow habitat taking into account mitigation, within the land required for construction of the scheme within the Agden to Pickmere and Hulseheath area, resulting in a permanent adverse effect, significant at the county/metropolitan level. The amendment will result in the loss of an additional 450m of hedgerows that are assumed to be species-rich. This will result in a different significant effect on hedgerow, but there will be no change in the level of significance of the effect reported in the SES2.

Species

- 5.3.46 The SES2 reports that the loss of habitat resulting from the construction of the SES2 scheme would result in an adverse effect on the metapopulation of great crested newt in a network of 158 ponds south of High Legh (GCNMP1.3.4), which would be significant at county/metropolitan level. The amendment will result in the additional loss of approximately 1.1ha of terrestrial habitat associated with this metapopulation. The amendment will result in a different significant effect, but there will be no change in the level of significance of the effect reported in the SES2.

- 5.3.47 The SES2 reports an adverse effect on a metapopulation of great crested newt within a network of 102 ponds located north of Tatton Dale (GCNMP1.3.9), extending into Hulseheath to Manchester Airport (MA06) which would be significant at the county/metropolitan level. The amendment will result in the loss of one additional pond in which the presence of great crested newt is confirmed, along with the retention of three other ponds, and approximately a 2.7ha decrease (including land within Hulseheath to Manchester Airport (MA06)) in the terrestrial habitat associated with this metapopulation. The amendment will result in a different significant adverse effect, but there will be no change in the level of significance of the effect reported in the SES2.
- 5.3.48 The SES2 reports that the construction of the SES2 scheme would result in the loss and fragmentation of foraging and commuting habitat, and roosts, from within the bat assemblage bounded by the M6, the M56 and the A556 within the Pickmere to Agden and Hulseheath area and the Hulseheath to Manchester Airport area (MA06). This would result in a permanent adverse effect that would be significant at a regional level. The amendment will result in the loss of trees, which on a precautionary basis are assumed to support roosting bats and foraging habitat. The amendment will result in a different significant effect on this bat assemblage, but there will be no change in the level of significance of the effect reported within the SES2.

Other mitigation measures

- 5.3.49 The SES2 reports that significant effects on the great crested newt populations within the Pickmere to Agden and Hulseheath area would be addressed by creating areas of suitable habitat. These measures would comprise provision of ponds and grassland that would be designed to compensate for the loss of breeding sites, foraging habitat and places of shelter used by great crested newt and other amphibian species. The mitigation measures will take account of the different significant effects identified above. Therefore, following implementation of these measures, the effects on the amphibian populations in the Pickmere to Agden and Hulseheath area will be reduced to a level that is not significant.
- 5.3.50 To replace roosts that will be lost to construction, artificial roosts will be provided in retained areas as close to the roost being lost as possible, in accordance with the Ecological Principles of Mitigation within the SMR. The mitigation measures will take account of the different significant effects identified above. Following the implementation of these measures, the effects of the potential loss of roosts on the bat assemblage will be reduced to a level that is not significant.

Summary of likely residual significant effects

- 5.3.51 On a precautionary basis, it is assumed that there will be a net loss in hedgerows of 39.2km at SES2 taking into account mitigation, and the amendment will result in a further loss of 450m. This will remain as a different permanent adverse residual effect that is significant at the county/metropolitan level. Opportunities will be sought for additional retention and replacement of hedgerow within the land required for the temporary works.

Cumulative effects

- 5.3.52 No new, removed or different significant cumulative effects have been identified.

Traffic and transport

- 5.3.53 Millington Clough is located in the Pickmere to Agden and Hulseheath community area on the boundary with the Hulseheath to Manchester Airport community area (MA06), and therefore this amendment has the potential to also impact the Hulseheath to Manchester Airport (MA06) community area. A description of the significant effects for both areas is provided in the SES2 and AP2 ES Volume 2, Community Area report: Hulseheath to Manchester Airport (MA06).

Summary of new or different likely residual significant effects as a result of the amendment

Construction

Agriculture, forestry and soils

- 5.3.54 The amendment will introduce a new temporary moderate adverse significant effect for Land at Thowler Lane (MA03/47).

Ecology and biodiversity

- 5.3.55 On a precautionary basis, it is assumed that there will be a net loss in hedgerows of 39.2km at SES2, taking account of mitigation, and the amendment will result in a further loss of 450m. This will remain as a different permanent adverse residual effect that is significant at the county/metropolitan level.

Summary of likely residual significant effects that will be removed

Construction

Agriculture, forestry and soils

- 5.3.56 As a result of the amendment, the following residual agricultural significant effects for holdings will be removed:
- Hulse Heath Farm (MA03/30); temporary moderate adverse effect removed; and
 - Agden Brook Farm (MA03/40); temporary moderate adverse effect removed.

5.4 Additional land permanently required for modifications to M6 junction 20a (AP2-003-004)

- 5.4.1 The Bill provides for construction traffic routes and construction compounds in the Pickmere to Agden and Hulseheath area. The main ES reported that movement of excavated or fill material and construction vehicles accessing construction compounds during the construction of the original scheme together with temporary road closures and diversions would result in changes in daily traffic flows. These activities would result in a significant adverse effect due to increased traffic congestion at junction M6 junction 20a. The main ES did not propose any mitigation works in this location for road users.
- 5.4.2 Since the main ES, further work has identified modifications to the existing M6 Junction 20a layout that will increase capacity and reduce the impact of construction traffic and workforce movements on road users.
- 5.4.3 The junction layout will be permanently modified to include carriageway widening by up to 7m to enable an additional northbound lane for traffic merging with the northbound M6.
- 5.4.4 In addition, modifications to the existing embankment slopes, kerb lines and road markings will be required. Highway drainage will need to be relocated along the new kerb lines.
- 5.4.5 To enable widening of the carriageway to the west of the current highway alignment, up to 2.1ha of existing grass verge, hedgerow and tree planting will be lost. Following construction, 1.9ha of this vegetation will be reinstated.
- 5.4.6 A working area and access road will be located on the western side of the M6, 500m north of, M6 junction 20a. This access will be created via agricultural land from the A50 Cliff Lane.
- 5.4.7 Whilst no utility diversions have been identified, some temporary works will be required to safeguard nearby utilities during construction.
- 5.4.8 The modification and widening of the M6 junction 20a will be constructed over a period of up to eight months, commencing in 2026.
- 5.4.9 The land required for this amendment is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 4.3ha of land and the temporary requirement for an additional 1.5ha of agricultural land (see SES2 and AP2 ES Volume 2, MA03 Map Book: maps CT-06-322a-L1, D3 to J7).

Topics included in the AP2 assessment

- 5.4.10 The assessment of this amendment has identified new, different or removed likely significant effects for the following topics: agriculture, forestry and soils; ecology and biodiversity; and landscape and visual.
- 5.4.11 The assessment of changes to traffic flows and traffic related effects as a result of all changes and amendments to the original scheme is reported in Section 7. Topics where a

significant effect has been identified due to changes to traffic flows are reported in Section 7 and include: air quality; community; ecology and biodiversity; health; socio-economics; and sound, noise and vibration.

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.4.12 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1 and the SMR of the main ES. The amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for agriculture, forestry and soils.
- 5.4.13 All agriculture, forestry and soils effects, arising from this amendment, are reported in SES2 and AP2 ES Volume 5, Appendix: AG-001-00000.

Environmental baseline

Existing baseline

- 5.4.14 The agricultural land associated with this amendment has soil in the Salop association. These soils are developed in reddish glacial deposits (i.e., till and glaciofluvial sand and gravel deposits) and are slowly permeable and seasonally waterlogged soils (WC III to IV). The quality of the agricultural land is limited by soil wetness to Subgrade 3b.
- 5.4.15 Two agricultural holdings, which were not impacted by the original scheme, will be affected by this amendment, and are summarised in Table 10.

Table 10: Summary characteristics of the holdings affected by the additional land required for modifications to M6 junction 20a (AP2-003-004)

Holding reference/name	Holding type	Holding size (ha)	Diversification	Agri-environment scheme	Sensitivity to change
MA03/48 Land at Cliff Lane *	Grassland	12	Not known	None	Medium
MA03/49 Masseybrook Farm*	Grassland	17	Not known	None	Medium

* It has not been possible to arrange farm impact assessment interviews with these holdings. Publicly available sources have been used to obtain the information presented.

Future baseline

- 5.4.16 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.

- 5.4.17 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 5.4.18 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on agriculture, forestry and soils.

Effects arising during construction

Avoidance and mitigation measures

- 5.4.19 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

- 5.4.20 The amendment will require 1.5ha of agricultural land in the Pickmere to Agden and Hulseheath area, which is classified as Subgrade 3b.
- 5.4.21 The impacts on the holdings affected are set out in Table 11 and Table 12.

Table 11: Temporary impacts and effects on holdings arising from the additional land required for modifications to M6 junction 20a (AP2-003-004)

Holding reference/name	Total area required from holding	Construction severance	Disruption	Scale of construction effect	Change in effect from main ES
MA03/48 Land at Cliff Lane	>0.6ha, >5% Low	Negligible	Negligible	Minor adverse	New holding affected – no significant effect
MA03/49 Masseybrook Farm	0.9ha, >5% Low	Negligible	Negligible	Minor adverse	New holding affected – no significant effect

Table 12: Permanent impacts and effects on holdings arising from the additional land required for modifications to M6 junction 20a (AP2-003-004)

Holding reference/name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES
MA03/48 Land at Cliff Lane	<0.1ha, <1% Negligible	Negligible	Negligible	Negligible	New holding affected – no significant effect
MA03/49 Masseybrook Farm	<0.1ha, <1% Negligible	Negligible	Negligible	Negligible	New holding affected – no significant effect

Other mitigation measures

- 5.4.22 The land required temporarily for construction will be restored to its former agricultural condition once the works are completed, following good practice techniques in handling, storing and reinstating soils on that land, as set out in the draft CoCP. No other mitigation is proposed.

Summary of likely residual significant effects

- 5.4.23 The amendment will not result in any new or different residual significant effects for agriculture, forestry and soils.

Cumulative effects

- 5.4.24 No new, removed or different significant cumulative effects have been identified.

Ecology and biodiversity

Scope, assumptions and limitations

- 5.4.25 The amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for ecology and biodiversity.
- 5.4.26 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1 and the SMR of the main ES.
- 5.4.27 Where there are limitations in data, a precautionary baseline has been taken following the approach set out in the SMR which constitutes a 'reasonable worst-case' scenario for the subsequent assessment.
- 5.4.28 Ecology and biodiversity effects that result from the assessment of the changes to traffic flows as a result of all changes and amendments to the original scheme are reported in Section 7.

Environmental baseline

Existing baseline

- 5.4.29 The baseline ecology and biodiversity is as described in Section 7 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES, and in the SES1 and SES2. A summary of baseline information relevant to the assessment of the amendment is provided below.

Habitats

- 5.4.30 Habitats within the land required for the amendment include broadleaved plantation woodland, hedgerows, mature trees, agricultural land and poor semi-improved grass verge. The habitats of relevance to the assessment of the amendment are described further below.
- 5.4.31 Within the land required for the amendment, there is 1.2km of hedgerow that (based on aerial surveys) are intact and that are assumed to be species-rich. These hedgerows may qualify as a habitat of principal importance and a conservation priority of the Cheshire BAP. These hedgerows contribute to a wider hedgerow network across the Agden to Pickmere and Hulseheath area that is of county/metropolitan value.

Species

- 5.4.32 An assumed great crested newt population of medium size in a single pond is located south-west of Lymm (GCNP1.3.17). The land required for the amendment includes terrestrial habitat associated with this metapopulation. This metapopulation is considered to be up to county/metropolitan value.
- 5.4.33 An assumed great crested newt population of medium size in a single pond is located south-west of Lymm (GCNP1.3.18). The land required for the amendment includes terrestrial habitat associated with this population. This population is considered to be up to county/metropolitan value.
- 5.4.34 The land required for the amendment contains trees which, on a precautionary basis, are assumed to support common and widespread species of roosting bats. Several species of bat are species of principal importance and a conservation priority of the Cheshire BAP. In the absence of survey information, on a precautionary basis, the assumed roosts are of up to county/metropolitan value.

Future baseline

- 5.4.35 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 5.4.36 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 5.4.37 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

- 5.4.38 No further avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

- 5.4.39 On a precautionary basis, the SES2 reports a net loss of 39.2km of hedgerow habitat taking into account mitigation, within the land required for construction of the scheme within the Agden to Pickmere and Hulseheath area, resulting in a permanent adverse effect, significant at the county/metropolitan level. The amendment will result in the loss of an additional 1.2km of assumed species-rich hedgerow. This will result in a different effect on hedgerow, but there will be no change in the level of significance of the effect reported in the SES2.
- 5.4.40 The amendment will result in the loss of approximately 0.65ha of suitable terrestrial habitat associated with the assumed population of great crested newt in a single pond located south-west of Lymm (GCNP1.3.17). The amendment will result in a new adverse effect that will be significant up to county/metropolitan level.
- 5.4.41 The amendment will result in the loss of approximately 0.88ha of suitable terrestrial habitat associated with the assumed population of great crested newt in a single pond located south-west of Lymm (GCNP1.3.18). The amendment will result in a new adverse effect that will be significant up to county/metropolitan level.
- 5.4.42 The amendment will result in the loss of trees which, on a precautionary basis, are assumed to support roosting bats. This would result in a permanent adverse effect on the species of bats present, which would be significant at up to county/metropolitan level.

