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

MA07: Davenport Green to Ardwick

S15

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

MA07: Davenport Green to Ardwick

S15

Department for Transport

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

High Speed Two (HS2) Limited
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.hs2.org.uk

A report prepared for High Speed Two (HS2) Limited:

ARUP+ ERM | FOSTER + PARTNERS | JACOBS
RAMBOLL | TYPSA | COSTAIN

MWJV
Mott MacDonald | WSP

High Speed Two (HS2) Limited has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the HS2 website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact High Speed Two (HS2) Limited.

recycle

Printed in Great Britain on paper containing 100% recycled fibre.

Contents

Tables

Figures

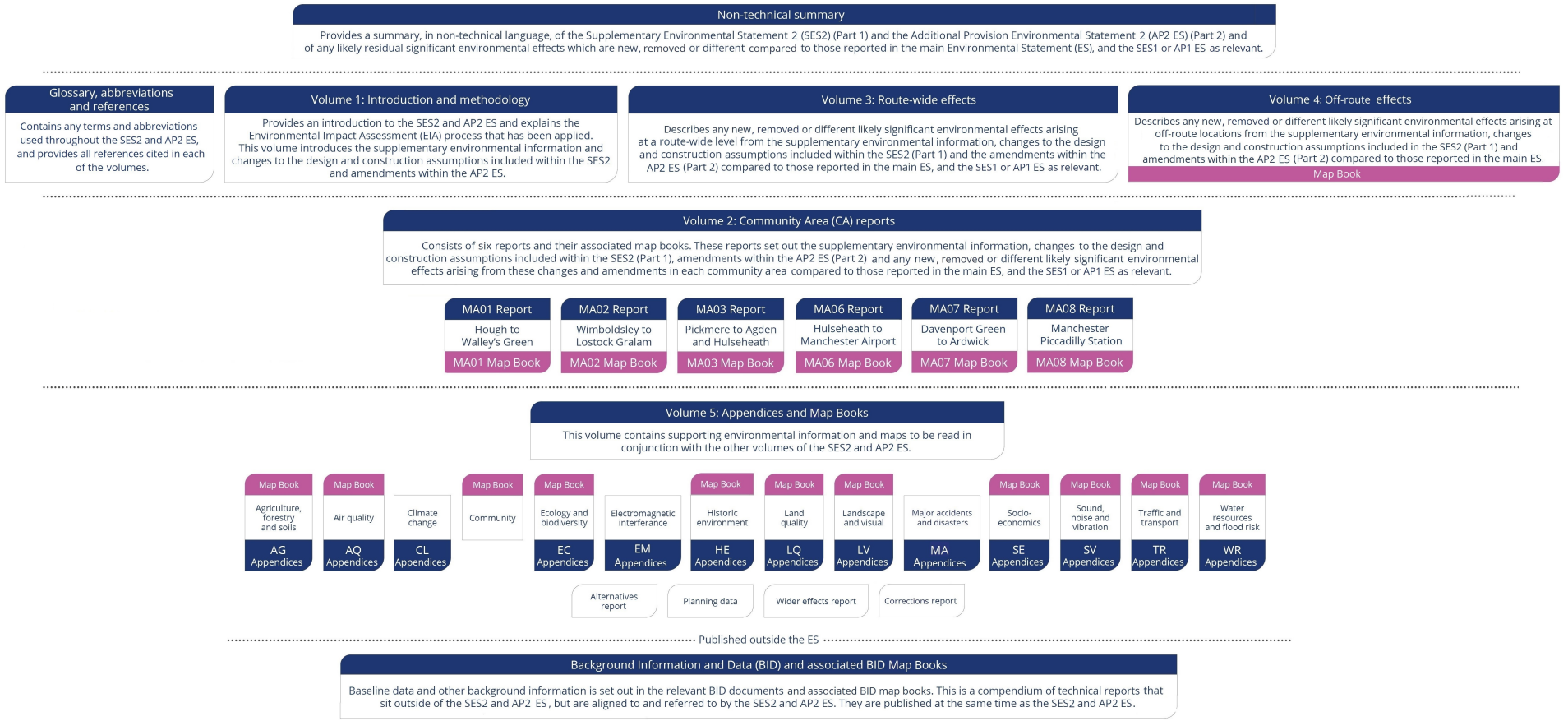
Structure of the HS2 Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

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 Davenport Green to Ardwick area include:

- additional environmental baseline information (which may be relevant to the SES2 scheme and/or AP2 revised scheme) for air quality; ecology and biodiversity; historic environment; land quality; socio-economics; sound, noise and vibration; traffic and transport; and water resources and flood risk.
- changes to the design and to construction assumptions that do not require changes to the Bill; and
- corrections to the main ES and the SES1 and AP1 ES.

1.1.5 These changes are described in Part 1 and are assessed on a topic by topic basis, where relevant.

1.1.6 The purpose of the SES2 is to describe the assessment and identify any new, removed or different likely significant environmental effects arising from the changes. These will be compared to the main ES or SES1 as relevant for each topic assessment.

1.1.7 The AP2 ES (Part 2) describes the likely significant effects of amendments to the design of the scheme which require the use of land outside the original limits of the Bill, additional

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.

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

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

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

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

Part 1: Supplementary Environmental Statement 2

2 Summary of changes in the Davenport Green to Ardwick area

2.1 New environmental baseline information

2.1.1 Since the main ES, updates to the environmental baseline information have occurred which may lead to new or different significant effects.

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

Traffic and transport

2.1.3 Since the main 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 Davenport Green to Ardwick area. This includes traffic data from National Highways and Transport for Greater Manchester (TfGM) and Trafficmaster journey time data from the Department for Transport (DfT), as set out in the Background Information and Data (BID)[2] report TR-004-00001 SES2 and AP2 ES. This data has been combined with the information

[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.

collected for local junction modelling set out in the BID[3] report TR-004-00001 which accompanied the main ES.

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;
- inclusion of recently committed or completed transport schemes and development proposals that have come forward since the models used in the assessment reported in the main ES were developed;
- refinements to future baseline traffic demand to reflect changes to future growth patterns;
- the change in the future baseline forecast years from 2030 to 2031, 2038 to 2039 and 2046 to 2051 (as described in Section 7 of this report); and
- updates to transport model parameters to reflect the July 2020 release of the DfT's Transport Analysis Guidance (TAG) data book.

2.1.5 In addition, the Planet Framework Model (PFM) future baseline has been updated for the SES2 and AP2 ES from PFM9.6, which was used in the assessment of the original scheme, to PFM10A. Changes from PFM9.6 to PMF10A reflect updated data including revised population and employment estimates.

2.1.6 The assessment of the changes to traffic flows associated with the updated baseline and future baseline models in combination with all SES2 changes and AP2 amendments is reported in Section 7 of this report.

Air quality

2.1.7 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 Davenport Green to Ardwick area. Details of the additional traffic data and associated background air pollution concentrations in this area are provided in the BID[4] document AQ-002-0MA07 SES2 and AP2 ES, SES2 and AP2 ES Volume 5, Appendix: AQ-001-0MA07 and SES2 and AP2 ES Volume 5, Air Quality Map Book: Map Series AQ-01 Monitoring Locations and Receptors.

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

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

Ecology and biodiversity

2.1.8 Since the main ES, additional amphibian, bats, aquatic macro-invertebrate and wintering bird surveys have been completed in the Davenport Green to Ardwick area.

2.1.9 Details of additional ecological surveys completed in the Davenport Green to Ardwick area are provided in BID documents[5] BID EC-017-00000 and BID EC-007-00000, and BID Ecology Map Book[6]: Map Series EC-04, EC-05, EC-06, EC-09, EC-11 and EC-12 which accompany the SES2 and AP2 ES.

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

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

Historic environment

2.1.12 The historic environment baseline information is as described in Volume 2, Community Area report: Davenport Green to Ardwick area (MA07) of the main ES.

2.1.13 There are no additional assets within the historic environment baseline which are relevant to the assessment of SES2 in the Davenport Green to Ardwick area. A description of the additional baseline relevant to the AP2 assessment is provided in Section 5.

2.1.14 Details of additional historic environment baseline are provided in SES2 and AP2 ES Volume 5, Appendix: HE-002-00000 and BID HE-001-00000 SES2 and AP2 ES.

Land quality

2.1.15 Environmental regulatory data has been updated. This data includes information on pollution incidents, radioactive and hazardous substances consents, environmental permits (previously integrated pollution control and integrated pollution prevention and control licences) and ecological receptors.

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

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

2.1.16 In the Davenport Green to Ardwick area (MA07), this includes two additional discharge consents to surface waters associated with sewage and trade discharge and two additional registered radioactive substance sites within the study area.

2.1.17 Following review of new baseline data, three additional land contamination sites have been added to the baseline assessment. Further details of these are presented in the BID[7] report (BID LQ-002-00000 SES2 and AP2 ES).

Socio-economics

2.1.18 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.

2.1.19 A review of local authority level employment land reports has been undertaken.

2.1.20 This baseline information has been considered, where relevant, in the assessment and is presented in the SES2 and AP2 ES Volume 5, Appendix: SE-001-00000, Updated socio-economic baseline information.

Sound, noise and vibration

2.1.21 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.

[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 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.

Water resources and flood risk

2.1.22 In July 2021, the Environment Agency published revised guidance and climate change allowance for peak river flows to reflect the UK Climate Projections 2018 (UKCP18)[8]. In May 2022 updated peak rainfall intensity allowances were published by the Environment Agency using UKCP local projections of extreme 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 the 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; and
- the 'Higher central' peak river flow allowance should be used for catchments which contain 'essential infrastructure', elsewhere the 'Central' allowance should be used; and
- the 'Upper end' peak rainfall intensity allowance should be used for all development with a lifespan beyond 2100.

2.1.23 Since the main ES, the Environment Agency has issued updated datasets for groundwater source protection zones (SPZ), discharge consents and licensed water abstractions. However, these updated datasets do not introduce any new water receptors or change existing receptors for the water resources and groundwater flood risk topics in this area. For the SES2 scheme, the additional data does not result in any new or different significant effects compared to the main ES.

2.1.24 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 Davenport Green to Ardwick area:

- changes to construction assumptions;
- changes to the construction programme; and
- a design change.

