In Parliament – Session 2022 - 2023

HS2

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

Volume 2: Community Area reports

MA02: Wimboldsley to Lostock Gralam

S12

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Department for Transport

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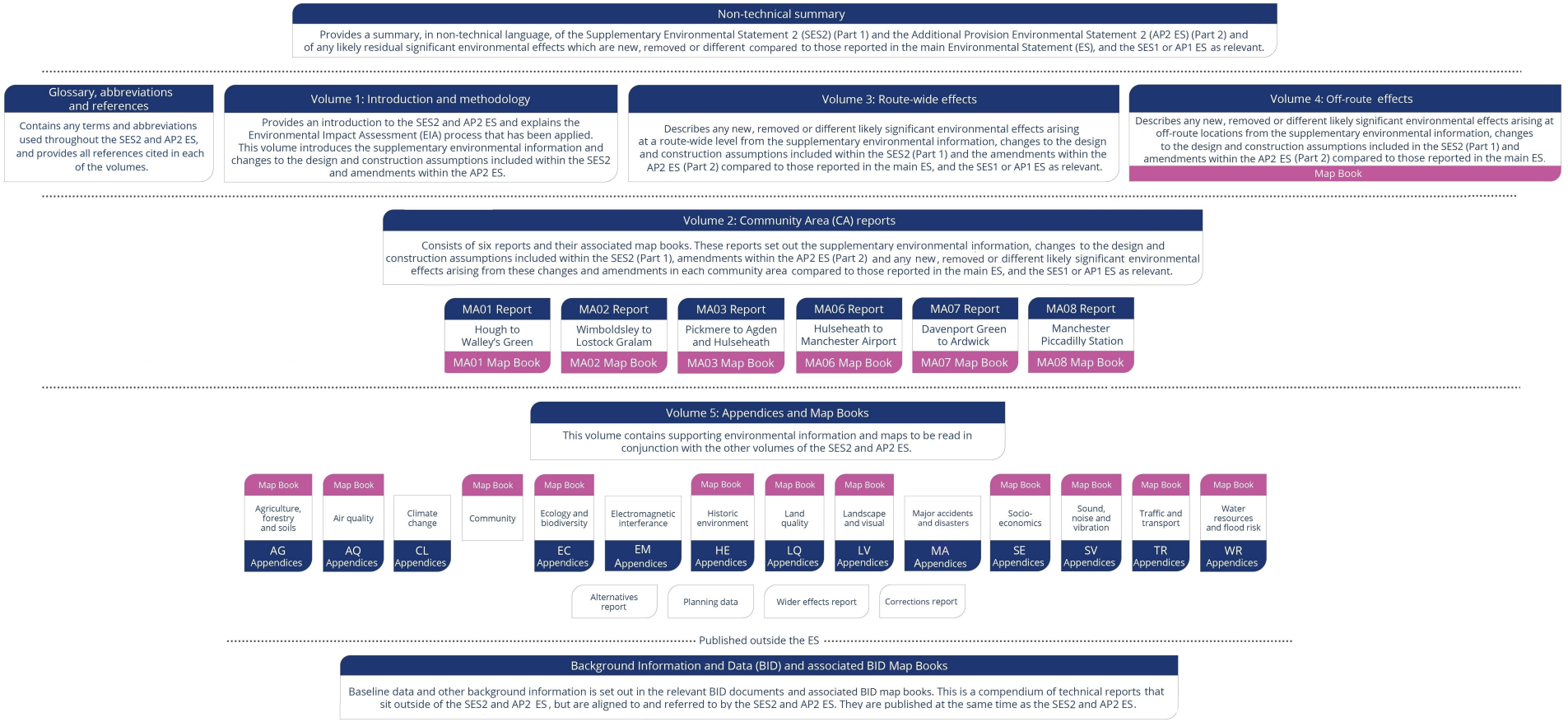
Structure of the HS2 Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

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;

- 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.

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 Wimboldsley to Lostock Gralam 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; 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

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.

1.1.14 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.

1.1.15 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 Wimboldsley to Lostock Gralam 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.

2.1.2 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;
- land quality;
- socio-economics;
- sound, noise and vibration; and
- water resources and flood risk.

Traffic and transport

2.1.3 Since 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 Wimboldsley to Lostock Gralam area. This includes 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 local junction modelling set out in the BID[3] report TR-004-00001 which accompanied the main ES.

[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.

[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.

2.1.4 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;
- 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).

2.1.5 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

2.1.6 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 Wimboldsley to Lostock Gralam area. Details of the additional traffic data and associated background air pollution concentrations in this area are provided in the BID[4] document AQ-002-0MA02 SES2 and AP2 ES, SES2 and AP2 ES Volume 5, Appendix: AQ-00-0MA02 and SES2 and AP2 ES Volume 5, Air Quality Map Book: Map Series AQ-01 Monitoring Locations and Receptors.

Ecology and biodiversity

2.1.7 Since the main ES and SES1 and AP1 ES, additional Phase 1 habitat, hedgerow, National Vegetation Classification (NVC), pond and canal, river habitat, bat, great crested newt, and otter surveys have been completed in the Wimboldsley to Lostock Gralam area.

2.1.8 Details of these additional ecological surveys are set out in BID documents[5] (see BID EC-017-00000, BID EC-007-00000 and BID EC-011-00000), and BID Ecology Map Book[6]: Map Series

[4] High Speed Two (2023) High Speed Rail (Crewe – Manchester), *Background Information and Data accompanying Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement, Additional data used in the air quality assessment*, BID AQ-002-0MA02. Available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement.

[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 and biodiversity 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.

EC-02, EC-04, EC-05, EC-06, EC-08, EC-10, EC-11 and EC-12, which accompany the SES2 and AP2 ES.

2.1.9 Additional effects that are significant at the local/parish level that are likely to occur as a consequence of changes to the SES2 baseline and AP2 amendments are identified in SES2 and AP2 ES Volume 5, Appendix: EC-015-00000.

2.1.10 Detailed supplementary ecological information that is relevant to the SES2 assessment is provided in Section 3.

Land quality

2.1.11 Environmental regulatory data has been updated, including 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.

2.1.12 In the Wimboldsley to Lostock Gralam area, this includes two additional pollution incidents to controlled waters and six additional pollution prevention controls reported within the study area.

2.1.13 Further details of these are presented in the BID[7] report (BID LQ-002-00000 SES2 and AP2 ES). No new, different or removed significant effects have been identified.

Socio-economics

2.1.14 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.

2.1.15 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.

[7] 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, Land quality baseline data*, BID LQ-002-00000. Available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement.

Sound, noise and vibration

2.1.16 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

2.1.17 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). In May 2022 updated peak rainfall intensity allowances were published by the Environment Agency using UKCP local projections of extreme rainfall[8]. Further details are provided 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. 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 developments with a lifespan beyond 2100.

2.1.18 No water quality data was available for the Highways England Water Risk Assessment Tool[9] assessments carried out for the main ES and SES1 and AP1 ES. Therefore, precautionary significant effects on water quality in Wade Brook were reported in the SES1 and AP1 ES relating to changes in traffic flows due to construction and operation of the scheme. Since the SES1 and AP1 ES was published, water quality data has been collected for Wade Brook to better understand the effects of highways drainage discharges on water quality. The results of the laboratory analysis of the water quality sampling are shown in Table 1.

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

[9] Standards for Highways (2020), *Design Manual for Roads and Bridges (DMRB) – LA 113 Road Drainage and the Water Environment Revision 1.* Available online at: https://standardsforhighways.co.uk/tses/attachments/d6388f5f-2694-4986-ac46-b17b62c21727?inline=true.

Table 1: Water quality sampling results – Wade Brook

Determinant (unit)	Limit of detection (LoD)	Wade Brook						Average concentrations
		10/08/21	10/01/22	21/03/22	28/07/22	28/08/22	25/11/22	
pH	N/A	-	8.3	7.9	8.4	7.6	7.7	7.88
Total Calcium (mg/l)	5	78	56	63	70	79	67	68.6
Copper (dissolved) (µg/l)	0.5	5.5	5.8	6.3	4.7	6.4	8.2	6.44
Zinc (dissolved) (µg/l)	2.5	2.5	5.4	36	3	4.7	4.9	10.7
Dissolved Organic Carbon (mg/l)	2	-	16	46	-	55	18	32*

*BDL = below detection limit, N/A = not applicable, * DOC this is the median value*

2.1.19 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 Wimboldsley to Lostock Gralam 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: Wimboldsley to Lostock Gralam (MA02) 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 design changes which result in new or different significant effects in the Wimboldsley to Lostock Gralam 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 2 provides the following:

- corrections to the Volume 2 report: Wimboldsley to Lostock Gralam (MA02) 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.

Table 2: Summary of corrections to the main ES and SES1 and AP1 ES in the Wimboldsley to Lostock Gralam 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 Figure 7, Volume 2, MA02 of the main ES	The main ES reported incorrect numbers of average workers per day and peak time workers at the Rudheath Embankment satellite compound.	Figure 7: Construction compounds for civil engineering works Rudheath Embankment satellite compound An average of 70 workers per day, with 50 workers and 75 staff at peak times. No worker accommodation	Figure 7: Construction compounds for civil engineering works Rudheath Embankment satellite compound An average of 50 workers per day, with 70 workers and 75 staff at peak times. No worker accommodation	N/A
Overview of the area and description of the Proposed Scheme Paragraph 2.3.156, Volume 2, MA02 of the main ES	The main ES incorrectly reported that access arrangements for the transfer node at the Rudheath embankment satellite compound will be via the B5082 Penny's Lane.	Paragraph 2.3.156, first bullet: • This compound will be used to manage civil engineering works (see Volume 2, MA02 Map Book: map CT-05-314, B7 to C7). It will: – provide a transfer node to the north of the compound, accessed from the B5082 Penny's Lane and site haul routes (as shown on Volume 2, MA02 Map Book: map CT-05-314, C7 to D8); and	Paragraph 2.3.156, first bullet: • This compound will be used to manage civil engineering works (see Volume 2, MA02 Map Book: map CT-05-314, B7 to C7). It will: – provide a transfer node to the north of the compound, accessed from the A530 King Street and site haul routes (as shown on Volume 2, MA02 Map Book: map CT-05-314, C7 to D8); and	N/A
Overview of the area and description of the Proposed Scheme Paragraph 2.3.62, Volume 2, MA02 of the main ES	The need for a temporary closure on Footpath Wimboldsley 1/1 during utility works should have been reported in the main ES	None included.	Paragraph 2.3.62 The works to be managed from this compound will require the temporary closure of Footpath Wimboldsley 1/ 1 for a period of one year during utility works, users will be diverted via the Shropshire Union Canal (Middlewich Branch) footpath (Footpath Wimboldsley 9/3 and Footpath Winsford 3/4), Clive Green Lane and A530	No change. This correction will not lead to a new or different significant effect.

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
			Nantwich Road, increasing journey length by 911m; and	
Landscape and visual Paragraph 11.4.12, Table 36: Construction phase significant visual effects, Volume 2, MA02 of the main ES		Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 7th entry: **View south-east from Footpath Wimboldsley 1/1, east of Lea Hall (High sensitivity receptor) (VP 307-02-005)** ...Utilities diversions will extend to the west of the viewpoint, which will bring construction activity close but will not result in additional hedgerow or tree loss. The construction works will be visible across the majority of the view...	Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 7th entry: **View south-east from Footpath Wimboldsley 1/1, east of Lea Hall (High sensitivity receptor) (VP 307-02-005)** ...Utilities diversions will extend to the west of the viewpoint, which will bring construction activity close but will not result in additional hedgerow or tree loss. Footpath Wimboldsley 1/1 will be temporarily closed to facilitate utility work. The construction works will be visible across the majority of the view...	No change. This correction will not lead to a new or different significant effect.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.159 and 2.3.163, Volume 2, MA02 of the main ES	The need for a temporary closure on Footpath Lach Dennis 3X/1 during utility works should have been reported in the main ES.	None included.	Paragraph 2.3.159: The works to be managed from this compound, alongside the B5082 Penny's Lane satellite compound, will require the temporary diversion of Footpath Lach Dennis 3X/1 for a period of three years during utility works, users of Footpath Rudheath 3/4, Footpath Rudheath 3/3, Footpath Lach Dennis 3X/2 and Footpath Lach Dennis 3X/1 will be diverted via Birches Lane and the A556 Shurlach Road increasing journey lengths by 790m. Paragraph 2.3.163:	No change. This correction will not lead to a new or different significant effect.

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
			The works to be managed from this compound, alongside the Rudheath embankment satellite compound, will require the temporary diversion of Footpath Lach Dennis 3X/1 for a period of three years during utility works, users of Footpath Rudheath 3/4, Footpath Rudheath 3/3, Footpath Lach Dennis 3X/2 and Footpath Lach Dennis 3X/1 will be diverted via Birches Lane and the A556 Shurlach Road increasing journey lengths by 790m.	
Landscape and visual Paragraph 11.4.12, Table 36: Construction phase significant visual effects, Volume 2, MA02 of the main ES		Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 34th entry: **View west from the B5082 Penny's Lane, Lach Dennis (High sensitivity receptors) (VP 311-02-001)** ...The construction works will be visible across the majority of the view. Footpath Lach Dennis 3X/1 will be diverted. Footpath Rudheath 3/4 will be closed.	Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 34th entry: **View west from the B5082 Penny's Lane, Lach Dennis (High sensitivity receptors) (VP 311-02-001)** ...The construction works will be visible across the majority of the view. Footpath Lach Dennis 3X/1 and Footpath Rudheath 3/4 will be temporarily diverted during construction. In addition, the footpaths will be permanently closed where they cross the route of the Proposed Scheme.	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.4.39, Volume 2, MA02 of the main ES		Paragraph 14.4.39, sixth entry: Footpath Rudheath 3/4, Footpath Rudheath 3/3, Footpath Lach Dennis 3X/2 and Footpath Lach Dennis 3X/1 – moderate adverse effect from an increase in journey length for some users of 660m	Paragraph 14.4.39, sixth entry: Footpath Rudheath 3/4, Footpath Rudheath 3/3, Footpath Lach Dennis 3X/2 and Footpath Lach Dennis 3X/1 – moderate adverse effect from an increase in journey length for some users of 790m	No change. This correction will not lead to a new or different significant effect.

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 2.3.164, Volume 2, MA02 of the main ES	The need for a temporary closure on Footpath Lostock Gralam 4/1 during utility works should have been reported in the main ES.	None included.	Paragraph 2.3.164, first bullet: • The works to be managed from this compound will require the following works to PRoW: temporary closure of the Footpath Lostock Gralam 4/1 during utility works for a period of one year, users will be diverted via Moss Lane, Hangman's Lane, Birches Lane and the A556, increasing journey length by 1.1km. On completion of construction Footpath Lostock Gralam 4/1 will be reinstated along its existing alignment;	No change. This correction will not lead to a new or different significant effect.
Landscape and visual Paragraph 11.4.12, Table 36: Construction phase significant visual effects, Volume 2, MA02 of the main ES		Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 39th entry: **View west from Mosslane Farm, Moss Lane (High sensitivity receptors) (VP 312-02-004)** ...Utilities diversions will also take place across the middle-distance. The combination of the above will result in a **medium** magnitude of visual change...	Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 39th entry: **View west from Mosslane Farm, Moss Lane (High sensitivity receptors) (VP 312-02-004)** ...Utilities diversions will take place across the middle-distance. Footpath Lostock Gralam 4/1 and 10/1 will be temporarily closed during construction to facilitate utilities works. The combination of the above will result in a **medium** magnitude of visual change...	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.4.39, Volume 2, MA02 of the main ES		None included.	Paragraph 14.4.39, seventh bullet: • Footpath Lostock Gralam 4/1 – moderate adverse effect from an increase in journey length of up to 1.1km;	Yes. This correction will lead to a new temporary moderate adverse significant effect with regards to changes in

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
				journey lengths for non-motorised users on Footpath Lostock Gralam 4/1.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.162, Volume 2, MA02 of the main ES	The need for a temporary closure on Footpath Lostock Gralam 10/1 during utility works should have been reported in the main ES.	None included.	Paragraph 2.3.164, second bullet: • temporary closure of the Footpath Lostock Gralam 10/1 during utility works for a period of one year, users will be diverted via Moss Lane, Hangman's Lane, Birches Lane and the A556, increasing journey length by 1.7km. On completion of construction Footpath Lostock Gralam 10/1 will be reinstated along its existing alignment.	No change. This correction will not lead to a new or different significant effect.
Landscape and visual Paragraph 11.4.12, Table 36: Construction phase significant visual effects, Volume 2, MA02 of the main ES		Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 39th entry: **View west from Mosslane Farm, Moss Lane (High sensitivity receptors) (VP 312-02-004)** ...Utilities diversions will also take place across the middle-distance. The combination of the above will result in a **medium** magnitude of visual change...	Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 39th entry: **View west from Mosslane Farm, Moss Lane (High sensitivity receptors) (VP 312-02-004)** ...Utilities diversions will take place across the middle-distance. Footpath Lostock Gralam 4/1 and 10/1 will be temporarily closed during construction to facilitate utilities works. The combination of the above will result in a **medium** magnitude of visual change...	No change. This correction will not lead to a new or different significant effect.
Traffic and transport		None included.	Paragraph 14.4.39, eighth bullet:	Yes. This correction will lead to a new temporary moderate adverse

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
Paragraph 14.4.39, Volume 2, MA02 of the main ES			• Footpath Lostock Gralam 10/1 – moderate adverse effect from an increase in journey length of up to 1.7km;	significant effect with regards to changes in journey lengths for non-motorised users on Footpath Lostock Gralam 10/1.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.160, Volume 2, MA02 of the main ES	The need for a temporary closure on Footpath Lostock Gralam 4/2 during utility works should have been reported in the main ES.	None included.	Paragraph 2.3.160, first bullet: The works to be managed from this compound will require the following works to PROW: • temporary closure of the Footpath Lostock Gralam 4/2 during utility works for a period of two years and three months, users will be diverted via Moss Lane, Hangman's Lane, Birches Lane and the A556, increasing journey length by 1.7km. On completion of construction Footpath Lostock Gralam 4/2 will be reinstated along its existing alignment;	No change. This correction will not lead to a new or different significant effect.
Landscape and visual Paragraph 11.4.12, Table 36: Construction phase significant visual effects, Volume 2, MA02 of the main ES		**View north-west from Footpath Lostock Gralam 4/2, east of Fieldhouse Farm (High sensitivity receptors) (VP 312-02-006)** … The construction works will be visible across the majority of the view. The combination of the above will result in a **high** magnitude of visual change…	Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 38th entry: **View north-west from Footpath Lostock Gralam 4/2, east of Fieldhouse Farm (High sensitivity receptors) (VP 312-02-006)** … The construction works will be visible across the majority of the view and will include modifications to utilities. Footpath Lostock Gralam 4/2 will be temporarily closed during construction to facilitate utilities works. The combination of the above	No change. This correction will not lead to a new or different significant effect.

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
			will result in a **high** magnitude of visual change...	
Traffic and transport Paragraph 14.4.39, Volume 2, MA02 of the main ES		None included.	Paragraph 14.4.39, ninth bullet: • Footpath Lostock Gralam 4/2 – moderate adverse effect from an increase in journey length of up to 1.7km;	Yes. This correction will lead to a new temporary moderate adverse significant effect with regards to changes in journey lengths for non-motorised users on Footpath Lostock Gralam 4/2.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.175, Volume 2, MA02 of the main ES	The need for a temporary closure on Restricted Byway Lostock Gralam 1/1 during utility works should have been reported in the main ES.	Paragraph 2.3.175, The works to be managed from this compound will require the permanent realignment of the footway north of Birches Lane, which will take nine months to complete, increasing the journey length by 581m. On completion of construction, the footway north of Birches Lane will be permanently realigned via the Birches Lane diversion under Wade Brook offline overbridge, and an unnamed access track to the west of the A556 Shurlach Road.	Paragraph 2.3.175, first and second bullets: The works to be managed from this compound will require the following works to PROW: • permanent realignment of the footway north of Birches Lane, which will take nine months to complete, increasing the journey length by 581m. On completion of construction, the footway north of Birches Lane will be permanently realigned via the Birches Lane diversion under Wade Brook offline overbridge, and an unnamed access track to the west of the A556 Shurlach Road; and • temporary closure of the Restricted Byway Lostock Gralam 1/1 during utility works for a period of nine months. Pedestrians travelling between Birches Lane and	Change to text as shown This correction will not lead to a new or different significant effect.

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
			Footpath Lostock Gralam 8/2 will be diverted via Birches Lane, the A556, Ascol Drive, Footpath Plumley 15/2 and Footpath Lostock Gralam 8/2. Pedestrians travelling between Moss Lane and Birches Lane will be diverted via Moss Lane, Hangman's Lane and Birches Lane. These diversions will increase journey length up to 1.3km. Restricted Byway Lostock Gralam 1/1 and Restricted Byway Lostock 1/2 do not provide a through route for equestrians and cyclists. As a result, no temporary diversion is possible for equestrians and cyclists for the duration of the works.	
Landscape and visual Paragraph 11.4.12, Table 36: Construction phase significant visual effects, Volume 2, MA02 of the main ES		**View west from Restricted Byway Lostock Gralam 1/1, Lostock Green (High sensitivity receptors) (VP 312-02-003)** **...**The presence of large-scale construction works in proximity to the receptors will result in a substantial change in the view. The combination of the above will result in a **high** magnitude of visual change.	Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 41st entry: **View west from Restricted Byway Lostock Gralam 1/1, Lostock Green (High sensitivity receptors) (VP 312-02-003)** The presence of large-scale construction works in proximity to the receptors will result in a substantial change in the view. Restricted Byway Lostock Gralam 1/1 will be temporarily closed during construction to facilitate utilities works. The combination of the above will result in a **high** magnitude of visual change.	No change. This correction will not lead to a new or different significant effect.
Traffic and transport		None included.	Paragraph 14.4.39, tenth bullet:	Yes. This correction will lead to a new temporary

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
Paragraph 14.4.39, Volume 2, MA02 of the main ES			• Restricted Byway Lostock Gralam 1/1 – moderate adverse effect from an increase in journey length of up to 1.3km;	moderate adverse significant effect with regards to changes in journey lengths for non-motorised users on Restricted Byway Lostock Gralam 1/1.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.165 and 2.3.176, Volume 2, MA02 of the main ES	The need for a temporary closure on Restricted Byway Lostock Gralam 1/2 during utility works should have been reported in the main ES.	Paragraph 2.3.165, None included. Paragraph 2.3.176, None included.	Paragraph 2.3.165: The works to be managed from this compound, alongside the Lostock Gralam viaduct satellite compound, will require the temporary closure of Restricted Byway Lostock Gralam 1/2 for a period of nine months during utility works, pedestrians travelling between the A556 and Footpath Lostock Gralam 8/2 will be diverted via the A556, Ascol Drive, Footpath Plumley 15/2 and Footpath Lostock Gralam 8/2. Pedestrians travelling between Moss Lane and the A556 will be diverted via Moss Lane, Hangman's Lane, Birches Lane and the A556. These diversions will increase journey length up to 1.7km. Restricted Byway Lostock Gralam 1/1 and Restricted Byway Lostock 1/2 do not provide a through route for equestrians and cyclists. As a result, no temporary diversion is possible for equestrians and cyclists for the duration of the works. Paragraph 2.3.176:	No change. This correction will not lead to a new or different significant effect.

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
			The works to be managed from this compound, alongside the B5082 Penny's Lane satellite compound, will require the temporary closure of Restricted Byway Lostock Gralam 1/2 for a period of nine months during utility works, pedestrians travelling between the A556 and Footpath Lostock Gralam 8/2 will be diverted via the A556, Ascol Drive, Footpath Plumley 15/2 and Footpath Lostock Gralam 8/2. Pedestrians travelling between Moss Lane and the A556 will be diverted via Moss Lane, Hangman's Lane, Birches Lane and the A556. These diversions will increase journey length up to 1.7km. Restricted Byway Lostock Gralam 1/1 and Restricted Byway Lostock 1/2 do not provide a through route for equestrians and cyclists. As a result, no temporary diversion is possible for equestrians and cyclists for the duration of the works.	
Traffic and transport Paragraph 14.4.39, Volume 2, MA02 of the main ES		None included.	Paragraph 14.4.39, eleventh bullet: • Restricted Byway Lostock Gralam 1/2 – moderate adverse effect from an increase in journey length of up to 1.7km;	Yes. This correction will lead to a new temporary moderate adverse significant effect with regards to changes in journey lengths for non-motorised users on Restricted Byway Lostock Gralam 1/2.

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 2.3.175, Volume 2, MA02 of the main ES	The need for a temporary closure on Footpath Lostock Gralam 7/1 during utility works should have been reported in the main ES.	None included.	Paragraph 2.3.175, third bullet: • temporary closure of the Restricted Byway Lostock Gralam 1/2 for a period of nine months, pedestrians travelling between the A556 and Footpath Lostock Gralam 8/2 will be diverted via the A556, Ascol Drive, Footpath Plumley 15/2 and Footpath Lostock Gralam 8/2. Pedestrians travelling between Moss Lane and the A556 will be diverted via Moss Lane, Hangman's Lane, Birches Lane and the A556. These diversions will increase journey length up to 1.7km. Restricted Byway Lostock Gralam 1/1 and Restricted Byway Lostock 1/2 do not provide a through route for equestrians and cyclists. As a result, no temporary diversion is possible for equestrians and cyclists for the duration of the works. Paragraph 14.4.39, twelfth bullet: • Footpath Lostock Gralam 7/1 – moderate adverse effect from an increase in journey length of up to 1.3km;	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.4.39, Volume 2, MA02 of the main ES		None included.	Paragraph 14.4.39, twelfth bullet: Footpath Lostock Gralam 7/1 – moderate adverse effect from an increase in journey length of up to 1.3km;	Yes. This correction will lead to a new temporary moderate adverse significant effect with regards to changes in journey lengths for non-

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 Lostock Gralam 7/1.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.189, Figure 14, Volume 2, MA02 of the main ES.	The main ES and SES1 and AP1 ES incorrectly reported the name of a realignment as Park House Farm access realignment within the indicative construction programme. It should have reported this as the Park Hall Farm realignment.	Paragraph 2.3.189, Figure 14: Indicative construction programme between 2025 and 2035, 9th entry: Park House Farm access realignment	Paragraph 2.3.189, Figure 14: Indicative construction programme between 2025 and 2035, 9th entry: Park Hall Farm access realignment	No change. This correction will not lead to a new or different significant effect.
Construction Programme Paragraph 6.1.6, Figure 4, Volume 2, MA02 of the SES1 and AP1 ES		Paragraph 6.1.6, Figure 4: Indicative construction programme, 9th entry: Park House Farm access realignment	Paragraph 6.1.6, Figure 4: Indicative construction programme, 9th entry: Park Hall Farm access realignment	N/A
Construction programme Figure 4: Indicative construction programme, Volume 2, MA02 of the SES1 and AP1 ES	The name of the B5082 Penny's Lane satellite compound was incorrectly reported as Penny's Lane satellite compound in Figure 4: Indicative construction programme of the SES1 and AP1 ES.	Figure 4: Indicative construction programme, 176th and 177th entries: Penny's Lane satellite compound (HBD) Penny's Lane satellite compound (AP1)	Figure 4: Indicative construction programme, 176th and 177th entries: B5082 Penny's Lane satellite compound (original scheme) B5082 Penny's Lane satellite compound (AP1)	N/A
Section 5, Assessment of engineering and minor utility amendments in the Wimboldsley to Lostock Gralam area	The SES1 and AP1 ES reported the incorrect area of land required for Additional land permanently required for modifications to the	Paragraph 5.9.3: ...The amendment will result in a requirement for an additional 5.4ha of land, all within the existing highway boundary (see map CT-05-311-R7 and C7 to	Paragraph 5.9.3: ...The amendment will result in a requirement for an additional 0.4ha of land, all within the existing highway boundary (see map CT-05-311-R7 and C7 to C8 in the SES1 and AP1 ES Volume 2, MA02 Map Book).	No change. This correction will not lead to new, removed, or different significant effect.

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
Paragraph 5.9.3, Volume 2, MA02 of SES1 and AP1 ES	A54 Middlewich Road and Chester Road junction (AP1-002-009).	C8 in the SES1 and AP1 ES Volume 2, MA02 Map Book).		
Section 5, Assessment of engineering and minor utility amendments in the Wimboldsley to Lostock Gralam area Paragraph 5.13, Additional land permanently required for modifications to the A530 Griffiths Road and A559 Manchester Road junction (AP1-002-013), Volume 2, MA02 of the SES1 and AP1 ES	The AP1 ES incorrectly reported that no reassessment of the environmental effects or mitigation set out in the main ES was required for any environmental topics.	Paragraph 5.13.6: The amendment is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.	Revised text is as outlined in paragraphs 2.3.3 to 2.3.41 of this report, under the heading: **Correction to the AP1 assessment for AP1-002-013: Additional land permanently required for modifications to the A530 Griffiths Road and A559 Manchester Road junction**	Yes. The amendment will give rise to Northwich Drum Studio being subject to a new adverse residual in-combination effect for socio-economics which is significant. The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community in the vicinity of the junction between Griffiths Road and Manchester Road in Lostock Gralam. The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the Northwich Drum

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
				Studio, Wincham Wharf, Manchester Road.
Community Paragraph 7.5.11, Volume 2, MA02 of the SES1 and AP1 ES	The SES1 and AP1 ES omitted an indirect significant noise effect at Wimboldsley Community Primary School.	Paragraph 7.5.11 ...The significant HGV traffic effects will combine with significant visual effects at Wimboldsley Community Primary School. Together these visual and HGV traffic effects will result in a new moderate adverse in-combination effect on staff and pupils and Wimboldsley Community Primary School, which is significant	Paragraph 7.5.11 ...The significant HGV traffic effects will combine with significant traffic noise effects during the peak months of construction and significant visual effects at Wimboldsley Community Primary School. Together these traffic noise, visual and HGV traffic effects will result in a new major adverse in-combination effect on staff and pupils at Wimboldsley Community Primary School, which is significant.	Yes. The effect changes from moderate adverse to major adverse.
Ecology and Biodiversity Paragraph 7.6.8, Volume 2, MA02 of SES1 and AP1 ES	The SES1 and AP1 ES incorrectly reported the effect on the Wettenhall and Darnhall Woods SSSI and Brookside Woods AWI site as the western-most part of the woodland only. This should have reported it as the eastern-most part of the woodland only.	Paragraph 7.6.8: ... Furthermore, although prolonged any impacts will be temporary and can be considered reversible and will affect the western-most part of the woodland only...	Paragraph 7.6.8: ...Furthermore, although prolonged any impacts will be temporary and can be considered reversible and will affect the eastern-most part of the woodland only...	No change. This correction will not lead to a new or different significant effect.
Health Paragraph 7.7.11, Volume 2, MA02 of the SES1 and AP1 ES	The SES1 and AP1 ES omitted an indirect significant noise effect at Wimboldsley Community Primary School.	Paragraph 7.7.11 ... New construction traffic data has resulted in a significant HGV traffic effect along the A530 Nantwich Road, one of the access routes to the school, due to an increase in HGV traffic movements.	Paragraph 7.7.11 ... New construction traffic data has resulted in a significant HGV traffic effect along the A530 Nantwich Road, one of the access routes to the school, due to an increase in HGV traffic movements. The increase in	Yes This correction will lead to a new adverse effect.

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 are also predicted due to the construction of the AP1 revised scheme. These effects are not predicted to result in changes to the school's indoor learning environment, and outdoor learning will not be impacted by the HGV severance effect. Therefore, these effects are not expected to impact the beneficial wellbeing effects associated with primary education.	traffic will also result in a new significant traffic noise effect during the peak months of construction. Significant visual effects are also predicted due to the construction of the AP1 revised scheme. The traffic noise, visual and HGV effects will result in an adverse wellbeing effect associated with primary education at Wimboldsley Community Primary School.	
Land quality Paragraph 10.3.42, Volume 2, MA02 of the main ES.	The main ES incorrectly omitted Petroleum Exploration and Development Licence (PEDL) 293 from the land quality assessment.	Paragraph 10.3.42: The OGA indicates that the route of the Proposed Scheme will pass through three PEDL areas: PEDL 292, PEDL 294 and PEDL 296.	Paragraph 10.3.42: The OGA indicates that the route of the Proposed Scheme will pass through four PEDL areas: PEDL 292, PEDL 293, PEDL 294 and PEDL 296.	No change. This correction will not lead to a new or different significant effect.
Land quality Paragraph 10.3.45, Table 29: Summary of sensitive receptors, Volume 2, MA02 of the main ES		Paragraph 10.3.45, Table 29, thirteenth entry: **Receptor description** Preferred areas for salt resources (at Winsford Rock Salt Mine and Holford Brinefield), PEDLs (PEDL 292, PEDL 294 and PEDL 296)	Paragraph 10.3.45, Table 29, thirteenth entry: **Receptor description** Preferred areas for salt resources (at Winsford Rock Salt Mine and Holford Brinefield), PEDLs (PEDL 292, PEDL 293, PEDL 294 and PEDL 296)	No change. This correction will not lead to a new or different significant effect.
Landscape and visual Paragraph 11.4.12, Table 36: Construction phase significant visual effects, Volume 2, MA02 of the main ES	Footpath Wimboldsley 1/1 was incorrectly described as part of VP-307-02-002.	Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 5th entry: **View west from Wimboldsley, A530 Nantwich Road (High sensitivity receptor) (VP 307-02-002)**	Paragraph 11.4.12, Table 36: Construction phase significant visual effects, 5th entry: **View west from Wimboldsley, A530 Nantwich Road (High sensitivity receptor) (VP 307-02-002)** Text would be removed	No change. This correction will not lead to a new or different significant effect.

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
		Footpath Wimboldsley 1/1 will be closed as a result of the Proposed Scheme.		
Landscape and visual Paragraph 11.5.9, Table 38: Construction phase significant visual effects, Volume 2, MA02 of the main ES	Footpath Wimboldsley 1/1 was incorrectly omitted in the description of operation effects for VP-307-02-005.	Paragraph 11.5.9, Table 38: Operation phase significant visual effects, 27th entry: **View south-east from Footpath Wimboldsley 1/1, east of Lea Hall (High sensitivity receptor) (VP 307-02-005)** Year 1 – winter and summer: Residents of Lea Hall, The Huntsman's Lodge, The Gate House and Lea Hall Farm House of high susceptibility and with views of medium value …	Paragraph 11.4.12, Table 38: Operation phase significant visual effects, 27th entry: **View south-east from Footpath Wimboldsley 1/1, east of Lea Hall (High sensitivity receptor) (VP 307-02-005)** Year 1 – winter and summer: Residents of Lea Hall, The Huntsman's Lodge, The Gate House, Lea Hall Farm House and users of Footpath Wimboldsley 1/1 of high susceptibility and with views of medium value …	No change. This correction will not lead to a new or different significant effect.
Socio-economics Paragraph 5.7.77, Volume 2, MA02 of the SES1 and AP1 ES	The SES1 and AP1 Environmental Statement did not report a direct noise effect at the Golden Lion Hotel as a result of modifications to the A54 Chester Road/A530 Croxton Lane junction (AP1-002-007).	Paragraph 5.7.77: As a result of the amendment The Golden Lion Hotel, located in Middlewich, will experience new significant visual effects during construction, as well as significant effects from HGV construction traffic (traffic congestion and delay effects) that were identified as part of the original scheme. The sensitivity of this establishment is assessed to be medium as customers are considered to be sensitive to impacts on the local environment and setting. The construction works may discourage them from using this facility. Given the duration of effects and the medium level of sensitivity, the amendment is assessed to have a	Paragraph 5.7.77: As a result of the amendment The Golden Lion Hotel, located in Middlewich, will experience new significant noise effects for 11 months and visual effects during construction, as well as significant effects from HGV construction traffic (traffic congestion and delay effects) that were identified as part of the original scheme. The sensitivity of this establishment is assessed to be medium as customers are considered to be sensitive to impacts on the local environment and setting. The construction works may discourage them from using this facility. Given the duration of effects and the medium level of sensitivity, the amendment	Yes. This correction will lead to an updated socio-economic in-combination effect upon The Golden Lion Hotel.

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 adverse in-combination effect on this business.	is assessed to have a significant adverse in-combination effect on this business.	
Sound, Noise and Vibration Paragraph 13.4.9, Volume 2, MA02 of the main ES	The main ES incorrectly identified one residential receptor as experiencing noise above the eligibility criteria for noise insulation.	Paragraph 13.4.9: Taking account of the avoidance and mitigation measures set out in the previous paragraphs, the following 17 residential properties are forecast to experience noise above the eligibility criteria for noise insulation, but below the eligibility criteria for temporary rehousing, as defined in the HS2 noise insulation and temporary rehousing policy. The locations of these dwellings are indicated on Map Series SV-03 (Volume 5, Sound, noise and vibration Map Book): Paragraph 13.4.9, fifth bullet: • Chapel End Cottage, Clive Green Lane, Winsford (assessment location ref.: 610204);	Paragraph 13.4.9: Taking account of the avoidance and mitigation measures set out in the previous paragraphs, the following 16 residential properties are forecast to experience noise above the eligibility criteria for noise insulation, but below the eligibility criteria for temporary rehousing, as defined in the HS2 noise insulation and temporary rehousing policy. The locations of these dwellings are indicated on Map Series SV-03 (Volume 5, Sound, noise and vibration Map Book): Paragraph 13.4.9, delete fifth bullet.	No change.
Sound, Noise and Vibration Table 42, Volume 2, MA02 of the main ES	The main ES incorrectly reported the highest monthly noise levels and approximate duration of impact for the likely significant effect at Clive Green (denoted by MA02-C-C1 in Table 42).	Paragraph 13.4.13, Table 42, first entry Cause (construction activities) – Highway works and earthworks. The typical and highest monthly noise levels are approximately 60dB to 75dB and 70dB to 85dB. Vibratory rollers associated with embankment and finishing works are predicted to cause a moderate vibration	Paragraph 13.4.13, Table 42, first entry Cause (construction activities) – Highway works and earthworks. The typical and highest monthly noise levels are approximately 60dB to 75dB and 65dB to 80dB. Vibratory rollers associated with embankment and finishing works are predicted to cause a moderate vibration	This correction to the likely significant effect at Clive Green (denoted by MA02-C-C1) will lead to a different significant effect.