Other mitigation measures

- 5.4.43 The SES2 reports a total of 21.2km of hedgerow would be planted as replacement for those lost in the Pickmere to Agden and Hulseheath Area. As part of the amendment, a further 700m of hedgerow will be re-planted to partly compensate for the additional loss of hedgerow as a result of the SES2 scheme. Following the implementation of these measures, the effects of the loss of hedgerows as a result of this amendment will result in a different residual significant effect. However, it will not change the level of significance of the effect reported in the SES2.
- 5.4.44 The SES2 reports that significant effects on the great crested newt populations within the Pickmere to Agden and Hulseheath area would be addressed by creating areas of suitable habitat. These measures would comprise provision of ponds and grassland that would be designed to compensate for the loss of breeding sites, foraging habitat and places of shelter used by great crested newt and other amphibian species. The mitigation measures will take account of the different significant effects identified above. Therefore, following

implementation of these measures, the effects on the amphibian populations in the Pickmere to Agden and Hulseheath area will be reduced to a level that is not significant.

- 5.4.45 To replace bat roosts that will be lost to construction, artificial roosts will be provided in retained areas as close to the roost being lost as possible, in accordance with the Ecological Principles of Mitigation within the SMR. The mitigation measures will take account of the different significant effects identified above. Following the implementation of these measures, the effects of the potential loss of roosts on the bat assemblage will be reduced to a level that is not significant.

Summary of likely residual significant effects

- 5.4.46 On a precautionary basis, it is assumed that there will be a net loss in hedgerows of 39.2km at SES2 taking into account mitigation, and the amendment will result in a further net loss of 500m. This will remain as a different permanent adverse residual effect that is significant at the county/metropolitan level. In addition to the mitigation described above, opportunities will be sought for additional retention and replacement of hedgerow within the land required for temporary works.

Cumulative effects

- 5.4.47 No new, removed or different significant cumulative effects have been identified.

Landscape and visual

Scope, assumptions and limitations

- 5.4.48 The assessment scope, key assumptions and limitations for landscape and visual are as set out in Volume 1 and the SMR of the main ES.
- 5.4.49 This amendment has the potential to result in new construction effects for the visual assessment only. Therefore, there is no operational phase visual assessment and no construction or operational phase landscape assessments.
- 5.4.50 All visual effects, arising from this amendment, are reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA03. The locations of significantly affected viewpoints during the construction phase are shown in the SES2 and AP2 ES Volume 2, MA03 Map Book: Map Series LV-03.

Environmental baseline

Existing baseline

- 5.4.51 The baseline visual information is as described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA03. A summary of the visual baseline information relevant to the assessment of the amendment is provided below.

Visual baseline

- 5.4.52 The amendment has the potential to significantly affect one new viewpoint. This viewpoint is described in the SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA03 and summarised below.

View north-east from Howshoots Farm, A50 Cliff Lane (high sensitivity receptors) (318-02-012)

- 5.4.53 This new viewpoint is in an area where there will be changes from the original scheme. It is representative of the views experienced by residents at Howshoots Farm and road users along the A50 Cliff Lane and M6 northbound slip road. Views across gently rolling farmland, are bordered by the M6 to the east and A50 Cliff Lane to the south-west. Field and road boundary hedgerows, limited woodland, scattered trees and small copses as well as isolated properties are characteristic features of the view. Massey Brook to the west is defined by a sinuous line of vegetation in the middle distance. There are open views from the front of the property to the A50 Cliff Lane at the junction with the M6. Farm outbuildings partially screen views to the west. Road users along the A50 Cliff Lane have views over the low roadside hedgerow, across the open farmland. Road users on the M6 have elevated and open views across the farmland, due to the lack of intervening vegetation.

Future baseline

- 5.4.54 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 5.4.55 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 5.4.56 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on landscape and visual.

Effects arising during construction

Avoidance and mitigation measures

- 5.4.57 No avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

Visual assessment

View north-east from Howshoots Farm, A50 Cliff Lane (high sensitivity receptors) (318-02-012)

- 5.4.58 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of Howshoots Farm of **high** susceptibility and road users along the A50 Cliff Lane and M6 northbound slip road of lower susceptibility, all with **medium** value views, will experience a noticeable change to near and middle-distance views. Construction of the amendment will be visible in the middle distance for residents of Howshoots Farm. There will also be near-distance views of the temporary access and passing construction traffic using the designated construction traffic route immediately to the north of the property. The elements associated with construction, including construction plant and earthworks will be out of character with existing views over open farmland. Vegetation removed in the middle-distance, during construction, will slightly increase the visibility of the motorway across a proportion of the view especially as the M6 and slip road are elevated above the adjacent farmland. There will be a **medium** magnitude of change and a **moderate** adverse effect (significant). The amendment will therefore give rise to a new significant effect.

Other mitigation measures

- 5.4.59 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Summary of likely residual significant effects

- 5.4.60 The amendment will give rise to a new likely residual significant construction effect at the view north-east from Howshoots Farm, the A50 Cliff Lane (318-02-012), after implementation of construction phase mitigation. The effect will be **moderate** adverse (significant).

Cumulative effects

- 5.4.61 No new, removed or different significant cumulative effects have been identified.

Summary of new or different likely residual significant effects as a result of the amendment

Construction

Ecology and biodiversity

- 5.4.62 On a precautionary basis, it is assumed that there will be a net loss in hedgerows of 39.2km at SES2 taking into account mitigation, and the amendment will result in a further net loss of

500m. This will remain as a different permanent adverse residual effect that is significant at the county/metropolitan level.

Landscape and visual

- 5.4.63 The amendment will give rise to a new likely residual significant construction effect at the view north-east from Howshoots Farm, the A50 Cliff Lane (318-02-012), after implementation of construction phase mitigation. The effect will be **moderate** adverse (significant).

6 Construction programme

6.1 Introduction

- 6.1.1 The AP2 revised scheme has resulted in the need to alter the indicative construction programme set out in the SES1 and AP1 ES.
- 6.1.2 The revised indicative programme compared to the programme included in the SES1 and AP1 ES is shown in Figure 3.

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Volume 2: Community Area report MA03 Pickmere to Agden and Hulseheath

Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Site preparation and setup												
Footpath Tabley Inferior 1/1 accommodation underbridge												
Smoker Brook viaduct												
Pickmere embankment												
Site reinstatement												
Pickmere Lane satellite compound (AP1)												
Pickmere Lane satellite compound (AP2)												
Site preparation and setup												
Cheshire Showground North accommodation access diversion												
Cheshire Showground South accommodation access diversion												
School Lane realignment												

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Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Arley Brook viaduct												
Flittogate Lane diversion												
B5391 Pickmere Lane realignment												
Footpath Pickmere 9/1 underbridge												
Pickmere telecommunications site (civil works)												
Pickmere telecommunications site (rail systems works)												
Site reinstatement												
Arley Brook Viaduct satellite compound (AP1)												
Arley Brook Viaduct satellite compound (AP2)												
Site preparation and setup												
Bongs Wood culvert												
Arley Brook viaduct												
Frog Lane realignment												

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Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Budworth Road auto-transformer station (civil works)												
Restricted Byway Tabley Superior 4/1 accommodation underbridge												
Budworth Road auto-transformer station (rail systems works)												
Site reinstatement												
Budworth Road satellite compound (AP1)												
Budworth Road satellite compound (AP2)												
Site preparation and setup												
Heyrose embankment												
Site reinstatement												
M6 Viaduct South satellite compound (AP1)												
M6 Viaduct South satellite compound (AP2)												

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Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Utilities (major)												
Site preparation and setup												
M6 Mere viaduct												
Rail systems - switches and crossing works												
Site reinstatement												
M6 Viaduct North satellite compound (AP1)												
M6 Viaduct North satellite compound (AP2)												
Site preparation and setup												
Hoo Green North cutting												
Bridleway Mere 1/1 accommodation underbridge												
Hoo Green North embankment no. 1, no. 2 and retaining wall no. 1												
Hoo Green South embankment no. 1, no. 2 and no. 3												

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Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters	
M6 Mere viaduct				Orange	Orange	Blue	Blue	Blue	Blue	Blue	Purple	Purple	
Winterbottom culvert				Orange	Orange	Purple	Purple						
Winterbottom Lane telecommunications site (civil works)					Orange		Purple						
Winterbottom Lane telecommunications site (rail systems works)					Orange		Purple						
Site reinstatement								Orange	Orange	Purple	Purple		
A50 Warrington Road main compound (AP1)				Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue		
A50 Warrington Road main compound (AP2)					Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	Dark Blue	
Site preparation and setup				Orange	Orange	Purple							
Hoo Green South cutting retaining wall				Orange	Orange	Blue	Blue	Purple	Purple				
Hoo Green North cutting retaining wall				Orange	Orange	Blue	Blue	Purple	Purple				
Hoo Green North embankment retaining wall no.2				Orange	Orange	Blue	Purple	Purple					

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Volume 2: Community Area report
MA03 Pickmere to Agden and Hulseheath

Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Hoo Green Lane diversion				Orange	Blue	Blue	Purple					
A50 Warrington Road overbridge and realignment				Orange	Blue	Blue	Purple					
Hoo Green tunnel			Orange	Blue	Blue	Purple						
Hoo Green box structure				Orange	Blue	Blue	Purple					
Hoo Green South embankment no.2 retaining wall						Orange	Blue	Purple				
Rail systems - Hoo Green Box portal building							Orange	Purple				
Rail systems - switches and crossings									Orange	Purple		
Site reinstatement							Orange	Purple		Orange	Purple	
Wrenshot Lane satellite compound (AP1)				Dark Blue	Dark Blue	Dark Blue						
Wrenshot Lane satellite compound (AP2)					Dark Blue	Dark Blue	Dark Blue					
Utilities (major)				Orange	Blue	Purple	Purple					
Site preparation and setup				Orange	Purple							

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Volume 2: Community Area report
MA03 Pickmere to Agden and Hulseheath

Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Hoo Green North cutting retaining wall				■	■	■	■					
Hoo Green South cutting retaining wall												
Hoo Green North cutting				■	■	■	■					
Hoo Green tunnel												
Hulseheath North embankment				■	■	■	■					
Hulseheath South embankment												
Site reinstatement						■	■					
Bowden View satellite compound (AP1)				■	■	■	■	■				
Bowden View satellite compound (AP2)					■	■	■	■	■	■		
Site preparation and setup				■	■							
Hoo Green North cutting retaining wall				■	■	■	■					
Hoo Green West cutting												

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Hulseheath North embankment												
Hulseheath South embankment												
Site reinstatement												
Peacock Lane satellite compound (AP1)												
Peacock Lane satellite compound (AP2)												
Site preparation and setup												
Millington Clough culvert												
Peacock Lane Highways Works												
Millington Clough offline underbridge												
Site reinstatement												
Peacock Lane ATFS satellite compound (AP1)												
Peacock Lane ATFS satellite compound (AP2)												
Utilities (major)												

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Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Site preparation and setup												
Agden Brook viaduct (MA06)												
Millington Clough aqueduct												
Millington Clough offline culvert no.1, no. 2 and no. 3												
Peacock Lane disconnecter (civil works)												
Peacock Lane auto-transformer feeder station (civil works)												
Peacock Lane grid supply point (civil works)												
Peacock Lane grid supply point (rail systems works)												
Peacock Lane auto-transformer feeder station (rail systems works)												
Chapel Lane Temporary Construction slip road												

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Pickmere to Agden and Hulseheath	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Site reinstatement												
Track laying and testing & commissioning (AP1)												
Track laying and testing & commissioning (AP2)												
Area track laying												
Testing and commissioning												

7 Combined effects of changes and amendments in the Pickmere to Agden and Hulseheath area due to changes in traffic flows

7.1 Introduction

- 7.1.1 This section reports the combined assessment of new or different significant traffic and traffic related effects, as a result of changes in traffic flows. These relate to changes associated with SES1 changes, AP1 amendments, SES2 changes and AP2 amendments, where the change in traffic flows cannot be directly attributed to a specific SES2 change or AP2 amendment.
- 7.1.2 The assessment has also considered any impacts in the Pickmere to Agden and Hulseheath area associated with SES2 changes and AP2 amendments in other community areas.
- 7.1.3 Traffic and transport effects are reported first, since the effects arise from changes in traffic flows. Other topics where a significant effect has been identified, are then reported in the following sequence:
- air quality;
 - community;
 - ecology and biodiversity;
 - health;
 - socio-economics;
 - sound, noise and vibration; and
 - water resources and flood risk.