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

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

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: Davenport Green to Ardwick (MA07) of the main 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 no changes to the construction workforce at compounds 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

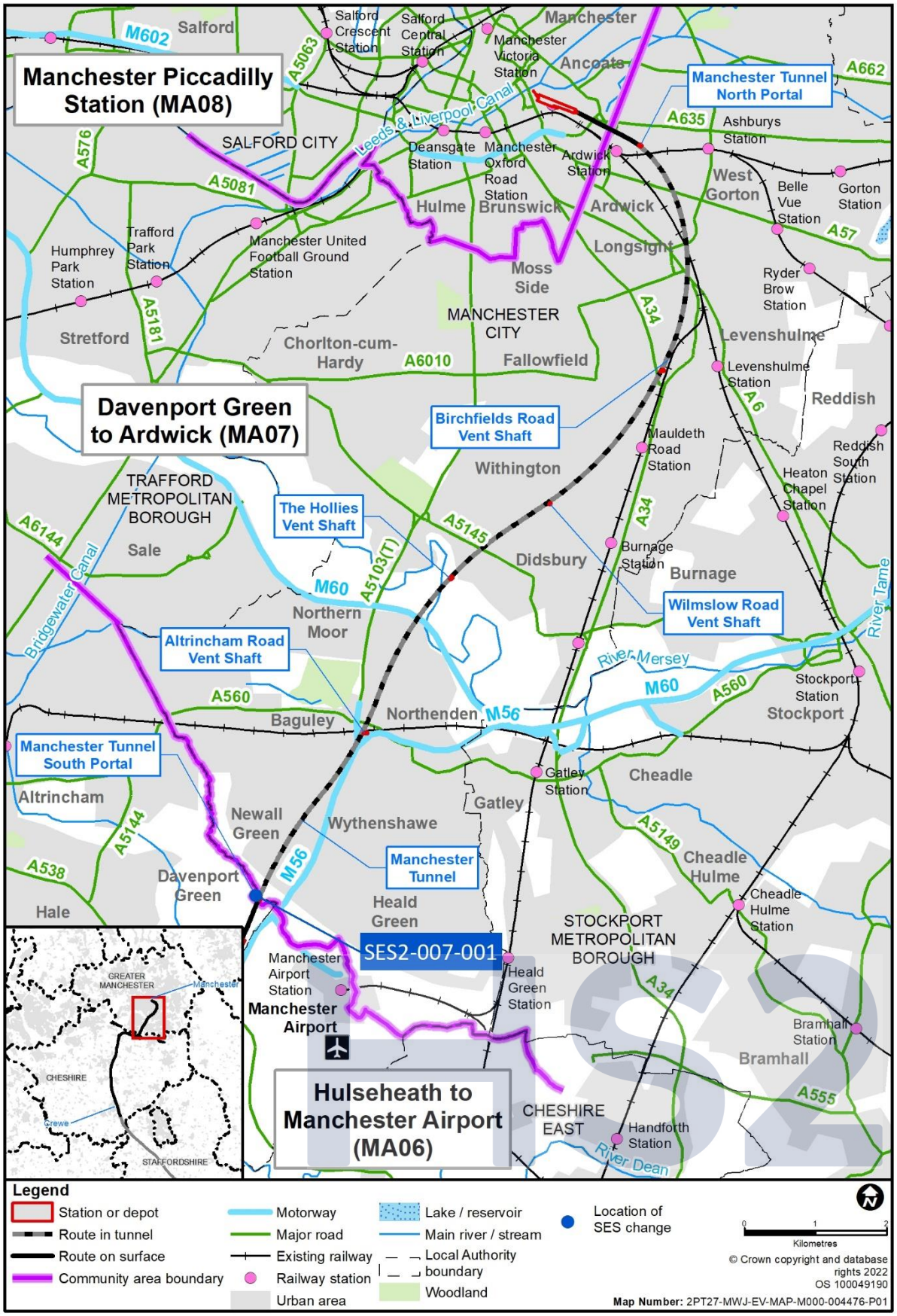
2.2.6 Table 1 provides a summary of the design change which results in new or different significant effects in the Davenport Green to Ardwick area. Figure 2 shows the location of this change.

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

Table 1: Summary of changes to the engineering design not requiring a change to the Bill in the Davenport Green to Ardwick area

Name of the SES2 design change	Description of the original scheme	Description of the SES2 scheme
Reconfiguration of Manchester tunnel south portal headhouse to accommodate the revised spatial requirements for rail systems equipment SES2-007-001 Map CT-05-357b, G6 and map CT-06-357b, G6 in the SES2 and AP2 ES Volume 2, MA07 Map Book	Provision of the Manchester tunnel south portal headhouse and headhouse compound.	Further work identified the need to amend the size of the headhouse and headhouse compound to accommodate a required redesign of rail systems equipment.

Figure 2: Location of SES2 design change not requiring a change to the Bill in the Davenport Green to Ardwick area



Reconfiguration of Manchester tunnel south portal headhouse to accommodate the revised spatial requirements for rail systems equipment (SES2-007-001)

2.2.8 The Bill provides for the Manchester tunnel south portal, Manchester tunnel south portal headhouse, Manchester tunnel and Manchester tunnel south portal auto-transformer station railway systems equipment (see Volume 2, MA07 Map Book: map CT-06-357b in the main ES).

2.2.9 Since the main ES, design development has led to rail system equipment requiring additional space within Manchester tunnel south portal headhouse. The headhouse will increase in size from 27.3m by 23.9m and 6.6m in height to 27.9m by 25.4m and 8m in height to accommodate the redesigned equipment (see SES2 and AP2 ES Volume 2, MA07 Map Book: Map CT-06-357b, G6).

2.2.10 The design change will be managed from the Manchester tunnel south portal main compound and will be completed within the indicative construction programme for this compound shown in Section 6.

Topics included in the SES2 assessment

2.2.11 The assessments of the following topics are reported for this design change: ecology and biodiversity; sound, noise and vibration and water resources. These are reported in Section 3.

2.2.12 A combined assessment of new or different significant traffic and traffic related effects, as a result of changes in traffic flows, 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 traffic and transport.

2.3 Corrections to the main ES

2.3.1 The need for a number of corrections to the main ES has been identified since submission of the Bill. Table 2 provides the following:

- corrections to the Volume 2, Community Area report: Davenport Green to Ardwick (MA07) 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.

Table 2: Summary of corrections to the main ES Volume 2 Community Area report for the Davenport Green to Ardwick area

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Overview of the area and description of the Proposed Scheme Table 4: Demolitions required as a result of the works to be managed from the Manchester tunnel north portal main compound, Volume 2, MA07 of the main ES.	The main ES should have reported the demolition of a commercial property at Rondin Road, Manchester.	None included.	Table 4: Demolitions required as a result of the works to be managed from the Manchester tunnel north portal main compound **Type** Commercial **Description** One Commercial Property **Location** Rondin Road, Manchester **Feature resulting in demolition** Ardwick South Cutting Retaining Wall	N/A
Community Paragraph 6.4.21, Volume 2, MA07 of the main ES	The main ES reported the incorrect number of parking spaces at the Christie Hospital car park.	Paragraph 6.4.21: Car Park D is one of the two designated patient and visitor car parks that serve The Christie Hospital. It has space for approximately 135 vehicles, including 30 blue badge spaces.	Paragraph 6.4.21: Car Park D is one of the two designated patient and visitor car parks that serve The Christie Hospital. It has space for approximately 147 vehicles, including eleven blue badge spaces.	No change. This correction will not lead to a new or different significant effect.
Health Paragraph 8.4.14, Volume 2, MA07 of the main ES		Paragraph 8.4.14: Car Park D is approximately 0.5ha in area and has space for approximately 135 vehicles, including blue badge holders.	Paragraph 8.4.14: Car Park D is approximately 0.5ha in area and has space for approximately 147 vehicles, including eleven blue badge spaces.	No change. This correction will not lead to a new or different effect.
Traffic and Transport Paragraph 14.5.14, Volume 2, MA07 of the main ES		Paragraph 14.5.14, second bullet: The Christie Hospital (Car Park D) – major adverse effect due to the permanent loss of 135 off-street	Paragraph 14.5.14, second bullet: The Christie Hospital (Car Park D) – major adverse effect due to the permanent loss of 147 off-street spaces. Eleven blue badge bays will be relocated.	No change. This correction will not lead to a new or different significant effect.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
		spaces. Thirty blue badge bays will be relocated.		
Community Paragraph 6.4.21, Volume 2, MA07 of the main ES	The main ES should have reported the loss of off-street parking spaces at 569 Wilmslow Road.	None included	Paragraph 6.4.21: The construction of Wilmslow Road vent shaft will require land from the private car park for residents of 569 Wilmslow Road. This will result in the loss of eight car parking spaces out of a total of 11 spaces. This is a significant proportion of the total car parking spaces available to residents. There is not currently any on-street or alternative parking arrangements available. The loss of these car parking spaces will result in a moderate adverse effect, which is significant.	Yes. This correction will lead to a new permanent moderate adverse effect due to loss of private, off-street residential parking. There is possible mitigation if parking permits are made available to residents of 569 Wilmslow Road as this would provide alternative parking arrangements.
Traffic and transport Paragraph 14.5.14, Volume 2, MA07 of the main ES		None included.	Paragraph 14.5.14 insert new bullet (first bullet): • 569 Wilmslow Road – major adverse effect due to the permanent loss of 8 off-street spaces.	Yes. This correction will lead to a new permanent major adverse significant effect with regard to changes to parking and loading.
Land Quality Paragraph 10.3.15, Volume 2, MA07 of the main ES	The main ES incorrectly omitted nine potential land contamination sites.	Paragraph 10.3.15: Current potentially contaminative land uses within the study area include a former cemetery and 47 commercial and industrial land uses.	Paragraph 10.3.15: Current potentially contaminative land uses within the study area include a former cemetery and 55 commercial and industrial land uses.	No change. This correction will not lead to new, removed or different significant effects.
Land Quality Paragraph 10.3.16, Volume 2, MA07 of the main ES	The main ES incorrectly omitted nine potential land contamination sites.	Paragraph 10.3.16: Historical land uses identified within the study area with the potential to have caused contamination include	Paragraph 10.3.16: Historical land uses identified within the study area with the potential to have caused contamination include one limestone	No change. This correction will not lead to new, removed or different significant effects.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
		one limestone mining site and 61 industrial and commercial sites.	mining site and 62 industrial and commercial sites.	
Land Quality Paragraph 10.3.29, Volume 2, MA07 of the main ES	The main ES incorrectly omitted the presence of sand and gravel Minerals Safeguarding Area (MSA).	Paragraph 10.3.29: Sands and gravels are recorded as mineral resources in the study area, although no quarries or mineral safeguarding areas (MSA) are recorded.	Paragraph 10.3.29: There is one sand and gravel Minerals Safeguarding Area (MSA) present in the study area in the east of Manchester Airport, which falls partially within the land required for the construction of the Proposed Scheme.	No change. This correction will not lead to new, removed or different significant effects.
Land Quality Table 16: Summary of sensitive receptors, Volume 2, MA07 of the main ES	The main ES incorrectly omitted the presence of sand and gravel Minerals Safeguarding Area (MSA).	Table 16: Summary of sensitive receptors, thirteenth row Receptor description SPA	Table 16: Summary of sensitive receptors, thirteenth row Receptor description Sand and gravel MSA, SPA	No change. This correction will not lead to new, removed or different significant effects.
Land Quality Paragraph 10.3.37, Volume 2, MA07 of the main ES	The main ES incorrectly identified the location of current or historical underground coal mining activities.	Paragraph 10.3.37: However, available records from the Coal Authority show that the route of the Proposed Scheme, with the exception of highways and utilities works, will not cross areas of recorded current or historical underground coal mining activities.	Paragraph 10.3.37: Available records from the Coal Authority show that the route of the Proposed Scheme, will cross areas of recorded current or historical underground coal mining activities in the north of the study area.	No change. This correction will not lead to new, removed or different significant effects.
Land Quality Paragraph 10.4.8, Volume 2, MA07 of the main ES	The main ES incorrectly omitted nine potential land contamination sites, three of which are taken to detailed risk assessment.	Paragraph 10.4.8: In the Davenport Green to Ardwick area, 55 sites remain following initial screening to go through to detailed risk assessment and require CSM.	Paragraph 10.4.8: In the Davenport Green to Ardwick area, 58 sites remain following initial screening to go through to detailed risk assessment and require CSM.	No change. This correction will not lead to new, removed or different significant effects.
Land Quality Table 17: Summary of baseline CSM for sites which may pose	The main ES incorrectly omitted nine potential land contamination sites, three of	None included.	Table 17: Summary of baseline CSM for sites which may pose a contaminative risk in relation to the Proposed Scheme, 26th, 27th and 28th entries:	No change. This correction will not lead to new, removed or