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
		impact at properties closest to highway works associated with Clive Green Lane overbridge. Assumed approximate duration of impact - Noise for up to one year and three months. Vibration for up to five months.	impact at properties closest to highway works associated with Clive Green Lane overbridge. Assumed approximate duration of impact - Noise for up to eight months. Vibration for up to five months.	
Sound, Noise and Vibration Paragraph 5.7.98, Volume 2, MA02 of the SES1 and AP1 ES	The SES1 and AP1 Environmental Statement did not report a direct noise effect at the Golden Lion Hotel as a result of modifications to the A54 Chester Road/A530 Croxton Lane junction (AP1-002-007).	None included.	Paragraph 5.7.99 insert new paragraph: The Golden Lion Hotel is located on the A530 Chester Road, opposite Middlewich Cemetery and within 2 metres of the land required for the amendment. The Golden Lion Hotel provides bed and breakfast accommodation. The building has been assessed against the hotel criteria. The predicted daytime monthly construction noise level is above the screening criterion defined in the SMR for a period of one year and five months. The highest predicted daytime monthly construction noise levels are 23dB above the screening criterion defined in the SMR. The predicted typical monthly daytime construction noise levels are 22dB above the screening criterion defined in the SMR. The Golden Lion Hotel is identified, on the basis of a precautionary assessment, as being subject to a new likely significant adverse effect (denoted by MA02-C-N20). This new temporary adverse effect may take the form of activity disturbance to users of the Golden Lion Hotel.	Yes. This correction will lead to a new temporary adverse likely significant noise effect at the Golden Lion Hotel (denoted by MA02-C-N20).

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
Sound, Noise and Vibration Paragraph 7.9.11, Volume 2, MA02 of the SES1 and AP1 ES	The SES1 and AP1 ES omitted an indirect significant noise effect at Wimboldsley Community Primary School.	None included.	Paragraph 7.9.11 insert new paragraph: As a result of the AP1 revised scheme, construction traffic is likely to cause an adverse noise effect on Wimboldsley Community Primary School, Nantwich Road, Middlewich which is located adjacent to Nantwich Road. It is assumed that the school does not have mitigation to control existing road traffic noise. Road traffic noise levels due to additional construction vehicles using this route are predicted to be above the daytime screening criteria defined in the SMR for school use during the peak months, with an increase of approximately 2dB $L_{pAeq, 0700 - 2300}$ in an area currently exposed to high levels of sound. The main ES did not identify an indirect noise effect at this location; therefore, Wimboldsley Community Primary School is identified, on the basis of a precautionary assessment, as being subject to a new likely significant effect denoted as MA02-C-N21 in SES1 and AP1 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect may take the form of activity disturbance to students and people visiting or working at the school.	Yes. This correction will lead to a new temporary adverse likely significant noise effect.
Sound, Noise and Vibration		None included	Paragraph 7.9.17, insert new first bullet, and new paragraph: • Wimboldsley Community Primary School, Nantwich Road, Wimboldsley;	

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
Paragraph 7.9.17, Volume 2, MA02 of the SES1 and AP1 ES			HS2 Ltd will continue to seek reasonably practicable measures to further reduce or avoid these significant effects. In doing so HS2 Ltd will continue to engage with stakeholders to fully understand the receptors, their use and the benefit of the measures.	
Sound, Noise and Vibration Paragraph 7.11.8, Volume 2, MA02 of the SES1 and AP1 ES		None included	Paragraph 7.11.8, insert new first bullet: • Wimboldsley Community Primary School, Nantwich Road, Wimboldsley;	
Traffic and transport Paragraph 14.4.26, Volume 2, MA02 of the main ES	The main ES incorrectly reported the effect on delays to vehicle occupants and congestion on the A50 Tofts Road/Goughs Lane during construction as major adverse during scenario 3 and moderate beneficial during scenario 2. The correct effect was moderate adverse during scenario 3. The main ES also used the incorrect spelling for the A50 Toft Road. This should have been	Paragraph 14.4.26, final bullet: • A50 Tofts Road/Goughs Lane - major adverse effect during scenario 3 and moderate beneficial effect during scenario 2.	Paragraph 14.4.26, final bullet: • A50 Toft Road/Goughs Lane - moderate adverse effect during scenario 3.	Yes. The effect changes from major adverse to moderate adverse.

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
	reported in Table 2: Summary of corrections to the main ES Volume 2, Community Area report for the Wimboldsley to Lostock Gralam area in the SES1 and AP1 ES.			
Traffic and transport Paragraph 14.4.21, Volume 2, MA02 of the main ES.	The main ES incorrectly reported that Ascol Drive will be used as a construction HGV route. Ascol Drive will not be used as a construction HGV route.	Paragraph 14.4.21, 20th bullet: • Ascol Drive;	None included – main ES text removed.	No change. This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.4.22, Volume 2, MA02 of the main ES.		Paragraph 14.4.22: A number of these construction HGV routes will have limited use (i.e. a low level of HGVs use generally over a short length of time, for example for site set up or minor works) including the A530 Croxton Lane (between Croxton Hall Farm and the B5309 King Street) and Ascol Drive.	Paragraph 14.4.22: A number of these construction HGV routes will have limited use (i.e. a low level of HGVs use generally over a short length of time, for example for site set up or minor works) including the A530 Croxton Lane (between Croxton Hall Farm and the B5309 King Street).	
Traffic and transport Paragraph 14.4.21, Volume 2, MA02 of the main ES.	The main ES incorrectly reported that Ascol Drive will be used as a construction HGV route. Ascol Drive will not be used as a construction HGV route.	Paragraph 14.4.21, 20th bullet: • Ascol Drive;	None included – main ES text removed.	No change. This correction will not lead to new, removed, or different significant effect.

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
Traffic and transport Paragraph 14.4.22, Volume 2, MA02 of the main ES.	The main ES incorrectly reported that Ascol Drive will be used as a construction HGV route. Ascol Drive will not be used as a construction HGV route.	Paragraph 14.4.22: A number of these construction HGV routes will have limited use (i.e. a low level of HGVs use generally over a short length of time, for example for site set up or minor works) including the A530 Croxton Lane (between Croxton Hall Farm and the B5309 King Street) and Ascol Drive.	Paragraph 14.4.22: A number of these construction HGV routes will have limited use (i.e. a low level of HGVs use generally over a short length of time, for example for site set up or minor works) including the A530 Croxton Lane (between Croxton Hall Farm and the B5309 King Street).	No change. This correction will not lead to new, removed, or different significant effect.

Correction to the AP1 assessment for AP1-002-013: Additional land permanently required for modifications to the A530 Griffiths Road and A559 Manchester Road junction

Topics included in the AP1 assessment

2.3.3 The assessment of this amendment has identified new, different or removed likely significant effects for the following topics: socio-economics; and, sound, noise and vibration, which are reported in this section.

Socio-economics

Scope, assumptions and limitations

2.3.4 The assessment scope, key assumptions and limitations for socio-economics are as set out in Volume 1 and the Scope and Methodology Report (SMR)[10] of the main ES. This amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for socio-economics.

2.3.5 Socio-economic effects that result from the assessment of the changes to traffic flows as a result of all AP1 amendments in combination with all SES1 changes are reported in Section 7.

Environmental baseline

Existing baseline

2.3.6 The baseline socio-economics information is as described in Section 12 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) of the main ES.

Future baseline

2.3.7 The Planning data reports of the main ES (see Volume 5, Appendix: CT-004-00000 of the main ES) provides details of committed developments assumed to have been implemented by 2025. These committed developments have been considered as a future baseline where relevant.

[10] HS2 Ltd (2021), 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.

2.3.8 None of the identified developments affect the assessment of the AP1 revised scheme's impacts for socio-economics.

Effects arising during construction

Avoidance and mitigation measures

2.3.9 No mitigation measures additional to those reported in the main ES and in the draft Code of Construction Practice (CoCP)[11] are proposed.

Assessment of impacts and effects

2.3.10 The amendment will result in a new temporary adverse significant in-combination effect on Northwich Drum Studio located west of Lostock Gralam as a result of a new significant noise effect for nine months. This 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 Northwich Drum Studio 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 adverse in-combination effect on Northwich Drum Studio, 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

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

Summary of likely residual significant effects

2.3.12 The amendment will give rise to Northwich Drum Studio being subject to a new adverse residual in-combination effect which is significant.

Cumulative effects

2.3.13 No new, removed or different significant cumulative effects have been identified compared to the main ES.

[11] 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.

Sound, noise and vibration

Scope, assumptions and limitations

2.3.14 This amendment has the potential to result in new or different significant construction and operational effects for sound, noise and vibration.

2.3.15 Baseline surveys have not been undertaken in the vicinity of this amendment and as such, a precautionary approach to the identification of likely significant effects has been taken due to the increased uncertainty of the baseline in this area.

Environmental baseline

Existing baseline

2.3.16 In the Wimboldsley to Lostock Gralam area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors adjacent to Manchester Road and in the community of Lostock Gralam. 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 the baseline sound levels are required, the baseline sound, noise and vibration information is as described in Section 13 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam area (MA02) of the main ES.

2.3.17 This amendment involves works close to properties which were not included within the main ES. The additional baseline sound levels are presented in in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000.

Future baseline

2.3.18 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.

2.3.19 These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

2.3.20 None of the identified developments affect the assessment of the AP1 revised scheme's likely impacts on sound, noise and vibration.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Residential receptors: direct effects – individual dwellings

2.3.22 Taking account of the avoidance and mitigation measures as outlined in the main ES, the following five properties are forecast to experience noise levels above the eligibility criteria for noise insulation, as defined in the draft CoCP:

- 220 Manchester Road in Lostock Gralam (assessment location ref.: 613238); and
- four properties (1, 3, 5 and Windy Ridge) Griffiths Road in Lostock Gralam (assessment location ref.: 613231).

2.3.23 For daytime construction, the threshold for eligibility for noise insulation is 75dB measured outdoors as specified in the draft CoCP.

2.3.24 The mitigation measures, including noise insulation, will reduce noise inside all dwellings such that it does not reach a level where it will significantly affect residents.

Residential receptors: direct effects – communities

2.3.25 The amendment has the potential to give rise to new temporary adverse noise effects which may be considered to be significant on a community basis. The new potentially likely significant effect is discussed in the following paragraph and summarised in Table 3. In the table, the duration of impact is the period where the relevant assessment category is exceeded. The predicted monthly construction noise level will vary throughout this period and as a guide the typical and highest monthly noise levels at the closest properties in the community identified are presented in the 'cause' column of this table.

2.3.26 The amendment has the potential to give rise to a new likely adverse noise effect at approximately ten dwellings in the vicinity of the A530 Griffiths Road and A559 Manchester Road junction (MA02-C-C13). The predicted duration of the construction noise impact is up to nine months during the daytime. This may be considered by the local community as an effect on the acoustic character of the area and hence be perceived as a change in the quality of life for that community. This effect is likely to be considered as significant when assessed on a community basis.

Table 3: Direct adverse construction effects on residential communities and shared open areas that are considered to be significant on a community basis and are new compared to those reported in the main ES

Significant effect number (and map reference)[12]	Type of significant effect	Time of day	Location	Cause (construction activities)[13]	Assumed approximate duration of impact
MA02-C-C13 (SV-03-308)	Construction noise (New)	Daytime	Griffiths Road, Lostock Gralam: approximately ten dwellings in the vicinity of the A530 Griffiths Road and A559 Manchester Road junction.	Highway junction works. The typical and highest monthly noise levels are approximately 70dB to 75dB and 75dB to 80dB[14].	Up to nine months.

Non-residential receptors: direct effects

2.3.27 The amendment will give rise to predicted airborne construction noise levels which exceed both the relevant screening criteria and the noise change criterion (typically a change of greater than 3dB compared with the existing baseline sound level) at the Northwich Drum Studio, Lostock Gralam (assessment location ref.: 613237).

2.3.28 This location is identified in the Wimboldsley to Lostock Gralam area, as shown in SES2 and AP2 ES, Volume 5, Sound, noise and vibration Map Book: Map Series SV-03. An assessment has been undertaken at the non-residential receptor identified above to determine if this impact would result in a significant effect, using the significance criteria set out in Annex A of Volume 5, Appendix: SV-001-00000 of the main ES.

2.3.29 The Northwich Drum Studio is a one-storey brick building located on Wincham Wharf, Manchester Road in Lostock Gralam used for music lessons. The building has windows that appear to be openable. It is assumed that the building is not provided with alternative means of ventilation to openable windows. The receptor is located approximately 20m from the land required for construction of the amendment. The drum studio has been assessed against the criteria for educational use. The predicted daytime monthly construction noise level is above the screening criteria defined in the SMR for educational use for up to a period of nine months. The typical and highest predicted daytime monthly construction noise levels are 17dB and 18dB respectively above the screening criteria defined in the SMR for this use. The Northwich Drum Studio is identified, on the basis of a precautionary assessment, as being subject to a new likely significant adverse effect (denoted by MA02-C-N15 in Table 6 SES2 and AP2 ES Volume 5, Appendix: SV-002-00000). This temporary adverse effect from construction site noise may take the form of activity disturbance to studio users.

[12] See SES2 and AP2 ES Volume 5, Appendix: SV-002-00000 and SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book, Map Series SV-03.

[13] The construction activity giving rise to the highest predicted noise or vibration level is reported. Multiple construction activities may contribute to the typical noise levels and the approximate duration of impact.

[14] Equivalent continuous sound level at the facade, $L_{pAeq,0700\text{-}1900}$.

Other mitigation measures

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

Summary of likely residual significant effects

2.3.31 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community in the vicinity of the junction between Griffiths Road and Manchester Road in Lostock Gralam.

2.3.32 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the Northwich Drum Studio, Wincham Wharf, Manchester Road.

Cumulative effects

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

Effects arising from operation

Avoidance and mitigation measures

2.3.34 No additional avoidance or mitigation measures compared to those reported in the main ES and SES1 are proposed.

Assessment of impacts and effects

Residential receptors: direct effects – individual dwellings

2.3.35 Taking account of the avoidance and mitigation measures incorporated into the AP2 revised scheme, the assessment has identified one dwelling, 220 Manchester Road, Lostock Gralam (assessment location ref.: 613238), close to the land required for the amendment, where noise levels are predicted to exceed the daytime trigger threshold set out in the NI Regulations[15]. It is, therefore, anticipated that these buildings are likely to qualify for noise insulation under the Regulations. The dwellings are indicated on Map Series SV-02 (SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book).

2.3.36 The mitigation measures, set out in the main ES, including noise insulation, will reduce airborne noise inside all dwellings such that it will not reach a level where it will significantly affect residents.

Other mitigation measures

2.3.37 No mitigation measures additional to those reported in the main ES and SES1 are proposed.

[15] Equivalent to a daytime free-field level of 65dB $L_{pAeq,0700-2300}$.

Summary of likely residual significant effects

2.3.38 There are no new or different residual significant effects from operational noise or vibration.

Cumulative effects

2.3.39 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

Socio-economics

2.3.40 The amendment will give rise to Northwich Drum Studio being subject to a new adverse residual in-combination effect which is significant.

Sound, noise and vibration

2.3.41 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community in the vicinity of the junction between Griffiths Road and Manchester Road in Lostock Gralam.

2.3.42 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the Northwich Drum Studio, Wincham Wharf, Manchester Road.

3 Assessment of changes in the Wimboldsley to Lostock Gralam area

3.1 Introduction

3.1.1 This section describes the effects of the SES2 changes in the Wimboldsley to Lostock Gralam area on:

- community;
- ecology and biodiversity;
- health;
- socio-economics;
- sound, noise and vibration; 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 Community

Introduction

3.2.1 The environmental baseline relevant to the community assessment is described below. Any new or different likely significant environmental effects as a result of the baseline and 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 community are as set out in Volume 1 and the SMR of the main ES.

SES2 changes relevant to the assessment

3.2.3 The implications of changes to the sound, noise and vibration assessment are considered in this assessment. Changes to the sound, noise and vibration assessment have the potential to result in a new significant construction effect.

Environmental baseline

Existing baseline

3.2.4 The baseline community information is as described in Section 6 of the main ES Volume 2, Community Area report Wimboldsley to Lostock Gralam (MA02). A summary of the baseline information relevant to the assessment of the SES2 change is provided below.

3.2.5 The area is rural in nature. Whatcroft comprises approximately 20 dispersed residential properties and farmsteads. The nearest residential properties are located 50m west of the HS2 route.

Future baseline

3.2.6 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.

3.2.7 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.

3.2.8 None of the identified developments affect the assessment of the SES2 scheme's likely impacts on community.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

3.2.10 Changes to the sound, noise and vibration assessment will result in a new moderate adverse in-combination effect on approximately ten residential properties at Pear Tree Farm Cottages on Davenham Road. New significant noise effects are expected to combine with significant visual effects reported in the main ES for approximately five months. Together, these noise and visual effects will result in a new moderate adverse in-combination effect on amenity for residents at these properties, which is significant.

Other mitigation measures

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

Summary of likely residual significant effects

3.2.12 The SES2 change will result in a new moderate adverse effect on approximately ten residential properties at Pear Tree Farm Cottages on Davenham Road, Whatcroft, due to new noise and existing visual effects.

Cumulative effects

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

3.3 Ecology and biodiversity

Introduction

3.3.1 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 baseline and design changes introduced in Section 2 are then identified, compared to those reported in the main ES and SES1.

Scope, assumptions and limitations

3.3.2 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.

3.3.3 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.

3.3.4 Ecology and biodiversity effects that result from changes to traffic flows as a result of all AP2 amendments in combination with all SES2 changes are reported in Section 7.

SES2 changes relevant to the assessment

3.3.5 New environmental baseline information resulting from additional ecological surveys in the Wimboldsley to Lostock Gralam area is relevant to the assessment.

Environmental baseline

Existing baseline

3.3.6 The baseline ecology and biodiversity information is as described in Section 7 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam area of the main ES and Section 3 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam area of SES1. A summary of the baseline information relevant to the assessment of the SES2 scheme is provided below.

Designated sites

3.3.7 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 Wimboldsley to Lostock Gralam area.

Habitats

3.3.8 The SES1 reported 86.6km of hedgerow within land required for the construction of the SES1 scheme comprising 47.9km of native species-poor hedgerow and 38.6km of native species-rich hedgerow (including 35.4km of un-surveyed hedgerows assumed to be species-rich on a precautionary basis). The change in length and composition of hedgerows reported does not change the value of hedgerows from that reported in the main ES.

3.3.9 Additional surveys of hedgerows that were previously not subject to survey have identified:

- a total of 158m of species-poor hedgerow not previously reported in the main ES or SES1; and
- a further 500m previously assumed on a precautionary basis to be species-rich, are species-poor.

3.3.10 As a result of updated baseline information, the total length of hedgerows within the land required for the SES2 scheme is 86.6km, comprising 48.5km of native species-poor hedgerow and 38.1km of native species-rich hedgerow (including 34.8km of un-surveyed hedgerow assumed to be species-rich on a precautionary basis). The change in composition of hedgerows reported does not change the value of the hedgerow network as a whole from that reported in the main ES and SES1.

Water bodies

3.3.11 The main ES reported the loss of 70 ponds which was significant at the district/borough level in each case. 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, shows the number of ponds within land required for the SES2 scheme is 82.

Species

Amphibians

3.3.12 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 Wimboldsley to Lostock Gralam 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 meta-populations of great crested newt. Changes to the baseline to inform the SES2 scheme have resulted in one new great crested newt metapopulation and changes to the composition of four 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 which are not relevant to the SES2 assessment.

3.3.13 The main ES reported a great crested newt metapopulation (GCNMP) in a network of 20 ponds to the north of Clive Green (GCNMP1.2.12). This included ponds in which the presence of great crested newt was confirmed through desk study in four ponds and surveys identified a small population in one pond. On a precautionary basis, the presence of a medium sized population was assumed. This metapopulation was valued at county/metropolitan level in the main ES. Additional surveys at SES2 have identified a further two ponds relevant to the scheme and form part of this metapopulation. The increase in the number of ponds with assumed populations of great crested newt does not change the assumed population size or value of GCNMP1.2.12, as reported in the main ES.

3.3.14 The main ES reported a great crested newt metapopulation in a network of 25 ponds to the north of Middlewich (GCNMP1.2.18). This included three ponds, identified through surveys, with small populations of great crested newt, one pond with a medium population, and one pond in which presence was confirmed by eDNA surveys. This metapopulation is of medium size and was valued at county/metropolitan level in the main ES. One further pond relevant to the SES2 scheme forms part of this metapopulation and is assumed to contain a medium population of great crested newt. The increase in the number of ponds with assumed populations of great crested newt and does not change the assumed population size or value of GCNMP1.2.18, as reported in the main ES.

3.3.15 The main ES reported a medium great crested newt metapopulation in a network of 23 ponds to the north of Middlewich (GCNMP1.2.19). This included ponds in which the presence of great crested newt was confirmed through desk study in two ponds, and field surveys identified a small population in two ponds and medium populations in a further two ponds. This metapopulation is valued at the county/metropolitan level in the main ES. Three further ponds are relevant to the SES2 scheme, each of which are assumed to contain a medium population of great crested newt and form part of this metapopulation. The increase in the number of ponds with assumed populations of great crested newt does not change the value of GCNMP1.2.19, as reported in the main ES.

3.3.16 The SES1 reported a great crested newt metapopulation in a network of 132 ponds to the west of Knutsford (GCNMP1.2.36). This included seven ponds in which the presence of great crested newt was confirmed through surveys. On a precautionary basis, the presence of a large sized population was assumed. This metapopulation was valued at county/metropolitan level in the SES1. Additional surveys at SES2 have confirmed that great crested newt are absent in 31 ponds in which they had been assumed to be present. Four further ponds are relevant to the SES2 scheme, and now form part of this metapopulation. The change in the number of ponds with confirmed or assumed populations of great crested newt does not change the assumed size or value of GCNMP1.2.36, as reported in the SES1.

3.3.17 The SES1 reported a great crested newt population in a single pond within Stanthorne, within 250m of the land required for the SES1 scheme (GCNP1.2.38). On a precautionary basis, the population size class of this population was assumed medium. An additional pond

relevant to the SES2 scheme now forms part of this population. This population is valued at county/metropolitan level. The change in the number of ponds with assumed populations of great crested newt does not change the value of GCN1.2.38 reported in SES1.

3.3.18 A metapopulation of great crested newt (GCNMP1.2.40) is present in five ponds west of Middlewich, which are located within and up to 25m from land required for the construction of the SES2 scheme. The population size class of this metapopulation is assumed medium, due to the presence of great crested newt confirmed through eDNA surveys in one pond and the presence of un-surveyed ponds. This metapopulation is valued at county/metropolitan level.

3.3.19 The main ES reported a total of 70 water bodies within land required for the original scheme, of which 31 water bodies had not been subject to survey and were assumed to support populations of great crested newt of up to county/metropolitan value. Of the 82 water bodies within the land required for construction of the SES2 scheme, 36 water bodies have not been subject to survey and are assumed to support populations of great crested newt.

Bats

3.3.20 The SES1 reported an assemblage of at least eight species of bats between Wimboldsley and Stanthorne considered to be of regional value. Additional surveys recorded a possible maternity roost of soprano pipistrelle 30m to the south, an occasional pipistrelle roost up to 35m to the east and an occasional noctule roost within the land required for the construction of the SES2 scheme. These additional roosts do not change the value of the assemblage, as reported in the SES1.

3.3.21 The SES1 reported an assemblage of at least nine species of bats, including a possible maternity roost of brown long-eared bat and further occasional roosts of previously recorded species between Stanthorne and Rudheath, considered to be of regional value. Additional surveys at SES2 recorded a *Myotis* species occasional roost 120m south-east and one occasional soprano pipistrelle roosts 130m from the land required for the SES2 scheme. These additional roosts do not change the value of the assemblage, as reported in the SES1.

3.3.22 The SES1 reported an assemblage of at least five species of bats between Broken Cross and Lostock Gralam, which is considered to be of regional value. Additional surveys at SES2 recorded an occasional soprano pipistrelle roost 10m north of the land required for the SES2 scheme. This additional roost does not change the value of the bat assemblage, as reported in the SES1.

3.3.23 The SES1 reported an assemblage of at least nine species of bats to the north and north-east of Lostock Gralam that is considered to be of regional value. Additional surveys at SES2 recorded an occasional Daubenton's roost within the land required for the SES2 scheme. The recording of this additional roost does not change the value of the bat assemblage, as reported in the SES1.

Vascular plants

3.3.24 Additional field surveys recorded two notable plants 100m from the land required for the SES2 scheme within the Wimboldsley to Lostock Gralam area. They are:

- fern-grass (*Catapodium rigidum*), locally scarce in Cheshire, located 100m from the SES2 scheme; and
- great fen-sedge (*Cladium mariscus*), locally scarce in Cheshire, located 100m from the SES2 scheme.

3.3.25 The records are from the vicinity of Lostock Gralam and are of district/borough level.

Future baseline

3.3.26 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

3.3.27 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.

3.3.28 None of the identified developments affect the assessment of the SES2 scheme's likely impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

3.3.29 No avoidance or mitigation measures additional to those reported in the main ES and SES1 and AP1 ES and in the draft Code of Construction Practice (CoCP)[16] are proposed.

Assessment of impacts and effects

Habitats

Water bodies

3.3.30 The main ES reported the loss of 70 ponds which was significant at the district/borough level in each case. The SES2 baseline, accounting for OS mapping changes and further survey,

[16] 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.

shows the number of ponds within land required for the SES2 scheme is 82. The increase in the number of ponds that will be removed 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 reported in the main ES.

Species

Amphibians

3.3.31 The main ES reported that the loss of habitat resulting from the construction of the original scheme would result in an adverse effect on the metapopulation of great crested newt in a network of 20 ponds north of Clive Green (GCNMP1.2.12). This would result in a permanent adverse effect on the metapopulation that is significant at the county/metropolitan level. Following additional surveys at SES2, the number of ponds associated with this metapopulation has increased to 22. The change in 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 effects reported in the main ES.

3.3.32 The main ES reported that the loss of habitat resulting from the construction of the original scheme would result in an adverse effect on the metapopulation of great crested newt in a network of 25 ponds to the north of Middlewich (GCNMP1.2.18). This would result in a permanent adverse effect on the metapopulation that is significant at the county/metropolitan level. One further pond relevant to the SES2 scheme now forms part of this metapopulation and is assumed to contain a medium population of great crested newt. The number of ponds associated with this metapopulation has increased to 26. The change in 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 effects reported in the main ES.

3.3.33 The main ES reported that the loss of habitat resulting from the construction of the original scheme would result in an adverse effect on the metapopulation of great crested newt in a network of 23 ponds to the north of Middlewich (GCNMP1.2.19). This would result in a permanent adverse effect on the metapopulation that is significant at the county/metropolitan level. Three further ponds are 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. The number of ponds associated with this metapopulation has increased to 26. The change in 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 effects reported in the main ES.

3.3.34 The SES1 reported that the loss of habitat resulting from the construction of the original scheme would result in an adverse effect on the metapopulation of great crested newt in a network of 132 ponds to the west of Knutsford (GCNMP1.2.36). This would result in a permanent adverse effect on the metapopulation that is significant at the county/metropolitan level. Additional surveys at SES2 have confirmed that great crested newt are absent in 31 ponds in which they had been assumed to be present. Four further

ponds are 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. The number of ponds associated with this metapopulation has decreased to 105. The change in 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 effects reported in the SES1.

3.3.35 The loss of habitat resulting from the construction of the SES2 scheme will result in an adverse effect on the population of great crested newt in two ponds in Stanthorne (GCNP1.2.38). Both of the ponds are assumed to contain great crested newt. The potential habitat loss resulting from the construction of the SES2 scheme would result in a different significant adverse 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. A metapopulation of great crested newt (GCNMP1.2.40) is present in five ponds west of Middlewich, which are located within and up to 25m from land required for the construction of the SES2 scheme. One of the ponds, with presence of great crested newt confirmed through eDNA surveys, is within the land required for the construction of the SES2 scheme, and it is assumed that the remaining ponds also support great crested newt. Three of the ponds were previously associated with existing metapopulations, one with GCNMP1.2.6 and two with GCNMP1.2.7. The potential habitat loss resulting from the construction of the SES2 scheme would result in a different significant adverse 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.

3.3.36 The main ES reported the loss of a total of 70 water bodies providing potential breeding sites within land required for the original scheme, of which 31 water bodies had not been subject to survey and were assumed to support populations of great crested newt of up to county/metropolitan importance. Of the 82 water bodies within the land required for construction of the SES2 scheme, 36 water bodies 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 that will be, in each case, significant at up to county/metropolitan level. This 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.

Bats

3.3.37 The SES1 reported the loss of roosts and the loss and fragmentation of foraging and commuting habitat used by an assemblage of at least eight species of bats between Wimboldsley and Stanthorne, which would result in a permanent adverse effect on this assemblage, significant at the regional level. Following further surveys at SES2, the loss of an occasional noctule roost and potential disturbance of an occasional common pipistrelle and possible maternity roost of soprano pipistrelle 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.

3.3.38 The SES1 reported a permanent adverse effect on the assemblage of at least nine species of bats between Stanthorne and Rudheath, significant at the regional level. Following further surveys at SES2, the disturbance of two occasional roost of soprano pipistrelle and Myotis species respectively 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.

3.3.39 The SES1 reported a permanent adverse effect on an assemblage of at least five species of bats between Broken Cross and Lostock Gralam, significant at the regional level. Following further surveys at SES2, the disturbance of an occasional soprano pipistrelle roost will result in a different impact on the bat assemblage to that reported in the SES1. However, this will not change the level of significance of the effect reported in the SES1.

3.3.40 The SES1 reported a permanent adverse effect on an assemblage of at least nine species of bats to the north and north-east of Lostock Gralam, significant at the regional level. Following further surveys at SES2, the loss of an occasional Daubenton's roost will result in a different significant effect to that reported in the SES1. However, this will not change the level of significance of the effect reported in the SES1.

Other mitigation measures

3.3.41 This section describes other mitigation measures designed to reduce or compensate for significant ecological effects. These include habitat creation and habitat enhancement.

Habitats

Water bodies

3.3.42 At least one pond will be created for every pond lost within the land required for the construction of the Proposed Scheme. New ponds will be established in accordance with the Ecological Principles of Mitigation in the SMR. Once established, it is anticipated that any adverse effect on pond habitats will be reduced to a level that is not significant.

Species

Amphibians

3.3.43 The SES1 reported that significant effects on the great crested newt populations within the Wimboldsley to Lostock Gralam area would be addressed by the provision of measures within the ecological habitat creation areas along the Shropshire Union Canal (Middlewich Branch), north of Clive Green Lane, west of Whatcroft Hall Lane, north of Davenham Road, south of the B5082 Penny's Lane and west of Cooke's Lane. These measures would comprise provision of ponds, grassland and woodland 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 Wimboldsley to Lostock Gralam area to a level that is not significant.

Bats

3.3.44 The SES1 reported that significant effects to the bat assemblage between Wimboldsley and Stanthorne would be addressed by the provision of artificial roosts, which would be provided in accordance with the Ecological Principles of Mitigation within the SMR, as well as a range of habitat creation measures. These include the provision of new woodland planting either side of Clive Green Lane and adjacent to Small Rookery Wood and Wimboldsley Wood, grassland creation along the Shropshire Union Canal (Middlewich Branch) and new hedgerows and scrub planting at the margins of Crewe North rolling stock depot (RSD) and along Walley's Green embankment. These measures will address the additional impacts on the bat assemblage caused by the loss of an occasional noctule roost and potential disturbance of a possible soprano pipistrelle maternity roost and an occasional pipistrelle roost associated with the SES2 scheme. Therefore, following implementation of these measures, the effects on the bat assemblage between Wimboldsley and Stanthorne will be reduced to a level that is not significant.

3.3.45 The SES1 reported that significant effects to the bat assemblage between Stanthorne and Rudheath would be addressed by the provision of artificial roosts that will be provided in accordance with the Ecological Principles of Mitigation within the SMR, as well as a range of habitat creation measures. These include the provision of new woodland planting adjacent to The Willowbeds LWS, west of the A533 Northwich Road, and to the south-east of Bostock Hall, and grassland creation to the south of the River Dane, Bostock LWS and alongside the Trent and Mersey Canal LWS. These measures will also address additional impacts on this bat assemblage caused by the loss of an occasional soprano pipistrelle roost associated with the SES2 scheme. Therefore, following implementation of these measures, the effects on the bat assemblage between Stanthorne and Rudheath will be reduced to a level that is not significant.

3.3.46 The SES1 reported that significant effects to the bat assemblage north and north-east of Lostock Gralam would be addressed by the provision of artificial roosts that will be provided in accordance with the Ecological Principles of Mitigation within the SMR as well as a range of habitat creation measures. These include the provision of extensive woodland planting between Plumley Lime Beds SSSI and Leonard's and Smoker Wood. These measures will also address the additional impacts on this bat assemblage caused by the loss of an occasional Daubenton's roost associated with the SES2 scheme. Therefore, following implementation of these measures, the effects on the bat assemblage north and north-east of Lostock Gralam will be reduced to a level that is not significant.

Summary of likely residual significant effects

3.3.47 Although there are different significant effects on great crested newt and bats there are no changes to the likely residual significant construction ecology and biodiversity effects identified in the main ES and SES1, as a result of the SES2 changes.

Cumulative effects

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

3.4 Health

Introduction

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

Scope, assumptions and limitations

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

SES changes relevant to the assessment

3.4.3 The implications of changes to the sound, noise and vibration assessment are considered in this assessment. Changes to the sound, noise and vibration assessment have the potential to result in a new construction effect.

Environmental baseline

Existing baseline

3.4.4 The baseline health information is as described in Section 8 of the main ES Volume 2, Community Area report Wimboldsley to Lostock Gralam (MA02). A summary of the baseline information relevant to the assessment of the SES change is provided below.

3.4.5 The area is rural in nature. Whatcroft comprises approximately 20 dispersed residential properties and farmsteads. The nearest residential properties are located 50m west of the HS2 route.

Future baseline

3.4.6 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.

3.4.7 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.

3.4.8 None of the identified developments affect the assessment of the SES2 scheme's likely impacts on health.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

3.4.10 Changes to the sound, noise and vibration assessment will result in a new adverse neighbourhood quality effect for residents of Pear Tree Farm Cottages on Davenham Road. Construction noise is expected to be noticeable at these properties for approximately five months. Significant visual effects reported in the main ES will remain the same. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, in diminishing the amenity of the settlement.

Other mitigation measures

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

Cumulative effects

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

3.5 Socio-economics

Introduction

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

3.5.2 Socio-economic 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.

Scope, assumptions and limitations

3.5.3 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 SES2 change of relevance to this assessment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for socio-economics.

SES2 changes relevant to the assessment

3.5.4 The SES2 changes to the construction design programme (construction assessment only) are considered in this assessment.

3.5.5 The implications of changes to the sound, noise and vibration assessment are considered in this assessment. Changes to the sound, noise and vibration assessment have the potential to result in different significant construction effects.

Environmental baseline

Existing baseline

3.5.6 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

3.5.7 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.

3.5.8 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.

3.5.9 None of the identified developments affect the assessment of the SES2 scheme's likely impacts on socio-economics.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

3.5.11 The SES1 reported that the construction of the SES1 scheme was expected to result in a temporary adverse significant in-combination effect on the Holford Hall Estate wedding venue, located east of Lostock Gralam. This was as a result of significant noise effects (for one year and six months) and effects from heavy goods vehicle construction traffic (traffic related severance for non-motorised users).

3.5.12 The SES2 change will decrease the duration of the significant noise effects to 11 months. The decrease in duration will result in a different temporary adverse significant in-combination effect on the Holford Hall Estate wedding venue.

3.5.13 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

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

Summary of likely residual significant effects

3.5.15 The SES2 change will result in the Holford Hall Estate wedding venue being subject to a different temporary adverse residual significant in-combination effect.

Cumulative effects

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

3.6 Sound, noise and vibration

Introduction

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

3.6.2 Sound, noise and vibration 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.

Scope, assumptions and limitations

3.6.3 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.

3.6.4 The SES2 changes have the potential to result in new or different likely significant construction effects only. Therefore, there is no assessment of operational effects for sound, noise and vibration.

SES2 changes relevant to the assessment

3.6.5 The following SES2 changes are considered in the construction phase assessment:

- additional baseline information; and
- changes to the construction design programme (construction assessment only).

Environmental baseline

Existing baseline

3.6.6 In the Wimboldsley to Lostock Gralam area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors in the communities of Middlewich and Lostock Gralam. 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: Wimboldsley to Lostock Gralam area (MA02) of the main ES and Section 3.8 of SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02).

Future baseline

3.6.7 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.

3.6.8 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.

3.6.9 Committed developments of relevance to the assessment of sound, noise and vibration from the SES2 scheme are summarised in Table 4.

Table 4: Committed developments relevant to sound, noise and vibration

Map book reference[17] (SNV Assessment location ref.)	Planning reference	Description	How this is considered in the assessment
MA02/422S MA02/423S MA02/424S MA02/425S (611224, 611225)	22/00768/FUL 21/04602/PDR 22/00769/FUL 21/04603/PDR	Location: Wimboldsley Hall Barns, Nantwich Road, Wimboldsley, Winsford, CW10 0LW. Change of use of building into Office Space	Informing future baseline (construction).

3.6.10 The implementation of committed development refs.: MA02/422S, MA02/423S, MA02/424S and MA02/425S will result in a new office development located 50m to the west of the land required for the construction of the SES2 scheme.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Residential receptors: direct effects – communities

3.6.12 The SES2 scheme has the potential to give rise to different temporary adverse noise effects which may be considered to be significant on a community basis. The potential different likely significant effect is discussed in the following paragraph and summarised in Table 5. In the table, the duration of impact is the period where the relevant assessment category is exceeded. The predicted monthly construction noise level will vary throughout this period and as a guide the typical and highest monthly noise levels at the closest properties in the community identified are presented in the 'cause' column of this table.