7.2 SES2 changes and AP2 amendments of relevance to this assessment

- 7.2.1 The assessment includes all changes to traffic. The primary contributors to the changes in construction traffic are the changes to the movement of excavated material, construction programme and construction assumptions. The assessment takes into account measures to reduce the need to move material by the road network and use of site haul routes to limit construction traffic on the road network.
- 7.2.2 In addition to the changes in construction traffic, the following SES2 changes and AP2 amendments make a particular contribution to the changes in traffic flows in the Pickmere to Adgen and Hulseheath area:

- additional land temporarily required for modifications to the A556 Chester Road and the A5033 Northwich Road Junction (AP2-003-001);
- additional land permanently required for modifications to M6 junction 19 (AP2-003-002); and
- additional land permanently required for modifications to M6 junction 20a (AP2-003-004).

7.2.3 In addition, updates to the transport model existing and future baselines described in Section 2 will lead to changes to the future baseline traffic forecasts reported in the main ES and SES1 and AP1 ES. These baseline changes could give rise to new or different effects compared with the main ES and the SES1 and AP1 ES as a result of, for example, different underlying levels of traffic and congestion against which the impacts of HS2 are assessed. The combined assessment of changes to traffic flows presented in this section of the report takes into account the revised future baseline traffic forecasts alongside the changes in traffic flows associated with the AP2 revised scheme.

7.3 Traffic and transport

Scope, assumptions and limitations

- 7.3.1 The assessment scope, key assumptions and limitations for the traffic and transport assessment are as set out in Volume 1 (Section 8) and the SMR of the main ES.
- 7.3.2 In the main ES, the future baseline traffic volumes were calculated for 2030, 2038 and 2046. In the SES1 and AP1 ES, the 2046 future baseline was updated to 2051 in order to give the assessment greater resilience to long term growth in travel demand. For the SES2 and AP2 ES, the 2030 and 2038 future baselines have been updated to 2031 and 2039 to reflect the revised programme presented in Section 6. Consequently, the construction assessment of the AP2 revised scheme has been undertaken for 2031 and the operational assessment has been undertaken for the anticipated opening year of 2039 and a further assessment year of 2051.
- 7.3.3 As a result, effects reported in 2031 due to construction of the AP2 revised scheme are compared against effects reported for 2030 in the SES1 and AP1 ES. Similarly, effects reported in 2039 and 2051 due to operation of the AP2 revised scheme are compared against effects reported for 2038 and 2051 respectively in the SES1 and AP1 ES.
- 7.3.4 The extent and nature of changes to travel behaviour following the changes seen during COVID-19 are not yet clear and consequently are not reflected in the assessment. However, the impact of COVID-19 on economic growth is reflected in the HS2 travel forecasts. The February 2023 release of the Department for Transport's (DfT's) national travel forecasts (NTEM8) indicates that local travel forecasts used in the assessment generally reflect the impact of COVID-19 on economic growth. The impact of COVID-19 on travel behaviour is not yet known, although it is considered likely to result in lower travel demand in the medium term than the forecasts used in the assessment. 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.

- 7.3.5 Changes to traffic and transport impacts within the Pickmere to Agden and Hulseheath area as a result of the AP2 revised scheme are contained in Volume 5, Appendix: TR-003-00003, Transport Assessment Part 3 Addendum.
- 7.3.6 There were SES1 changes and AP1 amendments in the Pickmere to Agden and Hulseheath area. This assessment reports the new or different likely significant effects, compared to those reported in the SES1 and AP1 ES, arising due to changes in traffic flows as a result of the SES1 changes, AP1 amendments, SES2 changes and AP2 amendments combined.
- 7.3.7 Maps relating to these new or different likely significant effects are set out in the Volume 5, Traffic and transport Map Book:
- Map Series TR-01 – Station Impacts (Operational);
 - Map Series TR-03 – Significant Residual Transport Effects Arising during Construction and Construction Traffic Routes; and
 - Map Series TR-04 – Significant Residual Transport Effects Arising from Operation.
- 7.3.8 In addition, construction traffic routes are set out in Map Series TR-08 – Construction Routes to the Strategic Network.

Environmental baseline

Existing baseline

- 7.3.9 The baseline traffic and transport information is described in Section 14 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath, (MA03) of the main ES and Section 7.3 of the SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03), as amended in Section 2 of this report and below.
- 7.3.10 Since the main ES and the SES1 and AP1 ES, additional traffic information has been used in the development of updated baseline and future baseline models for the SES2 scheme and AP2 revised scheme in the Pickmere to Agden and Hulseheath area. This includes traffic data from National Highways and Trafficmaster journey time data from the DfT, as set out in the BID¹⁵ report BID TR-004-00001 SES2 and AP2 ES. This data has been combined with the

¹⁵ High Speed Two Ltd (2023), High Speed Rail (Crewe – Manchester), *Background Information and Data accompanying Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement, Transport Assessment policy and data*, BID TR-004-00001 SES2 and AP2 ES. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement>.

information collected for local junction modelling set out in the BID¹⁶ report TR-004-00001 which accompanied the main ES.

Future baseline

Construction (2031) and operation (2039 and 2051)

- 7.3.11 The future baseline traffic and transport information is described in Section 14 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath, (MA03) of the main ES and Section 7.3 of the SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03), and is updated for the AP2 revised scheme below.
- 7.3.12 The assumptions regarding underlying committed developments and transport schemes for each assessment year have been reviewed and updated taking into account information from National Highways, Cheshire East Council, Cheshire West and Chester Council, Trafford Metropolitan Borough Council and Transport for Greater Manchester and are considered to be appropriately reflected in the traffic forecasts.

Effects arising during construction

Avoidance and mitigation measures

- 7.3.13 No avoidance or mitigation measures additional to those reported in the main ES and the draft Code of Construction Practice (CoCP)¹⁷ are proposed.

Assessment of impacts and effects

Temporary effects

Key construction transport issues

- 7.3.14 Table 13 in the SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) provides details of construction compounds in the Pickmere to Agden and Hulseheath area. This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 13.

¹⁶ High Speed Two Ltd (2022), High Speed Rail (Crewe - Manchester), *Background Information and Data, Transport Assessment policy and data report*, BID TR-004-00001. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-environmental-statement>.

¹⁷ High Speed Two Ltd (2022), High Speed Rail (Crewe - Manchester), *Environmental Statement, draft Code of Construction Practice*, Volume 5, Appendix: CT-002-00000. Available online at: <https://www.gov.uk/government/collections/cross-topic-technical-appendices-for-high-speed-rail-crewe-manchester-environmental-statement#draft-code-of-construction-practice>.

Table 13: Typical vehicle trip generation for construction compounds in the Pickmere to Agden and Hulseheath area

Compound type	Compound name	Indicative start/set up date (years/quarter)	Estimated duration of active use (years/months)	Average daily combined two-way car/LGV trips during busy period and within peak month of activity	Average daily combined two-way HGV trips during busy period and within peak month of activity	Estimated duration of busy period (months)
Satellite	Smoker Brook viaduct north satellite compound	2028 Q3	3 years and 6 months	180-238	400-498	6
Satellite	Pickmere Lane satellite compound	2028 Q2	4 years	160-280	90-114	7
Satellite	Arley Brook viaduct satellite compound	2028 Q2	4 years and 3 months	200-248	92-108	7
Satellite	Budworth Road satellite compound	2028 Q2	3 years and 6 months	178-178	424-478	8
Satellite	M6 viaduct south satellite compound	2028 Q2	5 years	122-220	66-86	9
Satellite	M6 viaduct north satellite compound	2028 Q2	4 years and 6 months	160-302	356-478	3
Main	A50 Warrington Road main compound	2028 Q2	5 years and 6 months	452-494	174-272	12
Satellite	Wrenshot Lane satellite compound	2028 Q4	2 years and 3 months	160-164	264-342	6
Satellite	Bowden View satellite compound	2028 Q2	4 years and 6 months	172-244	320-464	3
Satellite	Peacock Lane satellite compound	2026 Q2	4 years and 6 months	132-178	36-44	7
Satellite	Peacock Lane ATFS satellite compound	2027 Q2	6 years and 3 months	90-268	58-86	16

7.3.15 Details of the construction traffic routes for construction compounds in the Pickmere to Agden and Hulseheath area are reported in Table 14 of the SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03). This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 14.

Table 14: Construction HGV routes for construction compounds in the Pickmere to Agden and Hulseheath area

Compound name(s)	Access routes to/from compound(s) to main road network
Smoker Brook viaduct north	Site haul route, A556 Chester Road
Pickmere Lane satellite compound	B5391 Pickmere Lane and A556 Chester Road B5391 Pickmere Lane, Flittogate Lane and A556 (occasional route).

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Compound name(s)	Access routes to/from compound(s) to main road network
Arley Brook viaduct satellite compound	Budworth Road, B5391 Pickmere Lane and A556 Chester Road (to be used before closure of Budworth Road) Budworth Road, Frog Lane, School Lane, B5391 Pickmere Lane and A556 Chester Road (to be used after closure of Budworth Road)
Budworth Road satellite compound	B5391 Pickmere Lane and A556 Chester Road
M6 viaduct south satellite compound	Site haul route, Budworth Road, B5391 Pickmere Lane and A556 Chester Road (to be used before closure of Budworth Road) Site haul route, Budworth Road, Frog Lane, School Lane, B5391 Pickmere Lane and A556 Chester Road (to be used after closure of Budworth Road)
M6 viaduct north satellite compound	Site haul route, Old Hall Lane, B5569 Chester Road and A556 Chester Road
A50 Warrington Road main compound	A50 Warrington Road
Wrenshot Lane satellite compound	Site haul route, A50 Warrington Road (to be used before and after closure of the A556 temporary construction slip roads) Site haul route, Peacock Lane, Chapel Lane, A556 temporary construction slip roads and A556 Chester Road (to be used while the A556 temporary construction slip roads are open)
Bowden View satellite compound	Site haul route, A50 Warrington Road (to be used before and after closure of the A556 temporary construction slip roads) Site haul route, Peacock Lane, Chapel Lane, A556 temporary construction slip roads and A556 Chester Road (to be used while the A556 temporary construction slip roads are open)
Peacock Lane satellite compound	Route to/from the west: Peacock Lane, B5159 West Lane and A50 Warrington Road Incoming route from the north: A556 Chester Road, A5034 Chester Road, Chapel Lane and Peacock Lane Outgoing route to the south: Peacock Lane, Chapel Lane, A5034 Chester Road, B5569 Chester Road, A556 Chester Road (to be used before opening and after closure of the A556 temporary construction slip roads) Peacock Lane, Chapel Lane, A556 temporary construction slip roads and A556 (to be used while the A556 temporary construction slip roads are open)
Peacock Lane ATFS satellite compound	Incoming route from the north: A556 Chester Road, A5034 Chester Road, Chapel Lane and Peacock Lane Outgoing route to the south: Peacock Lane, Chapel Lane, A5034 Chester Road, B5569 Chester Road, A556 (to be used before opening and after closure of the A556 temporary construction slip roads) Peacock Lane, Chapel Lane, A556 temporary construction slip roads and A556 (to be used while the A556 temporary construction slip roads are open)

7.3.16 Information on the indicative construction programme is provided in Section 6 of this report, and the construction methodology is summarised in Volume 1 (Section 6) of the main ES. These illustrate how the phasing of activities at different compounds will generally be staggered and that construction activities at individual compounds may not occur over the whole duration presented in Table 13.

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- 7.3.17 Utility works have been included in the assessment where they are major and where the traffic or transport impacts from the works separately, or in combination with other works, will be greater than other construction activities arising within the area. Most utility works are expected to result in only localised traffic and pedestrian diversions, which will be of short-term duration and are not expected to result in significant effects.
- 7.3.18 The effects of construction of the AP2 revised scheme on the highway network in the Pickmere to Agden and Hulseheath area have been assessed by undertaking strategic model runs for a number of 'with AP2 revised scheme' construction scenarios and comparing the traffic flows and delays against the 2031 future baseline scenario. The assessment is based on the highest volume of construction traffic on each construction route in each construction scenario. Where construction routes will serve more than one construction compound, the assessment is based on the highest combined volume of construction traffic on each section of each route in each construction scenario.
- 7.3.19 In using the strategic model, the impacts and effects have been considered in a utilities scenario and five scenarios covering the main construction phases. These scenarios ensure that the assessment addresses the different combinations and interactions of advance works, utility works, temporary highway closures and diversions and construction HGV movements through the construction period. It should be noted that, due to changes in the construction programme of the AP2 revised scheme, these scenarios differ slightly from those reported in the SES1 and AP1 ES:
- utilities scenario, 2026 Q1 - 2027 Q4. This corresponds with utility and advance works. Temporary traffic management is in place during this scenario, associated with implementing AP2 temporary and permanent junction mitigation schemes. There are negligible construction traffic movements in this scenario as a percentage of peak construction movements;
 - scenario 1, 2028 Q1 - 2028 Q2. This corresponds with the setting-up of a number of compounds and the commencement of works in the Pickmere and Hoo Green areas. This scenario equates to 61% of the overall peak in construction traffic across the whole construction period;
 - scenario 2, 2028 Q3 - 2029 Q2. This corresponds with the peak in construction traffic movements prior to the installation of M56 temporary overbridge at Yarwoodheath Lane in the Hulseheath to Manchester Airport area (MA06). This scenario includes construction of the Arley Brook viaduct and the Agden Brook viaduct. This scenario equates to 77% of the overall peak in construction traffic across the whole construction period;
 - scenario 3, 2029 Q3 - 2030 Q1. This corresponds with the construction peak following the opening of the M56 temporary overbridge at Yarwoodheath Lane in the Hulseheath to Manchester Airport area (MA06). This scenario equates to 71% of the overall peak in construction traffic across the whole construction period;
 - scenario 4, 2030 Q2 - 2032 Q2. This corresponds with the construction peak and includes ongoing work to construct the Smoker Brook Viaduct, Heyrose embankment, M6 Mere viaduct, Hoo Green North cutting retaining wall, Hoo Green South cutting retaining wall,

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A50 Warrington Road overbridge and Hulseheath North embankment and Hulseheath south embankment. This scenario equates to the overall peak (100%) in construction traffic across the whole construction period; and

- scenario 5, 2032 Q3 onwards This corresponds with the construction peak following the removal of the M56 temporary overbridge at Yarwoodheath Lane in the Hulseheath to Manchester Airport area (MA06). All permanent realignments, diversions and closures are also included in this scenario. This scenario equates to 47% of the overall peak in construction traffic across the whole construction period.