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
a contaminative risk in relation to the Proposed Scheme, Volume 2, MA07 of the main ES	which are taken to detailed risk assessment.		Row 26 entry: Category: On-site; Site group/ID: Former dry cleaners, MA07-210; Human health risk: Low to moderate/low; Groundwater risk: Very low to low; Surface water risk: N/A; Ecosystem risk: N/A; Buildings risk: Very low to low. Row 27 entry: Category: On-site; Site group/ID: Waste transfer facility, MA07-212; Human health risk: Low to moderate/low; Groundwater risk: Very low to low; Surface water risk: N/A; Ecosystem risk: N/A; Buildings risk: Very low to low. Row 28 entry: Category: Off-site; Site group/ID: Garage workshops and industrial estate, MA07-217 Human health risk: Low to moderate/low; Groundwater risk: Very low to low; Surface water risk: Low; Ecosystem risk: N/A; Buildings risk: Very low to low.	different significant effects.
Socio-economics Paragraph 12.4.24, Volume 2, MA07 of the main ES	The main ES incorrectly reported the temporary effect on a group of businesses as major adverse. It should have been reported as moderate adverse. This group of businesses is accessed via the junction of the A57 Hyde Road and Bennett Street, and includes Diamond Hand Car Wash.	Paragraph 12.4.24 For the reasons stated above, the disruption as a result of the Proposed Scheme is considered to represent a temporary major adverse isolation effect and a permanent moderate adverse isolation effect on these 13 businesses, which commences part way through the construction phase and continues into operation.	Paragraph 12.4.24 For the reasons stated above, the disruption as a result of the Proposed Scheme is considered to represent a temporary moderate adverse isolation effect and a permanent moderate adverse isolation effect on these 13 businesses, which commences part way through the construction phase and continues into operation.	This correction will lead to a different significant effect.
Traffic and transport	The main ES incorrectly reported that the permanent closure of the A665 Midland Street would result in an	Paragraph 14.5.7, first bullet: A665 Midland Street - closure of the A665 Midland Street at its northern end	Paragraph 14.5.7, first bullet: A665 Midland Street - closure of the A665 Midland Street at its northern end where it	No change.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Paragraph 14.5.7, Volume 2, MA07 of the main ES	increase in journey length for vehicle occupants of up to 860m. The correct change in journey length is 718m.	where it is crossed by the route of the Proposed Scheme. Users will be diverted via a retained 10m section of the A665 Midland Street and the A665 Chancellor Lane diversion, increasing the journey length by up to 860m; and	is crossed by the route of the Proposed Scheme. Users will be diverted via a retained 10m section of the A665 Midland Street and the A665 Chancellor Lane diversion, increasing the journey length by up to 718m; and	This correction will not lead to a new or different significant effect.
Traffic and transport Paragraph 14.5.10, Volume 2, MA07 of the main ES	The main ES incorrectly reported the effect on delays to vehicle occupants and congestion at the A665 Chancellor Lane/A665 Devonshire Street North/Higher Ardwick junction during operation in 2038 as major adverse. The correct effect was moderate adverse.	Paragraph 14.5.10, sixth bullet: A665 Chancellor Lane/A665 Devonshire Street North/Higher Ardwick - major adverse effect	Paragraph 14.5.10, sixth bullet: A665 Chancellor Lane/A665 Devonshire Street North/Higher Ardwick - moderate adverse effect	Yes. The effect changes from major adverse to moderate adverse.
Traffic and transport Paragraph 14.5.18, Volume 2, MA07 of the main ES	The main ES incorrectly reported that the permanent closure of the A665 Midland Street would result in an increase in journey length for non-motorised users of up to 860m. The correct change in journey length is 718m.	Paragraph 14.5.18: The only severance effect, which is significant, on non-motorised users in the Davenport Green to Ardwick area will arise from the closure of a section of the A665 Midland Street. This will increase journey length by up to 860m, resulting in a major adverse effect.	Paragraph 14.5.18: The only severance effect, which is significant, on non-motorised users in the Davenport Green to Ardwick area will arise from the closure of a section of the A665 Midland Street. This will increase journey length by up to 718m, resulting in a major adverse effect.	No change. This correction will not lead to a new or different significant effect.

3 Assessment of changes in the Davenport Green to Ardwick area

3.1 Introduction

3.1.1 This section describes the effects of the SES2 changes in the Davenport Green to Ardwick area on:

- ecology and biodiversity;
- 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 design changes summarised in Section 2 are identified, compared to the original scheme.

3.1.3 The assessment of the changes to traffic flows and traffic related effects as a result of all SES2 changes and AP2 amendments is reported in Section 7.

3.2 Ecology and biodiversity

Introduction

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

Scope, assumptions and limitations

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

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

3.2.4 Ecology and biodiversity effects that result from the assessment of the changes to traffic flows as a result of all SES2 changes in combination with all AP2 amendments are reported in Section7.

[9] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Environmental Impact Assessment Scope and Methodology Report*, Volume 5, Appendix: CT-001-00001. Available online at: https://www.gov.uk/government/collections/cross-topic-technical-appendices-for-high-speed-rail-crewe-manchester-environmental-statement#environmental-impact-assessment-scope-and-methodology-report.

SES2 changes relevant to the assessment

3.2.5 New baseline information resulting from additional ecological surveys in the Davenport Green to Ardwick area is relevant to the assessment.

3.2.6 This SES2 assessment is based on the location of the Palatine Road vent shaft and headhouse in the original scheme, which included the requirement for land within Withington Golf Club. The assessment in this section does not take into consideration the proposed AP2 amendment Change to Bill powers required for the relocation of vent shaft and headhouse from Palatine Road to The Hollies (AP2-007-003), which is described and assessed in Section 5 of this report. Should the proposed AP2 amendment AP2-007-003 be adopted, the effects reported in this section would not occur.

Environmental baseline

Existing baseline

3.2.7 The baseline ecology and biodiversity information is as described in Section 7 of Volume 2, Community Area report: Davenport Green to Ardwick area of the main ES. A summary of the baseline information relevant to the assessment of the SES2 scheme is provided below.

Designated sites

3.2.8 There are no changes to the baseline for designated sites reported in the main ES as a result of the SES2 scheme in the Davenport Green to Ardwick area.

Species

Amphibians

3.2.9 Additional great crested newt surveys have informed the basis of a review of the composition of metapopulations across the Davenport to Ardwick area. This review has considered the quality and connectivity of terrestrial habitat between ponds in order to determine the locations of distinct clusters of ponds that are likely to support metapopulations of great crested newt. Changes to the baseline have resulted in changes to the composition of one population (GCNP1.7.5) and the scoping out of one population (GCNP1.7.3), in comparison with those reported in the main ES. Great crested newt metapopulations that are reported in the BID EC-007-00000 SES2 and AP2 ES include metapopulations associated with AP2 amendments which are not relevant to the SES2 assessment.

3.2.10 The main ES reported an assumed great crested newt population in a network of two ponds within Withington Golf Club (GCNP1.7.5). On a precautionary basis, the presence of a medium sized population was assumed and is valued at up to county/metropolitan level in the main ES. One further pond relevant to the SES2 scheme, which is assumed to contain a medium population of great crested newt now forms part of this population. The increase in

the number of ponds with assumed populations of great crested newt does not change the value of GCNP1.7.5.

Bats

3.2.11 The main ES reported a bat assemblage at Withington Golf Club that is of regional value due to large amounts of foraging and commuting activity of noctules and the presence of a noctule maternity roost, as this species is considered to be a 'rarer' species in England. Additional surveys since the main ES recorded two further soprano pipistrelle occasional roosts within buildings located 36m and 65m from the SES2 scheme, that form part of this assemblage. The recording of these additional roosts does not change the value of the bat assemblage, as reported in the main ES.

Wintering birds

3.2.12 Since the main ES, wintering bird surveys have been carried out at Withington Golf Course. In total, 43 bird species were recorded including 20 notable species. All are considered to be common and widespread in the habitats surveyed and no large or important populations were recorded. The winter bird assemblage is therefore considered to be of up to local/parish value.