3.6.13 The main ES identified, on the basis of a precautionary assessment, a significant adverse construction noise effect in the vicinity of approximately ten dwellings at Pear Tree Farm Cottages for a duration of up to two months. This was denoted as MA02-C-C2 in Table 42 of the Volume 2, Community Area report MA02, in Volume 5, Appendix: SV-002-0MA02 and Volume 5, Sound, noise and vibration Map Book: Map Series SV-03 in the main ES. The SES2 changes to the construction programme will increase the duration of impact at this

[17] SES2 and AP2 ES Volume 5, Planning Data / Committed Developments Map Book: Map Series CT-13 – Committed Developments, maps CT-13-304b to CT-13-309a.

community to five months. This will give rise to a different likely significant effect on the residential community.

Table 5: Direct adverse construction effects on residential communities and shared open areas that are considered to be significant on a community basis and are different to those reported in the main ES

Significant effect number (and map reference)[18]	Type of significant effect	Time of day	Location	Cause (construction activities)[19]	Assumed approximate duration of impact
MA02-C-C2 (SV-03-307)	Construction noise (Different)	Daytime	Pear Tree Farm Cottages: Approximately 10 dwellings in the vicinity of Davenham Road.	Viaduct construction. The typical and highest monthly noise levels are approximately 60dB and 70dB[20].	Up to five months.

Non-residential receptors: direct effects

3.6.14 The assessment has identified the non-residential committed development at Wimboldsley Hall Barns, Nantwich Road, Wimboldsley and committed development refs.: MA02/422S, MA02/423S, MA02/424S and MA02/425S (assessment location refs.: 6111224 and 611225) where, should the development proceed, the predicted airborne sound levels would exceed both the relevant screening criteria and the noise change criterion (typically a change of greater than 3dB compared with the existing baseline sound level).

3.6.15 The implementation of the committed development will result in the conversion of two existing agricultural buildings (referred to as Building A and Building B within the planning applications) to office accommodation under permitted development rights. The existing buildings date back to the 1970s and are clad in lightweight materials to both the façade and roof. The proposal is to replace the cladding and roof with similar materials to current Building Regulations standards and to fit-out the interiors as office space. The receptor is located around 50m west of land required for the construction of the SES2 scheme. The committed development has been assessed against the office criteria. The predicted daytime monthly construction noise level is above the screening criterion defined in the SMR for office use for a period of three years. The highest predicted daytime monthly construction noise level is 11dB above the screening criterion defined in the SMR. The typical predicted monthly daytime construction noise level is 3dB above the screening criterion defined in the SMR. Wimboldsley Hall Barns, Nantwich Road, Wimboldsley and committed

[18] See SES2 and AP2 ES Volume 5, Appendix: SV-002-00000 and SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book, Map Series SV-03.

[19] The construction activity giving rise to the highest predicted noise or vibration level is reported. Multiple construction activities may contribute to the typical noise levels and the approximate duration of impact.

[20] Equivalent continuous sound level at the facade, $L_{pAeq,0700\text{-}1900}$.

development refs.: MA02/422S, MA02/423S, MA02/424S and MA02/425S are identified, on the basis of a precautionary assessment, as being subject to a new likely significant adverse effect (denoted by MA02-C-N9 in Table 6 of Volume 5, Appendix SV-002-0MA02). This temporary adverse effect may take the form of activity disturbance to office users.

3.6.16 The SES1 and AP1 ES identified, on the basis of a precautionary assessment, a significant adverse construction noise effect at Holford Hall, a wedding venue located off the A556 Chester Road in Plumley for a duration of up to one year and six months. This was denoted as MA02-C-N1 in the SES1 and AP1 ES Volume 2, Community Area report MA02, in the SES1 and AP1 ES Volume 5, Appendix: SV-002-00000 and in the SES1 and AP1 ES Volume 5, Sound, noise and vibration Map Book: Map Series SV-03. The SES2 changes to the construction programme will decrease the duration of impact to 11 months. This will give rise to a different likely significant effect on the non-residential receptor.

3.6.17 For further information see SES2 and AP2 ES Volume 5, Appendix: SV-002-00000 and SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book.

Other mitigation measures

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

Summary of likely residual significant effects

3.6.19 The SES2 changes to the construction programme will give rise to a different likely temporary residual adverse significant construction noise effect on residential communities at Pear Tree Farm Cottages due to an increased impact duration.

3.6.20 The SES2 changes to committed developments will give rise to a new likely temporary residual adverse significant effect on the non-residential buildings at Wimboldsley Hall Barns, Nantwich Road, Wimboldsley and committed development refs.: MA02/422S, MA02/423S, MA02/424S and MA02/425S.

3.6.21 The SES2 changes to the construction programme will give rise to a different likely temporary residual adverse significant construction noise effect on Holford Hall, a wedding venue located off the A556 Chester Road in Plumley due to a decreased impact duration.

Cumulative effects

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

3.7 Water resources and flood risk

Introduction

3.7.1 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 baseline and changes introduced in Section 2 are identified, compared to the main ES and SES1.

Scope, assumptions and limitations

3.7.2 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 SES2 and AP2 ES Volume 5, Appendix: CT-001-00005: Water resources and flood risk technical note: Updated guidance on flood risk assessment.

3.7.3 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 and flood risk.

Environmental baseline

Existing baseline

3.7.4 The baseline water resources and flood risk information is as described in Section 15 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) of the main ES.

3.7.5 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 20226 and results in an increase in peak rainfall intensity allowance from 40% to 45%.

3.7.6 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 20216.

3.7.7 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. The River Dane, Wade Brook, Puddinglake Brook, Gad Brook, Peover Eye, Tributary of Peover Eye and Smoker Brook are all located within the Weaver Gowy Management Catchment.

3.7.8 In accordance with this guidance, the corresponding peak river flow climate change allowance for the Weaver Gowy Management catchment is 67%.

Future baseline

3.7.9 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.

3.7.10 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.

3.7.11 None of the identified developments affect the assessment of the SES2 scheme's likely impacts on water resources and flood risk.

Effects arising during construction

Avoidance and mitigation measures

3.7.12 The avoidance and mitigation measures specific to water resources and flood risk are set out in the Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) 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

3.7.13 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 6, the size and location remain unchanged since the main ES. These values show that the culverts are of sufficient size to convey the estimated increase in peak flow.

Table 6: 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[21]	Culvert location[22]	Culvert/ channel capacity (m3/s)[23]
Tributary of River Weaver 2	Park Hall culvert	<0.10	<0.10	0.18	CT-06-308b C6, C7	3.35
Tributary of River Weaver 2 - offline	A530 Nantwich Road offline east culvert	2.52	3.78	4.54	CT-06-308b E4	10.5
Tributary of River Weaver 2 - offline	A530 Nantwich Road offline west culvert	2.52	3.78	4.54	CT-06-308b E3	13.7
Dry valley discharging to The Dingle	Wimboldsley culvert	0.9	1.33	1.62	CT-06-308b I7, I6, I5, I4	3.56
Dry valley discharging to Tributary of River Weaver 4 at Stove Room Wood	Stove culvert	0.03	0.04	0.05	CT-06-309 F6, F5, F4	3.68
Dry valley discharging to Tributary of River Weaver 4 at Clive Green Lane	Stanthorne culvert	0.1	0.14	0.18	CT-06-310 A6, A5	3.86
Tributary of River Weaver 4 - offline	Clive Green Lane offline culvert	0.1	0.1	0.18	CT-06-310 B2	4.92
Dry valley discharging to	Clive culvert	0.46	0.67	0.83	CT-06-310 H6	2.62

[21] 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.

[22] The feature locations are indicated by the grid coordinates on the relevant Volume 2, MA02 Map Book, Map series CT-06 of the main ES.

[23] 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[21]	Culvert location[22]	Culvert/ channel capacity (m3/s)[23]
Tributary of River Wheelock 5						
Tributary of River Dane 3	Bank culvert	0.18	0.26	0.32	CT-06-311 E9	6.78
Tributary of the Trent and Mersey Canal	Whatcroft culvert	0.63	0.91	1.13	CT-06-312 F7	9.7
Track drain discharging to Puddinglake Brook	Manor culvert	0.1	0.15	0.18	CT-06-313 C5, C6	4.21
Broken Cross Drains	A556 Chester Road culvert	1.57	2.31	2.83	CT-06-314 H6, H5	2.9

3.7.14 In the main ES, hydraulic analysis was carried out using simplified 2D modelling to assessment the impacts of the original scheme on likely peak flood levels at the viaduct crossings. This was assessed for the 'Upper End' climate change allowance of 70% increase in peak river flow. The viaduct crossings assessed were:

- River Dane;
- Wade Brook;
- Puddinglake Brook;
- Gad Brook;
- Peover Eye and Tributary of Peover Eye; and
- Smoker Brook.

3.7.15 Under the latest guidance, the corresponding climate change allowance is for a higher central increase in peak flow of 67%. Since the updated climate allowances correspond to a slight reduction in flow it is considered that the main ES and SES1 assessments remain precautionary. No new or different significant effects are anticipated due to the change in peak river flow climate change allowance.

Other mitigation measures

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

Summary of likely residual significant effects

3.7.17 No new or different significant effects are anticipated for water resources and flood risk, due to the SES2 changes.

Cumulative effects

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

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

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

Construction

Community

3.8.2 The SES2 change will result in a new moderate adverse effect on approximately ten residential properties at Pear Tree Farm Cottages on Davenham Road, Whatcroft, due to new noise and existing visual effects.

Ecology and biodiversity

3.8.3 The SES2 scheme will result in different significant effects on great crested newt, however the effect will remain significant at the county/metropolitan level. There will also be different significant effects on bats, however the effect will remain significant at the regional level.

Socio-economics

3.8.4 The SES2 change will result in the Holford Hall Estate wedding venue being subject to a different temporary adverse residual significant in-combination effect.

Sound, noise and vibration

3.8.5 The SES2 changes to the construction programme will give rise to a different likely temporary residual adverse significant construction noise effect on residential communities at Pear Tree Farm Cottages due to an increased impact duration.

3.8.6 The SES2 changes to committed developments will give rise to a new likely temporary residual adverse significant effect on the non-residential buildings at Wimboldsley Hall Barns, Nantwich Road, Wimboldsley and committed development refs.: MA02/422S, MA02/423S, MA02/424S and MA02/425S.

3.8.7 The SES2 changes to the construction programme will give rise to a different likely temporary residual adverse significant construction noise effect on Holford Hall, a wedding venue located off the A556 Chester Road in Plumley due to a decreased impact duration.

Part 2: Additional Provision 2 Environmental Statement

4 Summary of AP2 amendments in the Wimboldsley to Lostock Gralam area

4.1 Engineering amendments

4.1.1 Amendments will be required in the Wimboldsley to Lostock Gralam area that will result in changes to the land or Bill powers required for the SES2 scheme. Table 7 provides a summary of the engineering amendments and Figure 2 shows their locations.

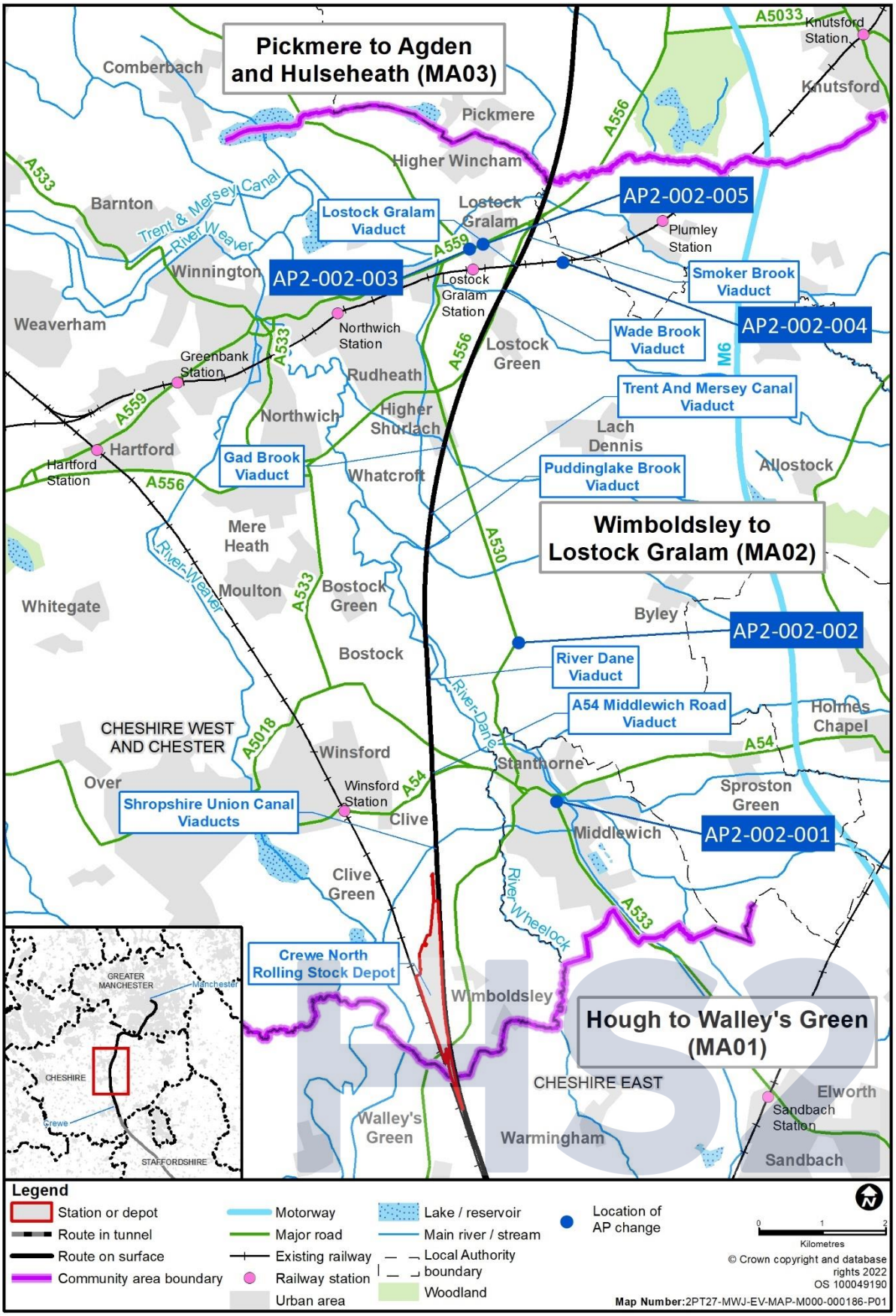
4.1.2 Please note that all dimensions in the following sections are approximate.

Table 7: Summary of AP2 engineering amendments in the Wimboldsley to Lostock Gralam area

Name of AP2 amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 revised scheme
Additional land temporarily required for modifications to the A54 St Michael's Way, A533 Leadsmithy Street and A54 Kinderton Street junction AP2-002-001 Map CT-05-310-R2, G5 to H5, in the SES2 and AP2 ES Volume 2, MA02 Map Book	The main ES did not propose any mitigation works in this location for road users.	The junction of A54 St Michael's Way/A533 Leadsmithy Street/A54 Kinderton Street will be temporarily modified to include carriageway widening to enable the extension and optimisation of a signalised left turn lane on A533 Leadsmithy Street.
Additional land temporarily required for modifications to the A530 King Street, A530 Croxton Lane and B5309 King Street junction AP2-002-002 Map CT-05-312-R2, B1 and B2 to C2, in the SES2 and AP2 ES Volume 2, MA02 Map Book	The main ES did not propose any mitigation works in this location for road users.	The junction of A530 King Street/ A530 Croxton Lane/B5309 King Street will temporarily be modified to include signalisation of the junction and will introduce a right turn lane on A530 King Street and a left turn lane on A530 Croxton Lane.
Additional land permanently required for modifications to the A559 Manchester Road, A559 Hall Lane and Station Road junction AP2-002-003 Map CT-05-315-L1, G7 to G8, in the SES2 and AP2 ES Volume 2, MA02 Map Book	The main ES did not propose any mitigation works in this location for road users.	The junction of A559 Manchester Road/A559 Hall Lane/Station Road will be permanently modified to include carriageway widening to enable the formation of a left turn lane on the south-west side of the A559 Manchester Road.
Additional land permanently required for modifications to DNO connections to A556 Shurlach Road auto-transformer station and	The Bill provides for a non-traction power (NTP) supply, which provides power for operation of the railway,	Modifications have been made to the design for the NTP supply to ensure a validated connection design at:

Name of AP2 amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 revised scheme
Peacock Lane auto-transformer feeder station AP2-002-004 Maps CT-05-315, H6 to J10 and F1 to G4, CT-05-315-L1, H10 and I9 to J10, CT-05-315-R1, H2 and I1 to J3 and CT-05-316a, A1 to B2 in the SES2 and AP2 ES Volume 2, MA02 Map Book Maps CT-05-316b, A1 to B2 and CT-05-320-R1 A10 to I9 in the SES2 and AP2 ES Volume 2, MA03 Map Book	via a number of intake points, including: • A556 Shurlach Road auto-transformer station in the Wimboldsley to Lostock Gralam area; and • Peacock Lane auto-transformer feeder station in the Pickmere to Agden and Hulseheath area (MA03).	• Peacock Lane auto-transformer feeder station (which will be removed and will no longer act as an intake point); and • the A556 Shurlach Road auto-transformer station.
Additional land temporarily required for modifications to the A559 Manchester Road and Stubbs Lane junction AP2-002-005 Map CT-05-315-L1, H9, in the SES2 and AP2 ES Volume 2, MA02 Map Book	The main ES did not propose any mitigation works in this location for road users.	The junction of A559 Manchester Road/Stubbs Lane will be temporarily widened to improve capacity. The amendment will introduce a left turn lane on Stubbs Lane.

Figure 2: Locations of AP2 amendments in the Wimboldsley to Lostock Gralam area



5 Assessment of engineering amendments in the Wimboldsley to Lostock Gralam area

5.1 Additional land temporarily required for modifications to the A54 St Michael's Way, A533 Leadsmithy Street and A54 Kinderton Street junction (AP2-002-001)

5.1.1 The Bill provides for construction traffic routes and construction compounds in the Wimboldsley to Lostock Gralam 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 for users of the junction of the A54 St Michael's Way/A533 Leadsmithy Street/A54 Kinderton Street, due to increased traffic flows. The main ES did not propose any mitigation works in this location for road users.

5.1.2 Since the main ES, further work has identified mitigation for the impacts of HS2 construction work on existing road users at the junction of the A54 St Michael's Way/A533 Leadsmithy Street/A54 Kinderton Street.

5.1.3 The junction will be temporarily widened to improve capacity. This change will enable an extension of the left turn lane (extended by 11.5m and up to 3m wide) on A533 Leadsmithy Street. The lane for traffic turning right will be 3m wide. A minimum width of 2m will be retained for the footway to the west of A533 Leadsmithy Street.

5.1.4 The modification and widening of the A54 St Michael's Way/A533 Leadsmithy Street/A54 Kinderton Street junction will be constructed over a period of up to one year and two 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. The construction of the amendment will be managed locally within the highway. The existing configuration of the junction will be reinstated following the completion of construction.

5.1.5 The land required for the amendment is outside the limits of the Bill. The amendment will result in the temporary requirement for an additional 0.21ha of land of land (see SES2 and AP2 ES Volume 2, MA02 Map Book: map CT-05-310-R2, G5 to H6).

Topics included in the AP2 assessment

5.1.6 The assessment of this amendment has identified new, different or removed likely significant effects for: socio-economics; and sound, noise and vibration.

5.1.7 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: community; ecology and biodiversity; health; socio-economics; sound, noise and vibration; and water resources and flood risk.

Socio-economics

Scope, assumptions and limitations

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

5.1.9 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

5.1.10 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.

5.1.11 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.

5.1.12 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

5.1.13 No mitigation measures additional to those reported in the main ES and in the draft Code of Construction Practice (CoCP)[24] are proposed.

Assessment of impacts and effects

5.1.14 The amendment will result in a new temporary adverse significant in-combination effect on Middlewich Physiotherapy and Sports Injury Clinic located in Middlewich as a result of new significant noise effects for one year and five months. This effect is in addition to the significant effects from HGV construction traffic congestion and delays for road users reported in the main ES and the SES1 and AP1 ES. The sensitivity of Middlewich Physiotherapy and Sports Injury Clinic 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 Middlewich Physiotherapy and Sports Injury Clinic, 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

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

Summary of likely residual significant effects

5.1.16 The amendment will result in a new temporary adverse significant in-combination effect on Middlewich Physiotherapy and Sports Injury Clinic.

Cumulative effects

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

[24] 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.

Sound, noise and vibration

Scope, assumptions and limitations

5.1.18 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. This amendment has the potential to result in new or different likely significant construction effects only. Therefore, there is no assessment of operational effects for sound, noise and vibration.

5.1.19 Baseline surveys have not been undertaken in the vicinity of this amendment and as such, a precautionary approach to the identification of likely significant effects has been taken due to the increased uncertainty of the baseline in this area.

Environmental baseline

Existing baseline

5.1.20 In the Wimboldsley to Lostock Gralam 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: Wimboldsley to Lostock Gralam area (MA02) of the main ES and Section 3.8 of SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02).

5.1.21 This amendment involves works close to properties which were not included within the main ES. The additional baseline sound levels are presented in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000.

Future baseline

5.1.22 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.

5.1.23 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.

5.1.24 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on sound, noise and vibration.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Residential receptors: direct effects – individual dwellings

5.1.26 Taking account of the avoidance and mitigation measures as outlined in the main ES, five properties at 30, 32, 34A, 34B and 36 Hightown, Middlewich (assessment location ref.: 611168) are forecast to experience noise levels above the eligibility criteria for noise insulation, as defined in the draft CoCP.

5.1.27 For daytime construction, the threshold for eligibility for noise insulation is 75dB measured outdoors as specified in the draft CoCP.

5.1.28 The mitigation measures, including noise insulation, will reduce noise inside all dwellings such that it does not reach a level where it will significantly affect residents.

Residential receptors: direct effects – communities

5.1.29 The amendment may give rise to new temporary direct adverse noise effects, which may be considered to be significant on a community basis. The potential new or different likely significant effects are discussed in the following paragraphs and summarised in Table 8. In the table, the duration of impact is the period where the relevant assessment category is exceeded. The predicted monthly construction noise level will vary throughout this period and as a guide the typical and highest monthly noise levels at the closest properties in the community identified are presented in the 'cause' column of this table.

5.1.30 The amendment has the potential to introduce a new adverse noise effect at approximately 20 dwellings in the vicinity of the junction of the A54 Kinderton Street and the A533 Leadsmithy Street in Middlewich. The predicted duration of the construction noise impact is up to 10 months during the daytime. This may be considered by the local community as an effect on the acoustic character of the area and hence be perceived as a change in the quality of life for that community. This is considered to be a likely significant effect when assessed on a community basis.

Table 8: Direct adverse construction effects on residential communities and shared open areas that are considered to be significant on a community basis and are new compared to those reported in the main ES

Significant effect number (and Map reference)[25]	Type of significant effect	Time of day	Location	Cause (construction activities)[26]	Assumed approximate duration of impact
MA02-C-C10 (SV-03-305-R1)i	Construction noise (New)	Daytime	Middlewich: approximately 20 dwellings in the vicinity of the A54 Kinderton Street and the A533 Leadsmithy Street	During the daytime, general site works in the vicinity of the junction of the A54 Kinderton Street and the A533 Leadsmithy Street. The typical and highest monthly noise levels will both be approximately 75dB	Up to ten months

5.1.31 For further information see SES2 and AP2 ES Volume 5, Appendix: SV-002-00000 and SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book.

Non-residential receptors: direct effects

5.1.32 The amendment will give rise to predicted airborne construction noise levels which exceed both the relevant screening criteria and the noise change criterion (typically a change of greater than 3dB[27] compared with the existing baseline sound level) at the following non-residential receptors:

- Peter Forshaw Funeral Services (Offices), Leadsmithy Street, Middlewich (assessment location ref.: 611157);
- Waters Edge Medical Centre, Leadsmithy Street, Middlewich (assessment location ref.: 611158);
- St Michael and All Angels Church, Hightown, Middlewich (assessment location ref.: 611150);
- The Kinderton (Accommodation), Kinderton Street, Middlewich (assessment location ref.: 611162); and
- Middlewich Physiotherapy and Sports Injury Clinic, St Michael's Way, Middlewich (assessment location ref.: 611160).

5.1.33 These locations are identified in the Wimboldsley to Lostock Gralam area, as shown in SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book, Map Series SV-03. At each of the non-residential receptors identified above an assessment has been undertaken to

[25] See SES1 and AP1 Volume 5, Appendix: SV-002-00000 and SES1 and AP1 ES, Volume 5, Sound, noise and vibration Map Book: AP1 Map Series SV-03.

[26] The construction activity giving rise to the highest predicted noise or vibration level is reported. Multiple construction activities may contribute to the typical noise levels and the approximate duration of impact.

[27] The exception is where the use and sensitivity of the receptor or land use is very sensitive to noise and have been included in the detailed assessment where there is a change less than 3dB. Further information can be found in the SES1 and AP1 ES, Volume 5, Appendix: SV-002-0MA02.

determine if this impact would result in a significant effect, using the significance criteria set out in Annex A of Volume 5, Appendix SV-001-00000 of the main ES.

5.1.34 Peter Forshaw Funeral Services is a firm of independent funeral directors operating from a two-storey brick-built building on the A533 Leadsmithy Street in Middlewich. The receptor is located adjacent to the land required for construction of the amendment. Peter Forshaw Funeral Services has been assessed against the office criteria. The predicted daytime monthly construction noise level is above the screening criterion defined in the SMR for office use[28] for a period of 10 months. The highest predicted daytime monthly construction noise level is 18dB above the screening criterion defined in the SMR. The typical predicted monthly daytime construction noise level is 17dB above the screening criterion defined in the SMR. Peter Forshaw Funeral Services is identified, on the basis of a precautionary assessment, as being subject to a likely adverse significant effect (denoted by MA02-C-N10). This temporary adverse effect may take the form of activity disturbance to office users.

5.1.35 Waters Edge Medical Centre is a GP practice within a two-storey brick-built building on the A533 Leadsmithy Street in Middlewich. The receptor is located adjacent to the land required for construction of the amendment. Waters Edge Medical Centre has been assessed against the hospital criteria. The predicted daytime monthly construction noise level is above the screening criterion defined in the SMR for hospital use[29] for a period of one year and three months. The highest predicted daytime monthly construction noise level is 25dB above the screening criterion defined in the SMR. The typical predicted monthly daytime construction noise level is 23dB above the screening criterion defined in the SMR. Waters Edge Medical Centre is identified, on the basis of a precautionary assessment, as being subject to a likely adverse significant effect (denoted by MA02-C-N11). This temporary adverse effect may take the form of activity disturbance to users of the medical centre.

5.1.36 St Michael and All Angels Church is a traditional stone-built church in Middlewich located within a corner plot adjacent to Hightown/Wheelock Street to the south, the A533 Leadsmithy Street to the east and the A54 St Michael's Way to the north. The receptor is located around 10m west of the land required for construction of the amendment. St Michael and All Angels Church has been assessed against the places of meeting for religious worship criteria. The predicted daytime monthly construction noise level is above the screening criterion defined in the SMR for religious worship use[30] for a period of one year and three months. The highest predicted daytime monthly construction noise level is 19dB above the screening criterion defined in the SMR. The typical predicted monthly daytime construction noise level is 17dB above the screening criterion defined in the SMR. It is understood that the church typically holds services at weekends only and use during weekday periods would be infrequent. There is the potential, however, for services to be held on occasion during weekday periods, and as such St Michael and All Angels Church is identified, on the basis of a precautionary assessment, as being subject to a likely adverse

[28] 55dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 58dB $L_{pAeq,0700-2300}$ (façade).

[29] 50dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 53dB $L_{pAeq,0700-2300}$ (façade).

[30] 50dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 53dB LpAeq,0700-2300 (façade).

significant effect (denoted by MA02-C-N12). This temporary adverse effect may take the form of activity disturbance to users of the church.

5.1.37 The Kinderton is a bar, restaurant and hotel within a three-storey building on the A54 Kinderton Street in Middlewich. The receptor is located approximately 10m east of the land required for construction of the amendment. The Kinderton has been assessed against the hotel criteria. The predicted daytime monthly construction noise level is above the screening criterion defined in the SMR for hotel use[31] for a period of one year and three months. The highest predicted daytime monthly construction noise level is 17dB above the screening criterion defined in the SMR. The typical predicted monthly daytime construction noise level is 16dB above the screening criterion defined in the SMR. The Kinderton is identified, on the basis of a precautionary assessment, as being subject to a likely adverse significant effect (denoted by MA02-C-N13). This temporary adverse effect may take the form of activity disturbance to users of the hotel.

5.1.38 Middlewich Physiotherapy and Sports Injury Clinic is a clinic specialising in the treatment of musculo-skeletal conditions and is located within a single-storey building on the A54 St Michael's Way in Middlewich. The receptor is located adjacent to the land required for construction of the amendment. Middlewich Physiotherapy and Sports Injury Clinic has been assessed against the hospital criteria. The predicted daytime monthly construction noise level is above the screening criterion defined in the SMR for hospital use[32] for a period of one year and five months. The highest predicted daytime monthly construction noise level is 26dB above the screening criterion defined in the SMR. The typical predicted monthly daytime construction noise level is 25dB above the screening criterion defined in the SMR. Middlewich Physiotherapy and Sports Injury Clinic is identified, on the basis of a precautionary assessment, as being subject to a likely adverse significant effect (denoted by MA02-C-N14). This temporary adverse effect may take the form of activity disturbance to users of the clinic.

Other mitigation measures

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

Summary of likely residual significant effects

5.1.40 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community of Middlewich.

5.1.41 The amendment will give rise to a new likely temporary residual adverse significant construction noise effects on the following non-residential buildings:

- Peter Forshaw Funeral Services, Leadsmithy Street;

[31] 50dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 53dB $L_{pAeq,0700-2300}$ (façade).

[32] 50dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 53dB $L_{pAeq,0700-2300}$ (façade).

- Waters Edge Medical Centre, Leadsmithy Street;
- St Michael and All Angels Church, Hightown;
- The Kinderton, Kinderton Street; and
- Middlewich Physiotherapy and Sports Injury Clinic, St Michael's Way.

Cumulative effects

5.1.42 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

Socio-economics

5.1.43 The amendment will result in a new temporary adverse residual significant in-combination effect on Middlewich Physiotherapy and Sports Injury Clinic.

Sound, noise and vibration

5.1.44 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community of Middlewich.

5.1.45 The amendment will give rise to a new likely temporary residual adverse significant construction noise effects on the following non-residential buildings:

- Peter Forshaw Funeral Services, Leadsmithy Street;
- Waters Edge Medical Centre, Leadsmithy Street;
- St Michael and All Angels Church, Hightown;
- The Kinderton, Kinderton Street; and
- Middlewich Physiotherapy and Sports Injury Clinic, St Michael's Way.

5.2 Additional land temporarily required for modifications to the A530 King Street, A530 Croxton Lane and B5309 King Street junction (AP2-002-002)

5.2.1 The Bill provides for construction traffic routes and construction compounds in the Wimboldsley to Lostock Gralam 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 for users of the junction of A530 King Street/A530 Croxton Lane/B5309 King Street, due to increased traffic flows. 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 work on existing road users at the junction of the A530 King Street/A530 Croxton Lane/B5309 King Street.

5.2.3 The junction will be temporarily widened to improve capacity. The following temporary modifications will be made:

- signalisation of the junction;
- the north side of A530 King Street will be widened to 13.3m wide, to accommodate three lanes, with the introduction of a right turn lane on the A530 King Street, which will be up to 3m wide;
- the south side of the A530 King Street will be widened to 10m;
- the left turn lane on the A530 Croxton Lane will be up to 3m wide;
- the amendment will require street lighting. There is no street lighting present under the existing junction configuration; and
- diversion of a telecommunication cable along the north of the A530 Croxton Lane.

5.2.4 To enable widening of the carriageway, existing trees, a grass verge and a hedgerow will be removed. To mitigate this, landscape mitigation planting will temporarily be provided alongside the highway alignment to provide habitat replacement.

5.2.5 The modification and widening of the A530 King Street/A530 Croxton Lane/B5309 King Street junction will be constructed over a period of up to one year and two months, commencing in 2026. The construction of the amendment will be managed locally and will result in the temporary loss of 0.29ha of agricultural land. The existing configuration of the junction will be reinstated following the completion of construction.

5.2.6 The land required for the amendment is outside the limits of the Bill. The amendment will result in the temporary requirement for an additional 0.91ha of land, of which 0.29ha is agricultural land (see SES2 and AP2 ES Volume 2, MA02 Map Book: map CT-05-312-R2, B1 and B2 to C2).

Topics included in the AP2 assessment

5.2.7 The assessment of this amendment has identified new, different or removed likely significant effects for: agriculture, forestry and soils; and ecology and biodiversity.

5.2.8 The assessment of changes to traffic flows and traffic relates 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: community; ecology and biodiversity; health; socio-economics; sound, noise and vibration; and water resources and flood risk.

Agriculture, forestry and soils

Scope, assumptions and limitations

5.2.9 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.

5.2.10 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.

5.2.11 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

5.2.12 The agricultural land associated with this amendment has soil predominantly in the Blackwood association. This group of soils is commonly seasonally waterlogged (WC IV) and limited by soil wetness to Subgrade 3b although drainage can improve the quality of the agricultural land to Grade 2 or Subgrade 3a.

5.2.13 One agricultural holding, not previously impacted, will be temporarily affected by this amendment, as detailed in Table 9.

Table 9: Summary characteristics of the holding affected by the additional land temporarily required for the modifications to the A530 King Street, A530 Croxton Lane and B5309 King Street junction (AP2-002-002)

Holding reference/name	Holding type	Holding size (ha)	Diversification	Agri-environment scheme	Sensitivity to change
MA02/36 Blueslates Farm*	Grassland	45	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

5.2.14 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.

5.2.15 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.

5.2.16 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

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

Assessment of impacts and effects

5.2.18 The amendment will require 0.2ha of agricultural land in the Wimboldsley to Lostock Gralam area, which is classified as Subgrade 3b.

5.2.19 The impacts on the holding affected are set out in Table 10. There will be no permanent effects on this holding.

Table 10: Impacts and effects on holdings arising from the additional land temporarily required for the modifications to the A530 King Street, A530 Croxton Lane and B5309 King Street junction (AP2-002-002)

Holding reference/name	Total area required from holding	Construction severance	Disruption	Scale of construction effect	Change in effect from main ES
MA02/36 Blueslates Farm	0.2ha, <1% Negligible	Negligible	Negligible	Negligible	New holding affected – no significant effect

Other mitigation measures

5.2.20 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 measures are proposed.

Summary of likely residual significant effects

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

Cumulative effects

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

Ecology and biodiversity

Scope, assumptions and limitations

5.2.23 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.

5.2.24 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.

5.2.25 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' basis for the subsequent assessment.

5.2.26 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

5.2.27 The baseline ecology and biodiversity information is as described in Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) of the main ES and SES1. A summary of the baseline information relevant to the assessment of the AP2 amendment is provided below.

Habitats

5.2.28 Habitats within the land required for construction of the amendment include hedgerow (assumed species-rich on a precautionary basis), semi-improved grassland, amenity grassland, arable and hardstanding.

5.2.29 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 Wimboldsley to Lostock Gralam area that is of county/metropolitan value.

Species

5.2.30 The land required for the amendment contains 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 part of the bat assemblage between Bostock and Rudheath, which is of regional value.

Future baseline

5.2.31 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.

5.2.32 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.

5.2.33 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

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

Assessment of impacts and effects

Habitats

5.2.35 On a precautionary basis, the SES1 reported a net loss of 54.6km of hedgerow habitat, taking account of mitigation, within the land required for construction of the scheme within the Wimboldsley to Lostock Gralam area, resulting in a permanent adverse effect, significant at the county/metropolitan level. The amendment will result in the loss of an additional 545m of assumed species-rich hedgerow. This will result in a different effect on hedgerow to that reported in the SES1. However, there will be no change in the level of significance of the effect reported in the SES1.

Species

5.2.36 The amendment will result in the loss of trees which, on a precautionary basis, are assumed to support roosting bats, which form part of the bat assemblage between Bostock and Rudheath. This would result in a different permanent adverse effect on the species of bats present to that reported in the main ES. However, there will be no change in the level of significance of the effect reported in the SES1.

Other mitigation measures

5.2.37 As reported in the SES1, a total of 32km of new hedgerows will be planted as replacement for those lost as a result of the SES2 scheme, resulting in an overall net loss of 54.6km of hedgerow after mitigation. This will result in a permanent adverse effect that is significant at

the county/metropolitan level. The amendment will result in the loss of an additional 545m of assumed species-rich hedgerow. This will result in a different effect on hedgerow to that reported in the SES1. However, this will not change the level of significance of that effect reported in the main ES on hedgerows within the Wimboldsley to Lostock Gralam area.

5.2.38 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

5.2.39 On a precautionary basis, it is assumed that there will be a net loss in hedgerow of 54.6km at SES1 taking account of mitigation, and the amendment will result in a further loss of 545m. This will remain a permanent adverse residual effect that is significant at the county/metropolitan level, as reported in the main ES and SES1. In addition to the mitigation described, opportunities will be sought for additional retention and replacement of hedgerow within the land required for temporary works.

Cumulative effects

5.2.40 No new 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

5.2.41 This amendment will result in a different effect on hedgerow to that reported in the main ES and SES1. However, this amendment will not change the significance of the effects reported in the main ES. On a precautionary basis, it is assumed that there will be a net loss in hedgerow of 55km. This will remain a permanent adverse residual effect that is significant at the county/metropolitan level, as reported in the main ES and SES1. In addition to the mitigation described, opportunities will be sought for additional retention and replacement of hedgerow within the land required for temporary works.

5.3 Additional land permanently required for modifications to the A559 Manchester Road, A559 Hall Lane and Station Road junction (AP2-002-003)

5.3.1 The Bill provides for the realignment of the A54 Middlewich Road, the diversion of the A533 Bostock Road and the A556 Shurlach Road realignment. The main ES reported a significant adverse effect due to these highway changes (combined with Crewe North rolling stock depot related traffic that will lead to flow changes on the highway network), for users of the junction of the A559 Manchester Road/A559 Hall Lane/Station Road. The main ES did not propose any mitigation works for road users in this location.