7.3.20 The HS2 construction works and the associated construction traffic movements differ for each of these scenarios. The assessment considers the impacts in all temporal phases and reports the highest magnitude of significant effects, regardless of which scenario they arise in.

7.3.21 Table 15 of the SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) gives details of the most relevant highway interventions and works for each scenario in the Pickmere to Agden area. This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 15.

Table 15: Construction highway interventions by scenario

Type	Intervention	Utilities scenario 2026 Q1 – 2027 Q4	Scenario 1 2028 Q1 – 2028 Q2	Scenario 2 2028 Q3 – 2029 Q2	Scenario 3 2029 Q3 – 2030 Q1	Scenario 4 2030 Q2 – 2032 Q2	Scenario 5 2032 Q2- onwards
Main works	A556 Chester Road/A5033 Northwich Road junction (temporary shuttle working)*	Included	Not included	Not included	Not included	Not included	Not included
Main works	M6 junction 19 (one lane closed on the northbound off-slip and on the northbound bridge across the junction)*	Included	Not included	Not included	Not included	Not included	Not included
Main works	M6 junction 20 (lane closure on the northbound on-slip and temporary speed limit and lane closure on the M6 northbound approaching the on-slip)*	Included	Not included	Not included	Not included	Not included	Not included

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Type	Intervention	Utilities scenario 2026 Q1 – 2027 Q4	Scenario 1 2028 Q1 – 2028 Q2	Scenario 2 2028 Q3 – 2029 Q2	Scenario 3 2029 Q3 – 2030 Q1	Scenario 4 2030 Q2 – 2032 Q2	Scenario 5 2032 Q2-onwards
Utilities	Temporary Local Road Network closures	Included	Not included	Not included	Not included	Not included	Not included
Main Works	Speed restriction on M56 (50mph) in the Hulseheath to Manchester Airport area (MA06)	Not included	Included**	Included**	Included***	Not included	Not included
Main Works	Old Hall Lane access, direct accesses from the A556 in the Hulseheath to Manchester Airport area (MA06) and temporary slip-roads at Chapel Lane	Not included	Not included	Included	Included	Included	Included
Main Works	School Lane and Frog Lane realignments and permanent closure of Budworth Road and Bowden View Lane	Not included	Not included	Included	Included	Included	Included
Main Works	Millington Lane closure in the Hulseheath to Manchester Airport area (MA06)	Not included	Not included	Included	Included	Not included	Not included
Main Works	M56 temporary overbridge at Yarwoodheath Lane the Hulseheath to Manchester Airport area (MA06).	Not included	Not included	Not included	Included	Included	Not included
Main Works	B5391 Pickmere Lane realignment	Not included	Not included	Not Included	Not Included	Included	Included

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Type	Intervention	Utilities scenario 2026 Q1 – 2027 Q4	Scenario 1 2028 Q1 – 2028 Q2	Scenario 2 2028 Q3 – 2029 Q2	Scenario 3 2029 Q3 – 2030 Q1	Scenario 4 2030 Q2 – 2032 Q2	Scenario 5 2032 Q2-onwards
Main Works	Speed restriction on M6 between junction 19 and junction 20 (50mph)	Not included	Not included	Not included	Not included	Included	Not included
Main Works	Hoo Green Lane diversion and the A50 Warrington Road realignment	Not included	Not included	Not included	Not included	Not included	Included
	Construction HGV traffic assessed as a percentage of peak construction HGV traffic	Negligible	61%	77%	71%	100%	47%

* Temporary traffic management during construction of the junction modifications.

** Junction 6 to junction 7.

*** Junction 5 to junction 7.

7.3.22 The strategic models have been used to assess these construction scenarios taking account of the HS2 construction traffic movements and any road closures, diversions and realignments, traffic management or changes to junction operations in each scenario. The strategic model outputs for each of these scenarios are only relevant to the assessment of the effects on traffic delays to vehicle occupants and traffic related severance.

Highway network

7.3.23 The AP2 revised scheme includes a number of changes to the highway network compared to the AP1 revised scheme. This includes temporary changes to the highway network to mitigate impacts identified at the A556 Chester Road/A5033 Northwich Road junction (AP2-003-001) during construction. This amendment is temporary and will be in place during construction of the AP2 revised scheme only.

7.3.24 The AP2 revised scheme also includes permanent changes to the highway network to mitigate impacts identified at the following locations:

- M6 Junction 19 (AP2-003-002); and
- M6 Junction 20a (AP2-003-004).

7.3.25 The indicative construction programme in Section 6 of this report illustrates how the phasing of activities will generally be staggered and that construction activities associated with the AP2 revised scheme may not occur at the same time.

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7.3.26 The combined impact of all SES1 changes, AP1 amendments, SES2 changes and AP2 amendments will lead to flow changes on the highway network in all construction scenarios. This will result in changes to the traffic congestion and delay effects for vehicle occupants reported in the SES1 and AP1 ES. Changes to traffic-congestion and delay effects are set out in Table 16. Where changes to effects are reported, these changes are compared to the AP1 revised scheme, as reported in the SES1 and AP1 ES. Locations not listed in Table 16 remain unchanged to those reported in the SES1 and AP1 ES. The significance of the effect reported in the SES1 and AP1 ES is indicated in brackets.

Table 16: Junctions with changes resulting in new or different significant effects on delays and congestion to vehicle occupants, 2031

Junction Name	Significant Effect	AP2 Construction Scenario
A50 Toft Road/A537 Adams Hill/B5083 Stanley Road	Moderate adverse (Previously minor adverse)	Scenarios 1, 2, 3 and 5
A537 Brook Street/B5085 Hollow Lane/Lilybrook Drive	Major adverse (increased) (Previously major adverse)	Scenarios 1, 2, 3 and 4
A537 Brook Street/A537 Adams Hill/B5083 King Street	Major adverse (Previously minor adverse)	Scenario 4
A556 Chester Road/A5033 Northwich Road*	Major adverse (Previously moderate adverse)	Utilities scenario
B5085 Moberley Road/B5085 Hollow Lane	Moderate adverse (Previously no effect)	Scenarios 1, 2, 3 and 4
A50 Manchester Road/A50 King Edward Road/A5033 Northwich Road/Canute Place	Moderate adverse (Previously no effect)	Scenario 4
Tabley Road/Ladies Mile	No effect (Previously minor beneficial)	-
A556 Chester Road/B5391 Pickmere Lane/Tabley Hill Lane	No effect (Previously minor adverse)	-
A50 Warrington Road/A50 Chester Road/B5569 Chester Road (south)	No effect (Previously major adverse)	-
A50 Knutsford Road/Bucklow Hill Lane/Hoo Green Lane	No effect (Previously major adverse)	-
M56 junction 10	Major adverse (Previously moderate adverse)	Scenario 4
M6 junction 20/A50 Cliff Lane/B5158 Cherry Lane*	Major adverse (Previously minor adverse)	Utilities scenario
A56 Higher Lane/Agden Park Lane	No effect (Previously major adverse)	-

* Temporary traffic management in utilities scenario and proposed layout from scenario 1 onwards

7.3.27 A change in traffic levels can result in changes to traffic-related severance for non-motorised road users, particularly pedestrians using or seeking to cross a road. Changes to traffic-related severance for non-motorised users are set out in Table 17 for all-traffic effects and

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Table 18 for HGV traffic effects. Where changes to effects are reported, these changes are compared to the AP1 revised scheme reported in the SES1 and AP1 ES. Locations not listed in Table 17 and Table 18 remain unchanged to those reported in the SES1 and AP1 ES. The significance of the effect reported in the SES1 and AP1 ES is indicated in brackets.

Table 17: Roads with changes in daily all vehicle movements (more than 30%) resulting in new or different significant effects on traffic-related severance for non-motorised users, 2031

Road Name	Significant Effect	AP2 Construction Scenario
Beggarmans Lane (between A50 Toft Road and Bexton Lane)	Moderate adverse (Previously no effect)	Utilities scenario and scenarios 1, 2, 3, 4 and 5
Bexton Road (between Bexton Lane and B5083 Stanley Road)	Moderate adverse (Previously no effect)	Utilities scenario and scenarios 1, 2, 3, 4 and 5
A5033 Northwich Road (between A556 Chester Road and Ladies Mile)	Moderate beneficial (Previously no effect)	Utilities scenario
Frog Lane realignment/School Lane realignment (between B5391 Pickmere Lane and Budworth Road)	Moderate beneficial (Previously no effect)	Utilities scenario
Budworth Road (between Westage Lane and Cann Lane)	Moderate adverse (Previously no effect)	Utilities scenario
A556 Chester Road (between A5033 Northwich Road and B5391 Pickmere Lane)	Moderate beneficial (Previously no effect)	Utilities scenario
Tabley Road (between Ladies Mile and A50 Manchester Road)	Minor beneficial (Previously no effect)	Scenarios 1, 2, 3, 4 and 5
Budworth Road (between Old Hall Lane and B5391 Pickmere Lane)	No effect (Previously moderate adverse)	-
B5391 Pickmere Lane (between Budworth Road and A556 Chester Road)	Moderate adverse (Previously major adverse)	Utilities scenario and scenarios 2 and 3
Budworth Road (between Cann Lane and Old Hall Lane)	No effect (Previously moderate adverse)	-
Chester Road (between B5569 Old Hall Lane East and Moss Lane)	Moderate adverse (Previously no effect)	Utilities scenario
Old Hall Lane (between A556 southbound on-slip and B5569 Chester Road)	Major adverse (Previously moderate adverse)	Scenarios 2 and 3
B5569 Chester Road (between Old Hall Lane and A50 Warrington Road)	Major adverse (Previously moderate adverse)	Scenarios 2, 3 and 5
Clamhunger Lane (between A50 Warrington Road and A5034 Mereside Road)	Major adverse (Previously moderate adverse)	Scenarios 3 and 5
Cann Lane/Whitley Lane/Rowley Bank Lane/Halliwell's Brow (between Budworth Road and A50 Warrington Road)	Major adverse (Previously moderate adverse)	Utilities scenario
B5569 Chester Road (between A50 Knutsford Road and A5034 Mereside Road)	Moderate adverse (Previously minor adverse)	Scenarios 2, 3 and 4
A50 Warrington Road (between B5159 West Lane and Halliwell's Brow)	Moderate adverse (Previously no effect)	Utilities scenario

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Road Name	Significant Effect	AP2 Construction Scenario
Chapel Lane (between Hulse Heath Lane and B5569 Chester Road)	Moderate adverse (Previously major adverse)	Scenarios 2, 3, 4 and 5
Chapel Lane/Peacock Lane (between Back Lane and Hulse Heath Lane)	Moderate adverse (Previously major adverse)	Scenarios 2, 3 and 5
B5159 West Lane west (between A50 Warrington Road and B5159 West Lane east)	No effect (Previously minor adverse)	-
A50 Warrington Road (between Swineyard Lane and B5159 West Lane)	Moderate adverse (Previously no effect)	Utilities scenario
Swineyard Lane (between Heath Lane and A50 Warrington Road)	Major adverse (Previously moderate adverse)	Utilities scenario
Heath Lane (between Swineyard Lane and A50 Warrington Road)	Minor adverse (Previously moderate adverse)	Scenarios 2, 3 and 4
Boothbank Lane (between Agden Lane and Millington Lane)	Moderate adverse (Previously major adverse)	Utilities scenario and scenarios 1, 2, 3, 4 and 5

Table 18: Roads with changes in daily HGV movements (more than 30%) resulting in new or different significant effects on traffic-related severance for non-motorised users, 2031