Aquatic macro-invertebrates

3.2.13 Since the main ES, further aquatic macro-invertebrate field surveys have been carried out at Fairywell Brook. Twenty-six individual specimens from 13 taxa and an aquatic assemblage of 'moderate' conservation value were recorded, though overall abundance was low. Part of Fairywell Brook is within the land required for the construction of the SES2 scheme. The aquatic macro-invertebrate assemblage is considered to be of local/parish value.

Future baseline

3.2.14 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

3.2.15 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 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

3.2.16 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

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

Assessment of impacts and effects

Species

Bats

3.2.18 The main ES reported that construction of Palatine Road vent shaft would result in a permanent adverse effect on the assemblage of bats at Withington Golf Club, which would be significant at the county/metropolitan level. Additional surveys recorded two further soprano pipistrelle occasional roosts within buildings, 36m and 65m from the SES2 scheme, that form part of the Withington Golf Club assemblage. This will result in a different adverse effect on the species of bats present to that reported the main ES. However, there will be no change to the level of significance of the effect on the bat assemblage reported in the main ES.

Other mitigation measures

3.2.19 The main ES reported that significant effects to the bat assemblage at Withington Golf Club would be addressed by mitigation which would be provided in accordance with the Ecological Principles of Mitigation within the SMR. This includes the provision of artificial roosts, as well as woodland planting and grassland throughout this area. The mitigation measures will take account of the different significant effects identified above. Following implementation of these measures, the effects on the bat assemblage at Withington Golf Club will be reduced to a level that is not significant.

Summary of likely residual significant effects

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

Cumulative effects

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

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

3.3 Sound, noise and vibration

Introduction

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

3.3.2 Sound, noise and vibration effects that result from the assessment of the changes to traffic flows as a result of all AP2 amendments in combination with all SES2 changes are reported in Section 7.

Scope, assumptions and limitations

3.3.3 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.

3.3.4 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

3.3.5 The following SES2 changes are considered in the construction phase assessments:

- additional environmental baseline information; and
- changes to the construction design programme.

Environmental baseline

Existing baseline

3.3.6 In the Davenport Green to Ardwick area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors in adjacent communities. 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: Davenport Green to Ardwick area (MA07) of the main ES.

Future baseline

3.3.7 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

3.3.8 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

3.3.9 These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed. Committed developments of relevance to the assessment of sound, noise and vibration from the SES2 scheme are summarised in Table 3.

Table 3: Committed developments relevant to sound, noise and vibration

Map book reference[11] (SNV Assessment location ref.)	Planning reference	Description	How this is considered in the assessment
MA07/559S (616972)	132579/FO/2021	Location: 131 Ashton Old Road, Manchester, M12 6LE Change of use of building into a children's nursery	Informing future baseline (construction).

3.3.10 The following committed development has been included as part of the future baseline and considered within this assessment: the implementation of committed development ref.: MA07/559S will result in a new children's nursery located on the boundary of the land required for the construction of the SES2 scheme.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Non-residential receptors: direct effects

3.3.12 The assessment has identified the non-residential committed development on Ashton Old Road, Manchester (assessment location ref.: 616972) 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[12] compared

[11] SES2 and AP2 ES Volume 5, Appendix: CT-004-00000, Planning Data/Committed Development Map Book: Maps CT-13-322b to CT-13-326.

[12] 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-002-00000.

with the existing baseline sound level). An assessment has been undertaken to determine if this impact will result in a likely significant effect using the significance criteria defined in the main ES Volume 5: Appendix: SV-001-00000.

3.3.13 The proposed children's nursery on Ashton Old Road (committed development ref.: MA07/559S) will result in the conversion of a two-storey brick building. The existing building has windows that appear to be openable. It is assumed that the proposed building will not be provided with alternative means of ventilation to openable windows. The committed development is located on the northern boundary of the land required for construction of the SES2 scheme. The nursery 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[13] for up to a period of five 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 18dB above the screening criterion defined in the SMR. The proposed nursery on Ashton Old Road (committed development ref.: MA07/559S) is identified, on the basis of a precautionary assessment, as being subject to a new likely significant adverse effect (denoted by MA07-C-N15 in 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 nursery users.

Other mitigation measures

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

Summary of likely residual significant effects

3.3.15 The SES2 changes to committed developments will give rise to a new likely temporary residual adverse significant effect on the proposed children's nursery at Ashton Old Road (committed development ref.: MA07/559S).

Cumulative effects

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

3.4 Water resources and flood risk

Introduction

3.4.1 The environmental baseline relevant to the water resources and flood risk assessment is described below. Any new or different likely significant environmental effects as a result of

[13] 50 dB $L_{pAeq,0700-2300}$ (free-field) during the day, which is equivalent to 53 dB $L_{pAeq,0700-2300}$ (façade).

the changes introduced in Section 2 are then identified, compared to those reported in the main ES.

Scope, assumptions and limitations

3.4.2 The assessment scope, key assumptions and limitations for water resources and flood risk are as set out in Volume 1, and the SMR of the main ES. The scope and methodology for the updated flood risk assessment is set out in the SES2 and AP2 ES Volume 5, Appendix: CT-001-00005 - Water resources and flood risk technical note – Updated guidance on flood risk assessment.

3.4.3 The baseline changes set out in Section 2 have the potential to result in new or different significant construction effects for flood risk only. Therefore, there is no construction assessment for water resources and no operational assessment for water resources and flood risk.

SES2 changes relevant to the assessment

3.4.4 New baseline information in the Davenport Green to Ardwick area is relevant to the assessment.

3.4.5 This SES2 assessment is based on the location of the Palatine Road vent shaft and headhouse in the original scheme, which included the requirement for land within Withington Golf Club. The assessment in this section does not take into consideration the proposed AP2 amendment: Change to Bill powers required for the relocation of vent shaft and headhouse from Palatine Road to The Hollies (AP2-007-003), which is described and assessed in Section 5 of this report. Should the proposed AP2 amendment AP2-007-003 be adopted the majority of the effects reported in this section would not occur.

Environmental baseline

Existing baseline

3.4.6 The baseline water resources and flood risk information is as described in Section 15 of Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES. New baseline information is set out in Section 2 of this report.

3.4.7 The revised guidance indicates that for essential infrastructure, the Environment Agency's 'Higher central' allowance for peak river flow should be used. The revised guidance provides peak river flow allowance by management catchment instead of river basin district. The River Mersey is located within the Upper Mersey Management Catchment. In accordance with this guidance, the corresponding peak river flow climate change allowance for the Upper Mersey is 53%.

Future baseline

3.4.8 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

3.4.9 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

3.4.10 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

3.4.11 The avoidance and mitigation measures specific to water resources and flood risk are set out in the Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES. No further avoidance and mitigation measures, additional to those reported in the main ES and draft CoCP, are proposed.

Assessment of impacts and effects

3.4.12 In the main ES, hydraulic modelling was carried out for the River Mersey, due to the presence of the Palatine Road vent shaft in the floodplain of the River Mersey and its location within the Environment Agency's Didsbury flood storage basin. This assessment was carried out using a 70% climate allowance. In the main ES significant effects were reported on 52 different receptors, due to the presence of the Palatine Road vent shaft. Details of these significant effects are set out in Table 4 below.

3.4.13 The reduction in the climate change allowance to 53%, has led to the removal of some of the previously reported significant effects. Therefore, taking into account the SES2 baseline changes the number of significant effects is reduced to 21. Details of the remaining significant effects are set out in Table 4.

Table 4: Summary of significant effects due to the presence of Palatine Road vent shaft as reported in the main ES and taking into account the SES2 baseline updates for the 1 in 100 year plus climate change (CC) event

Location	Number and type of receptor (value) reported in main ES	Significance of effect reported in main ES	Significance of effect in SES2 revised scheme	Change in significance of effect in SES2
Ford Lane, Northenden	Secondary electricity substation (very high)	Major adverse, significant	Negligible, not significant	**Removed**

Location	Number and type of receptor (value) reported in main ES	Significance of effect reported in main ES	Significance of effect in SES2 revised scheme	Change in significance of effect in SES2
	22 residential (high)	Major adverse, significant	Negligible, not significant	**Removed**
	4 residential (high) and 1 commercial (moderate)	Moderate adverse, significant	Negligible, not significant	**Removed**
	Mill Lane and Allanson Road (moderate)	Moderate adverse, significant	Negligible, not significant	**Removed**
Palatine Road area	Secondary electricity substation (very high)	Major adverse, significant	Major adverse, significant	No change
	Secondary electricity substation (very high)	Moderate adverse, significant	Moderate adverse, significant	No change
	4 residential (high)	Major adverse, significant	Major adverse, significant	No change
	5 residential (high) and 1 commercial (moderate)	Moderate adverse, significant	Moderate adverse, significant	No change
	Palatine Road (moderate)	Moderate adverse, significant	Moderate adverse, significant	No change
	1 residential (high) and Palatine Road (moderate)	Moderate beneficial, significant	Moderate beneficial, significant	No change
Area south of J5 of M60 (Northenden)	1 residential (high)	Moderate adverse, significant	Negligible, not significant	**Removed**
East of Didsbury flood storage basin (Stenner Lane)	4 residential (high) and 1 commercial property (moderate)	Moderate adverse, significant	Moderate adverse, significant	No change
	Stenner Lane (moderate)	Moderate adverse, significant	Moderate adverse, significant	No change

3.4.14 The SES2 baseline changes will remove the permanent significant effect on peak flood levels at a residential property in the area south of Junction 5 of the M60 (Northenden). The SES2 baseline changes will also remove the effects reported in the main ES at Ford Lane (Northenden). In the main ES, mitigation was proposed for the significant effects in the Ford Lane, Northenden area and therefore these were not reported as residual significant effects in the main ES.

Other mitigation measures

3.4.15 The avoidance and mitigation options reported in the main ES and draft CoCP will be implemented for the SES2 scheme.

3.4.16 The AP2 amendment Change to Bill powers required for relocation of vent shaft and headhouse from the B5167 Palatine Road to The Hollies (AP2-007-003), described in Section

5, if adopted, will mitigate the majority of the significant effects on the receptors in the B5167 Palatine Road area and East of Didsbury flood storage basin (Stenner Lane) area. If the AP2 amendment (AP2-007-003) is not adopted, alternative mitigation measures would be required. If alternative mitigation is needed it is likely to require additional land and would require a separate AP amendment, during later stages of the Bill passage.

Summary of likely residual significant effects

3.4.17 The SES2 baseline changes will remove the permanent likely residual significant effect on peak flood levels at a residential property in the area south of Junction 5 of the M60 (Northenden), due to changes in the conveyance of flood flows around the Palatine Road vent shaft site reported in the main ES.