5.3.2 Since the main ES, further work has identified mitigation for the impacts of HS2 construction work on existing road users at the junction of the A559 Manchester Road/A559 Hall Lane/Station Road.

5.3.3 The junction will be permanently widened to improve capacity. The amendment will introduce a left turn lane (23m long and up to 3m wide) on the south-west side of the A559 Manchester Road. The lane for traffic travelling straight ahead will be up to 3m wide.

5.3.4 The footway on the south-west side of the A559 Manchester Road will be realigned to follow the widened carriageway and will be a minimum of 2m wide.

5.3.5 To enable widening of the carriageway, existing grass verge will be removed. To mitigate this, replacement planting will be provided along the highway alignment to provide habitat replacement.

5.3.6 The modification and widening of the A559 Manchester Road/A559 Hall Lane/Station Road junction will be constructed over a period of up to one year and two months, commencing in 2026. The construction of the amendment will be managed locally within the highway.

5.3.7 The land required for the amendment is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 0.4ha of land (see SES2 and AP2 ES Volume 2, MA02 Map Book: maps CT-05-315-L1, G7 and G8 and CT-06-315-L1, G7).

Topics included in the AP2 assessment

5.3.8 The assessment of this amendment has identified new, different or removed likely significant effects for the following topics: community; health; landscape and visual; socio-economics; and sound, noise and vibration.

5.3.9 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: community; ecology and biodiversity; health; socio-economics; sound, noise and vibration; and water resources and flood risk.

Community

Scope, assumptions and limitations

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

5.3.11 This amendment has the potential to result in new significant construction effects only. Therefore, there is no operational assessment for community.

Environmental baseline

Existing baseline

5.3.12 The baseline community information is as described in Section 6 of the main ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02). A summary of the baseline information relevant to the assessment of the amendment is provided below.

5.3.13 Lostock Gralam is a settlement comprising approximately 1,000 residential properties. The nearest properties are located 100m west of the HS2 route. Lostock Gralam has several community facilities, including Lostock Gralam Community Centre and outdoor play area.

Future baseline

5.3.14 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.

5.3.15 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.

5.3.16 The committed development of relevance to the community assessment that would materially alter the future baseline during construction of the AP2 revised scheme in this area is set out in Table 11.

Table 11: Committed developments of relevance to community during construction

Map book reference[33]	Planning reference	Description	How this is considered in the assessment
MA02/444A	20/04578/FUL	Location: 280 Manchester Road Lostock Gralam Northwich CW9 7PY Change of use, part demolition and conversion of existing building to 5 apartments - (amended description and amended plans).	Informing future baseline

5.3.17 The committed development has been included as part of the future baseline and considered in this assessment as it will result in five new residential apartments, located approximately 30m to the east of land required for construction of the AP2 revised scheme.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.19 This amendment will result in a new major adverse in-combination effect on approximately five residential properties on the A559 Manchester Road, at the corner of Station Road, in Lostock Gralam. New significant noise effects are expected to combine with new significant visual effects for approximately nine months. Together, these noise and visual effects will result in a new major adverse in-combination effect on amenity for residents at these properties, which is significant. 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

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

Summary of likely residual significant effects

5.3.21 The amendment will result in a new residual significant effect on approximately five residential properties on the A559 Manchester Road, at the corner of Station Road, Lostock Gralam, due to new noise and visual effects.

[33] SES2 and AP2 ES Volume 5, Planning Data / Committed Developments Map Book: Map Series CT-13 – Committed Developments, maps CT-13-304b to CT-13-309a.

Cumulative effects

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

Health

Scope, assumptions and limitations

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

5.3.24 This amendment has the potential to result in new construction effects only. Therefore, there is no operational assessment for health.

Environmental baseline

Existing baseline

5.3.25 The baseline health information is as described in Section 8 of the main ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02). A summary of the baseline information relevant to the assessment of the amendment is provided below.

5.3.26 Lostock Gralam is a settlement comprising approximately 1,000 residential properties. The nearest properties are located 100m west of the HS2 route. Lostock Gralam has several community facilities, including Lostock Gralam Community Centre and outdoor play area.

Future baseline

5.3.27 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.

5.3.28 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.

5.3.29 The committed development of relevance to the health assessment that would materially alter the future baseline during construction of the AP2 revised scheme in this area is set out in Table 12.

Table 12: Committed developments of relevance to health during construction

Map book reference[34]	Planning reference	Description	How this is considered in the assessment
MA02/444A	20/04578/FUL	Location: 280 Manchester Road Lostock Gralam Northwich CW9 7PY Change of use, part demolition and conversion of existing building to 5 apartments - (amended description and amended plans).	Informing future baseline

5.3.30 The committed development has been included as part of the future baseline and considered in this assessment as it will result in five new residential apartments, located approximately 30m to the east of land required for construction of the AP2 revised scheme.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.32 This amendment will result in a new adverse neighbourhood quality effect for residents of properties on the A559 Manchester Road, at the corner of Station Road, in Lostock Gralam. Construction noise is expected to be noticeable for approximately nine months. Construction activities are expected to be visible from street level in the vicinity of the junction of the A559 Manchester Road and Station Road. 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

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

Cumulative effects

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

[34] SES2 and AP2 ES Volume 5, Planning Data / Committed Developments Map Book: Map Series CT-13 – Committed Developments, maps CT-13-304b to CT-13-309a.

Landscape and visual

Scope, assumptions and limitations

5.3.35 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.

5.3.36 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 assessment.

5.3.37 All visual effects, arising from this amendment, are reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA02. The locations of significantly affected viewpoints during the construction phase are shown in the SES2 and AP2 ES Volume 2, MA02 Map Book: Map Series LV-03.

Environmental baseline

Existing baseline

5.3.38 The baseline visual information is as described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA02. A summary of the visual baseline information relevant to the assessment of the amendment is provided below.

Visual baseline

5.3.39 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-001-0MA02 and summarised below.

View north-west from the junction of the A559 Manchester Road, Station Road and the A559 Hall Lane (medium-high sensitivity receptors) (312-02-011)

5.3.40 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 along the A559 Manchester Road, Station Road, the A559 Hall Lane and Townshend Road, visitors to The Slow and Easy Public House, and road users along the A559 Manchester Road, Station Road and A559 Hall Lane. The viewpoint is situated on the A559 Manchester Road, to the east of the junction with Station Road and the A559 Hall Lane. The viewpoint is flanked by residential and commercial properties, including the Slow and Easy public house to the north-west and fenced car sales plot to the north-east with the roofline of properties on Townshend Road beyond. Wide grass verges border the south-east and north-west corners of the junction. A row of mature trees extends along A559 Hall Lane partially screening views to the north. In the middle distance to the north-west, mature roadside trees and the rooflines of residential properties combine to form the skyline.

Night-time

5.3.41 The A559 Manchester Road has high level street lighting and along with the surrounding residential and commercial areas is well-lit.

Future baseline

5.3.42 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.

5.3.43 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.

5.3.44 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

5.3.45 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-west from the junction of the A559 Manchester Road, Station Road and A559 Hall Lane (medium-high sensitivity receptors) (312-02-011)

5.3.46 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of **high** susceptibility and visitors to the Slow and Easy public house and road users of lower susceptibility, all with **medium** value views, will experience a noticeable change to views during the construction period as a result of the amendment. The loss of roadside vegetation will open up near-distance views of the modified junction and the presence of traffic using the junction for residents of the A559 Manchester Road and Station Road and visitors to The Slow and Easy public house. The loss of roadside trees on the A559 Hall Lane will increase middle-distance visibility towards the junction for residents of Townshend Road. Road users along the A559 Manchester Road, Station Road and the A559 Hall Lane will experience a change to near-distance, transient views due to the presence of the modified junction and the presence of traffic using the junction. 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

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

Summary of likely residual significant effects

5.3.48 The amendment will give rise to a new likely residual significant construction effect at view north-west from the junction of the A559 Manchester Road, Station Road and A559 Hall Lane (312-02-011) after implementation of construction phase mitigation. The effect will be **moderate** adverse (significant).

Cumulative effects

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

Socio-economics

Scope, assumptions and limitations

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

5.3.51 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

5.3.52 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.

5.3.53 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.

5.3.54 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

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

Assessment of impacts and effects

5.3.56 The amendment will result in a new temporary adverse significant in-combination effect on The Slow and Easy, a public house located in Lostock Gralam. The public house does not currently operate as a hotel, but has in the past, and may do so in the future, so on the basis of a precautionary assessment the building has been assessed by sound, noise and vibration against the criteria for hotel use with the potential to operate as a hotel.

5.3.57 The new significant noise effects for 11 months and new significant visual effects will result in a new temporary adverse significant in-combination effect on The Slow and Easy public house. The sensitivity of The Slow and Easy is assessed to be high 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 high level of sensitivity, the amendment will result in a new temporary adverse in-combination effect on The Slow and Easy, which is significant.

5.3.58 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

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

Summary of likely residual significant effects

5.3.60 The amendment will result in a new temporary adverse significant in-combination effect on The Slow and Easy public house.

Cumulative effects

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

Sound, noise and vibration

Scope, assumptions and limitations

5.3.62 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. This amendment has the potential to

result in new or different significant construction and operational effects for sound, noise and vibration.

5.3.63 Baseline surveys have not been undertaken in the vicinity of this amendment and as such, a precautionary approach to the identification of likely significant effects has been taken due to the increased uncertainty of the baseline in this area.

Environmental baseline

Existing baseline

5.3.64 In the Wimboldsley to Lostock Gralam area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors adjacent to Manchester Road in the community of Lostock Gralam. 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 the baseline sound levels are required, the baseline sound, noise and vibration information is as described in Section 13 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam area (MA02) of the main ES.

5.3.65 This amendment involves works close to properties which were not included within the main ES. The additional baseline sound levels are presented in in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000.

Future baseline

5.3.66 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.

5.3.67 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.

5.3.68 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on sound, noise and vibration.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Residential receptors: direct effects – individual dwellings

5.3.70 Taking account of the avoidance and mitigation measures as outlined in the main ES, the assessment has identified two dwellings, at 272 and 274 Manchester Road, Lostock Gralam (assessment location ref.: 613246), close to the land required for the amendment, which are forecast to experience noise levels above the eligibility criteria for noise insulation as defined in the draft CoCP.

5.3.71 For daytime construction, the threshold for eligibility for noise insulation is 75dB measured outdoors as specified in the draft CoCP.

5.3.72 The mitigation measures, including noise insulation, will reduce noise inside all dwellings such that it does not reach a level where it will significantly affect residents.

Residential receptors: direct effects – communities

5.3.73 The amendment has the potential to give rise to new temporary adverse noise effects which may be considered to be significant on a community basis. The potential new likely significant effect is discussed in the following paragraph and summarised in Table 13. In the table, the duration of impact is the period where the relevant assessment category is exceeded. The predicted monthly construction noise level will vary throughout this period and as a guide the typical and highest monthly noise levels at the closest properties in the community identified are presented in the 'cause' column of this table.

5.3.74 The amendment has the potential to give rise to a new adverse noise effect at approximately five dwellings in the vicinity of the A559 Manchester Road, the A559 Hall Lane and Station Road junction (MA02-C-C12). The predicted duration of the construction noise impact is up to nine months during the daytime. This may be considered by the local community as an effect on the acoustic character of the area and hence be perceived as a change in the quality of life for that community. This effect is likely to be considered as significant when assessed on a community basis.

Table 13: Direct adverse construction effects on residential communities and shared open areas that are considered to be significant on a community basis and are new compared to those reported in the main ES

Significant effect number (and map reference)[35]	Type of significant effect	Time of day	Location	Cause (construction activities)[36]	Assumed approximate duration of impact
MA02-C-C12 (SV-03-308)	Construction noise (New)	Daytime	Manchester Road, Lostock Gralam: approximately five dwellings in the vicinity of the A559 Manchester Road, the A559 Hall Lane and Station Road junction.	Highway junction works. The typical and highest monthly noise levels are approximately 70dB to 75dB and 75dB to 80dB[37].	Up to nine months.

Non-residential receptors: direct effects

5.3.75 The amendment will give rise to predicted airborne construction noise levels which exceed both the relevant screening criteria and the noise change criterion (typically a change of greater than 3dB[38] compared with the existing baseline sound level) at the following non-residential receptors:

- The Slow and Easy (hotel), Lostock Gralam (assessment location ref.: 612587); and
- Motor Connect (lower sensitivity office), Lostock Gralam (assessment location ref.: 613241).

5.3.76 These locations are identified in the Wimboldsley to Lostock Gralam area, as shown in SES2 and AP2 ES, Volume 5, Sound, noise and vibration Map Book, Map Series SV-03. At each of the non-residential receptors identified above an assessment has been undertaken to determine if this impact would result in a significant effect, using the significance criteria set out in Annex A of Volume 5, Appendix: SV-001-00000 of the main ES.

5.3.77 The Slow and Easy hotel and pub is located on Manchester Road in Lostock Gralam. The receptor is approximately 30m to the north of the land required for construction of the amendment. The two-story brick building has windows that appear to be openable. It is assumed that the building is not provided with alternative means of ventilation to openable windows. The pub does not currently operate as a hotel, but has in the past and its planning

[35] See SES2 and AP2 ES Volume 5, Appendix: SV-002-00000 and SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book, Map Series SV-03.

[36] The construction activity giving rise to the highest predicted noise or vibration level is reported. Multiple construction activities may contribute to the typical noise levels and the approximate duration of impact.

[37] Equivalent continuous sound level at the facade, $L_{pAeq,0700\text{-}1900}$.

[38] The exception is where the use and sensitivity of the receptor or land use is very sensitive to noise and have been included in the detailed assessment where there is a change less than 3dB. Further information can be found in the SES2 and AP2 ES, Volume 5, Appendix: SV-002-0MA02.

status has not changed, and therefore may do so in the future, so on the basis of a precautionary assessment the building has been assessed against the criteria for hotel use. The typical and highest predicted daytime monthly construction noise levels are 16dB and 17dB respectively above the screening criteria defined in the SMR for this use[39] for a period of up to 11 months. The Slow and Easy hotel is identified, on the basis of a precautionary assessment, as being subject to a likely significant adverse effect (denoted by MA02-C-N16 in Table 6 SES2 and AP2 ES Volume 5, Appendix: SV-002-00000). This temporary adverse effect from construction site noise may take the form of activity disturbance to guests of the hotel.

5.3.78 Motor Connect is a car dealership operating from a one-storey brick-built building on Manchester Road in Lostock Gralam. The receptor has windows that appear to be openable. It is assumed that the building is not provided with alternative means of ventilation to openable windows. The receptor is located adjacent to the land required for construction of the amendment. Motor Connect has been assessed against the lower sensitivity office criteria. The typical and highest predicted daytime monthly construction noise levels at this building are 5dB and 6dB respectively above the screening criteria defined in the SMR for this use[40] for up to a period of 11 months. Motor Connect is identified, on the basis of a precautionary assessment, as being subject to a likely adverse significant effect (denoted by MA02-C-N17 in Table 6 of SES2 and AP2 ES Volume 5, Appendix: SV-002-00000). This temporary adverse effect may take the form of activity disturbance to office users.

Other mitigation measures

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

Summary of likely residual significant effects

5.3.80 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community in the vicinity of the junction between Manchester Road and Hall Lane in Lostock Gralam.

5.3.81 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the following non-residential buildings:

- The Slow and Easy (hotel), Manchester Road; and
- Motor Connect (lower sensitivity office), Manchester Road.

Cumulative effects

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

[39] 50 dB $L_{pAeq,2300\text{-}0700}$ (free-field) during the day, which is equivalent to 53 dB $L_{pAeq,2300\text{-}0700}$ (façade).

[40] 65 dB $L_{pAeq,0700\text{-}2300}$ (facade) during the day.

Effects arising from operation

Avoidance and mitigation measures

5.3.83 No additional avoidance or mitigation measures are proposed compared to those reported in the main ES and the SES1 and AP1 ES.

Assessment of impacts and effects

Residential receptors: direct effects – individual dwellings

5.3.84 Taking account of the avoidance and mitigation measures incorporated into the AP2 revised scheme, the assessment has identified two dwellings, 272 and 274 Manchester Road, Lostock Gralam (assessment location ref.: 613246) close to the land required for the amendment where the daytime forecast noise level does not exceed the threshold set in the Noise Insulation (NI) Regulations[41] but the predicted night-time noise level exceeds the WHO's Interim Target of 55dB. It is anticipated that these buildings will be offered noise insulation as described in the avoidance and mitigation measures section of the main ES. These dwellings are indicated on Map Series SV-02 (SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book).

5.3.85 The mitigation measures, set out in the main ES, including noise insulation, will reduce airborne noise inside all dwellings such that it will not reach a level where it will significantly affect residents.

Other mitigation measures

5.3.86 No other mitigation measures additional to those reported in the main ES and the SES1 and AP1 ES are proposed.

Summary of likely residual significant effects

5.3.87 There are no new or different residual significant effects from operational noise or vibration.

Cumulative effects

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

[41] Equivalent to a daytime free-field level of 65dB $L_{pAeq,0700\text{-}2300}$.

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

Construction

Community

5.3.89 The amendment will result in a new residual significant in-combination effect on approximately five residential properties on the A559 Manchester Road, at the corner of Station Road, in Lostock Gralam.

Landscape and visual

5.3.90 This amendment will give rise to a new likely residual significant construction effect at view north-west from the junction of the A559 Manchester Road, Station Road and A559 Hall Lane (312-02-011) after implementation of construction phase mitigation. The effect will be **moderate** adverse (significant).

Socio-economics

5.3.91 The amendment will result in a new temporary adverse significant in-combination effect on The Slow and Easy public house.

Sound, noise and vibration

5.3.92 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community in the vicinity of the junction between Manchester Road and Hall Lane in Lostock Gralam.

5.3.93 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the following non-residential buildings:

- The Slow and Easy (hotel), Manchester Road; and
- Motor Connect (lower sensitivity office), Manchester Road.

5.4 Additional land permanently required for modifications to the DNO connections to the A556 Shurlach Road auto-transformer station and Peacock Lane auto-transformer feeder station (AP2-002-004)

5.4.1 The Bill provides for non-traction power (NTP) supply for operation of the railway, via a number of intake points, including:

- A556 Shurlach Road auto-transformer station in the Wimboldsley to Lostock Gralam area; and
- Peacock Lane auto-transformer feeder station in the Pickmere to Agden and Hulseheath area (MA03).

5.4.2 The electrical substation adjacent to A556 Shurlach Road auto-transformer station would provide the power supply during construction to Smoker Brook viaduct south satellite construction compound and the non-traction power demand to an intake point situated within the A556 Chester Road auto-transformer station during operation. The incoming supply to the electrical substation would be provided by two 33kV underground cables from an existing Scottish Power Energy Networks (SPEN) substation located in Lostock Gralam. Between the existing and proposed substations, the two 33kV underground cables would be routed along Stubbs Lane, the A559 Manchester Road and the A556 Shurlach Road (see maps CT-05-315 and CT-06-315 in the main ES Volume 2, MA02 Map Book). A new 33kV underground cable between an existing SPEN substation in Mere and the Peacock Lane auto-transformer feeder station would provide a permanent power supply to the auto-transformer station compound. The proposed 33kV underground cable would be routed along the B5569 Chester Road, Chapel Lane and Peacock Lane before entering the auto-transformer station compound (see maps CT-05-321 and CT-06-321 in the main ES Volume 2, MA03 Map Book).

5.4.3 Since the main ES, Scottish Power Networks (SPEN) has provided feedback on the NTP design. The following modifications will be made to ensure a validated connection design for the AP2 revised scheme:

- Peacock Lane auto-transformer feeder station will no longer act as an intake point, and the supply load will be redistributed between the following intake points:
  - Crewe Tunnel north portal;
  - Crewe Rolling Stock depot;
  - Shurlach Road auto-transformer station;
  - Manchester Tunnel south portal;
  - Midland Street Sectioning auto-transformer station;

- removal of the incoming two 33kV underground cables connecting to the A556 Chester Road auto-transformer station (along with their point of connection onto the existing SPEN substation in Lostock Gralam), reducing the land required for construction by 1.1ha in the Wimboldsley to Lostock Gralam area. They will be replaced with a new incoming cable route (consisting of two 33kV underground cables) from an existing SPEN 33kV overhead line located within Inovyn Enterprise Ltd's (IEL) Holford Brinefield facility. The new point of connection onto SPEN's existing network will be located 830m south-east of the A556 Chester Road auto-transformer station compound. The new incoming underground lines connecting to the A556 Shurlach Road auto-transformer station will be routed south between the A556 Shurlach Road and HS2 track alignment, turn east and cross the proposed track alignment. It will then continue east alongside the Network Rail railway line before turning south, crossing beneath the railway line and entering IEL's Holford Brinefield facility. Once within the Holford Brinefield facility, the underground lines will be routed along Moss Lane until they reach the existing overhead line. Additional land will be temporarily required to accommodate the new underground cables;
- the new 33kV underground cables will pass through an area of woodland habitat creation outlined within the original scheme. Additional land will be required for replacement mitigation planting adjacent to the woodland habitat creation area;
- Footpath Lostock Gralam 8/1 will be closed for up to eight weeks, with no diversion proposed; and
- removal of the 33kV underground cable connecting the Peacock Lane auto-transformer feeder station, reducing the land required for construction by 4.37ha in the Pickmere to Agden and Hulseheath area (MA03). There will be no replacement power supply to be provided to the Peacock Lane auto-transformer station compound.

5.4.4 The construction of the amendment will be managed by Smoker Brook viaduct south satellite construction compound and Peacock Lane ATFS satellite compound and will be constructed within the period set out in the main ES.

5.4.5 The land required for the amendment is outside the limits of the Bill. The amendment will result in the reduction of 1.1ha of temporarily required land in the Wimboldsley to Lostock Gralam area (MA02) and 4.37ha of temporarily required land in the Pickmere to Agden and Hulseheath area (MA03). It will also result in the permanent requirement for an additional 0.74ha of land and the temporary requirement of an additional 0.46ha in Wimboldsley to Lostock Gralam area. The net decrease in land required will be 4.27ha (see SES2 and AP2 ES Volume 2, MA02 Map Book: CT-05-315, H6 to J10 and F1 to G4, CT-05-315-L1, H10 and I9 to J10, CT-05-315-R1, H2 and I1 to J3 and SES2 and AP2 ES Volume 2, MA03 Map Book: CT-05-316b, A1 to B2 and CT-05-320-R1 A10 to I9).

Topics included in the AP2 assessment

5.4.6 The assessment of this amendment has identified no new, different or removed likely significant effects.

5.4.7 The assessment of changes to traffic flows and traffic relates 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: community; ecology and biodiversity; health; socio-economics; sound, noise and vibration; and water resources and flood risk.

5.5 Additional land temporarily required for modifications to the A559 Manchester Road and Stubbs Lane junction (AP2-002-005)

5.5.1 The Bill provides for construction traffic routes and construction compounds in the Wimboldsley to Lostock Gralam 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 for users of the junction of A559 Manchester Road and Stubbs Lane, due to increased traffic flows. The main ES did not propose any mitigation works in this location for road users.

5.5.2 Since the main ES, further work has identified mitigation for the impacts of HS2 construction work on existing road users at the junction of the A559 Manchester Road and Stubbs Lane.

5.5.3 The junction will be temporarily widened to the west of Stubbs Lane to improve capacity. The amendment will introduce a left turn lane on Stubbs Lane, 3m wide and 11.5m in length. The existing pedestrian crossing on Stubbs Lane will also be widened by approximately 2m and will remain as an informal, uncontrolled crossing.

5.5.4 To enable widening of the carriageway, existing grass verge will be removed.

5.5.5 The modification and widening of the A559 Manchester Road/Stubbs Lane junction will be constructed over a period of up to six months, commencing in 2027. The construction of the amendment will be managed locally within the highway. The existing configuration of the junction will be reinstated following the completion of construction.

5.5.6 The land required for the amendment is outside the limits of the Bill. The amendment will result in the requirement for an additional 760m^2 of land (see SES2 and AP2 ES Volume 2, MA02 Map Book: map CT-05-315-L1, H9).

Topics included in the AP2 assessment

5.5.7 The assessment of this amendment has identified new, different or removed likely significant effects for the following topics: community; ecology and biodiversity; health; landscape and visual; and sound, noise and vibration.

5.5.8 The assessment of changes to traffic flows and traffic relates 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: community; ecology and biodiversity; health; socio-economics; sound, noise and vibration; and water resources and flood risk.

Community

Scope, assumptions and limitations

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

5.5.10 This amendment has the potential to result in a new significant construction effect only. Therefore, there is no operational assessment for community.

Environmental baseline

Existing baseline

5.5.11 The baseline community information is as described in Section 6 of the main ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02). A summary of the baseline information relevant to the assessment of the amendment is provided below.

5.5.12 Lostock Gralam is a settlement comprising approximately 1,000 residential properties. The nearest properties are located 100m west of the HS2 route. Lostock Gralam has several community facilities, including Lostock Gralam Community Centre and outdoor play area.

Future baseline

5.5.13 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.

5.5.14 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.

5.5.15 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

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

Assessment of impacts and effects

5.5.17 This amendment will result in a new major adverse in-combination effect on approximately 20 residential properties on the A559 Manchester Road, between Lodge Lane and Stubbs Lane, in Lostock Gralam. New significant noise effects are expected to combine with new significant visual effects for approximately one year and six months. Together, these noise and visual effects will result in a new major adverse in-combination effect on amenity for residents at these properties, which is significant.

5.5.18 This amendment will result in a new moderate adverse in-combination effect on the Community Centre in Lostock Gralam. New significant noise effects are expected to combine with new significant visual effects for approximately one year and seven months. Together, these noise and visual effects will result in a new moderate adverse in-combination effect on the community centre, which is significant.

5.5.19 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

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

Summary of likely residual significant effects

5.5.21 The amendment will result in new residual significant effects on:

- approximately 20 residential properties on the A559 Manchester Road, between Lodge Lane and Stubbs Lane, Lostock Gralam, due to new noise and visual effects; and
- Lostock Gralam Community Centre due to new noise and visual effects.

Cumulative effects

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

Ecology and biodiversity

Scope, assumptions and limitations

5.5.23 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.

5.5.24 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.

5.5.25 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' basis for the subsequent assessment.

5.5.26 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

5.5.27 The baseline ecology and biodiversity information is as described in Section 7 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) of the main ES and SES1. A summary of the baseline information relevant to the assessment of the amendment is provided below.

Designated sites

5.5.28 The land required for the construction of the amendment is located within the Natural England Impact Risk Zone[42] (IRZ) for Plumley Lime Beds SSSI, which is located approximately 1.1km east of the land required for the amendment and is of national value.

Habitats

5.5.29 Habitats within the land required for construction of the amendment include amenity grassland, trees and hardstanding.

Species

5.5.30 The land required for the amendment contains trees which, on a precautionary basis, are assumed to support roosting bats. Several species of bat are species of principal importance

[42] The Impact Risk Zones (IRZs) are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

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 form part of the bat assemblage east and north-east of Lostock Gralam, which is of regional value.

Future baseline

5.5.31 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.

5.5.32 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.

5.5.33 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

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

Assessment of impacts and effects

Designated sites

5.5.35 Whilst the amendment is within the IRZ for Plumley Lime Beds SSSI, no adverse effects on the integrity of the site is predicted due to the distance to the SSSI which is 1.1km to the east, the nature of the amendment and the lack of any potentially adverse indirect impacts that could affect the SSSI.

Species

5.5.36 The amendment will result in the loss of trees, which on a precautionary basis, are assumed to support roosting bats, which form part of the bat assemblage east and north-east of Lostock Gralam. This would result in a different significant effect on the species of bats present to that reported in the main ES. However, this will not change the level of significance of the effect reported in the main ES.

Other mitigation measures

5.5.37 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 and 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

5.5.38 There are no changes to the likely residual significant effects identified in the main ES as a result of the amendment.

Cumulative effects

5.5.39 No new or different significant cumulative effects have been identified.

Health

Scope, assumptions and limitations

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

5.5.41 This amendment has the potential to result in new construction effects only. Therefore, there is no operational assessment for health.

Environmental baseline

Existing baseline

5.5.42 The baseline health information is as described in Section 8 of the main ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02). A summary of the baseline information relevant to the assessment of the amendment is provided below.

5.5.43 Lostock Gralam is a settlement comprising approximately 1,000 residential properties. The nearest properties are located 100m west of the HS2 route. Lostock Gralam has several community facilities, including Lostock Gralam Community Centre and outdoor play area.

Future baseline

5.5.44 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.

5.5.45 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.

5.5.46 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

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

Assessment of impacts and effects

5.5.48 This amendment will result in a new adverse neighbourhood quality effect for residents on the A559 Manchester Road, between Lodge Lane and Stubbs Lane, in Lostock Gralam. Construction noise is expected to be noticeable for approximately one year and six months. Construction activities are expected to be visible from street level in the vicinity of the amendment. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, in diminishing the amenity of the settlement.

5.5.49 This amendment will result in a new adverse effect on Lostock Gralam Community Centre in Lostock Gralam. Construction noise effects are expected to be noticeable at the community centre and playground for approximately one year and seven months. Construction activities are expected to be visible from street level and from the playground. Changes to the community centre environment will have an adverse health effect on social capital by impacting the beneficial wellbeing effects associated with participation in community events and social networks. Therefore, this is considered to result in an adverse health effect.

Other mitigation measures

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

Cumulative effects

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

Landscape and visual

Scope, assumptions and limitations

5.5.52 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.

5.5.53 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 assessment.

5.5.54 All visual effects arising from this amendment are reported in SES1 and AP1 ES Volume 5, Appendix: LV-001-0MA02. The locations of significantly affected viewpoints during the construction phase are shown in the SES2 and AP2 ES Volume 2, MA02 Map Book: Map Series LV-03.

Environmental baseline

Existing baseline

5.5.55 The baseline visual information is as described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA02. A summary of the visual baseline information relevant to the assessment of the amendment is provided below.

Visual baseline

5.5.56 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-001-0MA02 and summarised below.

View east from the A559 Manchester Road (medium-high sensitivity receptors) (312-02-010)

5.5.57 This new viewpoint is in an area where there will be changes from the original scheme. It represents the views experienced by residents along the A559 Manchester Road and Stubbs Lane, users of the recreational ground at Lostock Gralam Community Centre and road users along the A559 Manchester Road and Stubbs Lane. This lit section of the A559 Manchester Road, between the junctions with Lodge Lane and Stubbs Lane, has residential properties along the northern side, which are set back beyond a wide grass verge and garden boundaries with walls, hedges and ornamental trees which partly filter views towards the road. Commercial properties on the southern side face directly onto the road. In the middle distance of the view, the A559 Manchester Road is bordered by residential properties on both sides of the road. Established vegetation and a prominent street tree form the northern boundary of the Lodge Lane residential properties which, combined with the vegetation associated with Lostock Gralam Community Centre and Cheshire Business Park beyond, define the skyline along the road in the middle and far distance.

Future baseline

5.5.58 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.

5.5.59 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.

5.5.60 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

5.5.61 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 east from the A559 Manchester Road (medium-high sensitivity receptors) (312-02-010)

5.5.62 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of **high** susceptibility, users of the recreation ground and road users of lower susceptibility, all with **medium** value views, will experience a noticeable change to views during the construction period as a result of the amendment. Views of a laydown area, together with the loss of a mature roadside tree and the presence of traffic using the temporarily modified junction will be noticeable in near-distance views for residents at the junction of the A559 Manchester Road with Stubbs Lane and users of the recreation ground at Lostock Gralam Community Centre. However, some views for residents will be filtered through intervening garden vegetation. For road users along the A559 Manchester Road and Stubbs Lane, the temporarily modified junction, traffic using it, and the loss of roadside vegetation will be perceptible in near-distance views. 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

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

Summary of likely residual significant effects

5.5.64 The amendment will give rise to a new likely residual significant construction effect at view east from the A559 Manchester Road (312-02-010) after implementation of construction phase mitigation. The effect will be **moderate** adverse (significant).

Cumulative effects

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

Sound, noise and vibration

Scope, assumptions and limitations

5.5.66 This amendment has the potential to result in new or different significant construction and operational effects for sound, noise and vibration.

5.5.67 Baseline surveys have not been undertaken in the vicinity of this amendment and as such, a precautionary approach to the identification of likely significant effects has been taken due to the increased uncertainty of the baseline in this area.

Environmental baseline

Existing baseline

5.5.68 In the Wimboldsley to Lostock Gralam area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors adjacent to Manchester Road and in the community of Lostock Gralam. 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 the baseline sound levels are required, the baseline sound, noise and vibration information is as described in Section 13 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam area (MA02) of the main ES.

5.5.69 This amendment involves works close to properties which were not included within the main ES. The additional baseline sound levels are presented in in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000.

Future baseline

5.5.70 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.

5.5.71 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.

5.5.72 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on sound, noise and vibration.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Residential receptors: direct effects – communities

5.5.74 The amendment has the potential to give rise to new temporary adverse noise effects which may be considered to be significant on a community basis. The potential new likely significant effect is discussed in the following paragraph and summarised in Table 14. In the table, the duration of impact is the period where the relevant assessment category is exceeded. The predicted monthly construction noise level will vary throughout this period and as a guide the typical and highest monthly noise levels at the closest properties in the community identified are presented in the 'cause' column of this table.

5.5.75 The amendment has the potential to give rise to a new adverse noise effect at approximately 20 dwellings in the vicinity of the A559 Manchester Road and Stubbs Lane junction (MA02-C-C11). The predicted duration of the construction noise impact is up to one year and six months during the daytime. This may be considered by the local community as an effect on the acoustic character of the area including its shared open space and hence be perceived as a change in the quality of life for that community. This effect is likely to be considered as significant when assessed on a community basis.

Table 14: Direct adverse construction effects on residential communities and shared open areas that are considered to be significant on a community basis and are new compared to those reported in the main ES

Significant effect number (and map reference)[43]	Type of significant effect	Time of day	Location	Cause (construction activities)[44]	Assumed approximate duration of impact
MA02-C-C11 (SV-03-308)	Construction noise (New)	Daytime	Manchester Road, Lostock Gralam: approximately 20 dwellings in the vicinity of the A559 Manchester Road and Stubbs Lane junction including its shared open space.	Highway junction works. The typical and highest monthly noise levels are approximately 70dB and 75dB[45].	Up to one year and six months.

Non-residential receptors: direct effects

5.5.76 The amendment will give rise to predicted airborne construction noise levels which exceed both the relevant screening criteria and the noise change criterion (typically a change of greater than 3dB[46] compared with the existing baseline sound level) at the following non-residential receptors:

- The Community Centre, Lostock Gralam (assessment location ref.: 613275); and
- Cheshire Business Park (offices), Lostock Gralam (assessment location ref.: 613289).

5.5.77 These locations are identified in the Wimboldsley to Lostock Gralam area, as shown in SES2 and AP2 ES, Volume 5, Sound, noise and vibration Map Book, Map Series SV-03. At each of the non-residential receptors identified above an assessment has been undertaken to determine if this impact would result in a significant effect, using the significance criteria set out in Annex A of Volume 5, Appendix SV-001-00000 of the main ES.

5.5.78 The Community Centre is a one-storey high brick building located on Stubbs Lane. The building has windows that appear to be openable. It is assumed that the building is not provided with alternative means of ventilation to openable windows. The receptor is located adjacent to the land required for construction of the amendment. The building has been assessed against the criteria for office use. The typical and highest predicted daytime monthly construction noise levels are 13dB and 16dB respectively above the screening

[43] See SES2 and AP2 ES Volume 5, Appendix: SV-002-00000 and SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book: Series SV-03.

[44] The construction activity giving rise to the highest predicted noise or vibration level is reported. Multiple construction activities may contribute to the typical noise levels and the approximate duration of impact.

[45] Equivalent continuous sound level at the facade, $L_{pAeq,0700\text{-}1900}$.

[46] The exception is where the use and sensitivity of the receptor or land use is very sensitive to noise and have been included in the detailed assessment where there is a change less than 3dB. Further information can be found in the SES2 and AP2 ES, Volume 5, Appendix: SV-002-0MA02.

criteria defined in the SMR for this use[47] for a period of up to one year and seven months. The Community Centre is identified, on the basis of a precautionary assessment, as being subject to a new likely significant adverse effect (denoted by MA02-C-N18 in Table 6 of SES2 and AP2 ES Volume 5, Appendix: SV-002-00000). This temporary adverse effect may take the form of activity disturbance to the community centre users.

5.5.79 Cheshire Business Park contains office units and is located on Manchester Road in Lostock Gralam. This two-storey purpose-built structure has windows that appear to be openable. It is assumed that the building is not provided with alternative means of ventilation to openable windows. The receptor is approximately 40m to the east of the land required for construction of the amendment. The building has been assessed against the criteria for office use. The typical and highest predicted daytime monthly construction noise levels at this building are 7dB and 9dB respectively above the screening criteria defined in the SMR for this use[48] for up to a period of one year and six months. Cheshire Business Park is identified, on the basis of a precautionary assessment, as being subject to a new likely adverse significant effect (denoted by MA02-C-N19 in Table 6 SES2 and AP2 ES Volume 5, Appendix: SV-002-00000). This temporary adverse effect may take the form of activity disturbance to office users.

Other mitigation measures

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

Summary of likely residual significant effects

5.5.81 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community including its shared open space in the vicinity of the junction between the A559 Manchester Road and Stubbs Lane in Lostock Gralam.

5.5.82 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the following non-residential buildings:

- The Community Centre, Stubbs Lane; and
- Cheshire Business Park, Manchester Road.

Cumulative effects

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

[47] 55 dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 58 dB $L_{pAeq,0700-2300}$ (façade).

[48] 55 dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 58 dB $L_{pAeq,0700-2300}$ (façade).