Road Name	Significant Effect	AP2 Construction Scenario
A556 Chester Road (between Plumley Moor Road and A5033 Northwich Road)	Moderate adverse (Previously no effect)	Scenario 4
B5391 Pickmere Lane realignment (between School Lane and Budworth Road)	Major adverse (increased) (Previously major adverse)	Scenarios 2, 3 and 4
Frog Lane realignment/School Lane realignment (between B5391 Pickmere Lane and Budworth Road)	Moderate adverse (Previously no effect)	Scenarios 2, 3, 4 and 5
Tabley Road (between Ladies Mile and A50 Manchester Road)	Major adverse (Previously no effect)	Utilities scenario
Budworth Road (between Old Hall Lane and B5391 Pickmere Lane)	Moderate adverse (Previously major adverse)	Utilities scenario and scenarios 1, 2, 3, 4 and 5
Budworth Road (between Cann Lane and Old Hall Lane)	No effect (Previously moderate adverse)	-
Old Hall Lane (between A556 southbound on-slip and B5569 Chester Road)	Major adverse (increased) (Previously major adverse)	Scenarios 1, 2 and 5
A556 (between B5569 Old Hall Lane and A50 Knutsford Road)	Moderate adverse (Previously no effect)	Scenario 4
B5569 Chester Road (between Old Hall Lane and A50 Warrington Road)	Major adverse (increased) (Previously major adverse)	Scenarios 1, 2 and 5
Cann Lane/Whitley Lane/Rowley Bank Lane/Halliwell's Brow (between Budworth Road and A50 Warrington Road)	No effect (Previously moderate adverse)	-
A50 Chester Road (between B5569 Chester Road (south) and B5569 Chester Road (north))	Moderate adverse (Previously no effect)	Scenarios 1, 2 and 5
B5569 Chester Road (between A50 Knutsford Road and A5034 Mereside Road)	Major adverse (increased) (Previously major adverse)	Scenarios 1, 2 and 5

Road Name	Significant Effect	AP2 Construction Scenario
Chapel Lane (between Hulse Heath Lane and B5569 Chester Road)	Moderate adverse (Previously major adverse)	Scenarios 1, 2, 3, 4 and 5
Chapel Lane/Peacock Lane (between Back Lane and Hulse Heath Lane)	Moderate adverse (Previously major adverse)	Scenarios 1, 2, 3, 4 and 5
Boothbank Lane (between Agden Lane and Millington Lane)	Moderate adverse (Previously major adverse)	Scenarios 1, 2, 3, 4 and 5
Agden Lane/Agden Park Lane (between Thowler Lane and A56 Higher Lane)	Moderate adverse (Previously no effect)	Utilities scenario

Other mitigation measures

7.3.28 No further appropriate traffic and transport mitigation measures have been identified. HS2 Ltd will, however, continue to work with the relevant highway authorities to consider whether any further mitigation measures would be required.

Summary of likely residual significant effects

7.3.29 The temporary residual significant effects during construction remain as described above. These effects will be temporary and reversible in nature lasting only for the duration of the construction works.

7.3.30 The AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants reported in the SES1 and AP1 ES:

- significant adverse effects removed at four junctions (three major and one minor);
- significant beneficial effects removed at one junction (one minor);
- change (increase) from moderate adverse effect to major adverse effect at two junctions;
- change (increase) from minor adverse effect to major adverse effect at two junctions;
- change (increase) from minor adverse effect to moderate adverse effect at one junction;
- new moderate adverse effect at two junctions; and
- different (increased) major adverse significant effect at one junction.

7.3.31 The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users reported in the SES1 and AP1 ES:

- significant adverse effects removed on two roads (one moderate and one minor);
- change (decrease) from major adverse effect to moderate adverse effect on four roads;
- change (increase) from moderate adverse effect to major adverse effect on three roads;
- change (decrease) from moderate adverse effect to minor adverse effect on one road;
- new major adverse effect on one road;
- new moderate adverse effect on ten roads;
- new moderate beneficial effect on two roads; and
- different (increased) major adverse significant effects on four roads.

Cumulative effects

7.3.32 This combined assessment has taken into account cumulative effects from background traffic growth, committed developments and traffic and transport impacts of the construction works arising from the SES2 changes and AP2 amendments in this area and other community areas.

Effects arising during operation

Avoidance and mitigation measures

7.3.33 No avoidance or mitigation measures additional to those reported in the main ES are proposed.

Assessment of impacts and effects

7.3.34 The assessment of effects arising during operation is described in Section 14 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES and Section 7.3 of the SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03).

7.3.35 The AP2 revised scheme includes permanent changes to the highway network at the following locations, which although introduced to mitigate construction impacts, are retained in operation:

- M6 junction 19 (AP2-003-002); and
- M6 junction 20a (AP2-003-004).

7.3.36 The combined impact of all SES2 changes and AP2 amendments will lead to flow changes on the highway network. This will result in changes to the traffic congestion and delay effects for vehicle occupants reported in the SES1 and AP1 ES. Changes to traffic-congestion and delay effects in 2039 and 2051 are set out in Table 19 and Table 20 respectively. Where changes to effects are reported, these changes are compared to the AP1 revised scheme reported in the SES1 and AP1 ES. Locations not listed in Table 19 and Table 20 remain unchanged to those reported in the SES1 and AP1 ES. The significance of the effect reported in the SES1 and AP1 ES is indicated in brackets.

Table 19: Junctions with changes resulting in new or different significant effects on delays and congestion to vehicle occupants, 2039

Junction Name	Significant Effect
A50 Toft Road/A537 Adams Hill/B5083 Stanley Road	No effect (Previously minor adverse)
A537 Brook Street/B5085 Hollow Lane/Lilybrook Drive	Minor adverse (Previously minor beneficial)
Tabley Road/Ladies Mile	Minor beneficial (Previously no effect)

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Junction Name	Significant Effect
M6 junction 19/A556 Chester Road/A556 (proposed layout)	Minor adverse (Previously no effect)

Table 20: Junctions with changes resulting in new or different significant effects on delays and congestion to vehicle occupants, 2051

Junction Name	Significant Effect
A537 Brook Street/B5085 Hollow Lane/Lilybrook Drive	Major adverse (Previously no effect)
A556 Chester Road/A5033 Northwich Road	Minor beneficial (Previously moderate adverse)
Tabley Road/Sugar Pit Lane	Minor adverse (Previously no effect)
M6 junction 19/A556 Chester Road/A556 (proposed layout)	Minor adverse (Previously no effect)

7.3.37 A change in traffic levels can result in changes to traffic-related severance for non-motorised road users, particularly pedestrians using or seeking to cross a road. Changes to traffic-related severance for non-motorised users in 2039 and 2051 are set out in Table 21. Where changes to effects are reported, these changes are compared to the AP1 revised scheme reported in the SES1 and AP1 ES. Locations not listed in Table 21 remain unchanged to those reported in the SES1 and AP1 ES. The significance of the effect reported in the SES1 and AP1 ES is indicated in brackets.

Table 21: Roads with changes in traffic flow resulting in new or different significant effects on traffic related severance effects on traffic-related severance for non-motorised users, 2039 and 2051

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
A50 Manchester Road (between Sugar Pit Lane and Green Lane)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)
Old Hall Lane (between Budworth Road and A556 northbound off-slip)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)
A50 Warrington Road (between A5034 Mereside Road and Clamhunger Lane)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)
B5569 Chester Road (between Old Hall Lane and A50 Warrington Road)	Major adverse (Previously no effect)	No effect (No change)	No effect (No change)	Major beneficial (Previously moderate beneficial)
A5034 Mereside Road (between Mereheath Lane and A50 Warrington Road)	No effect (Previously moderate beneficial)	Major beneficial (Previously no effect)	No effect (Previously moderate beneficial)	Major beneficial (Previously moderate beneficial)
A50 Warrington Road (between Clamhunger Lane and B5569 Chester Road)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)

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Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Clamhunger Lane (between A50 Warrington Road and A5034 Mereside Road)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously moderate beneficial)
A5034 Mereside Road (between Ashley Road and Mereheath Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate beneficial (Previously no effect)
Cann Lane/Whitley Lane/Rowley Bank Lane/Halliwell's Brow (between Budworth Road and A50 Warrington Road)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)	No effect (No change)
A5034 Mereside Road (between Clamhunger Lane and Ciceley Mill Lane)	Moderate adverse (Previously no effect)	No effect (Previously major adverse)	Moderate adverse (Previously no effect)	No effect (No change)
A50 Chester Road (between B5569 Chester Road (south) and B5569 Chester Road (north))	Moderate adverse (Previously no effect)	Major adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
A50 Knutsford Road (between B5569 Chester Road (north) and A556 northbound on-slip)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
A50 Knutsford Road (between A556 northbound on-slip and Hoo Green Lane)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
Hulse Heath Lane (between A50 Knutsford Road and Bowden View Lane)	Minor adverse (Previously no effect)	No effect (No change)	No change (Previously minor adverse)	No effect (No change)
A50 Warrington Road realignment (between Wrenshot Lane and Hoo Green Lane)	No effect (No change)	Major adverse (Previously moderate beneficial)	No effect (No change)	Major adverse (Previously moderate beneficial)
A50 Warrington Road (between Halliwell's Brow and Wrenshot Lane)	No effect (No change)	Major adverse (Previously moderate beneficial)	No effect (No change)	Major adverse (Previously moderate beneficial)
A50 Warrington Road (between B5159 West Lane and Halliwell's Brow)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
Chapel Lane (between Hulse Heath Lane and B5569 Chester Road)	Moderate adverse (Previously major adverse)	Moderate adverse (Previously major adverse)	Moderate adverse (Previously major adverse)	Minor adverse (Previously major adverse)
B5159 West Lane west (between A50 Warrington Road and B5159 West Lane east)	No effect (No change)	No effect (Previously minor adverse)	No effect (No change)	No effect (No change)

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Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
B5159 West Lane east (between A50 Warrington Road and B5159 West Lane west)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)
A50 Warrington Road (between Swineyard Lane and B5159 West Lane)	No effect (No change)	Major adverse (Previously moderate adverse)	No effect (No change)	Major adverse (Previously no effect)
Heath Lane (between Swineyard Lane and A50 Warrington Road)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Minor adverse (Previously moderate adverse)
A50 Warrington Road (between Swineyard Lane and Mag Lane)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
A50 Warrington Road (between Heath Lane and Mag Lane)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
B5159 West Lane (between B5159 West Lane east and Wrenshot Lane)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)
Back Lane/Thowler Lane (between Peacock Lane and Agden Lane)	Moderate adverse (Previously major adverse)	Moderate adverse (Previously major adverse)	No change (Previously major adverse)	No change (Previously major adverse)
Peacock Lane (between Moss Lane and Back Lane)	No effect (No change)	No effect (No change)	No effect (Previously moderate beneficial)	No effect (Previously moderate beneficial)
A50 Cliff Lane/A50 Warrington Road (between M6 junction 20 and Heath Lane)	No effect (No change)	No change (Previously major adverse)	No effect (No change)	Major adverse (Previously no effect)
Crouchley Lane/Beechtree Lane (between Mag Lane and B5159 West Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)

Other mitigation measures

7.3.38 No further appropriate traffic and transport mitigation measures are proposed. HS2 Ltd will, however, continue to work with the relevant highway authorities to consider whether further mitigation measures would be required.

Summary of likely residual significant effects

7.3.39 The AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants in 2039 reported in the SES1 and AP1 ES:

- significant adverse effect removed at one junction (one minor);
- change (increase) from minor beneficial effect to minor adverse effect at one junction;

- new minor adverse effect at one junction; and
- new minor beneficial effect at one junction.

7.3.40 The AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants in 2051 reported in the SES1 and AP1 ES:

- change from moderate adverse effect to minor beneficial effect at one junction;
- new major adverse effect at one junction; and
- new minor adverse effect at two junctions.

7.3.41 The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users in 2039 reported in the SES1 and AP1 ES:

- significant adverse effects removed on two roads (one major, one minor);
- change (decrease) from major adverse effect to moderate adverse effect on three roads;
- change (increase) from moderate adverse effect to major adverse effect on one road;
- change (increase) from moderate beneficial effect to major beneficial effect on one road;
- change (increase) from moderate beneficial effect to major adverse effect on two roads;
- new major adverse effect on nine roads;
- new moderate adverse effect on five roads; and
- new minor adverse effect on one road.

7.3.42 The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users in 2051 reported in the SES1 and AP1 ES:

- significant beneficial effects removed on two roads (two moderate);
- change (decrease) from major adverse effect to moderate adverse effect on one road;
- change (decrease) from moderate adverse effect to minor adverse effect on one road;
- change (increase) from moderate beneficial effect to major beneficial effect on two roads;
- change (increase) from moderate beneficial effect to major adverse effect on two roads;
- new major adverse effect on eight roads;
- new moderate adverse effect on seven roads; and
- new moderate beneficial effect on one road.

Cumulative effects

7.3.43 This combined assessment has taken into account cumulative effects from background traffic growth, committed developments and traffic and transport impacts arising from the SES2 changes and AP2 amendments in this area and other community areas.