Cumulative effects

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

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

Construction

Sound, noise and vibration

3.5.1 The SES2 scheme will give rise to a new likely temporary residual adverse significant effect on the proposed children's nursery at Ashton Old Road (committed development ref.: MA07/559S).

3.6 Summary of likely residual significant effects that will be removed

Construction

Water resources and flood risk

3.6.1 The SES2 scheme will remove the permanent likely residual significant effect on peak flood levels at a residential property in the area south of Junction 5 of the M60 (Northenden) reported in the main ES, due to changes in the conveyance of flood flows around the Palatine Road vent shaft site.

Part 2: Additional Provision 2 Environmental Statement

4 Summary of AP2 amendments in the Davenport Green to Ardwick area

4.1 Engineering amendments

4.1.1 Amendments in the Davenport Green to Ardwick area will result in changes to the land or Bill powers required. Table 5 provides a summary of the engineering amendments. Figure 3 shows the locations of the engineering amendments.

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

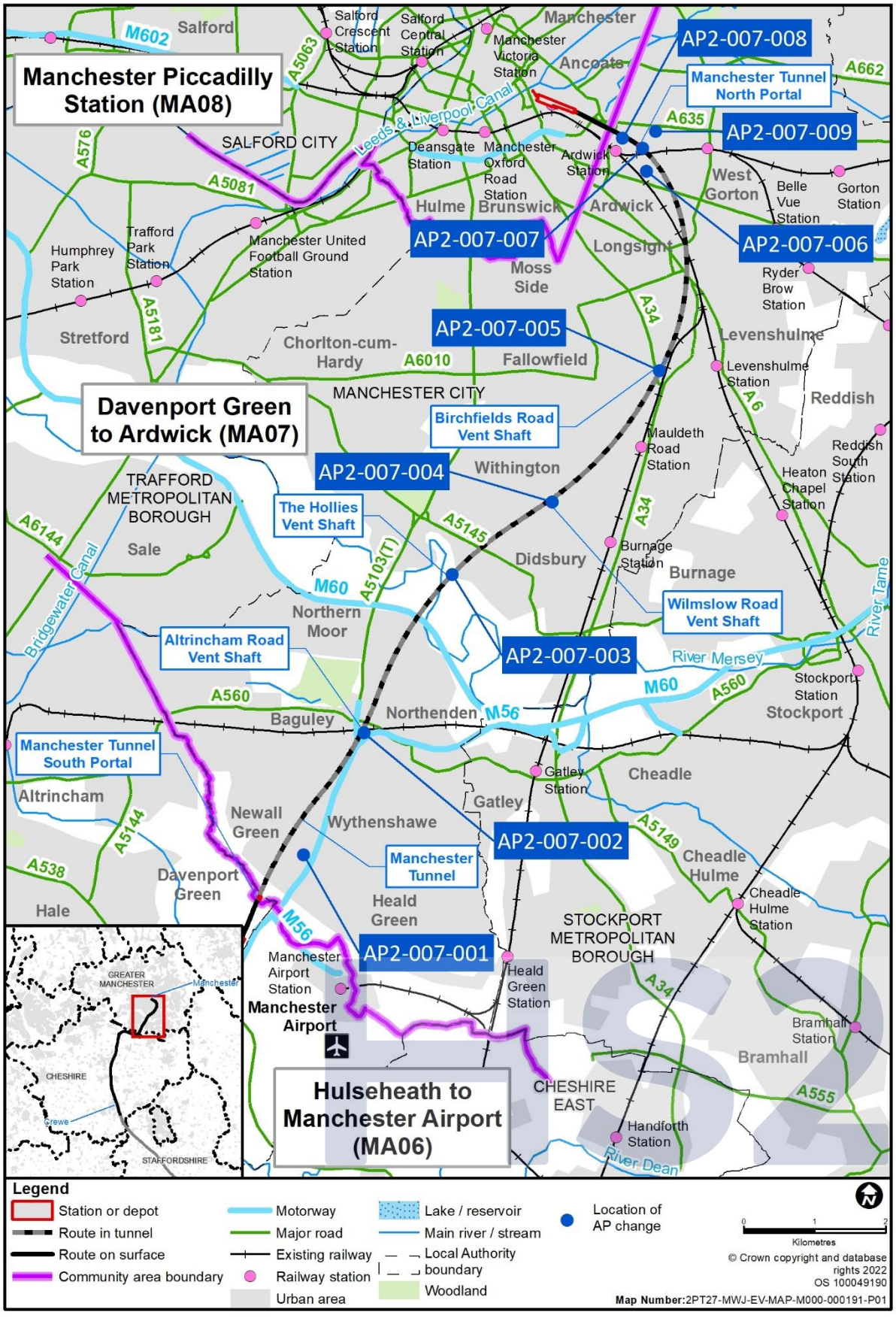
Table 5: Summary of AP2 engineering amendments in the Davenport Green to Ardwick area

Name of AP2 amendment	Description of the original scheme	Description of the AP2 revised scheme
Additional land temporarily required for changes to permanent sewer connection from Manchester tunnel south portal AP2-007-001 Map CT-05-358, B7 to B8 and C8 and map CT-06-358, B7 to B8 and C8 in the SES2 and AP2 ES Volume 2, MA07 Map Book	The proposed Manchester tunnel south portal main compound and transfer node included a 1.1km temporary wastewater utility connection under Saint Paul's Catholic High School playing fields, located off Firbank Road in Wythenshawe. The proposed sewer runs east to west across the school playing fields with the temporary connection being made from the south. From the Manchester tunnel south portal main compound, a temporary overground pipe would be routed north across Fairywell Brook.	The wastewater utility connection will be realigned to avoid the Saint Paul's Catholic High School playing fields. Whilst much of the alignment will remain the same, once the connection reaches the northern end of Kennett Road, the pipe will be routed west along Simonsway and connect to the same public combined sewer within Firbank Road. Additional land is required on Hucklow Avenue to provide less constrained access to the site through the construction of two new manhole chambers.
Change to Bill powers required for modifications to Manchester tunnel Altrincham Road vent shaft AP2-007-002 Map CT-05-359, C6 to C7 and D6 to D8 and map CT-06-359, C6 to C7 and D6 to D8 in the SES2 and AP2 ES Volume 2, MA07 Map Book	The Altrincham Road headhouse included three vertical fans within the vent shaft.	The Altrincham Road headhouse and vent shaft will now be reconfigured to accommodate a redesign of the tunnel ventilation system. This includes two horizontal fans to a ground level fan room and sewer/water main diversions to avoid the footprint of the redesigned headhouse.

Name of AP2 amendment	Description of the original scheme	Description of the AP2 revised scheme
Change to Bill powers required for relocation of vent shaft and headhouse from the B5167 Palatine Road to The Hollies AP2-007-003 Map CT-05-360-L1, G9 to G10 and map CT-06-360-L1, G9 to G10 in the SES2 and AP2 ES Volume 2, MA07 Map Book	The Palatine Road vent shaft was located on the Withington Golf Course and accessed off the B5167 Palatine Road. The Palatine Road headhouse included three horizontal fans within the vent shaft.	The vent shaft and headhouse will be relocated on derelict playing fields north-west of the Britannia Country House Hotel and will be renamed The Hollies vent shaft. The vent shaft will be accessed from Barlow Moor Road through the former Manchester College Fielden Campus site, that has been purchased by the Manchester Islamic Educational Trust to be developed as a school, crossing the derelict playing grounds. The Hollies headhouse will include two horizontal fans within the vent shaft.
Change to Bill powers required for the modifications to the Wilmslow Road vent shaft headhouse AP2-007-004 Map CT-05-361, F5 to G6 and map CT-06-361, F5 to G6 in the SES2 and AP2 ES Volume 2, MA07 Map Book	The Wilmslow Road headhouse included three vertical fans within the vent shaft.	Additional work has identified the requirement to increase the height of the vent shaft headhouse which will include two vertical fans. This is to accommodate a redesign of the tunnel ventilation system and the addition of a parapet around the roof of the structure.
Change to Bill powers required for modifications to the Birchfield Road vent shaft headhouse AP2-007-005 Map CT-05-363, A6 and map CT-06-363, A6 in the SES2 and AP2 ES Volume 2, MA07 Map Book	The Birchfield Road headhouse included three vertical fans within the vent shaft.	Additional work has identified the requirement for the Birchfield Road vent shaft and headhouse which will include two horizontal fans, to be reconfigured to accommodate a redesign of the tunnel ventilation system.
Additional land required for the diversion of Blackbrook Culvert AP2-007-006 Map CT-05-364, I3 to I6 and map CT-06-364, I3 to I6 in the SES2 and AP2 ES Volume 2, MA07 Map Book	The Bill provides for tunnelling activities beneath the existing Blackbrook Culvert running beneath the Siemens Ardwick Train Care Facility.	The Blackbrook Culvert will be diverted to avoid tunnelling impacts. This will involve the installation of two new pipes serviced by three new manholes. The existing culvert will be backfilled to prevent instability.
Change in Bill powers for modifications to size, height and layout of Manchester tunnel north portal headhouse AP2-007-007	The Bill provides for Manchester tunnel, Manchester tunnel north porous portal and Manchester tunnel north portal headhouse.	Further work identified the need to amend the size of the headhouse and headhouse compound to accommodate the required redesign of rail systems equipment. Alterations to the headhouse layout to minimise its footprint and improve access to surrounding

Name of AP2 amendment	Description of the original scheme	Description of the AP2 revised scheme
Map CT-05-364, I5 to J5 and map CT-06-364, I5 to J5 in the SES2 and AP2 ES Volume 2, MA07 Map Book		buildings and structures are also required.
Additional land permanently required for changes to design elements managed by the Manchester tunnel north portal main compound AP2-007-008 Map CT-05-364, I5 to J3 and map CT-06-364, I5 to J3 in the SES2 and AP2 ES Volume 2, MA07 Map Book	The Bill provides for the Midland Street sectioning auto-transformer station (SATS) and management of Electricity North West Limited (ENWL) underground electricity cables. The Bill also includes provision for a connection between HS2 and a future Northern Powerhouse Rail (NPR) route between Manchester and Leeds, referred to as the NPR Manchester to Leeds Junction.	Several elements in this area have been redesigned, including: • relocation of the SATS compound and removal of the railway telecommunication mast; • introduction of a new railway telecommunication mast on the top of the platform core; • a new access road, footways, verges, turning head and associated earthworks to enable access to the relocated SATS; • a new maintenance access point between Midland St and the ENWL compound; and • provision of surface water drainage facilities for the SATS compound; and new drainage, to be provided east of the alignment.
Additional land temporarily required for the reconfiguration of Ardwick construction sidings AP2-007-009 Map CT-05-365a, A6 to A7 and B6 to B76 and Map CT-06-365a, A6 to A7 and B6 to B7 in the SES2 and AP2 ES Volume 2, MA07 Map Book.	Manchester tunnel north portal construction sidings would be used to remove material excavated during works and removed offsite via rail only.	Further work has identified constraints on the national rail network that limit both the number of trains and the timing of available train paths. These constraints mean that there will be a shortfall in the capacity needed to keep pace with excavation activities. The layout of the construction sidings has been reconfigured to provide additional storage capacity and the removal of some excavated material by road resulting in the requirement of additional land.