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

Construction

Community

5.5.84 The amendment will result in new residual significant effects on:

- approximately 20 residential properties on the A559 Manchester Road, between Lodge Lane and Stubbs Lane, Lostock Gralam, due to new noise and visual effects; and
- Lostock Gralam Community Centre due to new noise and visual effects.

Landscape and visual

5.5.85 The amendment will give rise to a new likely residual significant construction effect at view east from the A559 Manchester Road (312-02-010) after implementation of construction phase mitigation. The effect will be **moderate** adverse (significant).

Sound, noise and vibration

5.5.86 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community including its shared open space in the vicinity of the junction between the A559 Manchester Road and Stubbs Lane in Lostock Gralam.

5.5.87 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the following non-residential buildings:

- The Community Centre, Stubbs Lane; and
- Cheshire Business Park, Manchester Road.

6 Construction programme

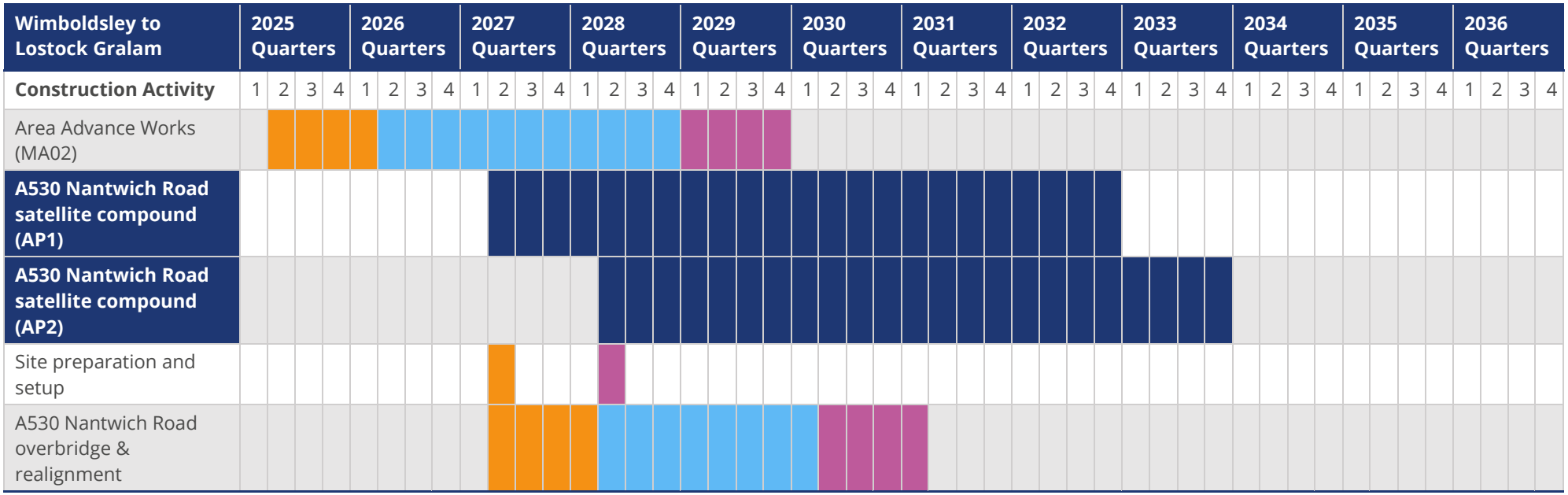
6.1 Introduction

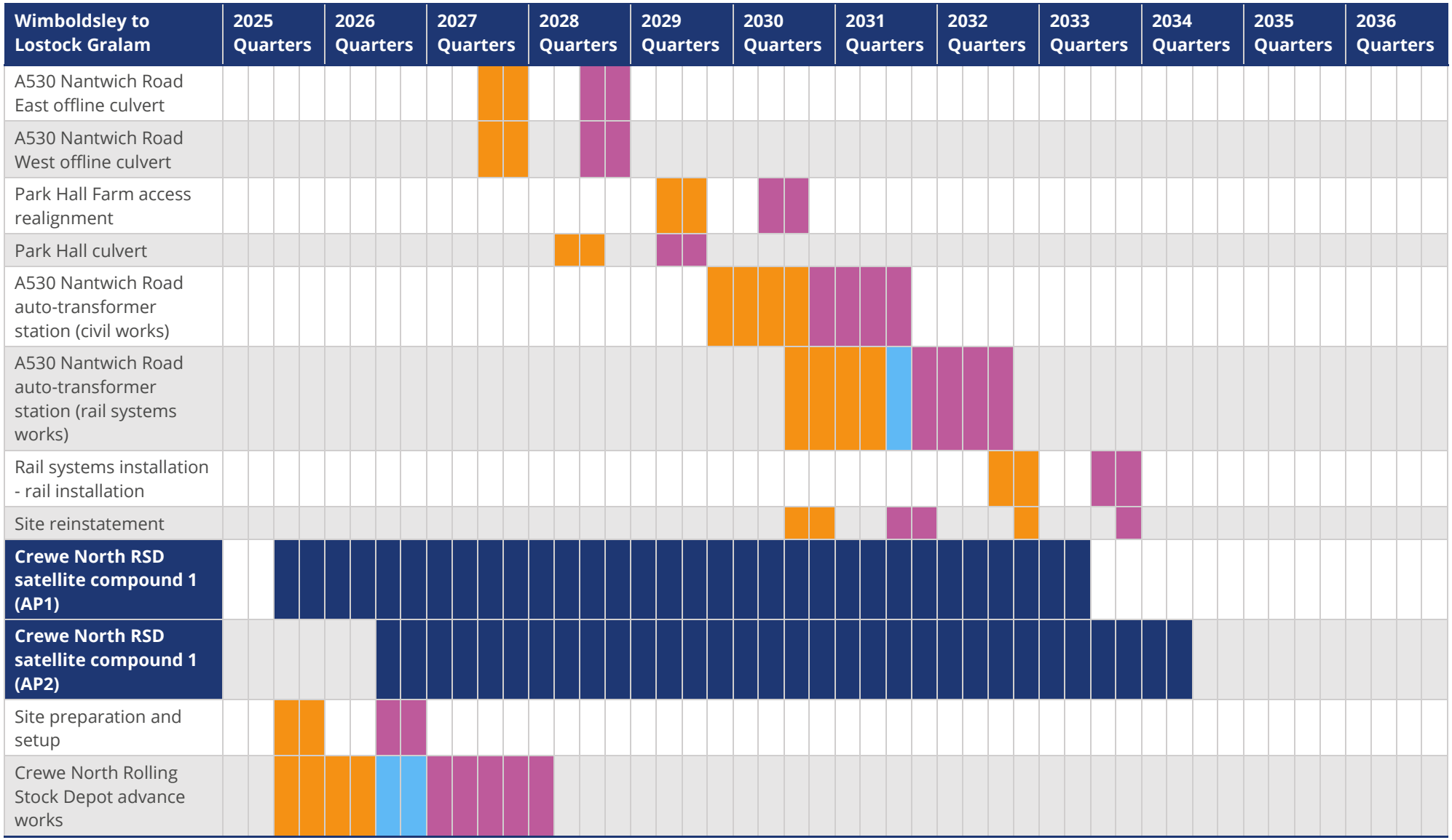
6.1.1 The SES2 changes and AP2 amendments have resulted in the need to alter the indicative construction programme as set out in the SES1 and AP1 ES.

6.1.2 The revised indicative programme compared to the programme included in the SES1 and AP1 ES is shown in Figure 3.

Figure 3: Indicative construction programme for the SES2 and AP2 ES compared to the SES1 and AP1 ES

Key	
	Compound duration showing start and end of mobilisation. Activities below will be managed from the above compound. Second phase site reinstatement can occur post the compound demobilisation.
	Activity duration (indicates where there is no change from the SES1 and AP1 ES taking into consideration SES2 changes and AP2 amendments).
	Increase in duration or activity moved as a result of a SES2 change or AP2 amendment. (A purple box indicates that works are now taking place in the quarter indicated.)
	Decrease in duration or activity moved as a result of a SES2 change or AP2 amendment. (An orange box indicates that works are no longer taking place in the quarter indicated.)
	Removed as a result of SES2 change or AP2 amendment.
	New elements of the programme (compound or associated) works as a result of a SES2 change or an AP2 amendment.