7.4 Air quality

Scope, assumptions and limitations

- 7.4.1 The assessment scope, key assumptions and limitations for air quality are as set out in Volume 1 and the SMR of the main ES and Volume 1 of the SES2 and AP2 ES. Since the SES1 and AP1 ES, there have been changes to the methodology, including the consideration of ammonia (NH₃) at sensitive ecological sites. The scope and methodology for the updated air quality assessment is set out in SES2 and AP2 ES Volume 5, Appendix: CT-001-00005.

Environmental baseline

Existing baseline

- 7.4.2 The baseline air quality information is as described in Section 4 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES. A summary of the baseline information relevant to the assessment of the AP2 revised scheme is provided below. An update of the model verification has been undertaken and is presented within Volume 5, Appendix: AQ-001-0MA03.

Future baseline

- 7.4.3 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 7.4.4 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as future baseline receptors where relevant, and their potential to give rise to cumulative effects has been assessed.

Effects arising during construction

Avoidance and mitigation measures

- 7.4.5 No further avoidance or mitigation measures additional to those reported in the main ES are proposed.

Assessment of impacts and effects

- 7.4.6 Construction activity could affect local air quality through the additional traffic generated on the highway network and site haul routes as a result of construction vehicles and through changes to traffic patterns arising from temporary road diversions and realignments.

- 7.4.7 The assessment of construction traffic emissions has been undertaken for a 'without the AP2 revised scheme' scenario and a 'with the AP2 revised scheme' scenario. The traffic data for each scenario includes the additional traffic from future committed developments.
- 7.4.8 Construction traffic data in the study area have been screened to identify roads that required further assessment and to confirm the likely effect of the change in emissions from vehicles using those roads during construction of the AP2 revised scheme. There were three construction traffic scenarios assessed for air quality in the Pickmere to Agden and Hulseheath (MA03) area.
- 7.4.9 There is the potential for new significant effects from the construction of the AP2 revised scheme compared to the main ES as amended by SES1 and AP1 ES for The Mere, Mere SSSI/Midland Meres and Mosses Phase 2 Ramsar site due to NH₃ concentrations and acid deposition. This is discussed further in Section 7.6 Ecology and biodiversity.
- 7.4.10 There is the potential for new significant effects from the construction of the AP2 revised scheme compared to the main ES as amended by SES1 and AP1 ES for Tabley Mere SSSI due to NO_x concentrations, NH₃ concentrations, nitrogen deposition and acid deposition. This is discussed further in Section 7.6 Ecology and biodiversity.

Other mitigation measures

- 7.4.11 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Summary of likely residual significant effects

- 7.4.12 The methods outlined within the draft CoCP are considered effective at reducing traffic emissions, and therefore, no significant residual effects are anticipated.

Cumulative effects

- 7.4.13 This combined assessment has taken into account cumulative effects from background traffic growth, committed developments and impacts related to traffic emissions arising from the SES2 changes and AP2 amendments in this area and other community areas.

7.5 Community

Scope, assumptions and limitations

- 7.5.1 The assessment scope, key assumptions and limitations for Community are as set out in Volume 1 and the SMR of the main ES.

Environmental baseline

Existing baseline

- 7.5.2 The baseline community information is as described in Section 6 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES. A summary of the baseline information relevant to the assessment of the SES2 changes and AP2 amendments is provided below.
- 7.5.3 Pickmere comprises approximately 1,000 residential properties. The nearest residential properties are located 1km west of the HS2 route. The village of Pickmere itself is to the west of the HS2 route, outside of the study area. There are scattered farmsteads and residential properties north of Pickmere towards the M6, some of which lie within the study area.

Future baseline

- 7.5.4 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 7.5.5 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 7.5.6 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on community.

Effects arising during construction

Avoidance and mitigation measures

- 7.5.7 No further avoidance or mitigation measures additional to those reported in the main ES are proposed.

Assessment of impacts and effects

- 7.5.8 The main ES reported a major adverse in-combination effect on approximately five residential properties in the vicinity of Budworth Road, Tabley Superior. Significant indirect and direct noise effects were expected to combine with significant visual and significant HGV traffic effects for approximately one year and one month.
- 7.5.9 Budworth Road is a designated route for construction traffic. Changes to construction traffic flows and changes to the sound, noise and vibration assessment will result in the removal of HGV traffic effects and a different noise effect. The indirect noise effect will be removed, and

the duration of the direct noise effect will reduce by one month to one year. Visual effects reported in the main ES will remain the same. This will result in a different major adverse in-combination effect on approximately five residential properties in the vicinity of Budworth Road, Tabley Superior, which is significant.

- 7.5.10 The A50 Chester Road is a construction traffic route and will experience a significant increase in HGV traffic. This new significant HGV traffic effect will combine with a new noise effect at approximately 50 residential properties on the A50 Chester Road, Mere during peak months of construction. Together, these noise effects and HGV traffic effects will result in a new major adverse in-combination effect on amenity for residents at these properties, which is significant.
- 7.5.11 Pickmere Lane is a construction traffic route and will experience a significant increase in HGV traffic. This new significant HGV traffic effect will combine with a new noise effect at approximately 20 residential properties on Pickmere Lane, Pickmere, during peak months of construction. Three of these properties were also reported in the SES1 and AP1 ES as a result of noise and HGV traffic effects. Together, these noise effects and HGV traffic effects will result in a new moderate adverse in-combination effect on amenity for residents at these properties, which is significant.
- 7.5.12 The locations of significantly affected resources are shown in the SES2 and AP2 ES Volume 5, Community Map Book: Map Series CM-01.

Other mitigation measures

- 7.5.13 No other mitigation measures additional to those reported in the main ES are proposed.

Summary of likely residual significant effects

- 7.5.14 Changes to traffic flows will result in new residual adverse significant effects on:
- approximately 50 residential properties on the A50 Chester Road, Mere, due to new noise and HGV traffic effects; and
 - approximately 20 residential properties on Pickmere Lane, Pickmere, due to new noise and HGV traffic effects.
- 7.5.15 Changes to traffic flows will result in a different major adverse residual significant effect on approximately five residential properties on Budworth Road in Tabley Superior due to noise and visual effects, and the removal of HGV traffic effects and the indirect noise effect.

Cumulative effects

- 7.5.16 No new, removed or different significant cumulative effects have been identified.

7.6 Ecology and biodiversity

Scope, assumptions and limitations

- 7.6.1 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1 and the SMR of the main ES.
- 7.6.2 The changes of relevance to this assessment have the potential to result in new or different significant permanent construction and operational effects.
- 7.6.3 The assessment of combined traffic effects on designated sites in this section draws its conclusions from the Designated site assessment for Rostherne Mere Ramsar site and Midland Meres and Mosses Phase 1 Ramsar site (The Mere, Mere) (see SES2 and AP2 ES Volume 5, Appendix: EC-016-00003).
- 7.6.4 The assessment in this section identifies effects on designated sites that would be significant at the national or international level, and on any protected and/or notable species that are not covered by the national and international designations. These effects are compared to those reported in the SES1 and AP1 ES to identify any new, different or removed significant effects.
- 7.6.5 As described in Section 7.4 (Air Quality) there have been changes to the methodology for air quality assessment that reflect Natural England's consultation response to the main ES. The assessment of the original scheme considered nitrogen deposition only; oxides of nitrogen (NO_x) and acidification were also assessed for the SES1 and AP1 ES. The assessment of the AP2 revised scheme also considers the impacts of ammonia (NH₃). Additionally, the AP2 revised scheme includes updated information on traffic flows that has also prompted a new assessment of the associated changes in air quality. Changes in air quality is the only new or different impact of the AP2 revised scheme that requires consideration for the sites described below.

Environmental baseline

Existing baseline

- 7.6.6 The baseline ecology and biodiversity information relevant to the Pickmere to Agden and Hulseheath area is as described in Section 7 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the SES1 and AP1 ES. A summary of the baseline information relevant to the assessment of the AP2 revised scheme is provided below.

Designated sites

- 7.6.7 There is one statutory site of international importance of relevance to the assessment of the AP2 revised scheme and previously considered in the main ES and SES1 and AP1 ES. This is the Midland Meres and Mosses Phase 1 Ramsar site, comprising 16 wetland SSSI distributed across the Cheshire/Shropshire Plain, of which The Mere, Mere SSSI is of relevance to the

Pickmere to Agden and Hulseheath area (MA03). Wybunbury Moss SSSI in the Hough to Walley's Green area (MA01) and Tatton Meres SSSI in the Hulseheath to Manchester Airport area (MA06) are also of relevance.

- 7.6.8 There are two statutory sites of national importance of relevance to the assessment of the AP2 revised scheme, as follows:
- The Mere, Mere SSSI which is a component of the Midland Meres and Mosses Phase 1 Ramsar site, is designated for its aquatic habitat and diverse aquatic plant community that includes nationally rare species, and for its assemblage of invertebrates. It is located east of Mere, 757m east of the land required for the construction of the AP2 revised scheme. It is also 180m north-east of a construction traffic route along the A50; and
 - Tabley Mere SSSI is designated for aquatic habitats and associated plants, as well as acidic marshy grassland and woodland, that support a large heronry and numerous wildfowl. It is 124m east of the land required for the construction of the AP2 revised scheme and 114m west of a construction traffic route along the A556. The SSSI is also relevant to the Wimboldsley to Lostock Gram area (MA02) assessment, where the western extent of the SSSI is located 1.3km north-east of the land required for the construction of the AP2 revised scheme at its closest point.

Future baseline

- 7.6.9 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 7.6.10 This information has been supplemented by the committed developments listed in the equivalent Volume 5 Planning data report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 7.6.11 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

- 7.6.12 No further avoidance or mitigation measures, additional to those reported in the main ES and draft CoCP, have been identified at this stage.

Assessment of impacts and effects

Designated sites

Midlands Meres and Mosses Phase 1 Ramsar site

7.6.13 The SES1 and AP1 ES reported that, with mitigation provided as part of the original scheme to address impacts on the hydrological regime at The Mere, Mere SSSI, there would be no adverse effects on the Midland Meres and Mosses Phase 1 Ramsar site. While there were no adverse effects from air pollution, an updated assessment of changes in air quality at the constituent SSSI of the Midland Meres and Mosses Phase 1 Ramsar site of relevance to the AP2 revised scheme has been undertaken. These sites are Wybunbury Moss SSSI (located in the Hough to Walley's Green area (MA01)), The Mere, Mere SSSI (located in the Pickmere to Agden and Hulseheath area) and Tatton Meres SSSI (located in the Hulseheath to Manchester Airport area (MA06)). The main ES reported that there would be no adverse effects from air pollution at Tatton Meres SSSI or Wybunbury Moss SSSI. This remains the same for the AP2 revised scheme despite the changes in the basis for the assessment of air quality, as changes in traffic movements are below the threshold at which assessment is required. For The Mere, Mere SSSI, an assessment of effects demonstrates that the changes in air quality as a result of the AP2 revised scheme will result in exceedance of the relevant thresholds for NH₃ and acid deposition. Therefore, on a precautionary basis, there will be an adverse effect on the Midland Meres and Mosses Phase 1 Ramsar site that is significant at the international level. This represents a new significant effect to that reported in the SES1 and AP1 ES. Information on the findings of the assessment of effects for the SSSI noted above is provided in Section 3 of the Designated site assessment reports for Wybunbury Moss SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00009), The Mere, Mere SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00003), and Tatton Meres SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00007).

Tabley Mere SSSI

7.6.14 The SES1 and AP1 ES reported that there would be no adverse effects on the structure and function of Tabley Mere SSSI from airborne pollution as a result of construction traffic along the A556. Tabley Mere SSSI is not part of an internationally designated site and therefore a detailed designated site assessment report has not been produced. Details of the air quality assessment are provided below. The updated assessment (based on daily peak derived traffic data) flows shows that in 2026, with the exception of NO_x, the air quality standards for all pollutants are exceeded with or without the AP2 revised scheme. Furthermore, all modelled receptors for all pollutants display an increase of 1%, or greater than 1% of the relevant critical load or level brought about by the AP2 revised scheme. In terms of the relevant critical loads or levels, the maximum increases in each pollutant in each affected habitat along two transects are summarised below:

- NO_x: There is an increase of 1% or greater than 1% of the critical level for NO_x at all modelled receptor points on both transects. The maximum increase within woodland is

1.7%, occurring at the boundary of the SSSI, 108m from the A556 on Transect 1. Within poor-fen habitat, the maximum increase is 1.3% 150m from the roadside on Transect 2;

- nitrogen deposition: There is an increase of greater than 1% of the critical load for nitrogen deposition at all modelled receptor points on both transects. The maximum increase within woodland is 3.7% at the SSSI boundary, 108m from the A556 on Transect 1. Within poor-fen habitat, the maximum increase is 1.8% 150m from the roadside on Transect 2;
- NH₃: There is an increase of greater than 1% of the critical level for ammonia at all modelled receptor points on both transects. The maximum increase within woodland is 3.9% at the SSSI boundary, 108m from the A556 on Transect 1. Within poor-fen habitat, the maximum increase is 2.9% 150m from the roadside on Transect 2; and
- acid deposition: There is an increase of greater than 1% of the critical load for acid deposition at all modelled receptor points on both transects. The maximum increase within woodland is 4.4% at the SSSI boundary, 108m from the A556 on Transect 1. Within poor-fen habitat, the maximum increase is 2.1% 150m from the roadside on Transect 2.