Figure 3: Locations of AP2 amendments in the Davenport Green to Ardwick area



5 Assessment of engineering amendments in the Davenport Green to Ardwick area

5.1 Additional land temporarily required for changes to permanent sewer connection from Manchester tunnel south portal (AP2-007-001)

5.1.1 The Bill provides for the Manchester tunnel south portal main compound and transfer node which includes the construction of a 1.1km temporary sewer connection to an existing United Utilities public combined sewer (see Volume 2, MA07 Map Book: map CT-06-357b, G7 to G8, H8 to H9, I9 to J9 and map CT-06-358, A9 and B9 in the main ES).

5.1.2 The proposed sewer connection is within the playing fields of the Saint Paul's Roman Catholic High School, located off Firbank Road in Wythenshawe. The existing sewer runs east to west across the school playing fields with the temporary connection being made from the south. From the Manchester tunnel south portal main compound and transfer node an overground pipe known as the 'rising main' would be routed north across Fairywell Brook.

5.1.3 The rising main would run parallel to the M56 within an area of vegetated land split between open space associated with the adjacent industrial estate and verge area of the M56. Once beyond the vegetated land, it would be routed into Kennett Road, before being tunnelled beneath Simonsway and into the playing field of Saint Paul's Roman Catholic High School.

5.1.4 Since the main ES, there has been additional design development to enable retention of the proposed rising main as a permanent sewer connection for the Manchester tunnel south portal headhouse and future development in the area. The connection point will be altered to remove the need to encroach on the Saint Paul's Roman Catholic High School playing field.

5.1.5 The majority of the proposed connection route between the Manchester tunnel south portal main compound and Kennett Road (approximately 960m of the 1.1km route) will remain the same as that provided in the Bill (see Map CT-06-357b, G7 to G8, H8 to H9, I9 to J9 and Map CT-06-358, A9 and B9 in the SES2 and AP2 ES Volume 2, MA07 Map Book). Once the connection reaches the northern end of Kennett Road, the pipe will be routed west along Simonsway and connect to the public combined sewer within Firbank Road.

5.1.6 To accommodate these changes, an increase in land temporarily required for construction is required along Hucklow Avenue, adjacent to the existing M56 footbridge, to ensure that the rising main can be routed west of the pedestrian bridge and to provide sufficient access to the site. The M56 footbridge will also be temporarily closed for two weeks to enable the construction works. Additionally, the works required on Simonsway and Firbank Road will be undertaken with traffic management and will require two new manhole chambers to be constructed.

5.1.7 The amendment will be constructed from the Manchester tunnel south portal main compound and will be completed within the indicative construction programme for this compound provided in Section6.

5.1.8 The land required for the amendment is outside the limits of the Bill. The amendment will result in the permanent requirement of an additional 0.33ha of land. The land no longer required in the route presented in the main ES is 0.03ha. The net increase in additional land will be 0.30ha (see Map CT-06-358, B7 to B8 and C8, in the SES2 and AP2 ES Volume 2, MA07 Map Book).

Topics included in the AP2 assessment

5.1.9 The assessment of this amendment has identified new, different or removed likely significant effects for traffic and transport.

5.1.10 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, is reported in Section7. 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 traffic and transport.

Traffic and transport

Scope, assumptions and limitations

5.1.11 The assessment scope, key assumptions and limitations for traffic and transport are as set out in Volume 1 Section 8 and the SMR of the main ES.

5.1.12 This amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for traffic and transport.

5.1.13 The assessment of the changes to traffic flows during construction and operation as a result of all AP2 amendments in combination with all SES2 changes is reported in Section7.

5.1.14 The assessment in this section considers the potential effects on changes in journey lengths for vehicle occupants. No effects on other traffic and transport topics, with the exception of traffic-related effects reported in Section7, are considered to require reassessment as a result of the amendment.

Environmental baseline

Existing baseline

5.1.15 The baseline traffic and transport information is described in Section 14 of Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES, as amended in Section 2 of this report. A summary of the baseline information relevant to the assessment of the amendment is provided below.

5.1.16 The M56 is a motorway in the Davenport Green to Ardwick area. The M56 provides east to west connections between Greater Manchester and Ellesmere Port/Chester. The M56 follows a north to south alignment through the Davenport Green to Ardwick area between M56 junction 5 and M56 junction 3 and follows an east to west alignment between M56 junction 3 and the M60 south of Manchester City Centre.

Future baseline

5.1.17 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.1.18 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.1.20 The main ES did not report a temporary change to the M56 junction 4 southbound off-slip. The amendment will require one-way shuttle working with temporary traffic signals on Simonsway for a duration of up to three months. Right-turn movements will be restricted from the M56 junction 4 southbound off-slip to Simonsway (west). Users will be diverted via Greenwood Road, Hollyhedge Road, Highdales Road and Firbank Road. This will give rise to a new temporary moderate adverse effect on changes in journey lengths for vehicle occupants on the M56 junction 4 southbound off-slip, which is significant, due to an increase in journey length of up to 2.4km.

Other mitigation measures

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

Summary of likely residual significant effects

5.1.22 The amendment will give rise to a new likely residual temporary moderate adverse significant effect on changes in journey lengths for vehicle occupants on the M56 junction 4 southbound off-slip, due to an increase in journey length of up to 2.4km.

Cumulative effects

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

5.1.24 The assessment of combined effects associated with changes in traffic flows as a result of this amendment in combination with all SES2 changes and AP2 amendments is reported in Section 7.

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

Construction

Traffic and transport

5.1.25 The amendment will give rise to a new likely residual temporary moderate adverse significant effect on changes in journey lengths for vehicle occupants on the M56 junction 4 southbound off-slip, due to an increase in journey length of up to 2.4km.

5.2 Change to Bill powers required for modifications to Manchester tunnel Altrincham Road vent shaft (AP2-007-002)

5.2.1 The Bill provides for both the Manchester tunnel Altrincham Road vent shaft and headhouse (see Volume 2, MA07 Map Book: map CT-06-359, C7 to C8 in the main ES).

5.2.2 Since the main ES, additional work has identified the need for the headhouse to be reconfigured to accommodate the revised spatial requirements for rail systems equipment. The two horizontal fans will now be located within the fan room at ground level, rather than three vertical fans within the shaft. Other design modifications as part of the reconfiguration of the headhouse include (with references to the SES2 and AP2 ES Volume 2, MA07 Map Book):

- a permanent change to the ventilation shaft compound area from approximately 0.32ha to 0.51ha within the land identified in the main ES to allow for an increase in the headhouse size (see map CT-06-359, C6 to D6);
- the shaft location will be moved 7m north-east (see map CT-06-359, C7);
- a reduction in the diameter of the vent shaft from 24m to 21m;
- the southern corners of the headhouse have been redesigned to allow for utilities diversions and vehicular access around the building;
- due to an increased impermeable area inside the compound, a larger water attenuation tank is required, which will be relocated within the compound due to associated changes to the compound layout;

- realignment of a culverted watercourse within the footprint of the amendment;
- water main and sewer diversion amendments to avoid the new footprint of the building, which has resulted in longer diversion lengths of the water main and sharper bends on the sewer; and
- land raising to the west of the amendment.

5.2.3 The headhouse amendment will be constructed from the Altrincham Road vent shaft satellite compound and will be completed within the indicative construction programme for this compound provided in Section 6.

5.2.4 No additional land is required for the amendment. A change to Bill powers is required to facilitate utility asset updates in the shaft compound (see SES2 and AP2 ES Volume 2, MA07 Map Book: Map CT-06-359, C6 to C7, D6 to D8).

Topics included in the AP2 assessment

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

5.2.6 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, 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 traffic and transport.

Ecology and biodiversity

Scope, assumptions and limitations

5.2.7 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.

5.2.8 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.

5.2.9 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.

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

Environmental baseline

Existing baseline

5.2.11 The baseline ecology and biodiversity information is as described in Section 7 of Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES and SES2. A summary of the baseline information relevant to the assessment of the amendment is provided below.

Habitats

5.2.12 Habitats within the land required for the amendment include broadleaved plantation woodland and poor semi-improved grassland present along the M56 slip road, both of which are considered to be up to local/parish value.

Species

5.2.13 Protected and notable species that are known or assumed to occur within the land required for construction of the amendment include bats. The species of relevance to the assessment of the amendment are described in further detail below.

Bats

5.2.14 The main ES reported a bat assemblage of five species between Withington and Ardwick of regional value on the basis of high numbers of foraging and commuting noctule, which is considered to be a 'rarer' species in England.

5.2.15 The land required for the amendment contains trees which, in the absence of survey information and on a precautionary basis, are assumed to support roosts of common and widespread species of bats. It is considered that roosts present would be associated with the bat assemblage present between Withington and Ardwick, which is reported in the main ES as being of regional value, on the basis of the large volume of data recorded for foraging and commuting noctule, which is considered to be a 'rarer' species in England. The assumed presence of additional roosts does not change the value of the bat assemblage reported in the main ES.

Future baseline

5.2.16 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.2.17 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.2.18 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

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

Assessment of impacts and effects

5.2.20 The main ES did not report a significant effect on the bat assemblage between Withington and Ardwick. On a precautionary basis, in the absence of survey data, it is assumed that the trees present provide roosting opportunities for common and widespread species and that the amendment will result in the loss of at least one bat roost of a common and widespread species. This will result in a new significant effect which is significant at up to the county/metropolitan level.

5.2.21 Effects on ecological features of significance at the local/parish level are listed in SES2 and AP2 ES Volume 5, Appendix: EC-015-00000.