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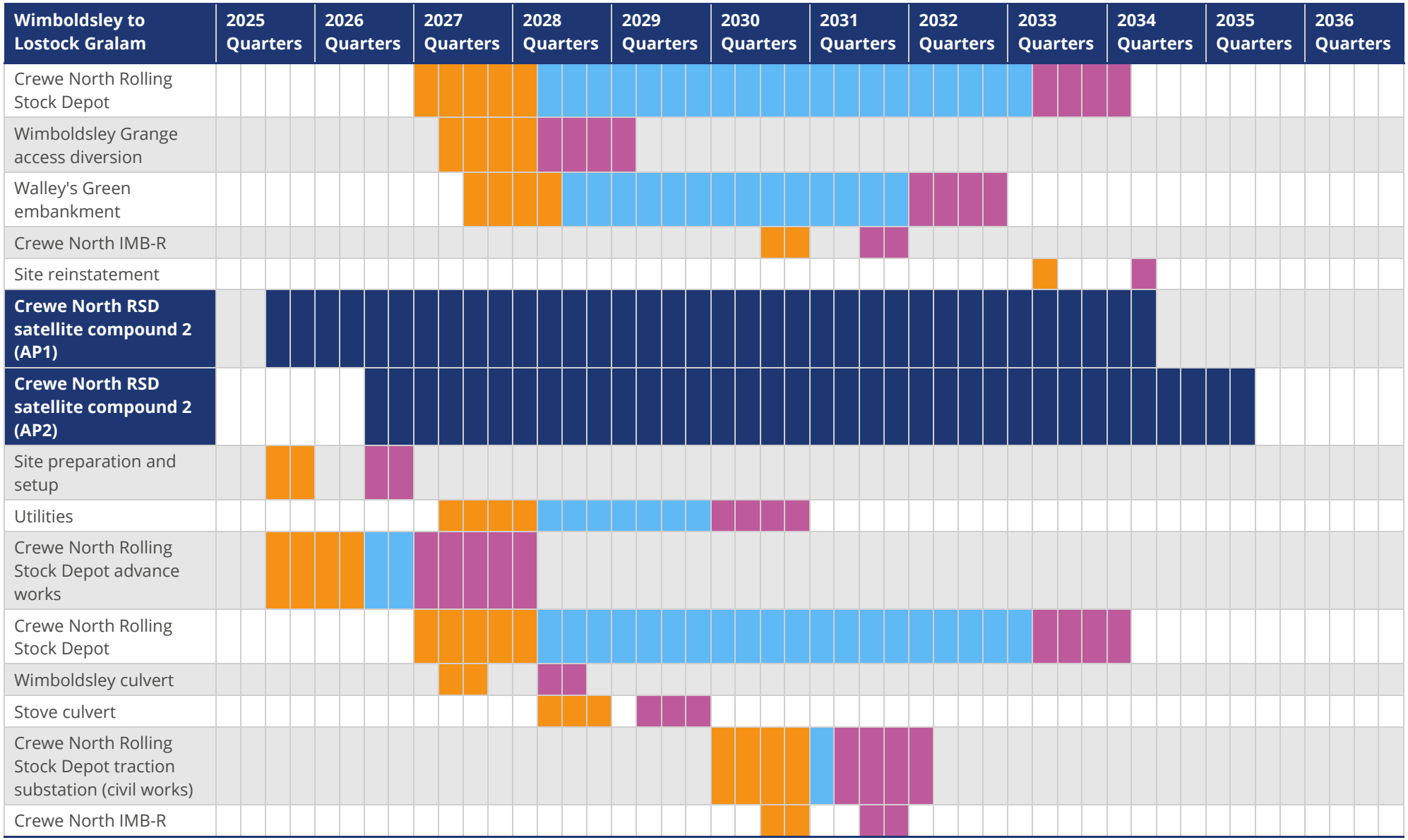
2035 Quarters
2036 Quarters
A530 Nantwich Road East offline culvert
A530 Nantwich Road West offline culvert
Park Hall Farm access realignment
Park Hall culvert
A530 Nantwich Road auto-transformer station (civil works)
A530 Nantwich Road auto-transformer station (rail systems works)
Rail systems installation - rail installation
Site reinstatement
Crewe North RSD satellite compound 1 (AP1)
Crewe North RSD satellite compound 1 (AP2)
Site preparation and setup
Crewe North Rolling Stock Depot advance works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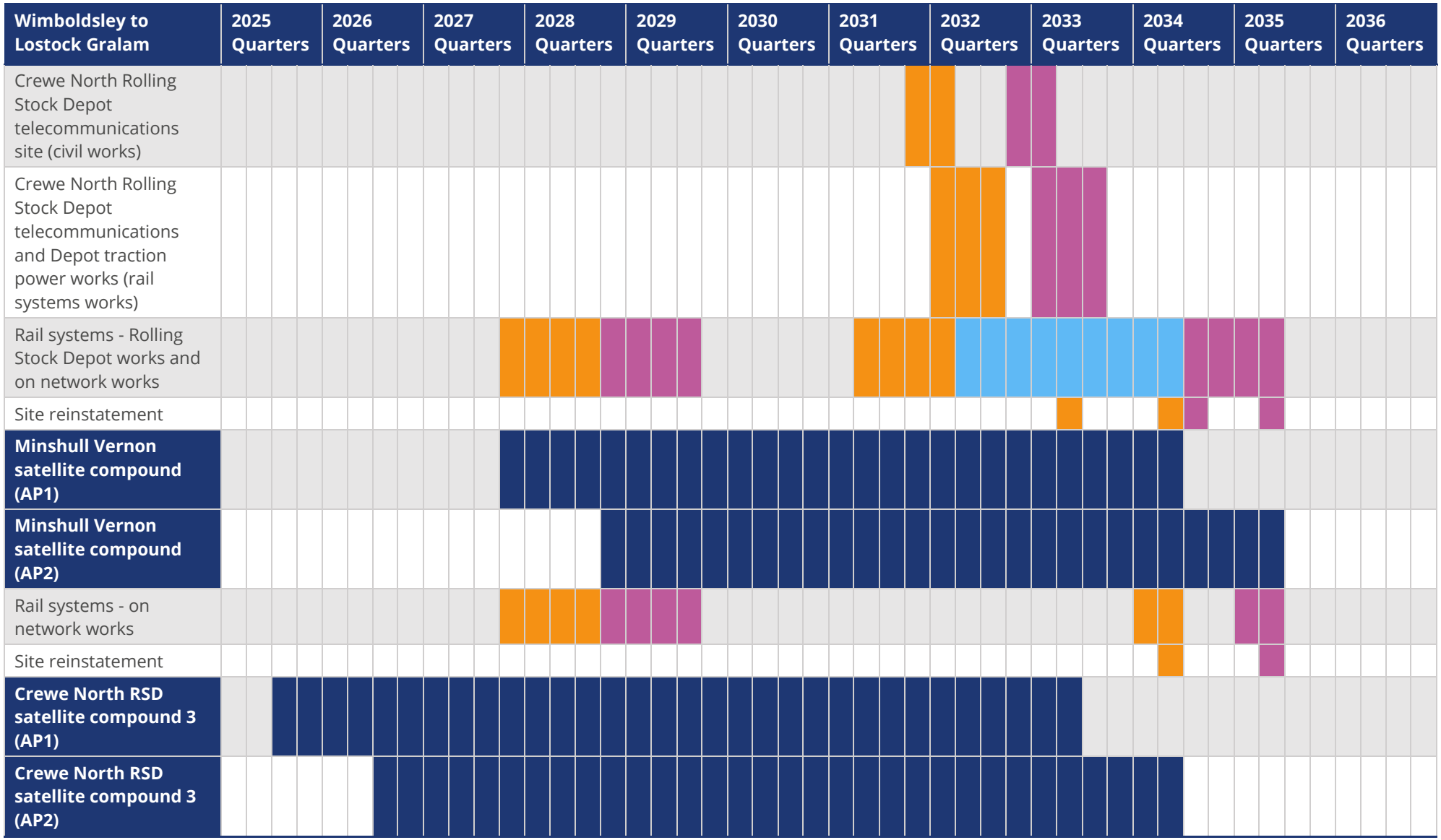
Crewe North Rolling Stock Depot
Wimboldsley Grange access diversion
Walley's Green embankment
Crewe North IMB-R
Site reinstatement
Crewe North RSD satellite compound 2 (AP1)
Crewe North RSD satellite compound 2 (AP2)
Site preparation and setup
Utilities
Crewe North Rolling Stock Depot advance works
Crewe North Rolling Stock Depot
Wimboldsley culvert
Stove culvert
Crewe North Rolling Stock Depot traction substation (civil works)
Crewe North IMB-R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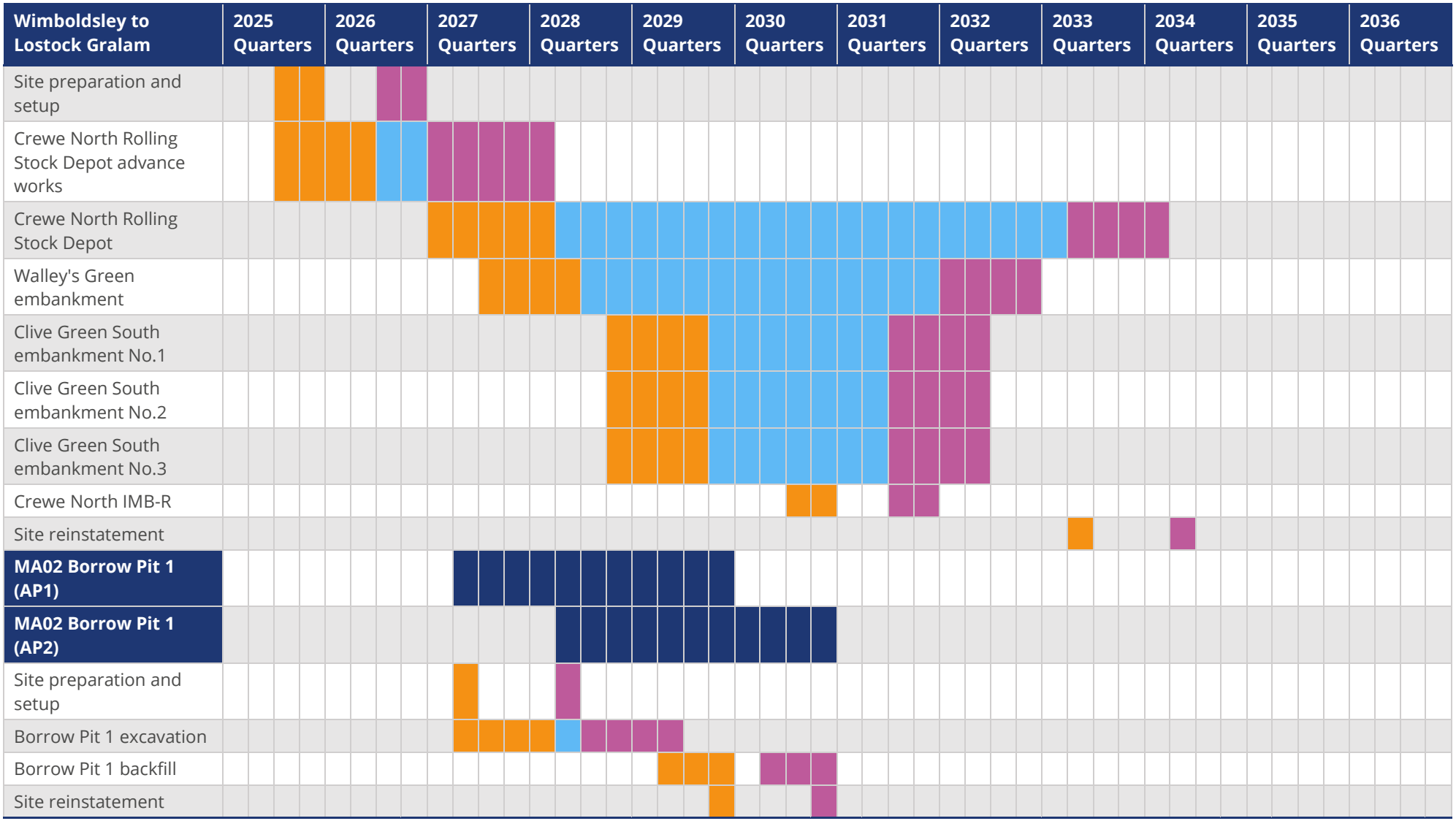
2036 Quarters
Crewe North Rolling Stock Depot telecommunications site (civil works)
Crewe North Rolling Stock Depot telecommunications and Depot traction power works (rail systems works)
Rail systems - Rolling Stock Depot works and on network works
Site reinstatement
Minshull Vernon satellite compound (AP1)
Minshull Vernon satellite compound (AP2)
Rail systems - on network works
Site reinstatement
Crewe North RSD satellite compound 3 (AP1)
Crewe North RSD satellite compound 3 (AP2)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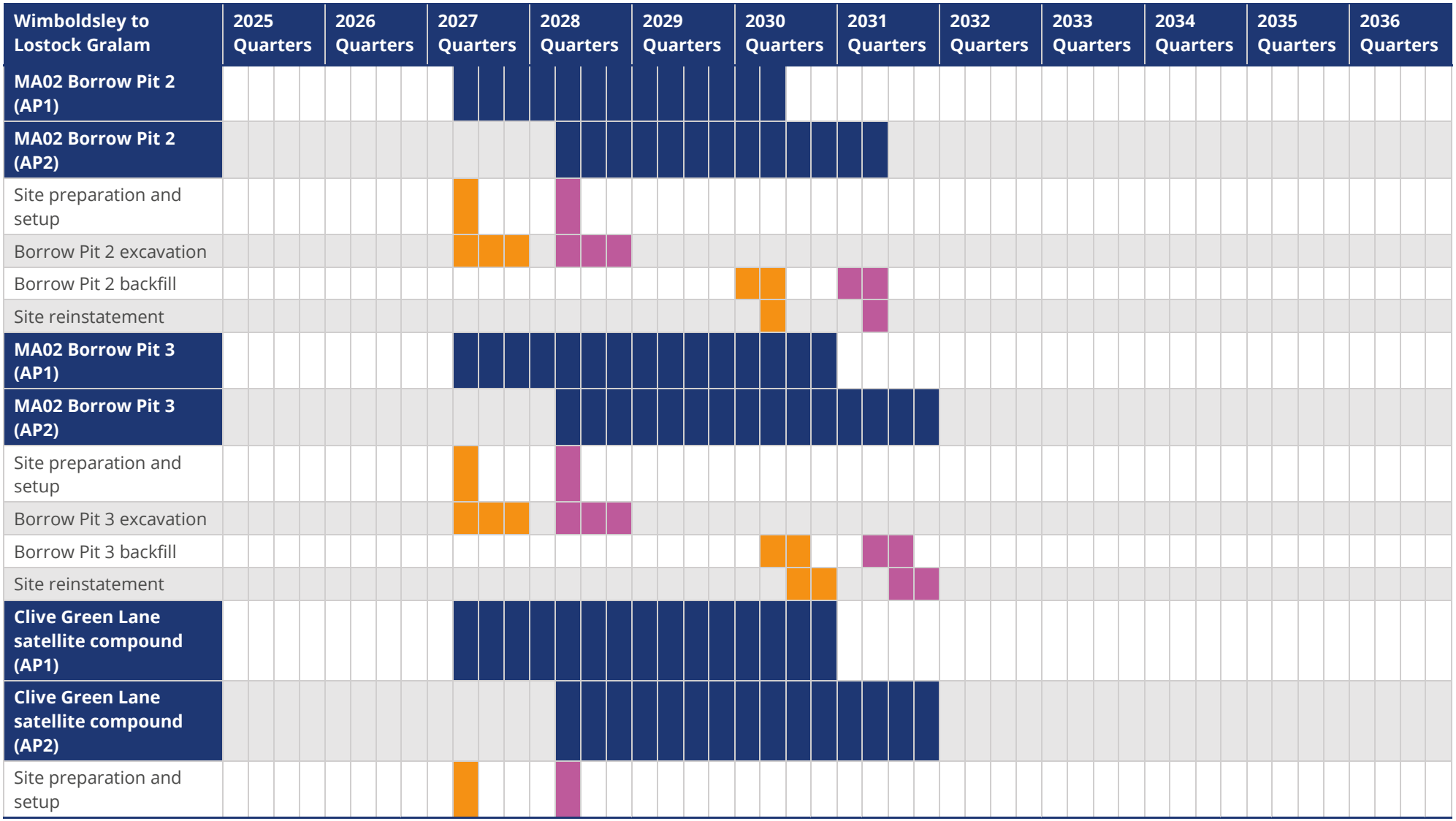
Site preparation and setup
Crewe North Rolling Stock Depot advance works
Crewe North Rolling Stock Depot
Walley's Green embankment
Clive Green South embankment No.1
Clive Green South embankment No.2
Clive Green South embankment No.3
Crewe North IMB-R
Site reinstatement
MA02 Borrow Pit 1 (AP1)
MA02 Borrow Pit 1 (AP2)
Site preparation and setup
Borrow Pit 1 excavation
Borrow Pit 1 backfill
Site reinstatement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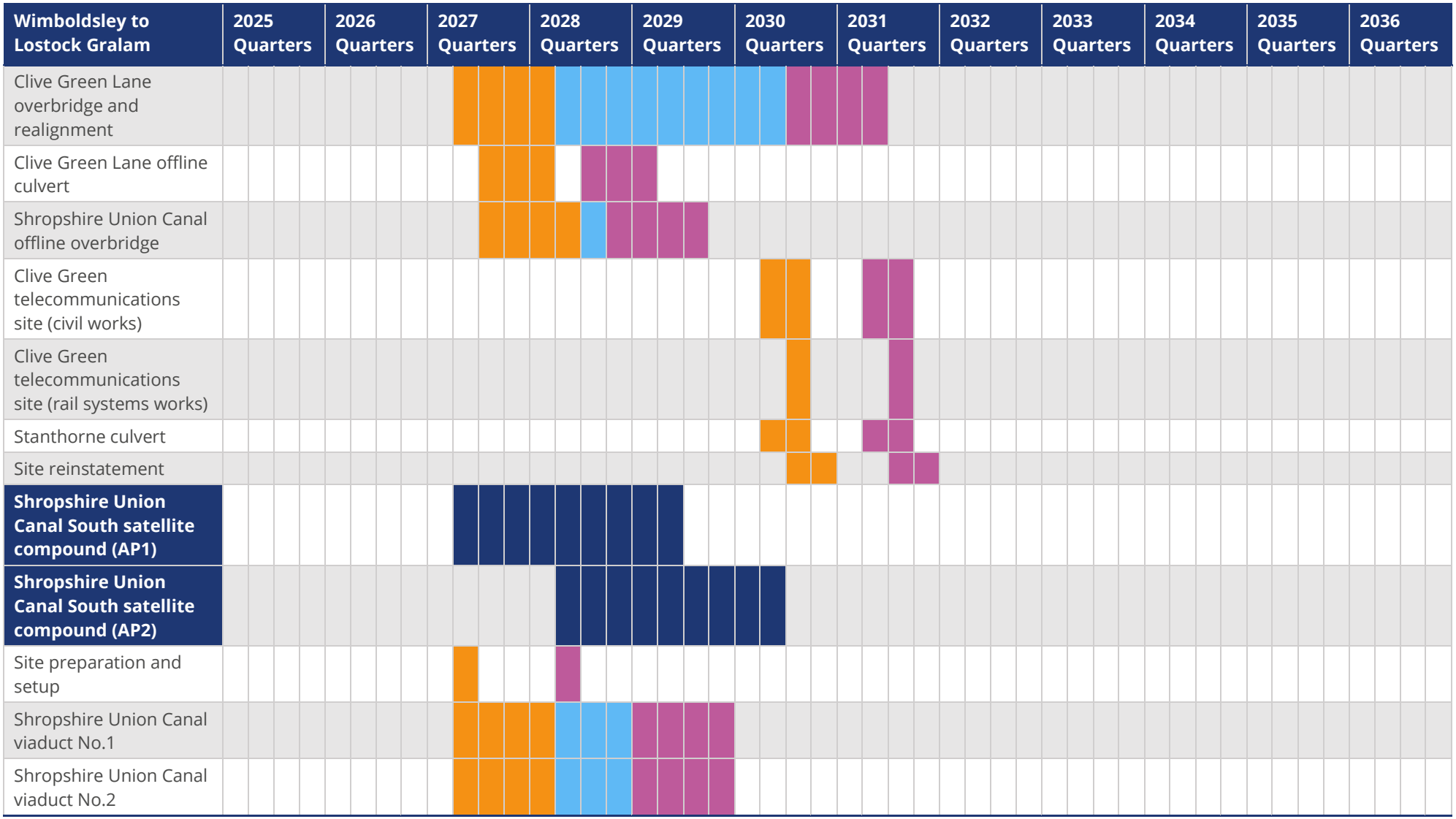
MA02 Borrow Pit 2 (AP1)
MA02 Borrow Pit 2 (AP2)
Site preparation and setup
Borrow Pit 2 excavation
Borrow Pit 2 backfill
Site reinstatement
MA02 Borrow Pit 3 (AP1)
MA02 Borrow Pit 3 (AP2)
Site preparation and setup
Borrow Pit 3 excavation
Borrow Pit 3 backfill
Site reinstatement
Clive Green Lane satellite compound (AP1)
Clive Green Lane satellite compound (AP2)
Site preparation and setup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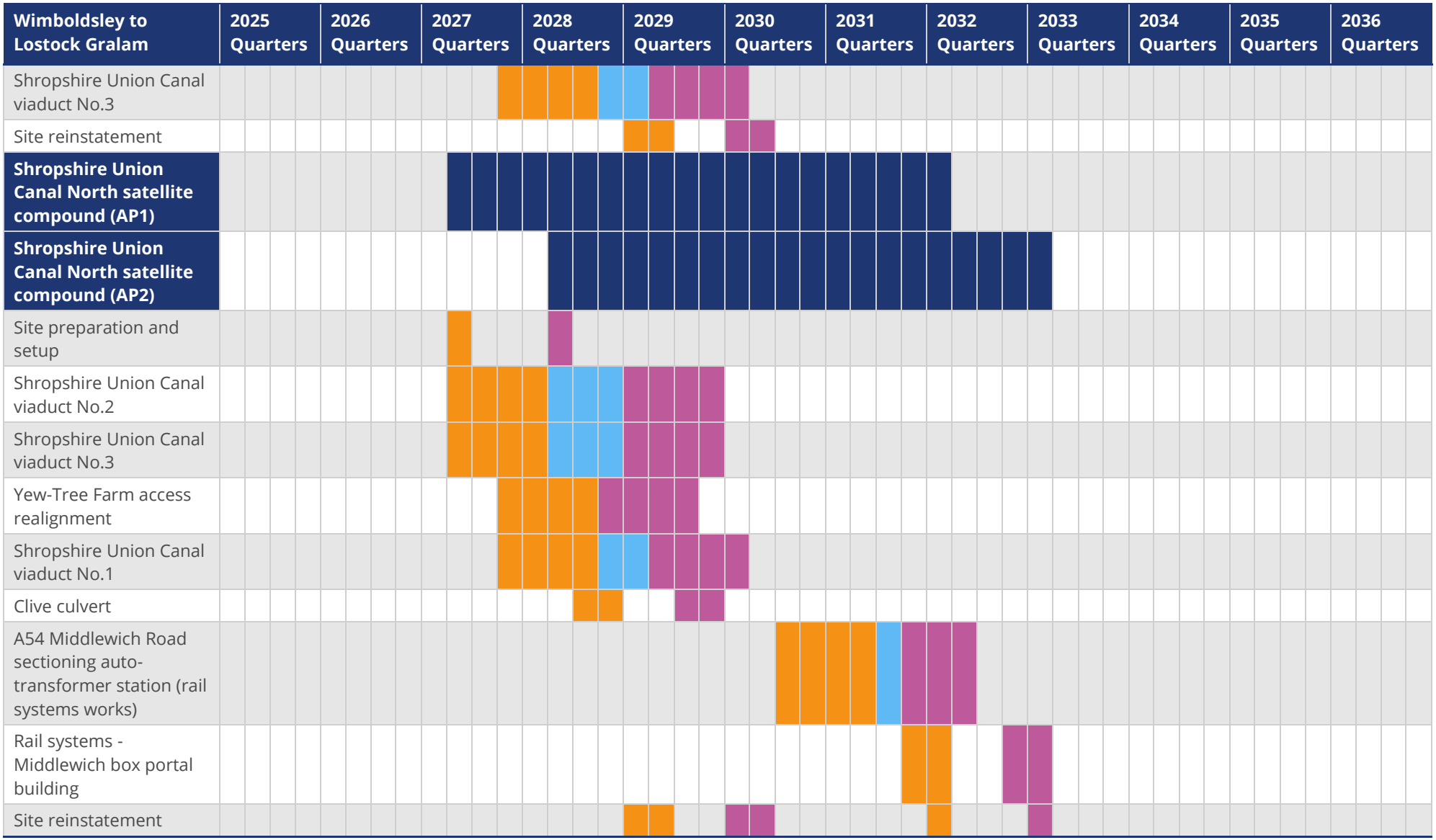
Clive Green Lane overbridge and realignment
Clive Green Lane offline culvert
Shropshire Union Canal offline overbridge
Clive Green telecommunications site (civil works)
Clive Green telecommunications site (rail systems works)
Stanthorne culvert
Site reinstatement
Shropshire Union Canal South satellite compound (AP1)
Shropshire Union Canal South satellite compound (AP2)
Site preparation and setup
Shropshire Union Canal viaduct No.1
Shropshire Union Canal viaduct No.2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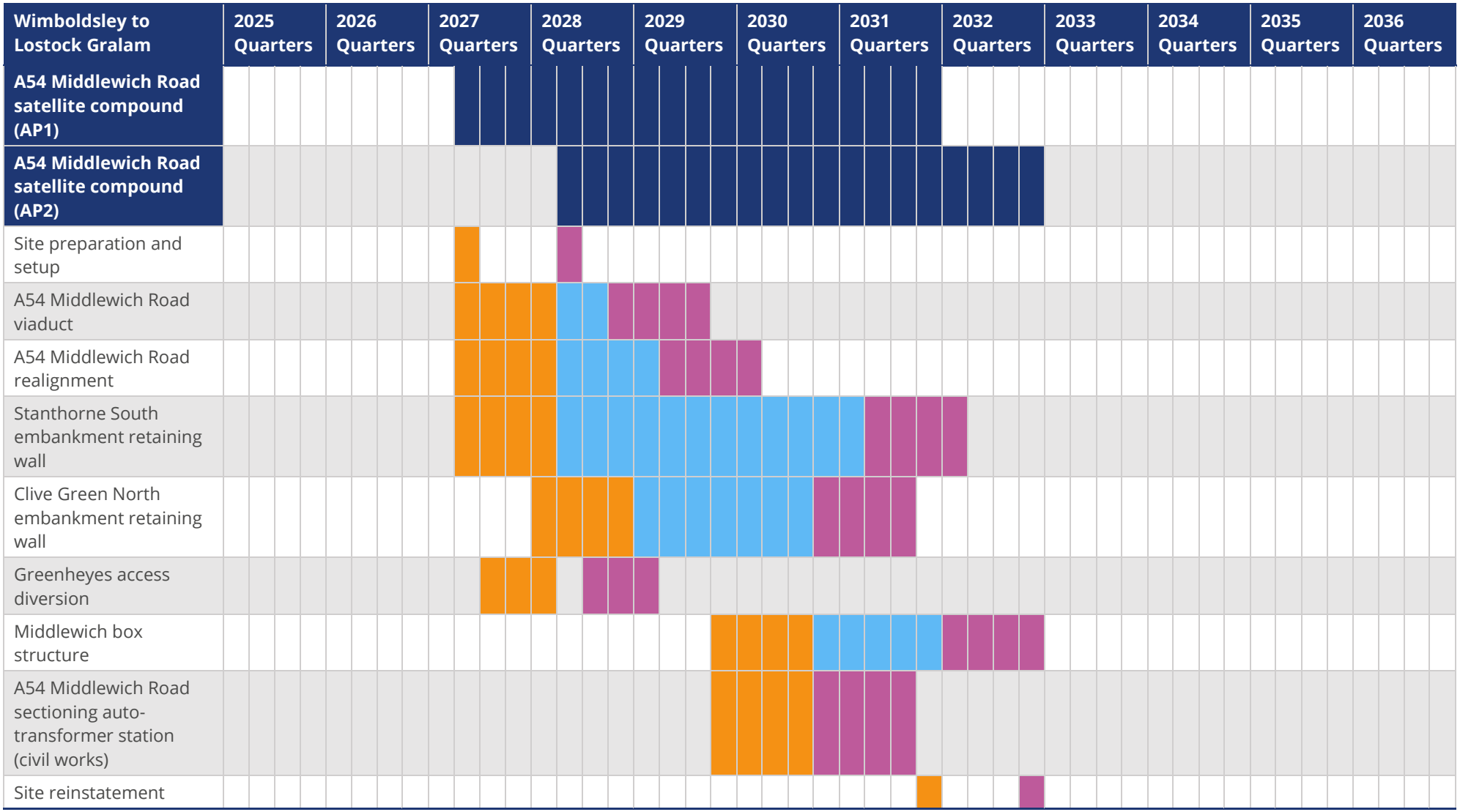
2036 Quarters
Shropshire Union Canal viaduct No.3
Site reinstatement
Shropshire Union Canal North satellite compound (AP1)
Shropshire Union Canal North satellite compound (AP2)
Site preparation and setup
Shropshire Union Canal viaduct No.2
Shropshire Union Canal viaduct No.3
Yew-Tree Farm access realignment
Shropshire Union Canal viaduct No.1
Clive culvert
A54 Middlewich Road sectioning auto-transformer station (rail systems works)
Rail systems - Middlewich box portal building
Site reinstatement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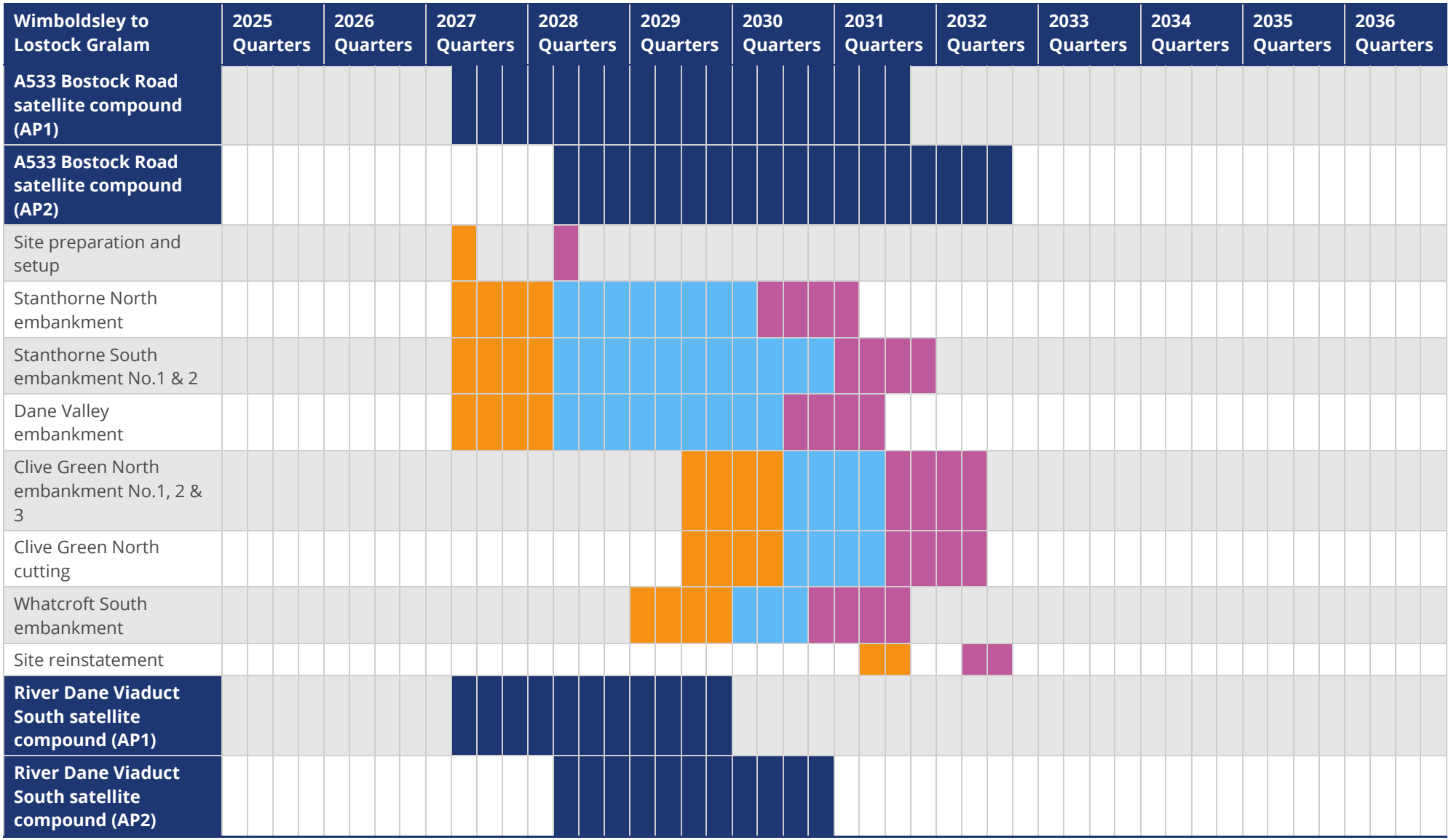
2036 Quarters
A54 Middlewich Road satellite compound (AP1)
A54 Middlewich Road satellite compound (AP2)
Site preparation and setup
A54 Middlewich Road viaduct
A54 Middlewich Road realignment
Stanthorne South embankment retaining wall
Clive Green North embankment retaining wall
Greenheyes access diversion
Middlewich box structure
A54 Middlewich Road sectioning auto-transformer station (civil works)
Site reinstatement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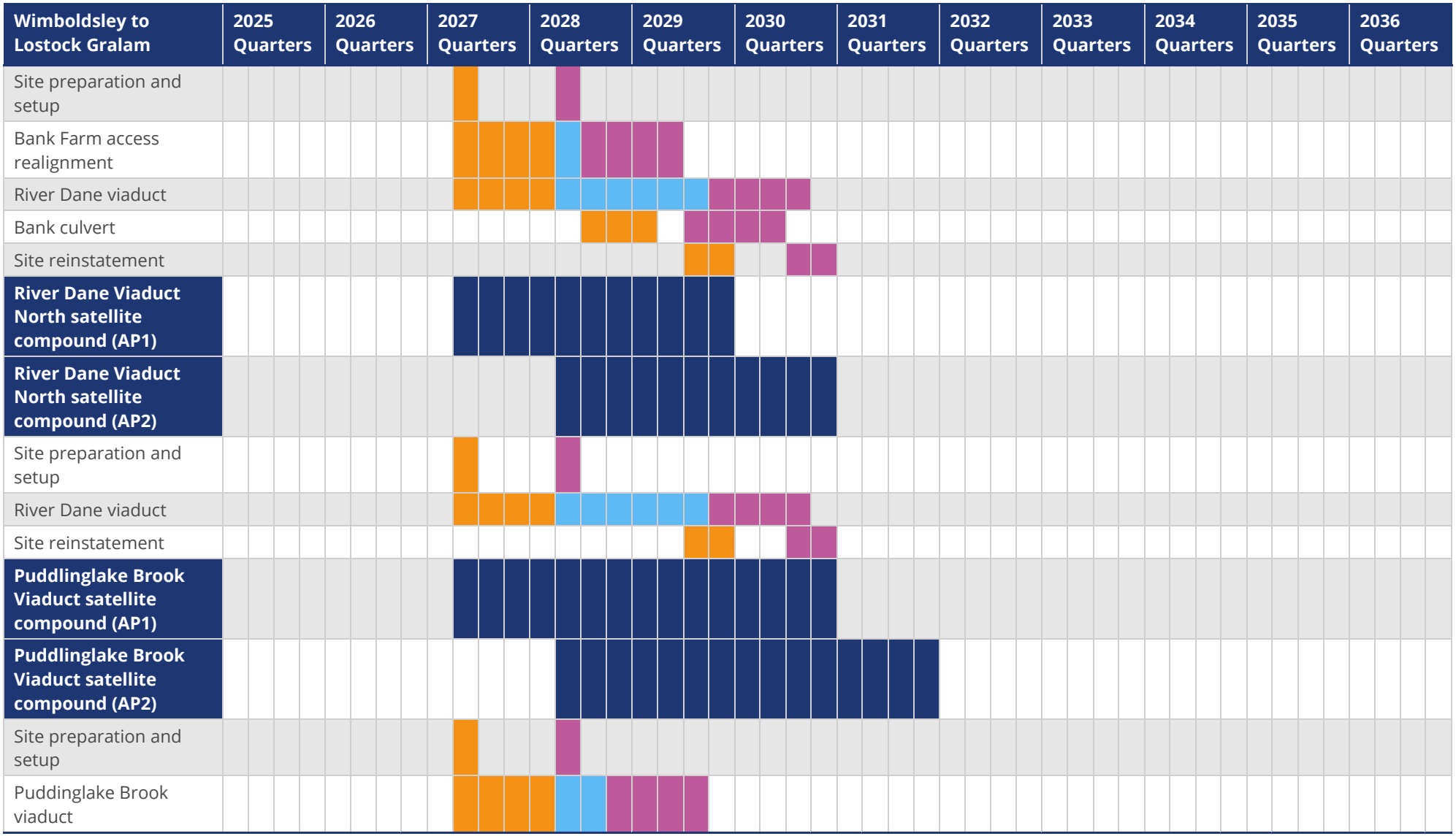
A533 Bostock Road satellite compound (AP1)
A533 Bostock Road satellite compound (AP2)
Site preparation and setup
Stanthorne North embankment
Stanthorne South embankment No.1 & 2
Dane Valley embankment
Clive Green North embankment No.1, 2 & 3
Clive Green North cutting
Whatcroft South embankment
Site reinstatement
River Dane Viaduct South satellite compound (AP1)
River Dane Viaduct South satellite compound (AP2)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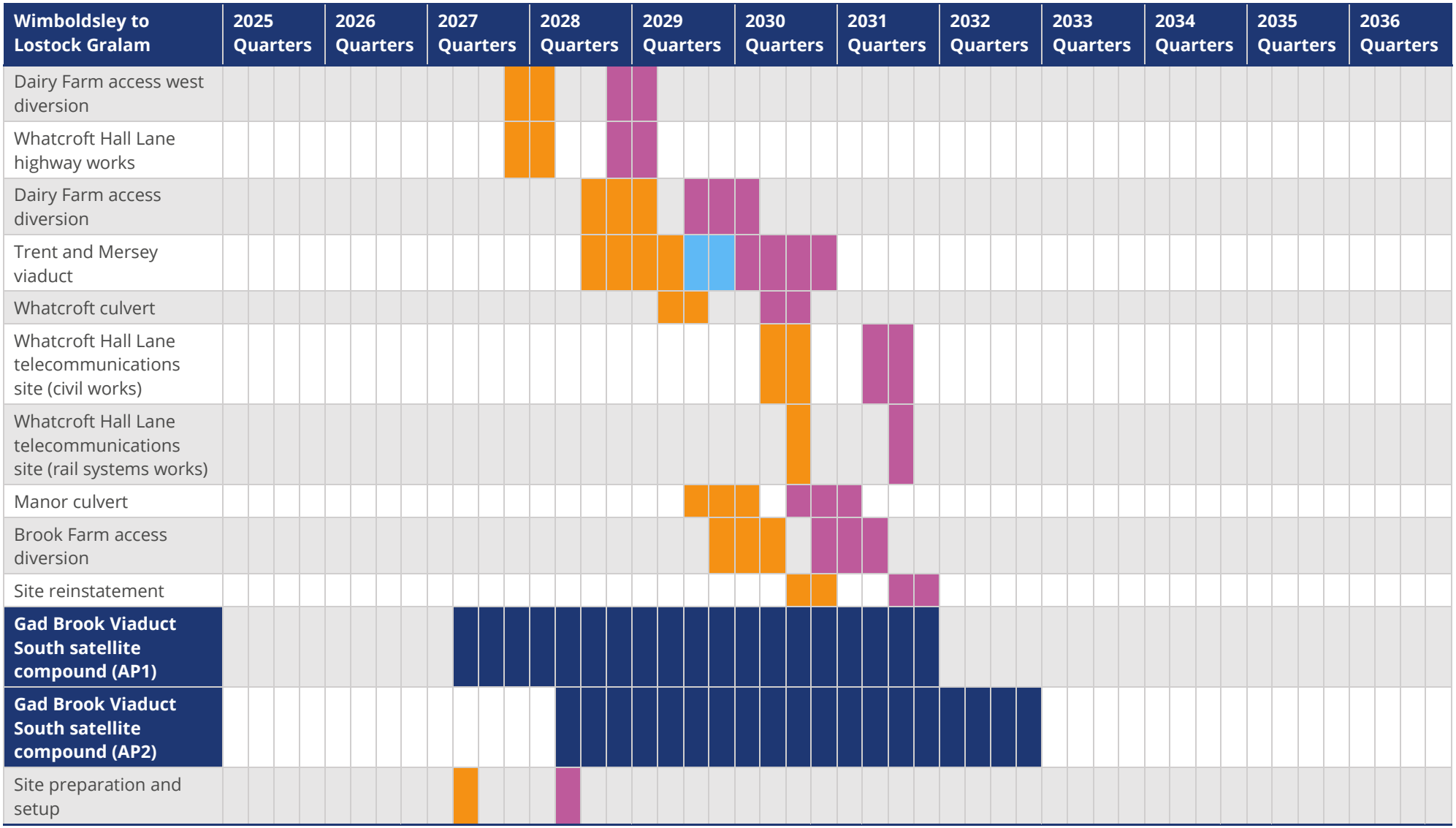
Site preparation and setup
Bank Farm access realignment
River Dane viaduct
Bank culvert
Site reinstatement
River Dane Viaduct North satellite compound (AP1)
River Dane Viaduct North satellite compound (AP2)
Site preparation and setup
River Dane viaduct
Site reinstatement
Puddlinglake Brook Viaduct satellite compound (AP1)
Puddlinglake Brook Viaduct satellite compound (AP2)
Site preparation and setup
Puddinglake Brook viaduct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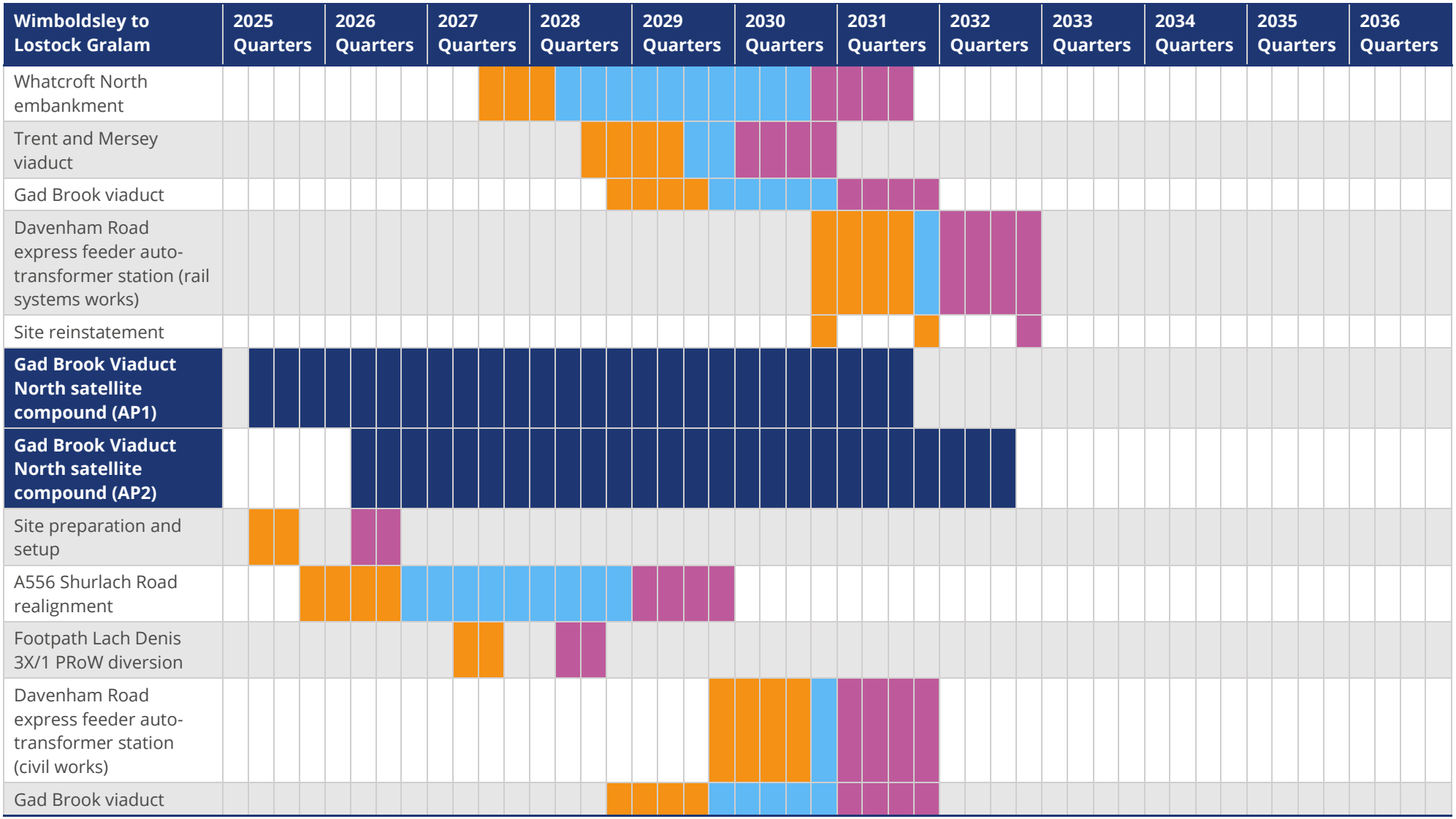
2036 Quarters
Dairy Farm access west diversion
Whatcroft Hall Lane highway works
Dairy Farm access diversion
Trent and Mersey viaduct
Whatcroft culvert
Whatcroft Hall Lane telecommunications site (civil works)
Whatcroft Hall Lane telecommunications site (rail systems works)
Manor culvert
Brook Farm access diversion
Site reinstatement
Gad Brook Viaduct South satellite compound (AP1)
Gad Brook Viaduct South satellite compound (AP2)
Site preparation and setup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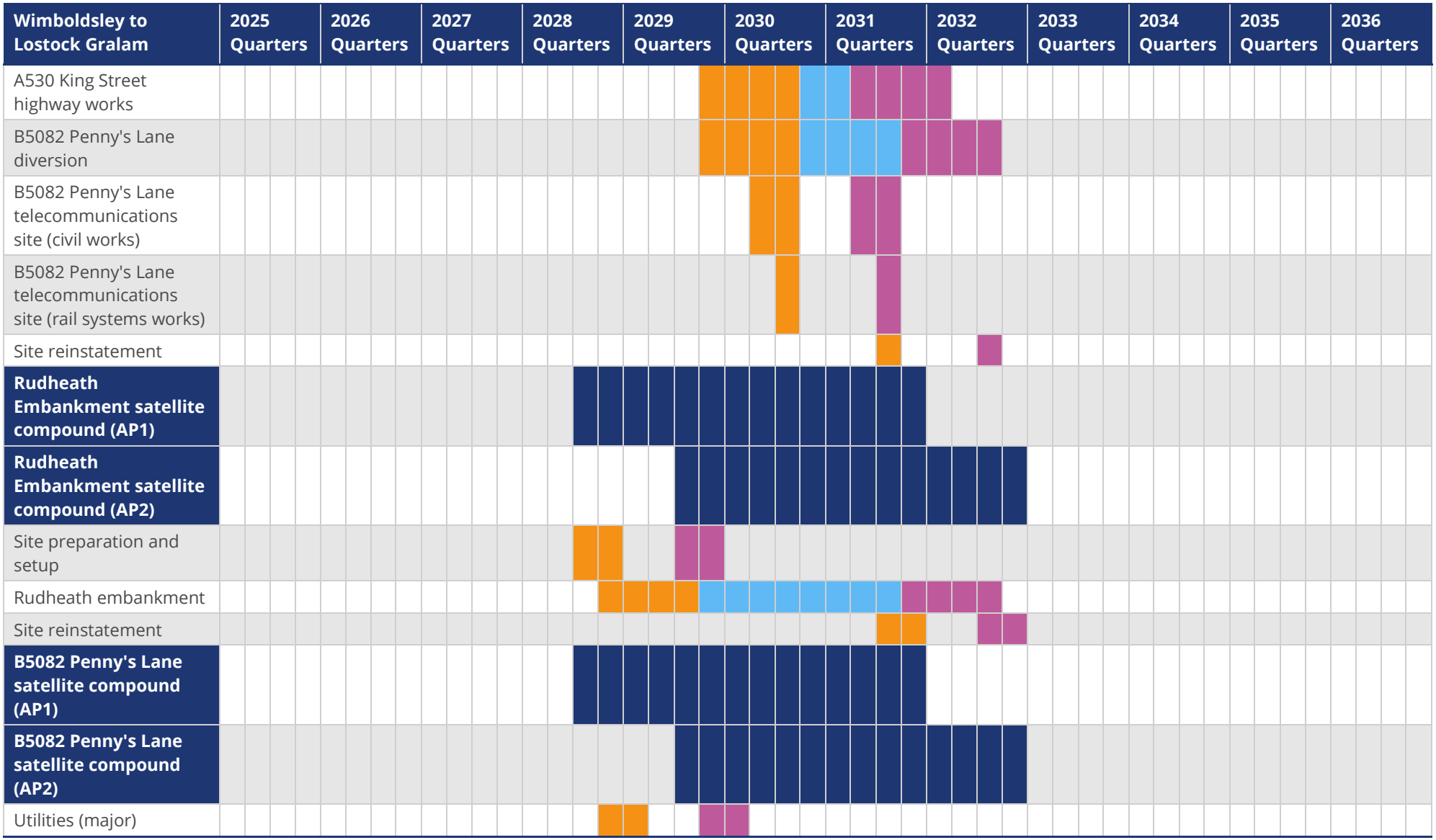
2036 Quarters
Whatcroft North embankment
Trent and Mersey viaduct
Gad Brook viaduct
Davenham Road express feeder auto-transformer station (rail systems works)
Site reinstatement
Gad Brook Viaduct North satellite compound (AP1)
Gad Brook Viaduct North satellite compound (AP2)
Site preparation and setup
A556 Shurlach Road realignment
Footpath Lach Denis 3X/1 PRoW diversion
Davenham Road express feeder auto-transformer station (civil works)
Gad Brook viaduct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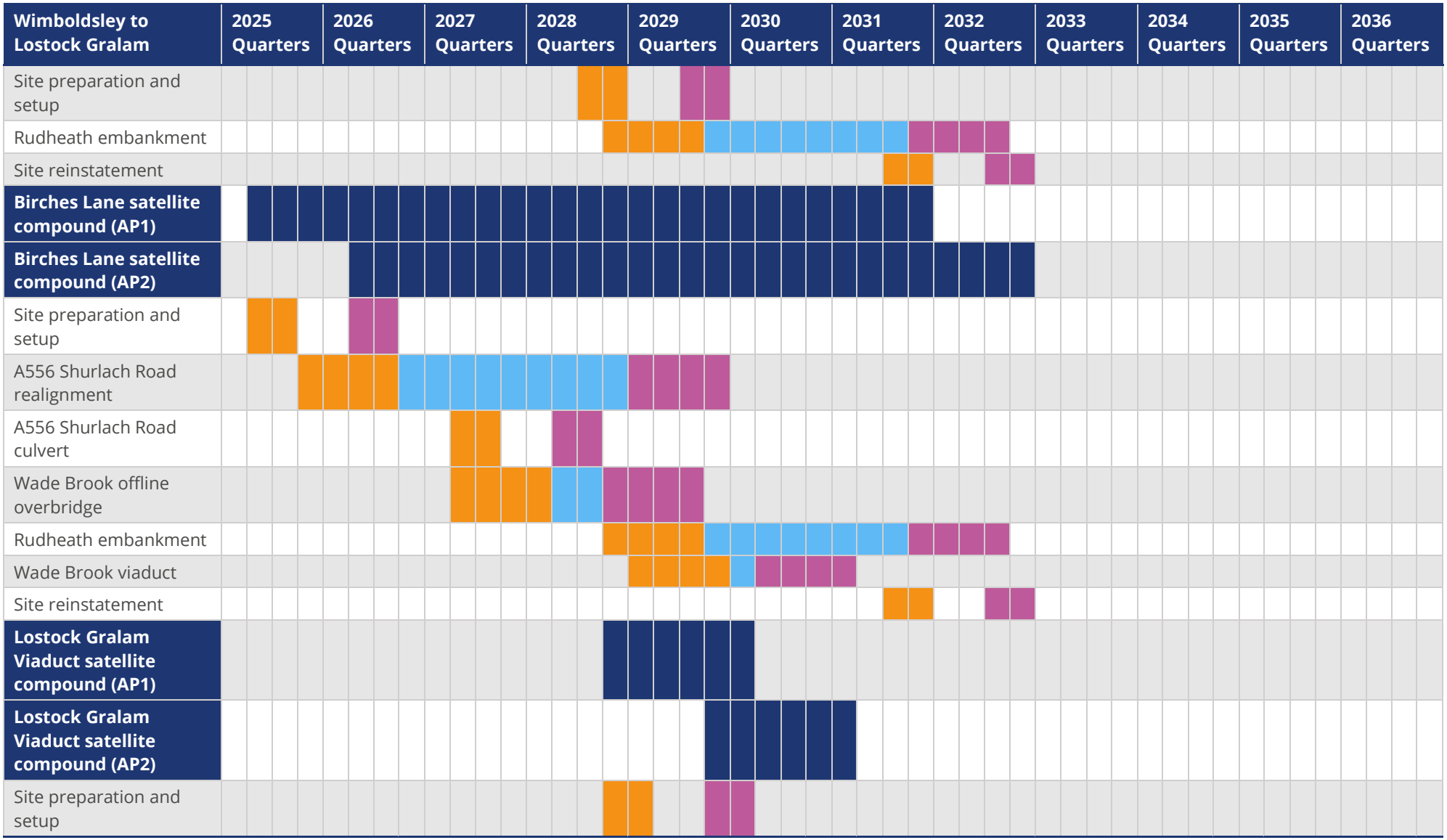
A530 King Street highway works
B5082 Penny's Lane diversion
B5082 Penny's Lane telecommunications site (civil works)
B5082 Penny's Lane telecommunications site (rail systems works)
Site reinstatement
Rudheath Embankment satellite compound (AP1)
Rudheath Embankment satellite compound (AP2)
Site preparation and setup
Rudheath embankment
Site reinstatement
B5082 Penny's Lane satellite compound (AP1)
B5082 Penny's Lane satellite compound (AP2)
Utilities (major)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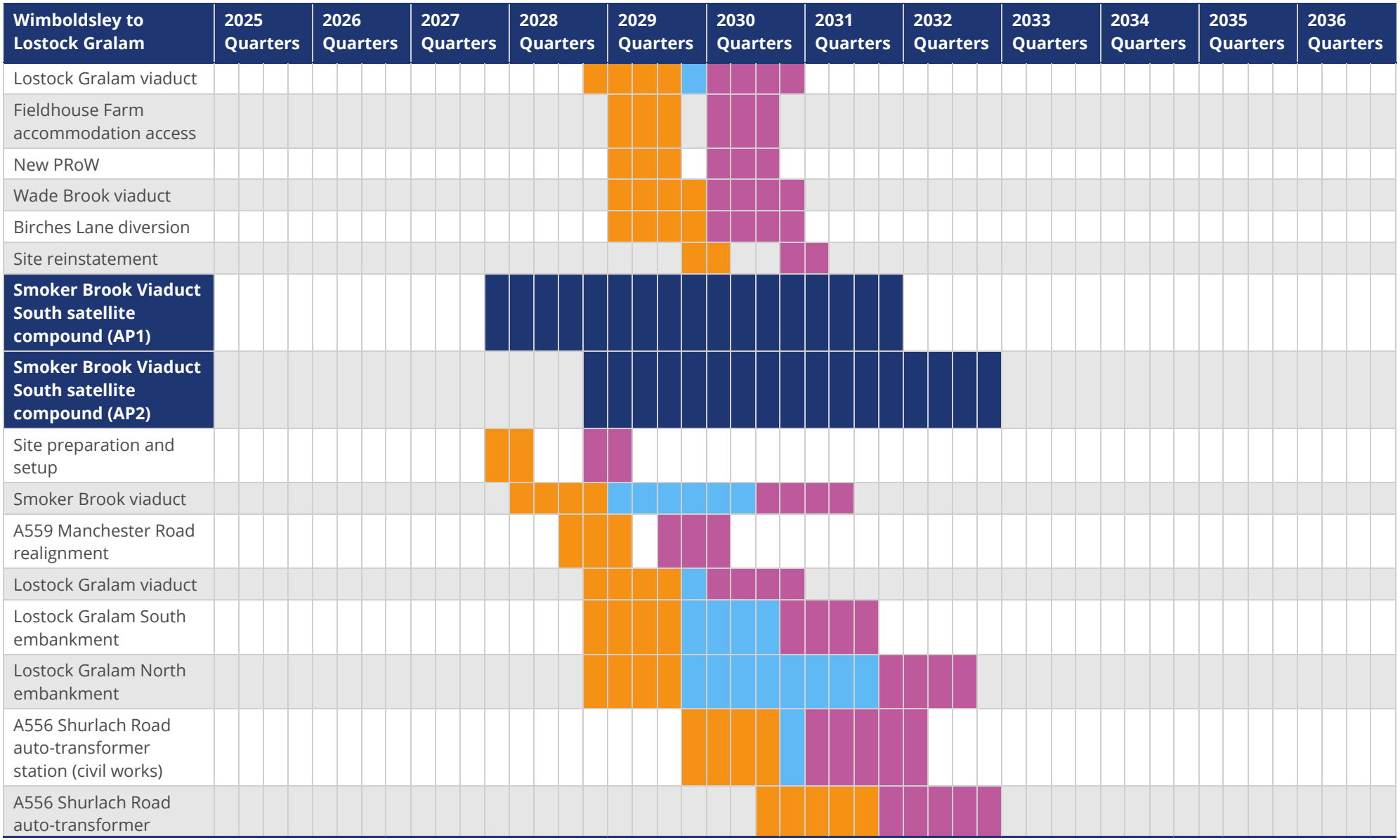
Site preparation and setup
Rudheath embankment
Site reinstatement
Birches Lane satellite compound (AP1)
Birches Lane satellite compound (AP2)
Site preparation and setup
A556 Shurlach Road realignment
A556 Shurlach Road culvert
Wade Brook offline overbridge
Rudheath embankment
Wade Brook viaduct
Site reinstatement
Lostock Gralam Viaduct satellite compound (AP1)
Lostock Gralam Viaduct satellite compound (AP2)
Site preparation and setup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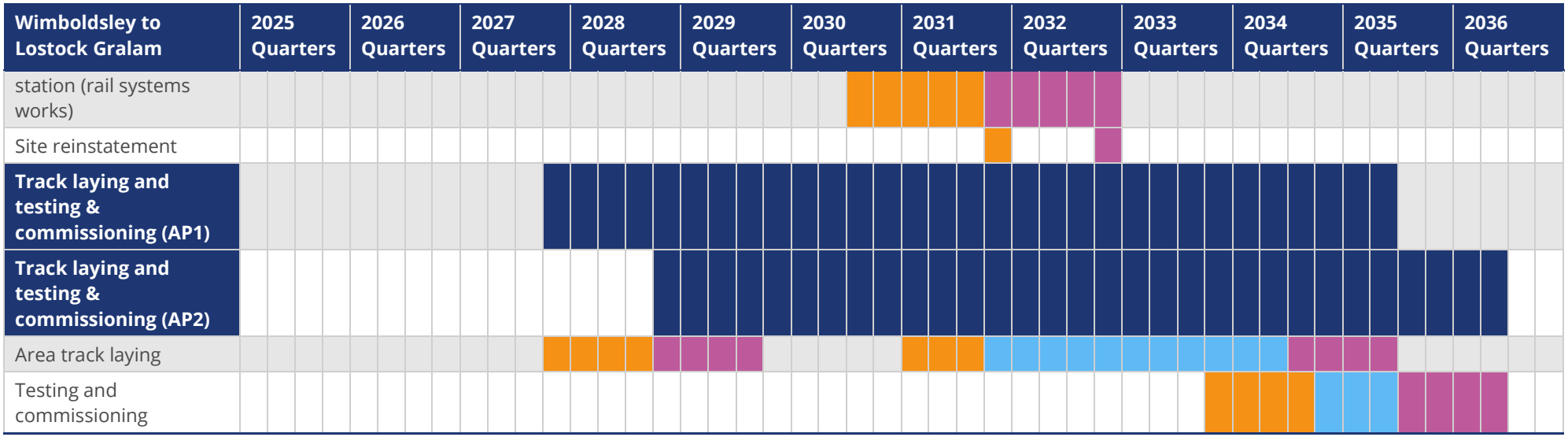
Lostock Gralam viaduct
Fieldhouse Farm accommodation access
New PRoW
Wade Brook viaduct
Birches Lane diversion
Site reinstatement
Smoker Brook Viaduct South satellite compound (AP1)
Smoker Brook Viaduct South satellite compound (AP2)
Site preparation and setup
Smoker Brook viaduct
A559 Manchester Road realignment
Lostock Gralam viaduct
Lostock Gralam South embankment
Lostock Gralam North embankment
A556 Shurlach Road auto-transformer station (civil works)
A556 Shurlach Road auto-transformer


Wimboldsley to Lostock Gralam
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
station (rail systems works)
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 Wimboldsley to Lostock Gralam 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 Wimboldsley to Lostock Gralam 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 Wimboldsley to Lostock Gralam area:

- additional land temporarily required for modifications to the A530 King Street, A530 Croxton Lane and B5309 King Street junction (AP2-002-230);
- additional land temporarily required for modifications to the A559 Manchester Road and Stubbs Lane junction (AP2-002-245);
- additional land temporarily required for modifications to the A54 St Michael's Way, A533 Leadsmithy Street and A54 Kinderton Street junction (AP2-002-241); and
- additional land permanently required for modifications to the A559 Manchester Road, A559 Hall Lane and Station Road junction (AP2-002-237).

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 Wimboldsley to Lostock Gralam area as a result of the AP2 revised scheme are contained in SES2 and AP2 ES Volume 5, Appendix: TR-003-00002 Transport Assessment Part 3 Addendum.

7.3.6 There were SES1 changes and AP1 amendments in the Wimboldsley to Lostock Gralam area. The 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: Wimboldsley to Lostock Gralam, (MA02) of the main ES and Section 7.3 of the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02), 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 Wimboldsley to Lostock Gralam area. This includes Trafficmaster journey time data from the DfT, as set out in the BID[49] report BID TR-004-00001 SES2 and

[49] 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. Available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement.

AP2 ES. This data has been combined with the information collected for local junction modelling as set out in the BID[50] report BID 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: Wimboldsley to Lostock Gralam, (MA02) of the main ES and Section 7.3 of the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) 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 Cheshire West and Chester Council (CWCC) and Cheshire East Council (CEC) 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 in the draft Code of Construction Practice (CoCP)[51] are proposed.

Assessment of impacts and effects

Temporary effects

Key construction transport issues

7.3.14 Table 18 in the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) provides details of construction compounds in the Wimboldsley to Lostock Gralam area. This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 15.

[50] 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.
[51] 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 15: Typical vehicle trip generation for construction compounds in the Wimboldsley to Lostock Gralam 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	A530 Nantwich Road satellite compound	2028 Q2	5 years	160-254	148-166	7
Satellite	Crewe North RSD satellite compound 1	2026 Q3	8 years	224-316	490-490	1
Satellite	Crewe North RSD satellite compound 2	2026 Q3	9 years	370-722	86-128	54
Satellite	Crewe North RSD satellite compound 3	2026 Q3	8 years	260-352	546-590	18
Satellite	Minshull Vernon satellite compound	2028 Q4	1 year and 6 months	148-148	4-4	7
Borrow pit	MA02 Borrow Pit A	2028 Q2	2 years	92-110	36-44	5
Borrow pit	MA02 Borrow Pit B	2028 Q2	1 year and 3 months	80-160	34-42	5
Borrow pit	MA02 Borrow Pit C	2028 Q2	1 year and 6 months	80-160	36-42	4
Satellite	Clive Green Lane satellite compound	2028 Q2	3 years and 9 months	146-212	88-116	7
Satellite	Shropshire Union Canal south satellite compound	2028 Q2	2 years and 3 months	114-336	68-90	6
Satellite	Shropshire Union Canal north satellite compound	2028 Q2	3 years and 9 months	162-370	88-122	8
Satellite	A54 Middlewich Road satellite compound	2028 Q2	4 years and 9 months	264-396	68-106	11
Satellite	A533 Bostock Road satellite compound	2028 Q2	4 years and 6 months	210-278	396-558	16
Satellite	River Dane viaduct south satellite compound	2028 Q2	2 years and 9 months	140-278	124-160	7
Satellite	River Dane viaduct north satellite compound	2028 Q2	2 years and 9 months	136-244	92-114	7
Satellite	Puddlinglake Brook viaduct satellite compound	2028 Q2	3 years and 9 months	162-380	78-100	7

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	Gad Brook viaduct south satellite compound	2028 Q2	4 years and 9 months	200-296	336-504	4
Satellite	Gad Brook viaduct north satellite compound	2026 Q2	6 years and 6 months	180-348	210-218	3
Satellite	Rudheath embankment satellite compound	2029 Q3	3 years and 6 months	204-206	294-430	6
Satellite	B5082 Pennys Lane satellite compound	2029 Q3	3 years and 6 months	184-208	272-330	4
Satellite	Birches Lane satellite compound	2026 Q2	6 years and 9 months	264-338	344-456	3
Satellite	Lostock Gralam viaduct satellite compound	2029 Q4	1 year and 6 months	132-362	74-92	8
Satellite	Smoker Brook viaduct south satellite compound	2028 Q4	4 years and 3 months	256-366	342-488	5

7.3.15 Details of the construction traffic routes for construction compounds in the Wimboldsley to Lostock Gralam area are reported in Table 19 of the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02). This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 16.