7.6.15 The exceedance of the 1% threshold across the four pollutants as a result of the AP2 revised scheme therefore indicates a precautionary significant adverse effect at the national level at Tabley Mere SSSI. This represents a new significant effect to that reported in the SES1 and AP1 ES.

Other mitigation measures

- 7.6.16 No mitigation measures, additional to those reported in the main ES and draft CoCP, have been identified at this stage.
- 7.6.17 HS2 Ltd is continuing to seek to identify suitable measures to mitigate or compensate for potential significant effects identified on designated sites. In doing so HS2 Ltd will continue to engage with stakeholders to fully understand the receptors and the suitability of the measures.

Summary of likely residual significant effects

7.6.18 In the absence of mitigation, at this stage, the significant adverse effects from the construction of the AP2 revised scheme reported above at The Mere, Mere SSSI component of the Midland Meres and Mosses Phase 1 Ramsar Site and Tabley Mere SSSI remain.

Cumulative effects

7.6.19 No new, removed or different significant cumulative effects have been identified.

Effects arising during operation

Avoidance and mitigation measures

- 7.6.20 No further avoidance or mitigation measures, additional to those reported in the main ES, are proposed.

Assessment of impacts and effects

Designated sites

Midlands Meres and Mosses Phase 1 Ramsar site (The Mere, Mere SSSI)

- 7.6.21 The SES1 and AP1 ES did not report adverse effects from changes in air quality during the operational phase of the AP1 revised scheme for the Midland Meres and Mosses Phase 1 Ramsar site. Change in traffic flows during operation of the AP2 revised scheme will not exceed the thresholds for assessment of changes in air quality at Tatton Mere SSSI and Wybunbury Moss SSSI, therefore, no air quality assessment is required. The assessment of effects of changes in air quality for the AP2 revised scheme at the Mere, Mere SSSI demonstrates that the thresholds for NO_x, NH₃, and nitrogen and acid deposition will not be exceeded. As such, there will be no adverse effects upon the Ramsar site, and there are no changes to the assessment of effects provided in the SES1 and AP1 ES.

Other mitigation measures

- 7.6.22 No mitigation measures, additional to those reported in the main ES, are proposed.

Summary of likely residual significant effects

- 7.6.23 No residual significant effects arising from operation of the AP2 revised scheme are anticipated.

Cumulative effects

- 7.6.24 No new, removed or different significant cumulative effects have been identified.

Ongoing work

- 7.6.25 Section 4 of the relevant designated site assessment reports (SES2 and AP2 ES Volume 5 Appendices) for the sites reported in this section includes the emerging results of an assessment of air quality impacts during construction and operation of the AP2 revised scheme in-combination with other schemes. Further assessment of these potential effects will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017. At this stage, it is identified that there are potentially

significant effects at The Mere, Mere SSSI and Wybunbury Moss SSSI components of the Midland Meres and Mosses Phase 1 Ramsar site.

Midland Meres and Mosses Phase 1 Ramsar site

- 7.6.26 The Midland Meres and Mosses Phase 1 Ramsar site, when considering the construction of the AP2 revised scheme in-combination with other schemes, results in exceedance of the relevant thresholds for NH₃, nitrogen deposition and acid deposition at The Mere, Mere SSSI and Wybunbury Moss SSSI. In-combination assessment also demonstrates that there is a greater than 1% exceedance for the critical level for NH₃ at The Mere, Mere SSSI during the operational phase of the AP2 revised scheme. Therefore, at this stage and on a precautionary basis, an adverse effect on the Ramsar site that is significant at the international level has been identified. There are no exceedances of thresholds for any pollutants at Tatton Meres SSSI and traffic volumes at Wybunbury Moss SSSI remain below the threshold required for further consideration.
- 7.6.27 Information on the findings of the in-combination assessment for each SSSI noted above is provided in Section 4 of the relevant designated site assessment report The Mere, Mere SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00003), Tatton Meres SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00007), and Wybunbury Moss SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00009).

7.7 Health

Scope, assumptions and limitations

- 7.7.1 The assessment scope, key assumptions and limitations for health are as set out in Volume 1 and the SMR of the main ES.

Environmental baseline

Existing baseline

- 7.7.2 The baseline health information is as described in Section 8 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES. A summary of the baseline information relevant to the assessment of the SES2 changes and AP2 amendments is provided below.
- 7.7.3 Pickmere comprises approximately 1,000 residential properties. The nearest residential properties are located 1km west of the HS2 route. The village of Pickmere itself is to the west of the HS2 route, outside of the study area. There are scattered farmsteads and residential properties north of Pickmere towards the M6, some of which lie within the study area.

Future baseline

- 7.7.4 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 7.7.5 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 7.7.6 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on health.

Effects arising during construction

Avoidance and mitigation measures

- 7.7.7 No further avoidance or mitigation measures additional to those reported in the main ES are proposed.

Assessment of impacts and effects

- 7.7.8 The main ES reported an adverse neighbourhood quality effect in the vicinity of Budworth Road, Tabley Superior. Construction noise and traffic noise was expected to be noticeable in the area for approximately one year and one month. Budworth Road was expected to experience a significant increase in HGV traffic, and construction was expected to be visible from street level. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, diminishing the amenity of the settlement. Changes to construction traffic flows and changes to the sound, noise and vibration assessment will result in the removal of HGV traffic effects and a different noise effect. The traffic noise effect will be removed, and the duration of the construction noise effect will reduce by one month to one year. Visual effects reported in the main ES will remain the same. This will result in a different adverse neighbourhood quality effect in the vicinity of Budworth Road, Tabley Superior.
- 7.7.9 Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents of the A50 Chester Road, Mere. The A50 Chester Road is a construction traffic route and will experience a significant increase in HGV traffic. In addition, traffic noise will be noticeable for residents on the A50 Chester Road in Mere during peak months of construction. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, diminishing the amenity of the settlement.

- 7.7.10 Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents in the vicinity of Pickmere Lane, Pickmere. Part of this area was identified in the in the SES1 and AP1 ES as having a neighbourhood quality effect as a result of noise and HGV traffic effects. Pickmere Lane is a construction traffic route and will experience a significant increase in HGV traffic as a result of the AP2 revised scheme. In addition, traffic noise will be noticeable in the vicinity of Pickmere Lane, Pickmere, during peak months of construction. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, diminishing the amenity of the settlement.

Other mitigation measures

- 7.7.11 No other mitigation measures additional to those reported in the main ES are proposed.

Cumulative effects

- 7.7.12 No new, removed or different cumulative effects have been identified.

7.8 Socio-economics

Scope, assumptions and limitations

- 7.8.1 The assessment scope, key assumptions and limitations for socio-economics are as set out in Volume 1 and the SMR of the main ES. The changes in traffic flows have the potential to result in new, removed or different significant construction and operation effects.

Environmental baseline

Existing baseline

- 7.8.2 The baseline socio-economics information is as described in the SES2 and AP2 ES Volume 5, Appendix: SE-001-00000, Updated socio-economic baseline information.

Future baseline

- 7.8.3 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025 and 2038.
- 7.8.4 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

- 7.8.5 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on socio-economics.

Effects arising during construction

Avoidance and mitigation measures

- 7.8.6 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

- 7.8.7 The SES1 and AP1 ES reported a temporary adverse significant in-combination effect on Tabley Brook Kennels and Cattery, located west of Tabley. This was as a result of significant HGV construction traffic (traffic-related severance for non-motorised users) effects and visual effects. As a result of changes in traffic flows, significant effects from HGV construction traffic (traffic-related severance for non-motorised users) will not arise. Therefore, the temporary adverse significant in-combination effect on Tabley Brook Kennels and Cattery will no longer occur.
- 7.8.8 The SES1 and AP1 ES reported a temporary adverse significant in-combination effect on Heyrose Golf Club, located west of Tabley. This was as a result of significant visual effects, noise effects and HGV construction traffic (traffic-related severance for non-motorised users). Due to changes in traffic flows, significant effects from HGV construction traffic (traffic-related severance for non-motorised users) will not occur. Therefore, there will be a different temporary adverse in-combination effect on Heyrose Golf Club, which is significant.
- 7.8.9 The locations of significantly affected resources are shown in the SES2 and AP2 ES Volume 5, Socio-economics Map Book: Map Series SE-01.

Other mitigation measures

- 7.8.10 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Summary of likely residual significant effects

- 7.8.11 The changes in traffic flows will result in removal of a temporary adverse significant in-combination effect on Tabley Brook Kennels and Cattery and a different temporary adverse significant in-combination effect on Heyrose Golf Club.

Cumulative effects

- 7.8.12 No new, removed or different significant cumulative effects have been identified.

Effects arising during operation

Avoidance and mitigation measures

- 7.8.13 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

- 7.8.14 The Mere, a golf club and spa, is expected to experience disruptions to business activities due to the convergence of three significant adverse effects on vulnerable (non-motorised) road users and one significant effect on vehicle occupants during operation. These effects relate to an increase in traffic associated with the operation of the AP2 revised scheme. Both primary access points to The Mere from B5569 Chester Road are affected by adverse traffic effects and may lead to an inconvenience to potential customers travelling on foot and by car to access the business for golfing, accommodation, spa services or to attend weddings or events.
- 7.8.15 For the reasons stated above, the disruption as a result of the AP2 revised scheme is considered to represent a new permanent moderate adverse significant isolation effect during operation on this business.

Other mitigation measures

- 7.8.16 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Summary of likely residual significant effects

- 7.8.17 The changes in traffic flows will result in a new permanent adverse significant isolation effect on The Mere.

Cumulative effects

- 7.8.18 No new, removed or different significant cumulative effects have been identified.

7.9 Sound, noise and vibration

Scope, assumptions and limitations

- 7.9.1 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in Volume 1 and the SMR of the main ES.

Environmental baseline

Existing baseline

- 7.9.2 In the Pickmere to Agden and Hulseheath area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors adjacent to roads. Further information on the updated baseline sound levels relevant to the assessment is provided in the SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. Where no updates to baseline sound levels are required, the baseline sound, noise and vibration information is as described in Section 13 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03) of the main ES and Section 3.8 of SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03).

Future baseline

- 7.9.3 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025 and 2038.
- 7.9.4 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 7.9.5 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on sound, noise and vibration.
- 7.9.6 Updates have also been made to future baseline sound levels at the locations identified in the existing baseline section above where updates to the existing baseline sound levels have been made for the SES2 and AP2 ES.

Effects arising during construction

Avoidance and mitigation measures

- 7.9.7 No avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

- 7.9.8 As a result of the AP2 revised scheme, construction traffic is likely to cause adverse noise effects on residential receptors in the vicinity of the B5391 Pickmere Lane between the A556 and School Lane including several dwellings on Budworth Road, the rear of which face the B5391 Pickmere Lane. Approximately 20 dwellings are forecast to experience a change in road traffic noise levels of around 7dB LpAeq,0700-2300 during the peak months, due to

additional construction vehicles using the B5391 Pickmere Lane. This is considered to be a new likely significant indirect effect on a community basis at the dwellings in the vicinity of this road denoted as MA03-C-C5 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect from construction traffic noise represents a change in the acoustic character of the area, which may be perceived as a change in the quality of life for that community.

- 7.9.9 The main ES identified a likely significant indirect construction effect on a community basis at approximately 50 residential properties along the B5569 Chester Road between the A50 Chester Road and the A5034 Mereside Road. This was denoted as MA03-C-C3 in Table 8 in the main ES Volume 5, Appendix: SV-002-0MA03. As a result of the AP1 revised scheme forecast construction traffic noise levels were lower than reported in the main ES and the likely indirect residual significant effect reported in the main ES on these properties was removed. For further information see SES1 and AP1 ES Volume 5, Appendix: SV-002-00000. As a result of the AP2 revised scheme, construction traffic noise levels are higher than reported in the SES1 and AP1 ES and are likely to cause adverse noise effects on the approximately 50 residential properties along the B5569 Chester Road between the A50 Chester Road and the A5034 Mereside Road. Dwellings located along the road are forecast to experience a change in road traffic noise levels of around 4dB $L_{pAeq,0700-2300}$ during the peak months, due to additional construction vehicles using this route. This is considered to be a new likely significant indirect effect on a community basis at the dwellings on this road compared to the SES1 and AP1 ES; however, it is the same as the effect reported in the main ES. This is denoted as MA03-C-C3 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect from construction traffic noise represents a change in the acoustic character of the area, which may be perceived as a change in the quality of life for that community.
- 7.9.10 The SES1 and AP1 ES identified a combined construction site and traffic noise significant effect on a community basis at approximately 10 residential properties along Budworth Road between Frog Lane and Old Hall Lane in Tabley Superior. This was denoted as MA03-C-C1 in Table 16 in the SES1 and AP1 ES Volume 5, Appendix: SV-002-00000. The AP2 revised scheme reduces both the average and peak monthly construction road traffic movements on this road, and thus the associated construction traffic noise levels are reduced compared to the AP1 revised scheme. For further information see SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. The reduction in construction traffic noise levels will remove the likely indirect residual significant effect from the combined construction site and traffic noise significant effect reported in the SES1 and AP1 ES on properties along Budworth Road between Frog Lane and Old Hall Lane. The residual effect at Tabley Superior will, therefore, be caused by direct construction site noise only.