Other mitigation measures

5.2.22 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. This will address the potential for loss or disturbance of roosts that could be present within the land required for the amendment and the potential significant effect on the bat assemblage. 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

5.2.23 The amendment does not result in a residual significant effect and there are no changes to the likely residual significant construction ecology and biodiversity effects identified in the main ES as a result of the amendment.

Cumulative effects

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

Sound, noise and vibration

Scope, assumptions and limitations

5.2.25 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.

Environmental baseline

Existing baseline

5.2.26 In the Davenport Green to Ardwick area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors adjacent to Altrincham Road. 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: Davenport Green to Ardwick area (MA07) of the main ES.

5.2.27 The works associated with the amendment are closer to receptors on Altrincham Road than works associated with the original scheme. Additional assessment locations have been added, which represent receptors which were previously represented by other assessment locations in the main ES. The baseline sound levels at the additional assessment locations are presented in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000.

Future baseline

5.2.28 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.2.29 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.2.30 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

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

Assessment of impacts and effects

Non-residential receptors: direct effects

5.2.32 The main ES identified, on the basis of a precautionary assessment, a significant effect as a result of construction noise at The Royals (offices). This was denoted as MA07-C-N2 in the Volume 2, Community Area report: Davenport Green to Ardwick (MA07), in Volume 5, Appendix: SV-002-0MA07 and the Volume 5, Sound, noise and vibration Map Book: Map Series SV-03 of the main ES. The amendment has the potential to give rise to an adverse vibration effect. The Royals has been assessed against the office criteria. The highest predicted daytime monthly construction vibration levels at this building are above the criteria defined in the SMR for this use[14] for a period of up to three months. The source of vibration impact is the pass-by of a vibratory roller, which is likely to be transient in nature. The Royals is identified, on the basis of a precautionary assessment, as being subject to a likely significant adverse effect (denoted by MA07-C-N2 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000) due to noise and vibration. This temporary adverse effect may take the form of activity disturbance to users of the offices. The addition of vibration to construction noise at this location will give rise to a different likely significant effect on the non-residential receptor.

Other mitigation measures

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

Summary of likely residual significant effects

5.2.34 The amendment will give rise to a different likely temporary residual adverse significant construction noise and vibration effect on The Royals (offices), Altrincham Road, Manchester.

Cumulative effects

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

[14] A vibration dose value of 0.4m/s$^{1.75}$ VDV.

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

Construction

Sound, noise and vibration

5.2.36 The amendment will give rise to a different likely temporary residual adverse significant construction vibration effect on the non-residential building, The Royals (offices), Altrincham Road, Manchester.

5.3 Change to Bill powers required for the relocation of vent shaft and headhouse from Palatine Road to The Hollies (AP2-007-003)

5.3.1 The Bill provides for the Manchester tunnel and Palatine Road vent shaft and headhouse (see Volume 2, MA07 Map Book: maps CT-06-360, D2 to D3 in main ES).

5.3.2 The main ES stated that additional flood modelling would be undertaken and would continue during the passage of the Bill, to identify avoidance and mitigation measures to reduce the impact on peak flood levels at receptors in the area of the vent shaft, as far as reasonably practicable. This additional modelling has been undertaken in consultation with the Environment Agency and utility providers.

5.3.3 Since the main ES, following engagement feedback from the Environment Agency on the additional flood modelling, HS2 Ltd identified that relocation of the Palatine Road vent shaft and headhouse is the most appropriate mitigation measure. Due to the relocation of the vent shaft to the derelict playing fields of The Hollies Convent School, the vent shaft has been renamed The Hollies vent shaft. This amendment consists of the following (with references to the SES2 and AP2 ES Volume 2, MA07 Map Book):

- Palatine Road vent shaft and Palatine Road vent shaft satellite compound will be relocated from the Withington Golf Course, off the B5167 Palatine Road, to the derelict playing fields of The Hollies Convent School to the north-west of the Britannia Country House Hotel and renamed as The Hollies vent shaft and The Hollies vent shaft satellite compound. The main site access will be from the A5145 Barlow Moor Road through the Manchester Islamic Educational Trust Campus), crossing derelict playing grounds (see map CT-06-360-L1, G9 and G10);
- removal of the replacement floodplain storage area on the eastern side of the route of the original scheme within the Didsbury flood storage basin in Withington Golf Club's golf course, adjacent to the River Mersey (see map CT-06-360, D3 to D6, E3 to E6, F3 to F8 and G4 to G7);

- the Manchester tunnel will be realigned across a total length of 11.5km between St Peter's Primary School and Longsight depot as a result of the amendment. This will result in a 111m increase in the length of the tunnel, with the vertical alignment remaining unchanged (see map CT-06-358, C6 to J6 to map CT-06-364, A4 to C5);
- a reconfigured vent shaft design, which is to incorporate the reduction in the number of horizontal fans from three fans in the original scheme to two;
- the internal room layouts will be amended to accommodate the two fan arrangement;
- construction of the vent shaft on a permanently raised area levelled to 30.2m above Ordnance Datum (AOD) instead of 31.7m AOD in the original scheme;
- change to the dimensions of the vent shaft headhouse, to be changed from 27.8m by 33.6m and 7.3m in height to 28.1m by 33.6m and 5.8m in height, plus a 0.9m parapet (see map CT-06-360, E3);
- change to the vent shaft ventilation exhaust with a reduction in dimensions from 9.8m by 33.6m and 7.3m in height to 7.0m by 21.6m and 3.8m in height;
- relocation and reduction in the size of the vent shaft permanent compound from 5,720m^2 to 5,700m^2 (see map CT-05-360-L1, G9 to G10); and
- the dimensions of the auto-transformer feeder station will be reduced from 33.6m by 24m to 28m by 24m.

5.3.4 The permanent access road to the vent shaft will be 500m in length linking to Barlow Moor Road. A temporary access deviating from the permanent access road will be provided for access to the construction compound (see map CT-06-360-L1, H8 to J8 in the SES2 and AP2 ES Volume 2, MA07 Map Book). The temporary access will be two-way with a 7.3m wide carriageway to accommodate temporary construction traffic. A secondary emergency access route will link to Mersey Meadows, providing a route for use during a significant flooding event. Culverts will be provided beneath the permanent access roads to allow flood flows to pass beneath the access roads, during flood events (see map CT-06-360-L1, G9 to H9 in the SES2 and AP2 ES Volume 2, MA07 Map Book).

5.3.5 The headhouse will require a permanent water supply and a foul discharge, which will be taken from the utilities in Barlow Moor Road and routed along the access road. The sewage will be pumped via a package pump station located at the headhouse and a rising main. The total length of the connections will be 660m.

5.3.6 The runoff from the vent shaft permanent compound and vent shaft access road will be managed through separate underground attenuation tanks (see map CT-06-360-L1, G9 and H8 in the SES2 and AP2 ES Volume 2, MA07 Map Book). Both underground attenuation tanks will be discharged into the River Mersey. Perimeter ditches will be provided around the access road and compound.

5.3.7 The amendment will be constructed from The Hollies vent shaft satellite compound and will be completed within the indicative construction programme for this compound provided in Section 6.

5.3.8 The land required for the amendment is outside the limits of the Bill. The amendment will result in the permanent requirement of approximately 5.4ha of additional land. The amendment will no longer require 11.3ha of land that was previously required for the original scheme. A change to Bill powers is also required for sub surface rights for the length of the new tunnel alignment and to facilitate utility and highway works within the existing adopted highway. See SES2 and AP2 ES Volume 2, MA07 Map Book: map CT-06-360, D1 to D6 and E1 to E6.

5.3.9 Table 6 describes the demolitions that will be required as a result of this amendment.

Table 6: Demolition required as a result of the relocation of The Hollies vent shaft and headhouse

Type	Description	Location
Commercial	Two-storey brick building (Manchester Islamic Educational Trust Campus)	Manchester College, Barlow Moor Road, Manchester M20 2PQ
Commercial	Derelict building (Derelict Sports Pavilion)	Hollies Path, Off Mersey Meadows, Manchester, M20 2GB

5.3.10 Table 7 describes the demolitions that will be avoided as a result of this amendment.

Table 7: Demolitions removed as a result of the relocation of The Hollies vent shaft and headhouse

Type	Description	Location
Residential	One residential property (above commercial property)	Withington Golf Club clubhouse, Palatine Road, Manchester
Commercial	One commercial property (below residential property)	Withington Golf Club clubhouse, Palatine Road, Manchester

Topics included in the AP2 assessment

5.3.11 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; socio-economics; sound, noise and vibration; traffic and transport; and water resources and flood risk.

5.3.12 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, 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 traffic and transport.

Community

Scope, assumptions and limitations

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

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

Environmental baseline

Existing baseline

5.3.15 A summary of baseline information relevant to the assessment of the amendment is provided below.

5.3.16 Residential properties are located to the north, east and south of the site of The Hollies vent shaft location. The nearest residential properties are located immediately to the east of the land required for the construction of the vent shaft.

5.3.17 Community facilities in the area include Didsbury Central Mosque, South Manchester Dance School and Moor Allerton Preparatory School. Bright Horizons Day Nursery and the Manchester Islamic Educational Trust Campus site are located immediately to the north of land required for the construction of the vent shaft.

5.3.18 Recreational facilities in the area include Northenden Golf Club, Withington Golf Club and the River Mersey walkway.

Future baseline

5.3.19 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.3.20 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.3.21 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

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

Assessment of impacts and effects

5.3.23 The assessment in the main ES identified effects on the previous location for the vent shaft within the Withington Golf Club. Construction of the original scheme in this location would have temporarily required 10ha (27%) of the 36ha site, with 2.5ha (7% of the 36ha site)

required permanently. The land required temporarily for the construction of the original scheme covered four of the 18 holes, the clubhouse, one residential property, and the associated infrastructure and landscaping, such as footpaths. The land was required for approximately five years. The main ES reported a temporary moderate adverse effect and a permanent moderate adverse effect on Withington Golf Club due to the temporary and permanent requirement for land, which would affect its ability to function.

5.3.24 This amendment will relocate the vent shaft from Withington Golf Club to the derelict playing fields of The Hollies Convent School. Land on the site of the golf club is no longer required. Therefore, this amendment will result in the removal of the temporary and permanent moderate adverse effects on Withington Golf Club.