Table 16: Construction HGV routes for construction compounds in the Wimboldsley to Lostock Gralam area

Compound name(s)	Access routes to/from compound(s) to main road network
A530 Nantwich Road satellite compound Crewe North RSD satellite compound 1	A530 Nantwich Road, A51 Nantwich Bypass and A500 Shavington Bypass
Crewe North RSD satellite compound 2	Route to/from south: Site haul route, Clive Green Lane, A530 Nantwich Road, A51 Nantwich Bypass and A500 Shavington Bypass Route to/from north (to be used after opening of the Clive Green Lane realignment): Site haul route, Clive Green Lane and A54 Middlewich Road

Compound name(s)	Access routes to/from compound(s) to main road network
	Site haul route, Clive Green Lane, Road One, A533 Davenham Bypass and A556
Crewe North RSD satellite compound 3	Site haul route, Clive Green Lane, A530 Nantwich Road, A51 Nantwich Bypass and A500 Shavington Bypass Site haul route and A530 Nantwich Road
Minshull Vernon satellite compound	A530 Nantwich Road, A51 Nantwich Bypass and A500 Shavington Bypass
MA02 Borrow Pit A MA02 Borrow Pit B	Route to/from south: A530 Nantwich Road, A51 Nantwich Bypass and A500 Shavington Bypass Route to/from north (to be used after opening of the Clive Green Lane realignment): A530 Nantwich Road, Clive Green Lane and A54 Middlewich Road A530 Nantwich Road, Clive Green Lane, Road One, A533 Davenham Bypass and A556
MA02 Borrow Pit C	Site haul route and A54 Middlewich Road
Clive Green Lane satellite compound	Route to/from south: Clive Green Lane, A530 Nantwich Road, A51 Nantwich Bypass and A500 Shavington Bypass Route to/from north (to be used after opening of the Clive Green Lane realignment): Clive Green Lane and A54 Middlewich Road Clive Green Lane, Road One, A533 Davenham Bypass and A556
Shropshire Union Canal South satellite compound	Route to/from south: Site haul route, Clive Green Lane, A530 Nantwich Road, A51 Nantwich Bypass and A500 Shavington Bypass Route to/from north (to be used after opening of the Clive Green Lane realignment): Site haul route, Clive Green Lane and A54 Middlewich Road
Shropshire Union Canal North satellite compound	Site haul route and A54 Middlewich Road
A54 Middlewich Road satellite compound	A533 Bostock Road (to be used before opening of A54 Middlewich Road realignment) and A54 Middlewich Road A54 Middlewich Road realignment (to be used after opening of A54 Middlewich Road realignment)
A533 Bostock Road satellite compound	A533 Bostock Road (to be used before opening of A54 Middlewich Road realignment) and A54 Middlewich Road A54 Middlewich Road (to be used after opening of A54 Middlewich Road realignment)
River Dane viaduct South satellite compound	Site haul route, A533 Bostock Road and A54 Middlewich Road A533 and A556 Chester Road Site haul route, A533 Bostock Road and A556 Chester Road
River Dane viaduct North satellite compound	Route to/from south: Site haul route, Whatcroft Hall Lane, A530 King Street, B5309, Centurion Way and A54 Route to/from north: Site haul route, Whatcroft Hall Lane, A530 King Street and A556

Compound name(s)	Access routes to/from compound(s) to main road network
Puddinglake Brook viaduct satellite compound	Route to/from south: Whatcroft Hall Lane, A530 King Street, B5309, Centurion Way and A54 Route to/from north: Whatcroft Hall Lane, A530 King Street and A556
Gad Brook viaduct south satellite compound	Route to/from south: Davenham Road, A530 King Street, B5309, Centurion Way and A54 Route to/from north: Davenham Road, A530 King Street and A556
Gad Brook viaduct north satellite compound	A530 King Street and A556
Rudheath embankment satellite compound	Route to/from south: Site haul route, A530 King Street, B5309, Centurion Way and A54 Route to/from north: Davenham Road, A530 King Street and A556
Pennys Lane satellite compound	Route to/from the north: B5082 Pennys Lane and A556 Shurlach Road (to be used before opening of the Pennys Lane diversion) B5082 Pennys Lane diversion, A530 King Street and A556 Shurlach Road (to be used after opening of the Pennys Lane diversion) Route to/from the south: B5082 Pennys Lane, Crowders Lane, A530 King Street, B5309, Centurion Way and A54 (to be used before opening of the Pennys Lane diversion) B5082 Pennys Lane diversion, A530 King Street, B5309, Centurion Way and A54 (to be used after opening of Pennys Lane diversion)
Birches Lane satellite compound	Birches Lane and A556 Shurlach Road (outbound) A556 Shurlach Road, A559 Manchester Road, A530, A556 and Birches Lane (inbound) Birches Lane, School Lane, A559 Manchester Road, A556
Lostock Gralam viaduct satellite compound	Site haul route, Birches Lane and A556 Shurlach Road
Smoker Brook viaduct south satellite compound	A556 Shurlach Road

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 16.

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 Wimboldsley to Lostock Gralam area have been assessed by undertaking strategic model runs for a number of 'with AP2 revised scheme' construction scenarios and comparing the 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 in three 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, peak between 2026 Q1 and 2028 Q1. This scenario corresponds with utility and advance works, site preparation and setup of compounds associated with Crewe North rolling stock depot (RSD). To enable the utility works, traffic management will be required, comprising shuttle working on the A530 Nantwich Road and on the A54 Middlewich Road/Chester Road/St Michael's Way/Kinderton Street/Holmes Chapel Road, and the temporary closure of Coalpit Lane and Birch Lane. There are negligible construction traffic movements in this scenario;
- scenario 1, peak between 2028 Q2 and 2029 Q4. This scenario corresponds with site preparation and setup of the remaining compounds and early main construction works. The main construction activities taking place during this scenario include construction of Crewe North RSD and extraction of material from MA02 Borrow Pits A, B, and C. Works will also take place on the construction of several highway modifications, including the A530 Nantwich Road realignment, the Clive Green Lane realignment, the A54 Middlewich Road realignment, the A533 Nantwich Road diversion and the A556 Shurlach Road realignment. A number of viaducts will also be under construction during this scenario, including Shropshire Union Canal viaducts, River Dane viaduct, Puddinglake Brook viaduct, Trent and Mersey Canal viaduct, Gad Brook viaduct, Lostock Gralam viaduct and Smoker Brook viaduct. This scenario equates to 92% of the overall peak in construction traffic across the whole construction period;
- scenario 2, peak between 2030 Q1 and 2031 Q1. This scenario corresponds with the construction peak following the opening of the Clive Green Lane realignment, A54 Middlewich Road realignment and the A533 Northwich Road diversion. The Clive Green Lane realignment will enable construction traffic associated with the AP2 revised scheme to use routes between Crewe North RSD and the A54 Middlewich Road. The main construction activities taking place during this scenario include the construction of Crewe North RSD, River Dane viaduct, Trent and Mersey Canal viaduct, Gad Brook viaduct, Wade Brook viaduct, Lostock Gralam viaduct, Smoker Brook viaduct, Walley's Green

embankment, Clive Green South and North embankments, Stanthorne South and North embankments, Dane Valley embankment, Whatcroft South and North embankments, Rudheath embankment, Lostock Gralam South and North embankments, the A530 Nantwich Road realignment, the B5082 Pennys Lane diversion and Middlewich box structure. This scenario equates to the overall peak in construction traffic across the whole construction period; and

- scenario 3, peak between 2031 Q2 and 2036 Q2. This corresponds with a construction scenario following the opening of the B5082 Pennys Lane realignment. The majority of construction activities taking place during scenario 2 will continue into scenario 3. This scenario equates to 76% 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 20 of the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) gives details of the most relevant highway interventions and works for each scenario in the Wimboldsley to Lostock Gralam area. This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 17.

Table 17: Construction highway interventions by scenario

Type	Intervention	Utilities scenario	Scenario 1	Scenario 2	Scenario 3
Utilities	A54 Middlewich Road/Chester Road/St Michael's Way/Kinderton Street/Holmes Chapel Road shuttle working	Included	Not included	Not included	Not included
Utilities	A530 Nantwich Road shuttle working	Included	Not included	Not included	Not included
Utilities	Temporary closure of Coalpit Lane and Birch Lane	Included	Not included	Not included	Not included
Main works	A54 Middlewich Road realignment	Not included	Not included	Included	Included
Main works	A533 Northwich Road diversion	Not included	Not included	Included	Included
Main works	Clive Green Lane available to construction traffic	Not included	Not included	Included	Included
Main works	B5082 Pennys Lane realignment	Not included	Not included	Not included	Included
Key construction activities	Crewe North RSD	Not included	Included	Included	Included

Type	Intervention	Utilities scenario	Scenario 1	Scenario 2	Scenario 3
Key construction activities	Extraction of material from MA02 Borrow Pits A, B and C	Not included	Included	Included	Included
Key construction activities	Clive Green Lane overbridge and realignment	Not included	Not included	Included	Included
	Construction HGV traffic assessed as a percentage of peak construction HGV traffic (Winsford and Northwich models combined)	Negligible	92%	100%	76%

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 following locations during construction. These amendments are temporary and will be in place during construction of the AP2 revised scheme only:

- A54 Kinderton Street/A533 Leadsmithy Street junction (AP2-002-001);
- A530 King Street/A530 Croxton Lane/B5309 King Street junction (AP2-002-002); and
- A559 Manchester Road/Stubbs Lane junction (AP2-002-005).

7.3.24 The AP2 revised scheme also includes a permanent amendment to the A559 Manchester Road/A559 Hall Lane/Station Road junction (AP2-002-003) to mitigate impacts at this location.

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.

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 18. 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 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 18: 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
A530 Nantwich Road/Chapel Lane	Minor adverse (Previously no effect)	Scenario 3
A530 Nantwich Road/Brynlow Drive	Major adverse (increased) (Previously major adverse)	Scenarios 2 and 3
Clive Lane/Rilshaw Lane	Major adverse (increased) (Previously major adverse)	Utilities scenario
A54 Middlewich Road/Clive Lane/Road One	Major adverse (increased) (Previously major adverse)	Utilities scenario and scenarios 2 and 3
A54 New High Street/A54 Winsford Bypass/A5018 Wharton Road/Weaver Street	Major adverse (Previously no effect)	Scenario 1
A54 Kinderton Street/A54 St Michael's Way/A533 Leadsmithy Street (proposed layout)	Moderate adverse (Previously minor adverse)	Scenarios 1, 2 and 3
A54 Chester Road/A54 St Michael's Way/A530 Nantwich Road	Major adverse (increased) (Previously major adverse)	Scenarios 1, 2 and 3
A54 Chester Road/A530 Newton Bank	Major adverse (increased) (Previously major adverse)	Utilities scenario
A54 Chester Road/A54 Middlewich Road/A533 Northwich Road	No effect (Previously major adverse)	-
A54 Middlewich Road realignment/Birch Lane diversion/Bell Lane realignment	No effect (Previously major adverse)	-
A5018 Wharton Road/A5018 Wharton Park Road/B5355 Wharton Road/Collingtree Avenue	Moderate beneficial (Previously no effect)	Scenarios 2 and 3
A5018 Wharton Road/Morrisons Manufacturing Winsford Access	No effect (Previously major adverse)	-
A533 Bostock Road/A5018 Bostock Road/A533 Davenham Road/Road One	Moderate adverse (Previously no effect)	Utilities scenario and scenario 3
A533 Davenham Bypass/Jack Lane	No effect (Previously minor adverse)	-
A556 Chester Road/Hartford Road/Hill Top Grange	No effect (Previously minor adverse)	-
Shurlach Lane/Davenham Road/Shipbrook Road/Manor Lane	No effect (Previously moderate adverse)	-
A556 Shurlach Road/A533 Davenham Bypass	Minor beneficial (Previously major adverse)	Scenarios 1 and 2
A556 Shurlach Road/A556 Chester Road/A533 London Road/London Road	No effect (Previously major adverse)	-
A533 Kingsmead/A533 London Road	Minor adverse (Previously no effect)	Scenarios 1 and 3

Junction Name	Significant Effect	AP2 Construction Scenario
A559 Chester Road/Bradburns Lane/School Lane	Minor adverse (Previously no effect)	Utilities scenario
A556 Shurlach Road/Gadbrook Road	Minor adverse (Previously moderate adverse)	Scenario 3
B5153 Beach Road/Bradburns Lane	Minor adverse (Previously no effect)	Utilities scenario
B5153 Beach Road/Burrows Hill	Minor adverse (Previously no effect)	Utilities scenario
A530 Griffiths Road/A530 King Street/B5082 Middlewich Road	No effect (Previously minor adverse)	-
A533 London Road/A5509 Chester Way	Minor adverse (Previously no effect)	Scenarios 1 and 2
Apple Market Street/Carpark Egress	No effect (Previously major adverse)	-
A559 Chester Way/Crum Hill	Minor adverse (Previously no effect)	Scenarios 1, 2 and 3
B5082 Station Road/B5062 Middlewich Road/Manchester Road/Victoria Road	No effect (Previously minor adverse)	-
A559 Chester Way/B5075 New Warrington Road/B5082 Station Road/Leicester Street	Moderate adverse (Previously no effect)	Scenarios 1, 2 and 3
A530 Griffiths Road/A559 Manchester Road*	Minor adverse (Previously moderate adverse)	Scenarios 1 and 2
A559 Manchester Road/A559 Hall Lane/Station Road	Major adverse (Previously no effect)	Utilities scenario
A559 Manchester Road/Stubbs Lane*	Minor beneficial (Previously no effect)	Scenario 3
B5075 Ollershaw Lane/B5075 New Warrington Road/Chapel Street	Moderate adverse (Previously minor adverse)	Utilities scenario and scenarios 1, 2 and 3
A556 Chester Road/A556 Shurlach Road/A559 Manchester Road	No effect (Previously major adverse)	-
A559 Marston Lane/A559 Hall Lane/B5391 Church Street/Wincham Lane	Moderate adverse (Previously minor adverse)	Utilities scenario
A556 Chester Road/B5569 Plumley Moor Road	Moderate adverse (Previously major adverse)	Scenario 2
A559 Marston Lane/Earles Lane	Major adverse (Previously no effect)	Utilities scenario
A50 Toft Road/Goughs Lane	Minor adverse (Previously moderate adverse)	Scenario 1

**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 19 for all-traffic effects and

Table 20 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 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: 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
A530 Nantwich Road (between Moss Lane and Brookhouse Lane)	No effect (Previously major adverse)	-
Middlewich Eastern Bypass (between A533 Booth Lane and Cledford Lane)	No effect (Previously moderate adverse)	-
Darnhall School Lane (between Glebe Green Drive and B5074 Swanlow Lane)	Moderate adverse (Previously major adverse)	Utilities scenario and scenario 1
Durham Drive/Glebe Green Drive (between Darnhall School Lane and Townsfields Drive)	Moderate adverse (Previously major adverse)	Utilities scenario and scenario 1
Clive Green Lane realignment (between A530 Nantwich Road and Crewe North RSD)	Major adverse (Previously no effect)	Utilities scenario and scenarios 2 and 3
Woodford Lane West (between Mount Pleasant Drive and A54 Oakmere Road)	No effect (Previously moderate adverse)	-
Brynlow Drive (between Long Lane and A530 Nantwich Road)	Major adverse (Previously no effect)	Scenario 2
Hayhurst Avenue (between Eaton Drive and Long Lane)	Moderate adverse (Previously no effect)	Utilities scenario and scenarios 1, 2 and 3
Hayhurst Avenue (between Long Lane and Sutton Lane)	Moderate adverse (Previously no effect)	Utilities scenario and scenarios 1, 2 and 3
Coalpit Lane (between Clive Green Lane and Birch Lane)	Major adverse (Previously moderate adverse)	Scenarios 2 and 3
Sutton Lane (between St Ann's Road and A533 Lewin Street)	Major adverse (Previously no effect)	Scenario 1
St Ann's Road (between Sutton Lane and Manor Lane)	Minor beneficial (Previously no effect)	Utilities scenario
Clive Green Lane realignment/Clive Lane (between Crewe North RSD and A54 Middlewich Road)	Major adverse (Previously moderate adverse)	Utilities scenario and scenarios 2 and 3
St Ann's Road (between Manor Lane and King Edward Street)	Minor beneficial (Previously no effect)	Utilities scenario
A54 Middlewich Road realignment (between Clive Lane and A533 Northwich Road diversion)	No effect (Previously moderate adverse)	-
B5355 Crook Lane (between B5355 Station Road and Bradbury Road)	Moderate adverse (Previously no effect)	Scenario 1
St Ann's Road (between King Edward Street and A530 Nantwich Road)	Moderate beneficial (Previously no effect)	Utilities scenario
A530 Nantwich Road (between A530 Newton Bank and A54 St Michael's Way)	Moderate beneficial (Previously no effect)	Utilities scenario

Road Name	Significant Effect	AP2 Construction Scenario
Brereton Lane (between Cledford Lane and A54 Holmes Chapel Road)	No effect (Previously minor adverse)	-
Wharton Road (between A5018 Wharton Park Road and B5355 Crook Lane)	Moderate adverse (Previously no effect)	Scenario 1
Birch Lane (between Coalpit Lane and A54 Middlewich Road)	Major adverse (Previously no effect)	Scenarios 2 and 3
A530 Croxton Lane (between A54 Chester Road and B5309 King Street)	Moderate beneficial (Previously no effect)	Utilities scenario
A54 Middlewich Road (between Clive Lane and Birch Lane)	No effect (Previously moderate adverse)	-
A54 Middlewich Road realignment (between Birch Lane and Coalpit Lane)	Moderate beneficial (Previously no effect)	Utilities scenario
B5355 Crook Lane (between Bradbury Road and B5355 Wharton Road)	Moderate adverse (Previously no effect)	Scenario 1
A54 Middlewich Road realignment (between A533 Northwich Road diversion and Birch Lane)	Moderate adverse (Previously major adverse)	Scenarios 2 and 3
Road One (between A54 Middlewich Road and A533 Bostock Road)	Moderate adverse (Previously no effect)	Scenario 1
A533 Bostock Road (between A533 Northwich Road diversion and London Road)	Moderate adverse (Previously no effect)	Scenarios 2 and 3
London Road (between A533 Bostock Road and Brick Kiln Lane)	Major adverse (Previously no effect)	Scenario 2
Crowders Lane (between A530 King Street and B5082 Pennys Lane)	Moderate adverse (Previously no effect)	Scenarios 1 and 2
A530 King Street (between B5082 Pennys Lane diversion and A556 Shurlach Road)	Moderate adverse (Previously major adverse)	Scenario 3
Birches Lane diversion (between A556 Shurlach Road and B5082 Holmes Chapel Road)	Moderate adverse (Previously no effect)	Scenarios 1 and 2
West Avenue (between Gadbrook Road and Grange Road)	Minor adverse (Previously no effect)	Scenarios 1, 2 and 3
Porter Drive/Porter Way/Greenway Drive (between Marlowe Road and Belmont Road)	Moderate adverse (Previously no effect)	Scenario 3
Central Road (between West Avenue and East Avenue)	No effect (Previously minor adverse)	-
East Avenue (between Central Road and North Drive)	No effect (Previously minor beneficial)	-
North Drive (between West Avenue and East Avenue)	No effect (Previously minor adverse)	-
Belmont Road (between Greenway Drive and Malpas Road Roundabout)	Moderate adverse (Previously no effect)	Scenario 3
Birches Lane (between A556 Shurlach Road and B5082 Holmes Chapel Road)	Moderate adverse (Previously no effect)	Scenarios 1 and 2

Road Name	Significant Effect	AP2 Construction Scenario
A556 Shurlach Road (between Birches Lane and A559 Manchester Road)	No effect (Previously major adverse)	-
Station Road (between School Lane and A559 Manchester Road)	Major adverse (Previously no effect)	Utilities scenario
School Lane (between Station Road and Stubbs Lane)	Moderate adverse (Previously minor adverse)	Utilities scenario and scenarios 2 and 3
Townshend Road (between A559 Hall Lane and Fryer Road)	Major adverse (Previously no effect)	Utilities scenario
Fryer Road (between A559 Manchester Road and Townshend Road)	Major adverse (Previously no effect)	Utilities scenario
Linnards Lane (between Green Lane and B5391 Church Street)	Moderate adverse (Previously no effect)	Utilities scenario
Earles Lane (between A559 Marston Lane and B5391 Pickmere Lane)	Moderate adverse (Previously no effect)	Utilities scenario
High Street/Church Street/Westage Lane (between A559 Warrington Road and Hield Lane)	Moderate adverse (Previously no effect)	Utilities scenario

Table 20: 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
A530 Nantwich Road (between Moss Lane and Brookhouse Lane)	No effect (Previously major adverse)	-
St Annes Avenue (between Sutton Lane and A533 Booth Lane)	Moderate adverse (Previously no effect)	Scenarios 1, 2 and 3
St Ann's Road (between Sutton Lane and Manor Lane)	Major adverse (Previously no effect)	Scenario 1
Clive Green Lane realignment/Clive Lane (between Crewe North RSD and A54 Middlewich Road)	No effect (Previously major adverse)	-
St Ann's Road (between Manor Lane and King Edward Street)	Major adverse (Previously no effect)	Scenario 1
St Ann's Road (between King Edward Street and A530 Nantwich Road)	Major adverse (Previously no effect)	Scenario 1
A530 Nantwich Road (between A530 Newton Bank and A54 St Michael's Way)	Moderate adverse (Previously no effect)	Scenarios 1 and 2
A54 St Michael's Way (between A54 Chester Road and The Bull Ring)	Moderate adverse (Previously no effect)	Scenarios 1 and 2
A530 Newton Bank (between A530 Nantwich Road and A54 Chester Road)	Moderate adverse (Previously no effect)	Scenarios 1 and 2
A530 Croxton Lane (between A54 Chester Road and B5309 King Street)	Major adverse (Previously no effect)	Scenarios 1, 2 and 3
A54 Middlewich Road realignment (between Birch Lane and Coalpit Lane)	Moderate adverse (Previously no effect)	Scenario 1

Road Name	Significant Effect	AP2 Construction Scenario
B5309 Centurion Way (between White Park Close and B5081 Byley Road)	Moderate adverse (Previously no effect)	Scenario 1
B5309 Centurion Way (between B5309 King Street and White Park Close)	Major adverse (Previously moderate adverse)	Scenario 1
London Road (between A533 Bostock Road and Brick Kiln Lane)	Major adverse (Previously no effect)	Scenarios 1, 2 and 3
A50 London Road (between B5082 Northwich Road and Booth Bed Lane)	Moderate adverse (Previously no effect)	Utilities scenario
B5082 Pennys Lane diversion (between Pennys Lane and A556 Shurlach Road)	No effect (Previously moderate adverse)	-
A556 Shurlach Road (between A530 King Street and B5082 Pennys Lane)	Major adverse (Previously moderate adverse)	Scenario 2
Birches Lane/Station Road (between A556 Shurlach Road and School Lane)	Major adverse (increased) (Previously major adverse)	Scenarios 1, 2 and 3
A556 Shurlach Road (between Birches Lane and A559 Manchester Road)	Major adverse (decreased) (Previously major adverse)	Scenario 2
A556 Chester Road (between A559 Manchester Road and Linnards Lane)	Major adverse (Previously moderate adverse)	Scenario 2
A556 Chester Road (between A559 Manchester Road and Plumley Moor Road)	Moderate adverse (Previously no effect)	Scenario 2
A50 Holmes Chapel Road (between B5081 Middlewich Road and Goughs Lane)	Major adverse (Previously moderate adverse)	Scenario 2

Other mitigation measures

7.3.28 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 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 11 junctions (six major, one moderate, four minor);
- change (increase) from minor adverse effect to moderate adverse effect at three junctions;
- change (decrease) from major adverse effect to moderate adverse effect at one junction;

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

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 eight roads (one major, four moderate and three minor);
- significant beneficial effects removed on one road (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 five roads;
- change (increase) from minor adverse effect to moderate adverse effect on one road;
- new major adverse effect on 11 roads;
- new moderate adverse effect on 23 roads;
- new minor adverse effect on one road;
- different (increased) major adverse significant effects on one road; and
- different (decreased) major adverse significant effects on one road.

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: Wimboldsley to Lostock Gralam, (MA02) of the main ES and Section 7.3 of the SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02).

7.3.35 The AP2 revised scheme includes an amendment to permanently modify the A559 Manchester Road/A559 Hall Lane/Station Road junction (AP2-002-237) to mitigate impacts at this location.

7.3.36 The combined impact of all SES1 changes, AP1 amendments, 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 21 and Table 22 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 21and Table 22 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: Junctions with changes resulting in new or different significant effects on delays and congestion to vehicle occupants, 2039

Junction Name	Significant Effect
A530 Nantwich Road/Brynlow Drive	Major adverse (Previously moderate adverse)
A533 Booth Lane/St Annes Avenue	Minor adverse (Previously no effect)
A54 Chester Road/A530 Newton Bank	No effect (Previously major adverse)
A54 Holmes Chapel Road/Brereton Lane	Minor beneficial (Previously no effect)
A530 King Street/A530 Croxton Lane/B5309 King Street	Moderate beneficial (Previously moderate adverse)
A556 Shurlach Road/Gadbrook Road	Minor adverse (Previously moderate adverse)
A533 London Road/A533 Kingsmead	Minor adverse (Previously no effect)
A530 Griffiths Road/A530 King Street/B5082 Middlewich Road	Minor adverse (Previously major adverse)
A559 Chester Way/Crum Hill	Minor adverse (Previously no effect)
B5082 Station Road/B5062 Middlewich Road/Manchester Road/Victoria Road	No effect (Previously minor adverse)
A559 Chester Way/B5082 Station Road/B5075 New Warrington Road	Minor beneficial (Previously no effect)

Junction Name	Significant Effect
A530 Griffiths Road/A559 Manchester Road (proposed layout)	Minor adverse (Previously no effect)
B5075 Ollershaw Lane/B5075 New Warrington Road/Chapel Street	Minor beneficial (Previously no effect)
A556 Chester Road/A556 Shurlach Road/A559 Manchester Road	Minor adverse (Previously no effect)
A559 Marston Lane/A559 Hall Lane/B5391 Church Street/Wincham Lane	Moderate beneficial (Previously no effect)
B5391 Church Street/B5391 Pickmere Lane/Linnards Lane/Earles Lane	No effect (Previously minor adverse)

Table 22: Junctions with changes resulting in new or different significant effects on delays and congestion to vehicle occupants, 2051

Junction Name	Significant Effect
B5074 Swanlow Lane/Townfields Road/Townfields Drive	Minor beneficial (Previously no effect)
A530 Nantwich Road/Brynlow Drive	Major adverse (increased) (Previously major adverse)
A54 Middlewich Road/Clive Lane/Road One	Major adverse (Previously moderate adverse)
Dene Drive/The Drumber	No effect (Previously minor adverse)
A54 Middlewich Road/B5355 Station Road	No effect (Previously major adverse)
A54 New High Street/A54 Winsford Bypass/A5018 Wharton Road/Weaver Street	Moderate adverse (Previously minor adverse)
A54 Kinderton Street/A54 St Michael's Way/A533 Leadsmithy Street	No effect (Previously minor adverse)
A54 Holmes Chapel Road/B5309 Centurion Way/Pochin Way	Major adverse (Previously no effect)
A533 Bostock Road/A533 Davenham Road/A5018 Bostock Road/Road One	Major adverse (Previously minor adverse)
A533 Bostock Road/London Road	Minor adverse (Previously major adverse)
A530 King Street/A530 Croxton Lane/B5309 King Street	Major beneficial (Previously major adverse)
London Road/Hartford Road	Minor adverse (Previously no effect)
A530 King Street/Davenham Road/Crowders Lane	No effect (Previously minor beneficial)
A556 Shurlach Road/Shurlach Lane	No effect (Previously moderate adverse)
A533 Kingsmead/St Georges Way/Monarch Drive	Minor adverse (Previously no effect)

Junction Name	Significant Effect
A556 Shurlach Road/Gadbrook Road	No effect (Previously minor adverse)
A533 London Road/A533 Kingsmead	Minor adverse (Previously no effect)
A530 Griffiths Road/A530 King Street/B5082 Middlewich Road	Minor adverse (Previously major adverse)
A533 London Road/A5509 Chester Way	Minor adverse (Previously no effect)
A533 Town Bridge/A533 Dane Street/Weaver Way	Moderate adverse (Previously no effect)
A559 Chester Way/B5082 Station Road/B5075 New Warrington Road	Minor beneficial (Previously no effect)
A530 Griffiths Road/A559 Manchester Road (proposed layout)	Moderate adverse (Previously no effect)
A559 Manchester Road/A559 Hall Lane/Station Road	Minor adverse (Previously no effect)
B5075 Ollershaw Lane/B5075 New Warrington Road/Chapel Street	Moderate beneficial (Previously no effect)
A559 Marston Lane/A559 Hall Lane/B5391 Church Street/Wincham Lane	Moderate adverse (Previously no effect)
A556 Chester Road/B5569 Plumley Moor Road	Minor beneficial (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 23. 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 23 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 23: Roads with changes in traffic flow resulting in new or different significant 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
A530 Nantwich Road (between Brookhouse Lane and Clive Green Lane)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Middlewich Eastern Bypass (between A533 Booth Lane and Cledford Lane)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	No effect (No change)
Swanlow Drive (between Darnhall School Lane and B5074 Swanlow Lane)	No effect (No change)	Minor adverse (Previously no effect)	No effect (No change)	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Chadwick Road (between Sutton Lane and Warmingham Lane)	No effect (No change)	Minor adverse (Previously no effect)	No effect (No change)	Minor adverse (Previously no effect)
A530 Nantwich Road (between Clive Green Lane and Brynlow Drive)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (Previously moderate beneficial)
Long Lane South (between Sutton Lane and Elm Road)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously minor adverse)
Long Lane (between Sutton Lane and Hayhurst Avenue)	Minor adverse (Previously no effect)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)
Sutton Lane (between Long Lane South and Hayhurst Avenue)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously minor adverse)
Cledford Lane (between Bradwall Road and Jones Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
Denbigh Drive (between Mount Pleasant Drive and Swanlow Lane)	No effect (No change)	No effect (Previously minor adverse)	No effect (No change)	No effect (No change)
Beeston Drive (between Denbigh Drive and Handley Hill)	No effect (No change)	No change from SES1 and AP1 ES (Previously minor adverse)	No effect (No change)	Minor adverse (Previously no effect)
Brynlow Drive (between Long Lane and A530 Nantwich Road)	No change from SES1 and AP1 ES (Previously moderate adverse)	Major adverse (Previously no effect)	No change from SES1 and AP1 ES (Previously major adverse)	Major adverse (Previously moderate adverse)
Hayhurst Avenue (between Eaton Drive and Long Lane)	Moderate adverse (Previously no effect)	Major adverse (Previously no effect)	No change from SES1 and AP1 ES (Previously major adverse)	Major adverse (Previously no effect)
Hayhurst Avenue (between Long Lane and Sutton Lane)	Moderate adverse (Previously no effect)	Major adverse (Previously no effect)	No change from SES1 and AP1 ES (Previously major adverse)	Major adverse (Previously moderate adverse)
St Annes Avenue (between Sutton Lane and A533 Booth Lane)	No effect (Previously moderate adverse)	Major adverse (Previously no effect)	No effect (Previously moderate adverse)	Major adverse (Previously no effect)
Dene Drive (between Townfields Road and Queensway)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)
Sutton Lane (between St Annes Avenue and St Ann's Road)	Moderate beneficial (Previously no effect)	No effect (No change)	No effect (No change)	No effect (Previously major adverse)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Beeston Drive (between Handley Hill and B5074 Swanlow Lane)	No effect (No change)	No change from SES1 and AP1 ES (Previously minor adverse)	No effect (No change)	Minor adverse (Previously no effect)
Coalpit Lane (between Clive Green Lane and Birch Lane)	Major adverse (Previously moderate adverse)	No change from SES1 and AP1 ES (Previously major adverse)	No change from SES1 and AP1 ES (Previously major adverse)	No change from SES1 and AP1 ES (Previously major adverse)
Sutton Lane (between St Ann's Road and A533 Lewin Street)	No effect (No change)	No effect (No change)	Major adverse (Previously moderate adverse)	No effect (Previously moderate adverse)
St Ann's Road (between Sutton Lane and Manor Lane)	Major beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	No effect (Previously moderate adverse)
A533 Lewin Street (between St Annes Avenue and Sutton Lane)	No effect (No change)	Major beneficial (Previously no effect)	No effect (No change)	Major beneficial (Previously no effect)
Clive Green Lane realignment/Clive Lane (between A530 Nantwich Road and A54 Middlewich Road)	No change from SES1 and AP1 ES (Previously major adverse)	Major adverse (Previously moderate adverse)	No change from SES1 and AP1 ES (Previously major adverse)	No change from SES1 and AP1 ES (Previously major adverse)
Long Lane/Manor Lane (between Hayhurst Avenue St Ann's Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Brereton Lane (between Cledford Lane and A54 Holmes Chapel Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
St Ann's Road (between Manor Lane and King Edward Street)	Major beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously moderate adverse)
A54 Middlewich Road realignment (between Clive Lane and A533 Northwich Road diversion)	Major beneficial (Previously no effect)	Major beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Major beneficial (Previously no effect)
Station Road (between B5355 Crook Lane and Rilshaw Lane)	Moderate adverse (Previously no effect)	No effect (No change)	Major beneficial (Previously moderate adverse)	No effect (No change)
Station Road (between Kingsway and B5355 Crook Lane)	Moderate beneficial (Previously no effect)	No effect (Previously moderate adverse)	Major beneficial (Previously moderate adverse)	No effect (No change)
Dingle Lane/Weaver Street (between The Drumber and A54 Winsford Bypass)	Major beneficial (Previously moderate beneficial)	No effect (No change)	Major beneficial (Previously no effect)	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
A54 Middlewich Road (between Clive Lane and A54 Winsford Bypass)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)
Station Road (between A54 Winsford Bypass and Kingsway)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)	No effect (No change)
Station Road (between Rilshaw Lane and B5355 Crook Lane)	Moderate beneficial (Previously no effect)	No effect (No change)	Major beneficial (Previously moderate adverse)	No effect (No change)
B5355 Station Road (between A54 Middlewich Road and B5355 Crook Lane)	No effect (No change)	Major beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)
A530 Nantwich Road (between Brynlow Drive and Glastonbury Drive)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Major beneficial (Previously moderate beneficial)
A533 Lewin Street (between Sutton Lane and Hightown)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)
B5355 Crook Lane (between B5355 Station Road and Birch Avenue)	Moderate adverse (Previously major adverse)	Major adverse (Previously no effect)	No effect (Previously moderate adverse)	No effect (No change)
Queen Street (between St Anns Road and Hightown)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Hightown (between A533 Leadsmithy Street and Queen Street)	Moderate adverse (Previously no effect)	Minor adverse (Previously no effect)	No effect (No change)	No effect (No change)
St Ann's Road (between King Edward Street and A530 Nantwich Road)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	No effect (No change)
A530 Nantwich Road (between Glastonbury Drive and St Ann's Road)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Major beneficial (Previously moderate beneficial)
A530 Nantwich Road (between St Ann's Road and A530 Newton Bank)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
B5355 Crook Lane (between B5355 Station Road and Bradbury Road)	No change from SES1 and AP1 ES (Previously moderate adverse)	Major adverse (Previously no effect)	No effect (Previously moderate adverse)	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
A54 Kinderton Street (between A533 Leadsmithy Street and King Street)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
A530 Nantwich Road (between A530 Newton Bank and A54 St Michael's Way)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
Middlewich Eastern Bypass (between Cledford Lane and A54 Holmes Chapel Road)	Moderate beneficial (Previously no effect)	Major adverse (Previously no effect)	Moderate beneficial (Previously no effect)	No effect (No change)
King Street (between A54 Kinderton Street and B5309 Centurion Way)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
A54 St Michael's Way (between A54 Chester Road and The Bull Ring)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously moderate beneficial)
Wharton Road (between A5018 Wharton Park Road and B5355 Crook Lane)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)	No effect (No change)
A54 Chester Road (between A530 Newton Bank and A54 St Michael's Way)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	No change from SES1 and AP1 ES (Previously moderate beneficial)
Nixon Drive (between Basford Way and Saxon Crossway)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
A54 Chester Road (between A530 Croxton Lane and A530 Newton Bank)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	No change from SES1 and AP1 ES (Previously moderate beneficial)
A54 Holmes Chapel Road (between King Street and B5309 Centurion Way)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Nixon Drive (between Abbotts Way and Basford Way)	Minor adverse (Previously no effect)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
A54 Chester Road (between Coal Pit Lane and A530 Croxton Lane)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
A530 Croxton Lane (between A54 Chester Road and B5309 King Street)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	No change from SES1 and AP1 ES (Previously