Other mitigation measures

- 7.9.11 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Summary of likely residual significant effects

- 7.9.12 As a result of the AP2 revised scheme, construction traffic in this area will give rise to a new likely temporary residual adverse significant noise effect on adjacent residential properties in the vicinity B5391 Pickmere Lane between the A556 and School Lane including several dwellings on Budworth Road, the rear of which face the B5391 Pickmere Lane.
- 7.9.13 As a result of the AP2 revised scheme, construction traffic in this area will give rise to a new likely temporary residual adverse significant noise effect on adjacent residential properties along the B5569 Chester Road between the A50 Chester Road and the A5034 Mereside Road compared to the SES1 and AP1 ES; however, it is the same as the effect reported in the main ES.

Summary of likely residual significant effects that will be removed

- 7.9.14 The AP2 revised scheme will remove the likely residual indirect significant effect from construction traffic noise reported in the SES1 and AP1 ES on residential properties along Budworth Road between Frog Lane and Old Hall Lane. The residual effect at Tabley Superior will, therefore, be caused by direct construction site noise only.

Cumulative effects

- 7.9.15 This combined assessment has taken into account cumulative effects as described in Section 7.2 arising from the AP2 revised scheme in this area and other community areas.

Effects arising during operation

Avoidance and mitigation measures

- 7.9.16 No further avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

- 7.9.17 The main ES identified dwellings close to the original scheme where the daytime forecast noise level does not exceed the threshold set in the NI Regulations¹⁸ but the predicted night-time noise level exceeds the WHO's Interim Target of 55dB, or the maximum noise level as a train passes exceeds the relevant criteria¹⁹. It was anticipated that these buildings will be

¹⁸ *The Noise Insulation (Railways and Other Guided Transport Systems) Regulations 1996*. Her Majesty's Stationary Office, London.

¹⁹ During the night (2300-0700) a significant effect is also identified where the Proposed Scheme results in a maximum sound level at the façade of a building at or above: 85dB L_{pAFmax} (where the number of train pass-

offered noise insulation as described in the avoidance and mitigation measures section of the main ES. Night time noise levels are now forecast to be lower, compared to the main ES predictions, at the following three dwellings due to SES changes in road traffic noise levels, and therefore it is anticipated that these buildings will no longer qualify or be offered noise insulation as described previously in the main ES. These dwellings are indicated on Map Series SV-02 (SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book):

- Field Cottage, Heyrose Lane, Over Tabley (assessment location ref.: 612647);
- School Farm, Pickmere Lane, Pickmere (assessment location ref.: 612628); and
- Oaklands, Pickmere Lane, Pickmere (assessment location ref.: 612628).

Other mitigation measures

7.9.18 No other mitigation measures additional to those reported in the main ES are proposed.

Summary of likely residual significant effects

7.9.19 There are no new or different significant operational effects for sound, noise or vibration as a result of the amendment, compared to the main ES.

Cumulative effects

7.9.20 No new, removed or different significant cumulative effects have been identified.

7.10 Water resources and flood risk

Scope, assumptions and limitations

7.10.1 This assessment considers any new or different significant effects on water quality in local water bodies from:

- accidental spillages and routine discharge of surface runoff from new road diversions/realignment resulting from the AP2 revised scheme;
- changes to spillage risk on the existing road network due to increases in HGV movements resulting from construction traffic; and
- changes to the quantity and quality of routine runoff discharged from the existing road network due to changes in daily traffic movements resulting from the construction of the AP2 revised scheme.

7.10.2 The assessment scope, key assumptions and limitations for water resources and flood risk are as set out in Volume 1 and the SMR of the main ES.

bys exceeding this value is less than or equal to 20); or 80dB L_{pAFmax} (where the number of train pass-bys exceeding this value is greater than 20).

Environmental baseline

Existing baseline

- 7.10.3 The baseline water resources and flood risk information is as described in Section 15 of Volume 2, Community Area report: Pickmere to Agden and Hulseheath area (MA03) of the main ES, as amended by the SES1 and AP1 ES Volume 2, Community Area report: Pickmere to Agden and Hulseheath area (MA03).

Future baseline

- 7.10.4 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000) and the SES1 and AP1 ES (see SES1 and AP1 ES Volume 5, Appendix: CT-004-00000) provide details of committed developments assumed to have been implemented by 2025.
- 7.10.5 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.
- 7.10.6 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on water resources and flood risk.

Effects arising during construction

Avoidance and mitigation measures

- 7.10.7 No further avoidance or mitigation measures additional to those reported in the main ES are proposed.

Assessment of impacts and effects

- 7.10.8 Where highway drainage for existing roads is discharged to local watercourses and where traffic numbers are likely to increase due to construction traffic, assessments for determining whether routine runoff and spillage risk are likely to have detrimental impacts on water quality are carried out using the Highways England Water Risk Assessment Tool (HEWRAT). These assessments have been updated to identify the effects arising from traffic flows for the AP2 revised scheme.
- 7.10.9 The main ES identified no significant effects to watercourses in this area. However, SES1 and AP1 ES reported a potential moderate adverse effect, which is significant on the underlying till Secondary (Undifferentiated) aquifer at Chapel Lane Drain. Due to the changes in construction traffic in SES2 and AP2, the screening results no longer identify the need for routine runoff assessments for Chapel Lane Drain. Therefore, the temporary moderate adverse significant effect on the glacial till aquifer at Chapel Lane has been removed.

- 7.10.10 There are no other new or different significant effects due to the combined changes in construction traffic, as a result of the AP2 revised scheme, compared to those reported in the SES1 and AP1 ES.

Other mitigation measures

- 7.10.11 No other mitigation measures additional to those reported in the main ES are proposed.

Summary of likely residual significant effects

- 7.10.12 No new or different significant cumulative effects have been identified.
- 7.10.13 The changes in construction traffic, due to the AP2 revised scheme has led to the removal of the moderate adverse significant effects on the glacial till aquifer at Chapel Lane reported in SES1 and AP1 ES.

Cumulative effects

- 7.10.14 No new, removed or different significant cumulative effects have been identified.

7.11 Summary of new or different likely residual significant effects as a result of combined effects due to changes in traffic flows

Construction

Traffic and transport

- 7.11.1 The construction of the AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants reported in the SES1 and AP1 ES:
- change (increase) from moderate adverse effect to major adverse effect at two junctions;
 - change (increase) from minor adverse effect to major adverse effect at two junctions;
 - change (increase) from minor adverse effect to moderate adverse effect at one junction;
 - new moderate adverse effect at two junctions; and
 - different (increased) major adverse significant effect at one junction.
- 7.11.2 The construction of the AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users reported in the SES1 and AP1 ES:
- change (decrease) from major adverse effect to moderate adverse effect on four roads;
 - change (increase) from moderate adverse effect to major adverse effect on three roads;
 - change (decrease) from moderate adverse effect to minor adverse effect on one road;
 - new major adverse effect on one road;

- new moderate adverse effect on ten roads;
- new moderate beneficial effect on two roads; and
- different (increased) major adverse significant effects on four roads.

Community

7.11.3 Changes to traffic flows during construction will result in new residual significant effects on:

- approximately 50 residential properties on the A50 Chester Road, Mere, due to new noise and HGV traffic effects; and
- approximately 20 residential properties on Pickmere Lane, Pickmere, due to new noise and HGV traffic effects.

7.11.4 Changes to traffic flows during construction will result in a different residual significant effect on approximately five residential properties on Budworth Road in Tabley Superior due to noise and visual effects, and the removal of HGV traffic effects and the indirect noise effect.

Ecology and biodiversity

7.11.5 At this stage, without any mitigation taken into account, the construction of the AP2 revised scheme will result in significant adverse effects on:

- The Mere, Mere SSSI component of the Midland Meres and Mosses Phase 1 Ramsar Site. On a precautionary basis, this will result in an adverse effect on the Midland Meres and Mosses Phase 1 Ramsar site that is significant at the international level. This will be a new significant effect compared to that reported in the SES1 and AP1 ES; and
- Tabley Mere SSSI. On a precautionary basis, this will result in an adverse effect on the SSSI that is significant at the national level. This will be a new significant effect compared to that reported in the SES1 and AP1 ES.

7.11.6 HS2 Ltd is continuing to seek to identify suitable measures to mitigate or compensate for potential significant effects identified on designated sites. In doing so HS2 Ltd will continue to engage with stakeholders to fully understand the receptors and the suitability of the measures.

Socio-economics

7.11.7 The changes in traffic flows during construction will result in a different temporary adverse significant in-combination effect on Heyrose Golf Club.

7.11.8 The changes in traffic flows during operation will result in a new permanent adverse significant isolation effect on The Mere.

Sound, noise and vibration

7.11.9 As a result of the AP2 revised scheme, construction traffic in this area will give rise to a new likely temporary residual adverse significant noise effect on adjacent residential properties

in the vicinity B5391 Pickmere Lane between the A556 and School Lane including several dwellings on Budworth Road, the rear of which face the B5391 Pickmere Lane.

- 7.11.10 As a result of the AP2 revised scheme, construction traffic in this area will give rise to a new likely temporary residual adverse significant noise effect on adjacent residential properties along the B5569 Chester Road between the A50 Chester Road and the A5034 Mereside Road compared to the SES1 and AP1 ES; however it is the same as the effect reported in the main ES.

Operation

Traffic and transport

- 7.11.11 The operation of the AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants in 2039 reported in the SES1 and AP1 ES:
- change (increase) from minor beneficial effect to minor adverse effect at one junction;
 - new minor adverse effect at one junction; and
 - new minor beneficial effect at one junction.
- 7.11.12 The operation of the AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants in 2051 reported in the SES1 and AP1 ES:
- change from moderate adverse effect to minor beneficial effect at one junction;
 - new major adverse effect at one junction; and
 - new minor adverse effect at two junctions.
- 7.11.13 The operation of the AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users in 2039 reported in the SES1 and AP1 ES:
- change (decrease) from major adverse effect to moderate adverse effect on three roads;
 - change (increase) from moderate adverse effect to major adverse effect on one road;
 - change (increase) from moderate beneficial effect to major beneficial effect on one road;
 - change (increase) from moderate beneficial effect to major adverse effect on two roads;
 - new major adverse effect on nine roads;
 - new moderate adverse effect on five roads; and
 - new minor adverse effect on one road.
- 7.11.14 The operation of the AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users in 2051 reported in the SES1 and AP1 ES:
- change (decrease) from major adverse effect to moderate adverse effect on one road;
 - change (decrease) from moderate adverse effect to minor adverse effect on one road;
 - change (increase) from moderate beneficial effect to major beneficial effect on two roads;

- change (increase) from moderate beneficial effect to major adverse effect on two roads;
- new major adverse effect on eight roads;
- new moderate adverse effect on seven roads; and
- new moderate beneficial effect on one road.

7.12 Summary of likely residual significant effects that will be removed

Construction

Traffic and transport

- 7.12.1 The construction of the AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants reported in the SES1 and AP1 ES:
- significant adverse effects removed at four junctions (three major and one minor); and
 - significant beneficial effects removed at one junction (one minor).
- 7.12.2 The construction of the AP2 revised scheme will result in the removal of significant adverse effects on two roads (one moderate and one minor) following changes to the traffic-related severance effects for non-motorised users reported in the SES1 and AP1 ES.

Socio-economics

- 7.12.3 The changes in traffic flows during construction will result in removal of a temporary adverse significant in-combination effect on Tabley Brook Kennels and Cattery.

Sound, noise and vibration

- 7.12.4 The AP2 revised scheme will remove the likely residual indirect significant effect from construction traffic noise reported in the SES1 and AP1 ES on residential properties along Budworth Road between Fog Lane and Old Hall Lane.

Water resources and flood risk

- 7.12.5 In the SES1 and AP1 ES, a temporary moderate adverse effect, which is significant, was reported on water quality in the glacial till aquifer at Chapel Lane Drain due to changes in construction traffic flow. The updated assessment based on new SES2 baseline data and the AP2 revised scheme traffic data, will remove this temporary residual significant effect on water quality in the glacial till aquifer at Chapel Lane Drain.

Operation

Traffic and transport

- 7.12.6 The operation of the AP2 revised scheme will result in the removal of a significant adverse effect at one junction (one minor) following changes to the congestion and delay effects for vehicle occupants in 2039 reported in the SES1 and AP1 ES.
- 7.12.7 The operation of the AP2 revised scheme will result in the removal of significant adverse effects on two roads (one major, one minor) following changes to the traffic-related severance effects for non-motorised users in 2039 reported in the SES1 and AP1 ES.
- 7.12.8 The operation of the AP2 revised scheme will result in the removal of significant adverse effects on two roads (two moderate) following changes to the traffic-related severance effects for non-motorised users in 2051 reported in the SES1 and AP1 ES.

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