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
				moderate beneficial)
Birch Lane (between Coalpit Lane and A54 Middlewich Road)	Major adverse (Previously no effect)	No change from SES1 and AP1 ES (Previously major adverse)	No change from SES1 and AP1 ES (Previously major adverse)	No change from SES1 and AP1 ES (Previously major adverse)
Nixon Drive (between B5074 Delamere Street and Abbotts Way)	Minor adverse (Previously no effect)	No effect (No change)	Minor adverse (Previously moderate adverse)	No effect (No change)
Nixon Drive (between Saxon Crossway and Grange Lane)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously moderate adverse)	No effect (Previously minor adverse)
B5355 Crook Lane (between Bradbury Road and B5355 Wharton Road)	No effect (Previously minor adverse)	Major adverse (Previously no effect)	No effect (Previously moderate adverse)	No effect (No change)
Coalpit Lane (between Birch Lane and A54 Chester Road)	Moderate adverse (Previously moderate beneficial)	No change from SES1 and AP1 ES (Previously moderate adverse)	No change from SES1 and AP1 ES (Previously moderate adverse)	No change from SES1 and AP1 ES (Previously moderate adverse)
A54 Middlewich Road realignment (between Birch Lane and Coalpit Lane)	Major beneficial (Previously no effect)	Major beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Major beneficial (Previously moderate beneficial)
B5355 Wharton Road (between Nat Lane and Bradbury Road)	No change from SES1 and AP1 ES (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Road One (between A54 Middlewich Road and A533 Bostock Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
B5309 Centurion Way (between B5309 King Street and White Park Close)	No effect (No change)	Major adverse (Previously no effect)	No effect (Previously moderate adverse)	Moderate adverse (Previously no effect)
A533 Northwich Road diversion (between A54 Middlewich Road realignment and A533 Northwich Road)	Moderate adverse (Previously no effect)	Major adverse (Previously no effect)	Major adverse (Previously moderate adverse)	Major adverse (Previously no effect)
A54 Middlewich Road (between A54 Chester Road and Bramhall Drive)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate beneficial (Previously no effect)
B5355 Wharton Road (between A5018 Wharton Park Road and Bradbury Road)	No change from SES1 and AP1 ES (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
B5309 King Street (between B5309 Centurion Way and A530 Croxton Lane)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (Previously moderate adverse)	No effect (No change)
A533 Bostock Road (between A533 Northwich Road diversion and London Road)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	Major adverse (Previously moderate adverse)	Major adverse (Previously no effect)
A533 Bostock Road (between A5018 Bostock Road and London Road)	No effect (No change)	No effect (Previously moderate adverse)	No effect (Previously moderate adverse)	Moderate adverse (Previously no effect)
London Road (between A533 Bostock Road and Brick Kiln Lane)	No change from SES1 and AP1 ES (Previously moderate adverse)	Major adverse (Previously no effect)	No change from SES1 and AP1 ES (Previously moderate adverse)	Major adverse (Previously moderate adverse)
B5081 Byley Road (between B5309 Centurion Way and Moss Lane)	No effect (No change)	Major beneficial (Previously no effect)	No effect (Previously moderate adverse)	Moderate beneficial (Previously no effect)
A533 Davenham Bypass (between Jack Lane and London Road)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)
A530 King Street (between A530 Croxton Lane and Whatcroft Hall Lane)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (Previously moderate adverse)	No effect (No change)
A533 Davenham Bypass (between London Road and A556 Shurlach Road)	No effect (Previously major beneficial)	No effect (No change)	No effect (No change)	No effect (No change)
Hartford Road (between Mount Pleasant Road and Green Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)
Hartford Road (between A556 and Mount Pleasant Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
Church Street/Shipbrook Road (between London Road and Shurlach Lane)	No change from SES1 and AP1 ES (Previously moderate beneficial)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)
Davenham Road (between Shurlach Lane and A530 King Street)	No change from SES1 and AP1 ES (Previously major beneficial)	No effect (Previously moderate adverse)	No change from SES1 and AP1 ES (Previously moderate beneficial)	No effect (No change)
B5082 Holmes Chapel Road (between B5081 Byley Lane and Birches Lane)	Major adverse (Previously moderate adverse)	No effect (No change)	Major adverse (Previously moderate adverse)	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Shurlach Lane (between Shipbrook Road and A556 Shurlach Road)	Major beneficial (Previously moderate beneficial)	No effect (No change)	No change from SES1 and AP1 ES (Previously moderate beneficial)	No effect (No change)
B5082 Pennys Lane diversion (between Pennys Lane and A556 Shurlach Road)	No change from SES1 and AP1 ES (Previously major adverse)	Moderate adverse (Previously major adverse)	No change from SES1 and AP1 ES (Previously major adverse)	No change from SES1 and AP1 ES (Previously major adverse)
Shipbrook Road (between Gadbrook Road and A556 Shurlach Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate beneficial (Previously no effect)
Birches Lane diversion (between A556 Shurlach Road and B5082 Holmes Chapel Road)	No effect (No change)	Moderate beneficial (Previously major beneficial)	No change from SES1 and AP1 ES (Previously major beneficial)	No effect (Previously moderate beneficial)
East Avenue (between Gadbrook Road and Grange Road)	Moderate adverse (Previously minor adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (Previously minor adverse)
East Avenue (between Grange Road and South Drive)	Moderate adverse (Previously minor adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (Previously minor adverse)
Porter Drive (between Shipbrook Road and Marlowe Road)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously minor adverse)
Gadbrook Road (between Shipbrook Road and East Avenue)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate beneficial (Previously no effect)
Shipbrook Road (between Porter Drive and Gadbrook Road)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)	Major beneficial (Previously no effect)
East Avenue (between South Drive and Central Road)	Minor adverse (Previously no effect)	No effect (No change)	No effect (Previously minor adverse)	No effect (Previously minor adverse)
West Avenue (between Grange Road and South Drive)	Minor adverse (Previously no effect)	No effect (No change)	Minor adverse (Previously no effect)	Minor adverse (Previously moderate beneficial)
Central Road (between West Avenue and East Avenue)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
West Avenue (between South Drive and Central Road)	Minor adverse (Previously no effect)	No effect (No change)	Minor adverse (Previously no effect)	Minor adverse (Previously moderate beneficial)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
East Avenue (between Central Road and North Drive)	Minor adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (Previously minor adverse)
West Avenue (between Central Road and North Drive)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously moderate beneficial)
Shipbrook Road (between Agecroft Road and Central Road)	No effect (No change)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)
North Drive (between West Avenue and East Avenue)	Moderate adverse (Previously no effect)	No change from SES1 and AP1 ES (Previously minor adverse)	No effect (Previously moderate adverse)	No change from SES1 and AP1 ES (Previously moderate adverse)
East Avenue (between North Drive and B5082 Middlewich Road)	No effect (No change)	No effect (Previously moderate beneficial)	No effect (Previously moderate adverse)	No effect (No change)
B5082 Middlewich Road (between East Avenue and A530 Griffiths Road)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)
Central Road (between West Avenue and Shipbrook Road	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
West Avenue (between North Drive and B5082 Middlewich Road)	No effect (No change)	No effect (Previously minor adverse)	No effect (Previously moderate beneficial)	Minor adverse (Previously no effect)
B5082 Middlewich Road (between Shipbrook Road and East Avenue)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
Shipbrook Road (between Central Road and B5082 Middlewich Road)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	Moderate adverse (Previously no effect)
Malpas Road (between Braemar Avenue and B5082 Middlewich Road)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)
B5082 Middlewich Road (between Parkfield Road and Shipbrook Road)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)
Victoria Road (between Kingsway and B5082 Station Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
B5082 Middlewich Road (between Victoria Road and Parkfield Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
B5082 Station Road (between A559 Chester Way and Victoria Road)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)
Whitton Street (between Station Road and A559 Chester Way)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously minor adverse)
Whitton Street (between Old Warrington Road and Station Road)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously minor adverse)
A559 Chester Way (between B5082 Station Road and A559 Manchester Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Birches Lane/Station Road (between A556 Shurlach Road and School Lane)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)	Major beneficial (Previously moderate beneficial)
A530 Griffiths Road (between A559 Manchester Road and B5082 Middlewich Road)	Major beneficial (Previously moderate beneficial)	No change from SES1 and AP1 ES (Previously moderate beneficial)	Major beneficial (Previously moderate beneficial)	No effect (No change)
A559 Manchester Road (between A530 Griffiths Road and A559 Hall Lane)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
Station Road (between School Lane and A559 Manchester Road)	Moderate adverse (Previously no effect)	Moderate beneficial (Previously no effect)	Major adverse (Previously no effect)	Moderate beneficial (Previously no effect)
School Lane (between Station Road and Stubbs Lane)	No effect (Previously minor adverse)	No effect (No change)	No effect (Previously moderate adverse)	No change from SES1 and AP1 ES (Previously moderate beneficial)
A559 Manchester Road (between A559 Hall Lane and Stubbs Lane)	Moderate beneficial (Previously no effect)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)
A559 Hall Lane (between A559 Manchester Road and Townshend Road)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)
A569 Hall Lane (between Townshend Road and Green Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
Townshend Road (between A559 Hall Lane and Fryer Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	Major adverse (Previously no effect)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
A559 Manchester Road (between Stubbs Lane and Fryer Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
Fryer Road (between A559 Manchester Road and Townshend Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
A559 Hall Lane (between Green Lane and B5391 Church Street)	No effect (No change)	No effect (No change)	Moderate beneficial (Previously no effect)	Moderate adverse (Previously no effect)
Green Lane (between Linnards Lane and A569 Hall Lane)	No effect (No change)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)
Earles Lane (between A559 Marston Lane and B5391 Pickmere Lane)	No effect (Previously moderate adverse)	No effect (No change)	No effect (No change)	No effect (No change)

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

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:

- significant adverse effects removed at five junctions (one major, one moderate and three minor);
- significant beneficial effects removed at one junction (one minor);

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

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 seven roads (one major, three moderate and three minor);
- significant beneficial effects removed on two roads (one moderate and one major);
- change (increase) from moderate adverse effect to major adverse effect on five roads;
- change (increase) from minor adverse effect to major adverse effect on one road;
- change (increase) from minor adverse effect to moderate adverse effect on three roads;
- change (decrease) from moderate adverse effect to major beneficial effect on one road;
- change (decrease) from moderate adverse effect to moderate beneficial effect on one road;
- change (decrease) from major beneficial effect to moderate beneficial effect on one road;
- change (increase) from moderate beneficial effect to major beneficial effect on three roads;
- new major adverse effect on seven roads;
- new moderate adverse effect on 21 roads;
- new minor adverse effect on eight roads;
- new major beneficial effect on seven roads; and
- new moderate beneficial effect on 14 roads.

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 adverse effects removed on 23 roads (two major, 15 moderate and six minor);
- significant beneficial effects removed on one road (one moderate);
- change (increase) from moderate adverse effect to major adverse effect on six roads;
- change (increase) from minor adverse effect to moderate adverse effect on one road;

- change (decrease) from moderate adverse effect to minor adverse effect on one road;
- change (decrease) from moderate adverse effect to major beneficial effect on three roads;
- change (decrease) from moderate adverse effect to moderate beneficial effect on four roads;
- change (increase) from moderate beneficial effect to major beneficial effect on four roads;
- change (increase) from moderate beneficial effect to major adverse effect on one road;
- change (increase) from moderate beneficial effect to moderate adverse effect on two roads;
- change (increase) from moderate beneficial effect to minor adverse effect on three roads;
- new major adverse effect on six roads;
- new moderate adverse effect on 18 roads;
- new minor adverse effect on four roads;
- new major beneficial effect on four roads; and
- new moderate beneficial effect on 14 roads.

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 main ES and SES1 and AP1 ES, there have been changes to the methodology, including the consideration of ammonia (NH_3) 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: Wimboldsley to Lostock Gralam (MA02) 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-001-0MA02.

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 and draft CoCP 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 Wimboldsley to Lostock Gralam area.

7.4.9 Receptors expected to experience the greatest change in concentrations have been included in the air quality model. No significant effects are predicted in relation to NO2, PM_{10} or $PM_{2.5}$ concentrations.

7.4.10 There was one significant adverse effect for annual mean NO2 concentrations reported in the SES1 and AP1 ES. This was at the A530 Nantwich Road, Middlewich (receptor 02-C-H048). This significant effect has now been removed due to the AP2 revised scheme. No new or different significant effects are anticipated at other human receptors in the area.

7.4.11 There is the potential for new significant effects from the construction of the AP2 revised scheme compared to the SES1 and AP1 ES for Wettenhall and Darnhall Woods SSSI due to NH3 concentrations and nitrogen. This is discussed further in Section 7.6, Ecology and biodiversity.

Other mitigation measures

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

Summary of likely residual significant effects

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

Cumulative effects

7.4.14 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: Wimboldsley to Lostock Gralam (MA02) 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 Clive Green comprises approximately 20 dispersed residential properties and farmsteads. The closest residential property is located 200m west of the HS2 route. Just north of Clive Green is Clive, a settlement comprising approximately 200 residential properties, which border the southern edge of the Winsford Industrial Estate. The closest residential property is located 350m west of the HS2 route.

7.5.4 Middlewich is a settlement comprising approximately 5,600 residential properties. The nearest properties are located 1.2km to the east of the HS2 route.

Future baseline

7.5.5 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.

7.5.6 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.

7.5.7 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

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

Assessment of impacts and effects

7.5.9 The main ES reported a major adverse in-combination effect on approximately 20 residential properties in Clive Green. Significant noise effects were expected to combine with significant visual and significant HGV traffic effects for approximately one year and three months.

7.5.10 Clive Green Lane is a designated route for construction traffic. Changes to construction traffic flows will result in the removal of HGV traffic effects. Noise and visual effects reported in the main ES will remain the same. This will result in a different major adverse in-combination effect on approximately 20 residential properties in Clive Green, which is significant.

7.5.11 The A530 Newton Bank is a construction traffic route and will experience a significant increase in HGV traffic. This new significant HGV traffic effect will combine with new traffic noise effects at approximately 25 residential properties in the vicinity of the A54 St Michael's Way and the A530 Newton Bank, Middlewich, during peak months of construction. 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 addition 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 a different residual significant effect on approximately 20 residential properties in Clive Green due to noise and visual effects, and the removal of HGV traffic effects.

7.5.15 Changes to traffic flows and the sound, noise and vibration assessment will result in a new residual significant effect on approximately 25 residential properties in the vicinity of the A54 St Michael's Way and the A530 Newton Bank, Middlewich, due to new noise and HGV traffic effects.

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 the Midland Meres and Mosses Phase 2 Ramsar site (Oak Mere) and Oak Mere Special Area of Conservation and the designated site assessment for the Midland Meres and Mosses Phase 2 Ramsar site (Oakhanger Moss) (see SES2 and AP2 ES Volume 5, Appendices: EC-016-00001 and EC-016-00006).

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 (NOx) and acidification were also assessed for the SES1 and AP1 ES. The assessment of the AP2 revised scheme also considers the impacts of ammonia (NH_3). 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 is as described in Section 7 of Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02) of the SES1 and AP1 ES. A summary of the baseline information relevant to this assessment is provided below.

Designated sites

7.6.7 There are two statutory sites of international importance of relevance to the assessment of the AP2 revised scheme; both were considered in the main ES and SES1 and AP1 ES:

- Midland Meres and Mosses Phase 2 Ramsar site, comprising 18 wetland SSSI distributed across the Cheshire/Shropshire Plain, of which the closest component unit of the Ramsar site of relevance to the assessment is Oak Mere SSSI. A further component of this Ramsar site, Oakhanger Moss SSSI, located in the Hough to Walley's Green area (MA01), is also relevant; and
- Oak Mere SAC, comprising one constituent SSSI, Oak Mere SSSI, is designated for its oligotrophic waters and transition mires, and schwingmoor[52], and is also part of the Midland Meres and Mosses Phase 2 Ramsar site.

7.6.8 There are three statutory sites of national importance of relevance to the assessment of the AP2 revised scheme, as follows:

- Wettenhall and Darnhall Woods SSSI (which also includes Brookside Woods Ancient Woodland Inventory (AWI) Site), is designated for woodland and unimproved grassland. It is located 2.4km west of land that has been identified for the purpose of habitat creation or enhancement as part of the AP2 revised scheme and 95m from the B5074 Swanlow Lane on which traffic will be redistributed as a result of the AP2 revised scheme;
- Oak Mere SSSI, is designated for its aquatic habitats and associated species. It is located 9.3km west of the land required for the construction of the AP2 revised scheme, and adjacent to the A54 Middlewich Road and A49 Tarporley Road on which traffic will be redistributed as a result of the AP2 revised scheme; 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 located 1.3km north-east of land that has been identified for the purpose of habitat creation or enhancement in the Wimboldsley to Lostock Gralam area. The SSSI is also relevant to the Pickmere to Agden and Hulseheath area (MA03) assessment, where it is located 124m east of the land required for the construction of the AP2 revised scheme

[52] A schwingmoor is a quaking peat bog formed as a result of colonisation of the water surface by floating vegetation.

at its closest point and 114m west of a construction traffic route on the A556 Chester Road.

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 2 Ramsar site

7.6.13 The SES1 and AP1 ES reported that there would be no adverse effects on the Midland Meres and Mosses Phase 2 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 2 Ramsar site of relevance to the AP2 revised scheme has been undertaken. These sites are Oakhanger Moss SSSI (located in the Hough to Walley's Green area (MA01)) and Oak Mere SSSI (located in the Wimboldsley to Lostock Gralam area). For Oak Mere SSSI, the assessment of effects demonstrates that there will be no adverse effects as the increase in construction traffic associated with the AP2 revised scheme will not exceed the thresholds required for air quality assessment. For Oakhanger Moss SSSI, an assessment of effects demonstrates that the changes in air quality brought about by the AP2 revised scheme will result in exceedance of the relevant thresholds for NH_3 concentrations and nitrogen deposition. Therefore, on a precautionary basis, there will be an adverse effect on the 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 Oak Mere SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00001) and Oakhanger Moss SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00006).

Oak Mere SAC

7.6.14 The SES1 and AP1 ES reported that there would be no adverse effects on Oak Mere SAC. As reported in the assessment of effects for the Midland Meres and Mosses Phase 2 Ramsar site, construction traffic volumes associated with the AP2 revised scheme will not exceed the thresholds required for air quality assessment at Oak Mere SSSI. As such, there will be no adverse effects on the SAC, and there are no changes to the assessment of effects reported in the SES1 and AP1 ES.

Wettenhall and Darnhall Woods SSSI

7.6.15 The SES1 and AP1 ES reported that there would be no significant adverse effects at Wettenhall and Darnhall Woods SSSI from changes in air quality arising from changes in traffic volumes on the B5074 Swanlow Lane. Wettenhall and Darnhall Woods 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) shows that in 2026, with the exception of NOx, the air quality standards for all pollutants are exceeded with or without the AP2 revised scheme. Furthermore, all modelled receptors display a greater than or equal to a 1% increase of the relevant critical load or level for all pollutants brought about by the AP2 revised scheme. The maximum increases in each pollutant all occur within the broadleaved woodland at the boundary of the SSSI, 80m from the road (Swanlow Lane/Over Road). In terms of the relevant critical loads or levels, the maximum increases in each pollutant in each affected habitat along the single transect are summarised below:

- NOx: There is an increase of 1% or greater than 1% of the critical level for NOx at all modelled receptors on the single transect. The maximum increase is 1.3%;
- nitrogen deposition: There is an increase greater than 1% of the critical load for nitrogen deposition at all modelled receptors on the single transect. The maximum increase is 3.2%;
- NH_3: There is an increase greater than 1% of the critical level for ammonia at all modelled receptors on the single transect. The maximum increase is 3.3%; and
- acid deposition: There is an increase greater than 1% of the critical load at all modelled receptor points on the single transect. The maximum increase is 1.8%.

7.6.16 It should be noted that the 1% threshold is precautionary, and an exceedance of the threshold does not mean that a significant (or adverse) effect will automatically occur. However, the exceedance of the 1% threshold across the four pollutants as a result of the AP2 revised scheme indicates a precautionary significant adverse effect at the national level at Wettenhall and Darnhall Woods SSSI. This represents a new significant effect to that reported in the SES1 and AP ES.

Oak Mere SSSI

7.6.17 The SES1 and AP1 ES reported that there would be no adverse effects on the structure and function of Oak Mere SSSI. The SSSI is designated for wetland habitats that also form the reason for designation of Oak Mere SAC, and the Midland Meres and Mosses Phase 2 Ramsar site, of which the SSSI is part. As noted in relation to these sites, construction traffic volumes associated with the AP2 revised scheme will not exceed the thresholds required for air quality assessment. As such, there will be no adverse effects on the Oak Mere SSSI, and there are no changes to the assessment of effects reported in the SES1 and AP1 ES.

Tabley Mere SSSI

7.6.18 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 reported in Volume 2, Community Area report: Pickmere to Agden and Hulseheath (MA03). The updated assessment (based on daily peak derived traffic data) flows shows that in 2026, with the exception of NOx, 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. The exceedance of the 1% threshold across the four pollutants as a result of the AP2 revised scheme 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 AP ES.

Other mitigation measures

7.6.19 No mitigation measures, additional to those reported in the main ES and draft CoCP, have been identified at this stage.

7.6.20 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

7.6.21 In the absence of mitigation, at this stage, the significant adverse effects from the construction of the AP2 revised scheme reported above at the Oakhanger Moss SSSI component of the Midland Meres and Mosses Phase 2 Ramsar Site, Wettenhall and Darnell Woods SSSI and Tabley Mere SSSI remain.

Cumulative effects

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

Effects arising during operation

Avoidance and mitigation measures

7.6.23 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 2 Ramsar site (Oak Mere SSSI)

7.6.24 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 2 Ramsar site. The changes in traffic flows on roads affected by AP2 revised scheme in the vicinity of the relevant constituent sites (Oak Mere SSSI and Oakhanger Moss SSSI) do not meet the threshold for air quality assessment. As such, there will be no adverse effects on the Ramsar site, and there are no changes to the assessment of effects provided in the SES1 and AP1 ES.

Oak Mere SAC (Oak Mere SSSI)

7.6.25 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 Oak Mere SAC. As noted above in relation to the Midland Meres and Mosses Phase 2 Ramsar site, changes in traffic flows on roads affected by AP2 revised scheme in the vicinity Oak Mere SSSI, do not meet the threshold for air quality assessment. As such, there will be no adverse effects on the SAC, and there are no changes to the assessment of effects provided in the SES1 and AP1 ES.

Other mitigation measures

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

Summary of likely residual significant effects

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

Cumulative effects

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

Ongoing work

7.6.29 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 Oakhanger Moss SSSI component of the Midland Meres and Mosses Phase 2 Ramsar site.

Midlands Meres and Mosses Phase 2 Ramsar site and Oak Mere SAC

7.6.30 At this stage, it is identified that there are potentially significant effects at the Oakhanger Moss SSSI component of the Midland Meres and Mosses Phase 2 Ramsar site during construction when considering the AP2 revised scheme in combination with other schemes. In-combination assessment demonstrates that the thresholds for NOx, NH_3, nitrogen deposition and acid deposition are all predicted to be exceeded at this SSSI. 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. The thresholds for these pollutants are also exceeded at Oak Mere SSSI (SES2 and AP2 ES Volume 5, Appendix: EC-016-00001), which is a further constituent of the component of the Midland Meres and Mosses Phase 2 Ramsar site and forms Oak Mere SAC, but affected parts of the site that are considered to be site fabric only.

7.6.31 The changes in traffic flows on roads affected by the AP2 revised scheme during operation, in combination with other schemes, in the vicinity of the relevant constituent sites (Oak Mere SSSI and Oakhanger Moss SSSI) of the Midland Meres and Mosses Phase 2 Ramsar site and Oak Mere SAC do not meet the threshold for air quality assessment. Therefore, this assessment identifies that there are no potentially significant effects when considering the AP2 revised scheme in combination with other schemes at the Ramsar site and SAC, and no requirement for further assessment of effects at Oak Mere SAC in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

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: Wimboldsley to Lostock Gralam (MA02) 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 Clive Green comprises approximately 20 dispersed residential properties and farmsteads. The closest residential property is located 200m west of the HS2 route. Just north of Clive Green is Clive, a settlement comprising approximately 200 residential properties, which border the southern edge of the Winsford Industrial Estate. The closest residential property is located 350m west of the HS2 route.

7.7.4 Middlewich is a settlement comprising approximately 5,600 residential properties. The nearest properties are located 1.2km to the east of the HS2 route.

Future baseline

7.7.5 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.

7.7.6 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.

7.7.7 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

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

Assessment of impacts and effects

7.7.9 The main ES reported an adverse neighbourhood quality effect for residents in Clive Green. Significant noise effects were expected to be noticeable for one year and three months. Construction activities were expected to be visible from street level and Clive Green Lane was expected to experience a significant increase in HGV traffic. People in this community

were 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 will result in the removal of HGV traffic effects. Noise and visual effects reported in the main ES will remain the same. This will result in a different neighbourhood quality effect for residents in Clive Green.

7.7.10 Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents in the vicinity of the A54 St Michael's Way and the A530 Newton Bank, Middlewich. As reported in the main ES, the A530 Newton Bank is a construction traffic route and will experience a significant increase in HGV traffic. New traffic noise effects are expected to be noticeable in the vicinity of the A54 St Michael's Way and the A530 Newton Bank, Middlewich, 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.

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.

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 correction to the SES1 and AP1 ES, as reported in Section 2.3 Table 2, identifies that the construction of the SES1 scheme would result in a temporary adverse significant in-combination effect on The Golden Lion Hotel, located in Middlewich. This was as a result of significant noise effects for 11 months, visual effects and HGV construction traffic (congestion and/or delays for road users). Due to changes in traffic flows as part of the AP2 revised scheme, significant effects from HGV construction traffic (traffic-related severance for non-motorised users) will also occur. Therefore, there will be a different temporary adverse in-combination effect on The Golden Lion Hotel, which is significant.

7.8.8 As a result in changes in traffic flows, Crossways Care Home, located in Lostock Gralam, will experience new significant effects from HGV construction traffic (congestion and delays for road users) in addition to new significant visual effects from Additional land permanently required for modifications to the A559 Manchester Road, A559 Hall Lane and Station Road junction (AP2-002-003). The sensitivity of Crossways Care Home is assessed to be high as users may be sensitive to impacts on the local environment and setting and this is likely to discourage customers of the residential care home. The construction works may discourage them from using this business. Given the duration of effects and the high level of sensitivity, amendment AP2-002-003 and the changes in traffic flows will result in a new temporary adverse in-combination effect on Crossways Care Home, which is significant.

7.8.9 SES2 reported that the construction of the scheme was expected to result in a temporary adverse significant in-combination effect on The Slow and Easy, a public house located in Lostock Gralam. This was as a result of significant noise effects (for 11 months) and significant visual effects. As a result in changes in traffic flows, there will be new significant HGV construction traffic effects (congestion and delays for road users) on the receptor. This will result in a different temporary adverse significant in-combination effect on The Slow and Easy.

7.8.10 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

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

Summary of likely residual significant effects

7.8.12 The changes in traffic flows will result in different temporary adverse significant in-combination effects on The Golden Lion Hotel and The Slow and Easy.

7.8.13 The changes in traffic flows will result in a new temporary adverse significant in-combination effect on Crossways Care Home.

Cumulative effects

7.8.14 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 Wimboldsley to Lostock Gralam 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: Wimboldsley to Lostock Gralam area (MA02) of the main ES and Section 3.8 of SES1 and AP1 ES Volume 2, Community Area report: Wimboldsley to Lostock Gralam (MA02).

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

Residential receptors: indirect effects

7.9.8 The SES1 and AP1 ES identified an indirect likely construction significant effect on a community basis at approximately 50 dwellings along Darnhall School Lane, Winsford between the B5074 Swanlow Lane and Glebe Green Drive. This was denoted as MA02-C-C4 in Table 13 in the SES1 and AP1 ES Volume 5, Appendix: SV-002-00000. As a result of the AP2 revised scheme the peak monthly road traffic movements on this road have decreased and thus the associated traffic noise levels have also decreased. Dwellings located along the road are forecast to experience a change in road traffic noise levels of around 2dB $L_{pAeq,0700\text{-}2300}$ during the peak months, due to traffic diverting away from construction routes on nearby roads. The reduction in construction traffic noise levels compared with that reported in the SES1 and AP1 ES will remove the likely indirect residual significant effect reported in the SES1 and AP1 ES on properties along Darnhall School Lane, Winsford between the B5074 Swanlow Lane and Glebe Green Drive.

7.9.9 As a result of the AP2 revised scheme, construction traffic is likely to cause adverse noise effects on residential receptors along the A530 Newton Bank and the A530 St Michael's Way. Approximately 25 dwellings located along these roads are forecast to experience a change in road traffic noise levels of around 1dB $L_{pAeq,0700\text{-}2300}$ during the peak months, due to additional construction vehicles using this route in an area currently exposed to high levels of sound. This is considered to be a new likely significant indirect effect on a community basis at the dwellings along these roads, denoted as MA02-C-C14 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 As a result of the SES2 changes and AP2 amendments, construction traffic is likely to cause adverse noise effects on residential receptors along the A54 Holmes Chapel Road between King Street and the B5309 Centurion Way roundabout. Approximately 45 dwellings located along this road are forecast to experience a change in road traffic noise levels of around 1dB LpAeq,0700-2300 during the peak months, due to additional construction vehicles using this route in an area currently exposed to high levels of sound. This is considered to be a new likely significant indirect effect on a community basis at the dwellings along these roads, denoted as MA02-C-C15 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.

Non-residential receptors: indirect effects

7.9.11 The SES1 and AP1 ES identified an indirect likely construction significant effect on Lorien House, a building located adjacent to Darnhall School Lane and used as a meeting space for a charity (Men in Sheds). This was denoted as MA02-C-N2 in Table 13 in the SES1 and AP1 ES Volume 5, Appendix: SV-002-00000. As a result of the SES2 changes and AP2 amendments the peak monthly road traffic movements on this road have decreased and thus the associated traffic noise levels have also decreased. Lorien House is forecast to experience a change in road traffic noise levels of around 2dB $L_{pAeq,0700-2300}$ during the peak months, due to traffic diverting away from construction routes on nearby roads. This reduction in construction traffic noise levels compared with that reported in the SES1 and AP1 ES will remove the likely indirect residual significant effect on Lorien House.

7.9.12 The SES1 and AP1 ES identified an indirect likely construction significant effect on Darnhall Primary School (Early Years Development) which is located adjacent to Darnhall School Lane. This was denoted as MA02-C-N3 in Table 13 in the SES1 and AP1 ES Volume 5, Appendix: SV-002-00000. As a result of the SES2 changes and AP2 amendments the peak monthly road traffic movements on this road have decreased and thus the associated traffic noise levels have also decreased. Darnhall Primary School (Early Years Development) is forecast to experience a change in road traffic noise levels of around 2dB LpAeq,0700-2300 during the peak months, due to traffic diverting away from construction routes on nearby roads. This reduction in construction traffic noise levels compared with that reported in the SES1 and AP1 ES will remove the likely indirect residual significant effect on Darnhall Primary School (Early Years Development).

Other mitigation measures

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

Summary of likely residual significant effects

7.9.14 As a result of the AP2 revised scheme, changes to construction traffic in this area is likely to result in the removal of indirect residual significant noise effects on dwellings which are adjacent to Darnhall School Lane.

7.9.15 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 dwellings which are adjacent to the A530 Newton Bank and A530 St Michael's Way and the A54 Holmes Chapel Road.

7.9.16 As a result of the AP2 revised scheme, changes in traffic in this area are likely to result in the removal of indirect residual significant noise effects at the following non-residential properties located adjacent to Darnhall School Lane:

- Lorien House; and
- Darnhall Primary School (Early Years Development).

Cumulative effects

7.9.17 This combined assessment has taken into account cumulative effects as described in Section 7.5 arising from the SES2 changes and AP2 amendments in this area and other community areas.

Effects arising during operation

Avoidance and mitigation measures

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

Assessment of impacts and effects

7.9.19 Taking account of the avoidance and mitigation measures incorporated into the AP2 revised scheme, the assessment has identified one dwelling at Bostock House Farm, Northwich Road, Stanthorne (assessment location ref.: 610234), close to the land required for the AP2 revised scheme, where noise levels are predicted to exceed the daytime trigger threshold set out in the NI Regulations[53]. It is, therefore, anticipated that this building is likely to qualify for noise insulation under the Regulations. The dwelling is indicated on Map Series SV-02 (SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book).

7.9.20 The assessment has also identified 21 dwellings close to the AP2 revised scheme where the daytime forecast noise level does not exceed the threshold set in the NI Regulations[53] but the predicted night-time noise level exceeds the WHO's Interim Target of 55dB, or the

[53] Equivalent to a daytime free-field level of 65dB $L_{pAeq,0700\text{-}2300}$.

maximum noise level as a train passes exceeds the relevant criteria[54]. It is anticipated that these buildings will be offered noise insulation as described in the avoidance and mitigation measures section 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):

- 2, 4 and 6 Harris Road, Lostock Gralam (assessment location ref.: 612570);
- Robin Hood House, Birches Lane, Lostock Gralam (assessment location ref.: 612558);
- 15 Birches Lane, Lostock Gralam (assessment location ref.: 612558);
- 1, 3, 5, 7, 11, 15 and 17 Mulberry Close, Rudheath (assessment location ref.: 612528);
- 16, 18, 20, 22, 24, 26 and 28 Foxglove Way, Rudheath (assessment location ref.: 612875);
- Chapel End Cottage, Clive Green Lane, Winsford (assessment location ref.: 610204); and
- Methodist Chapel, Clive Green Lane, Winsford (assessment location ref.: 610204).

7.9.21 The main ES identified six dwellings at Wynwood, Woodside, Brooklyn, Hollingwood, Fernlea and Millwood, Cranage Villas, Manchester Road, Plumley (assessment location ref.: 612601) as locations where noise levels are predicted to exceed the daytime trigger threshold set out in the NI Regulations[53]. The AP2 revised scheme will reduce the airborne noise level at these properties to below the daytime trigger threshold set out in the NI Regulations[53]. However, the night-time noise level is still predicted to exceed the WHO's Interim Target of 55dB, or the maximum noise level as a train passes is predicted to exceed the relevant criteria[54]. It is anticipated that these buildings will still be offered noise insulation as described in the avoidance and mitigation measures section. These dwellings are indicated on Map Series SV-02 (SES2 and AP2 ES Volume 5, Sound, noise and vibration Map Book).

7.9.22 The main ES identified one dwelling at Hillsbro, Middlewich Road, Stanthorne (assessment location ref.: 610409), close to the land required for the AP2 revised scheme where the daytime forecast noise level does not exceed the threshold set in the NI Regulations[53] 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 criteria[54]. It was anticipated that these buildings would be offered noise insulation as described in the avoidance and mitigation measures section. Night time noise levels are now forecast to be lower, compared to the main ES predictions, at the dwelling due to changes in road traffic noise levels with the AP2 revised scheme, and therefore it is anticipated that this building 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).

7.9.23 The mitigation measures, including noise insulation, will reduce airborne noise inside all dwellings such that it will not reach a level where it will significantly affect residents.

[54] During the night (2300-0700) a significant effect is also identified where the AP2 revised 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-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).

Other mitigation measures

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

Summary of likely residual significant effects

7.9.25 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

7.9.26 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.

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.

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: Wimboldsley to Lostock Gralam area (MA02) of the main ES and in Section 2 of this report. The changes in traffic flows have the potential to result in new, removed or different significant operational effects only. Therefore, there is no construction assessment for water resources.

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 2038.

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 operation

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 road diversions and realignments are discharged to local watercourses, 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 repeated following the main ES using the combined changes to traffic flows. The main ES and SES1 and AP1 ES reported a precautionary moderate adverse effect, which is significant, on water quality in Wade Brook due to highways drainage. No permanent new or different significant effects have been identified for the AP2 revised scheme.

7.10.9 In line with Water Framework Directive best practice guidance and the DMRB assessment principles, for those drainage outfalls where the discharge failed to pass the HEWRAT assessment and water quality data was available, a metal bioavailability assessment was carried out using the Environment Agency Metal Bioavailability Assessment Tool (M-BAT). This assessment uses average concentrations of calcium and pH along with a median concentration of dissolved organic carbon, to estimate the concentrations of copper and zinc that would be bioavailable (i.e. in a form which could impact on the biology in the watercourse).

7.10.10 For the Wade Brook, the water quality data used in the M-BAT assessment are set out in the final column of Table 1 in Section 2.1. Under the baseline conditions (prior to the scheme), the average concentration of copper from the monitoring is 6.44µg/l. The HEWRAT assessment for the Wade Brook shows that the changes in traffic data associated with the AP2 revised scheme would lead to an increase in average concentration of copper to 6.48µg/l in Wade Brook. These concentrations have been input to the M-BAT to estimate the bioavailable concentration of copper. The M-BAT estimates the concentration of bioavailable copper as 0.22µg/l in baseline conditions and 0.24µg/l for the AP2 revised scheme. Both of these values are below the Environmental Quality Standard (EQS) of 1µg/l. Therefore, this additional assessment leads to the removal of the significant effect on water quality in Wade Brook reported in the SES1 and AP1 ES.

Other mitigation measures

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

Summary of likely residual significant effects

7.10.12 In the SES1 and AP1 ES, a precautionary moderate adverse effect, which is significant, was reported on water quality in Wade Brook due to changes in highways drainage. The updated assessment based on new SES2 baseline data and the AP2 revised scheme traffic data, will lead to the removal of this permanent residual significant effect on water quality in Wade Brook.

7.10.13 There are no new or different significant operational effects for water resources and flood risk as a result of the AP2 revised scheme, compared to the main ES and 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

Traffic and transport

7.11.1 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 11 junctions (six major, one moderate, four minor);
- change (increase) from minor adverse effect to moderate adverse effect at three junctions;
- change (decrease) from major adverse effect to moderate adverse effect at one junction;
- change (decrease) from moderate adverse effect to minor adverse effect at three junctions;
- change (decrease) from major adverse effect to minor beneficial effect at one junction;
- new major adverse effect at three junctions;
- new moderate adverse effect at two junctions;
- new minor adverse effect at seven junctions;
- new moderate beneficial effect at one junction;
- new minor beneficial effect at one junction; and
- different (increased) major adverse significant effects at five junctions.

7.11.2 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 three roads;
- change (increase) from moderate adverse effect to major adverse effect on five roads;
- change (increase) from minor adverse effect to moderate adverse effect on one road;
- new major adverse effect on 11 roads;
- new moderate adverse effect on 23 roads;
- new minor adverse effect on one road;
- different (increased) major adverse significant effects on one road; and
- different (decreased) major adverse significant effects on one road.

Community

7.11.3 Changes to traffic flows will result in a different residual significant effect on approximately 20 residential properties in Clive Green due to noise and visual effects, and the removal of HGV traffic effects.

7.11.4 Changes to traffic flows and the sound, noise and vibration assessment will result in a new residual significant effect on approximately 25 residential properties in the vicinity of the A54 St Michael's Way and the A530 Newton Bank, Middlewich, due to new noise and HGV traffic effects.

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:

- Oakhanger Moss SSSI component of the Midland Meres and Mosses Phase 2 Ramsar Site. On a precautionary basis, this will result in an adverse effect on the Midland Meres and Mosses Phase 2 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;
- Wettenhall and Darnell Woods 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; 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 will result in different temporary adverse significant in-combination effects on The Golden Lion Hotel and The Slow and Easy.

7.11.8 The changes in traffic flows will result in a new temporary adverse significant in-combination effect on Crossways Care Home.

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 dwellings which are adjacent to the A530 Newton Bank and A530 St Michael's Way and the A54 Holmes Chapel Road.

7.12 Summary of likely residual significant effects that will be removed

Traffic and transport

7.12.1 The AP2 revised scheme will result in the removal of significant adverse effects at 11 junctions (six major, one moderate, four minor) following changes to the congestion and delay effects for vehicle occupants reported in the SES1 and AP1 ES.

7.12.2 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:

- major significant adverse effects removed on eight roads (one major, four moderate and three minor); and
- significant beneficial effects removed on one road (one minor).

Sound, noise and vibration

7.12.3 As a result of the AP2 revised scheme, construction traffic in this area is likely to result in the removal of indirect residual significant noise effects on dwellings which are adjacent to Darnhall School Lane.

7.12.4 As a result of the AP2 revised scheme, changes in traffic in this area are likely to result in the removal of indirect residual significant noise effects at the following non-residential properties located adjacent to Darnhall School Lane:

- Lorien House; and
- Darnhall Primary School (Early Years Development).

Water resources and flood risk

7.12.5 In the SES1 and AP1 ES, a precautionary moderate adverse effect, which is significant, was reported on water quality in Wade Brook due to changes in highways drainage. The updated assessment based on new SES2 baseline data and the AP2 revised scheme traffic data, will remove this permanent residual significant effect on water quality in Wade Brook.

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