5.3.25 The Hollies vent shaft and its associated construction compound will be located to the rear of an educational facility on the A5145 Barlow Moor Road owned by the Manchester Islamic Educational Trust. Construction of the vent shaft will result in the demolition of a building (formerly West Didsbury Sure Start Centre) located on the north-western part of the site. Access to the vent shaft site will be via an access road within the grounds that runs directly along the western side of the school building. This road will be used by HGV construction traffic. The construction compound will require land that covers all of the parking spaces from the car park located to the rear of the building. One of the entrances for the educational facility is on the A5145 Barlow Moor Road. The entrance for those arriving by vehicle is via the access road, where staff and deliveries would access the building. This is also the route where those attending the education facility would be dropped off or park. This access to the building and all of the site car park will be within land required for the AP2 revised scheme. The demolition of one building (formerly West Didsbury Sure Start Centre) and presence of the HS2 access route, alongside significant construction noise effects and the loss of car parking may make it difficult for the Manchester Islamic Educational Trust to operate an education facility on this site. HS2 Ltd is continuing to consider options with regards to its impacts on the operational educational facility. However, due to demolition, changes in access and the loss of car parking and while options are being explored, it is assumed on a precautionary basis that the Manchester Islamic Educational Trust Campus will not be able to continue to operate. Therefore this will result in a new major significant effect due to the loss of this resource.

5.3.26 This amendment will result in a new major adverse in-combination effect on approximately 190 residential properties on Mersey Road, West Didsbury. New significant noise effects are expected to combine with new significant visual effects for approximately four years and ten 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.

5.3.27 This amendment will result in a new major adverse in-combination effect on approximately six residential properties on Mersey Meadows, West Didsbury. New significant noise effects are expected to combine with new significant visual effects for approximately five years and two 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.

5.3.28 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

5.3.29 HS2 Ltd is continuing to engage with Manchester Islamic Educational Trust to identify reasonably practicable measures to help mitigate the likely significant effects identified in this assessment.

Summary of likely residual significant effects

5.3.30 The amendment will result in new major adverse residual significant effects on:

- The Manchester Islamic Educational Trust Campus due to the demolition of the former West Didsbury Sure Start Centre, significant construction noise effects, loss of parking and change to access. On a precautionary basis, this will result in the permanent loss of this resource; and
- approximately 190 residential properties on Mersey Road, West Didsbury due to new noise and visual effects.

5.3.31 The amendment will result in a new moderate adverse residual significant effect on approximately six residential properties on Mersey Meadows, West Didsbury due to new noise and visual effects.

5.3.32 The amendment will result in the removal of a temporary and permanent residual significant effect on Withington Golf Club.

Cumulative effects

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

Ecology and biodiversity

Scope, assumptions and limitations

5.3.34 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1 and the SMR (Volume 5, Appendix: CT-001-00001) of the main ES.

5.3.35 This amendment has the potential to result in new or different significant effects at construction or the removal of significant construction effects only. Therefore, there is no operational assessment for ecology and biodiversity.

5.3.36 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.

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

Environmental baseline

Existing baseline

5.3.38 The baseline ecology and biodiversity information is as described in Section 7 of Volume 2, Community Area report: Davenport Green to Ardwick of the main ES and SES2. A summary of the baseline information relevant to the assessment of the AP2 amendment is provided below.

Habitats

5.3.39 Habitats within the land required for construction of the amendment include marshy grassland, broadleaved woodland, broadleaved plantation woodland, poor semi-improved grassland, scattered trees, and hardstanding. The habitats of relevance to the assessment of the amendment are described further below:

- a 1ha area of broadleaved woodland along the River Mersey that is likely to qualify as lowland mixed deciduous woodland, a habitat of principal importance in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and a conservation priority of the Greater Manchester Biodiversity Action Plan (local BAP) and is considered to be of up to district/borough value;
- a 0.9ha area of marshy grassland considered to be of up to district/borough value; and
- broadleaved plantation woodland, poor semi-improved grassland and scattered trees which are considered to be of up to local/parish value.

Species

Amphibians

5.3.40 The SES2 changes report a great crested newt metapopulation across 4 ponds (GCNMP1.7.5) at Withington Golf Club that is of county/metropolitan value.

Bats

5.3.41 The main ES reported a bat assemblage of at least six species at Withington Golf Club that is considered to be of regional value on the basis of high numbers of foraging and commuting noctule, which is considered to be a 'rarer' species in England. The land required for the amendment contains trees and buildings which, in the absence of survey information and on a precautionary basis, are assumed to support bat roosts. The assumed presence of additional roosts does not change the value of the bat assemblage reported in the main ES.

Future baseline

5.3.42 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides 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 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

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

Effects arising during construction

Avoidance and mitigation measures

5.3.45 No avoidance or mitigation measures additional to those reported in the main ES and draft Code of Construction Practice (CoCP)[15], are proposed.

Assessment of impacts and effects

Habitats

5.3.46 The assessment in the main ES identified effects on the previous location for the vent shaft within Withington Golf Club. The main ES reported that construction of Palatine Road vent shaft would result in the removal of 1.4ha (20%) of broadleaved woodland habitat at Withington Golf Club resulting in an adverse effect that is significant at the district/borough level. This area of woodland will be retained as a result of the amendment resulting in the removal of the significant effect reported in the ES.

5.3.47 The amendment will result in the loss of 1ha (100%) of broadleaved woodland along the River Mersey within the land required for construction of the SES2 scheme that is likely to qualify as lowland mixed deciduous woodland, a habitat of principal importance. This will result in a new permanent adverse effect that will be significant at up to the district/borough level.

5.3.48 The amendment will involve the removal of 0.9ha (100%) marshy grassland located within the south-east portion of the land required for the construction of the SES2 scheme. This will result in a new permanent adverse effect that will be significant at up to the district/borough level.

[15] 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.

Species

Amphibians

5.3.49 The main ES reported that on a precautionary basis, construction of the Palatine Road vent shaft and loss of terrestrial habitat would result in a temporary adverse effect on GCNP1.7.5 that is significant at up to county/metropolitan level. The relocation of the vent shaft will remove this significant effect. The amendment will not result in any significant effects on amphibians.

Bats

5.3.50 The main ES reported that construction of Palatine Road vent shaft would result in the loss of a non-breeding roost of soprano pipistrelle at Withington Golf Club, which is significant at the county/metropolitan level. The amendment will remove the impact on this bat roost.

5.3.51 On a precautionary basis it is considered that The Hollies vent shaft will result in the loss of at least one bat roost associated with the bat assemblage at Withington Golf Club. This will result in a different significant effect to that reported in the main ES at up to the regional level, due to the possible presence of *Myotis* species.

Other mitigation measures

5.3.52 The significant effects on lowland deciduous woodland and marshy grassland will be addressed by the creation of 1.4ha woodland adjacent to the River Mersey and 0.7ha grassland, including marshy grassland and semi-improved grassland. Following establishment, the adverse effect on lowland deciduous woodland and marshy grassland will be reduced to a level that is not significant.

5.3.53 The significant effects to the bat assemblage associated with Withington Golf Club will be addressed by mitigation which will be provided in accordance with the Ecological Principles of Mitigation within the SMR. Provision of artificial roosts, woodland planting and grassland will be created at The Hollies vent shaft location. Following implementation of these measures, the effects on the bat assemblage associated with Withington Golf Club will be reduced to a level that is not significant.

Summary of likely residual significant effects

5.3.54 There are no changes to the likely residual significant construction ecology and biodiversity effects identified in the main ES as a result of the amendment.

Cumulative effects

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

Health

Scope, assumptions and limitations

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

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

Environmental baseline

Existing baseline

5.3.58 A summary of baseline information relevant to the assessment of the amendment is provided below.

5.3.59 This part of Manchester is urban in character. Residential properties are located to the north, east and south of the site of The Hollies vent shaft location. The nearest residential properties are located immediately to the east of the land required for the construction of the vent shaft.

5.3.60 Community facilities in the area include Didsbury Central Mosque, South Manchester Dance School and Moor Allerton Preparatory School. Bright Horizons Day Nursery and former West Didsbury Sure Start Centre, now part of the Manchester Islamic Educational Trust Campus, are located immediately to the north of land required for the construction of the vent shaft.

5.3.61 Recreational facilities in the area include Northenden Golf Club, Withington Golf Club and the River Mersey walkway.

Future baseline

5.3.62 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.3.63 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.3.64 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

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

Assessment of impacts and effects

5.3.66 Construction of The Hollies vent shaft and its associated construction compound will be located to the rear of an educational facility on the A5145 Barlow Moor Road owned by the Manchester Islamic Educational Trust. Construction of the vent shaft will result in the demolition of a building (formerly West Didsbury Sure Start centre) located on the north-western part of the site. Access to the vent shaft site will be via an access road within the grounds that runs directly along the western side of the education facility. This road will be used by HGV construction traffic. The construction compound will require land that covers all of the parking spaces from the car park located to the rear of the building. One of the entrances for the educational facility is on the A5145 Barlow Moor Road. The entrance for those arriving by vehicle is via the access road, where staff and deliveries would access the building. This is also the route where those attending the education facility would be dropped off or park. This access to the building and all of the site car park will be within land required for the AP2 revised scheme. The demolition of the building (formerly West Didsbury Sure Start Centre) and presence of the HS2 access route, alongside significant construction noise effects and the loss of car parking may make it difficult for the Manchester Islamic Educational Trust to operate an educational facility on this site. HS2 Ltd is continuing to consider options with regards to its impacts on the operational educational facility. However, due to demolition, changes in access and the loss of car parking and while options are being explored, it is assumed on a precautionary basis that the Manchester Islamic Educational Trust Campus will not be able to continue to operate. Therefore this will result in a new major significant effect due to the loss of this resource. Therefore, on a precautionary basis, this will result in a new adverse health effect due to the loss of this resource and its impact on the wellbeing effects associated with educational attainment.

5.3.67 This amendment will result in a new adverse neighbourhood quality effect for residents of Mersey Road, West Didsbury. Construction noise is expected to be noticeable for approximately four years and ten months. Construction activities will be visible from street level. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, in diminishing the amenity of the settlement.

5.3.68 This amendment will result in a new adverse neighbourhood quality effect for residents of Mersey Meadows, West Didsbury. Construction noise is expected to be noticeable for approximately five years and two months. Construction activities will be visible from street level. People in this community are likely to experience these effects as changing the quality

of their neighbourhood and to regard that change as adverse, in diminishing the amenity of the settlement.

Other mitigation measures

5.3.69 HS2 Ltd is continuing to engage with Manchester Islamic Educational Trust to identify reasonably practicable measures to help mitigate the likely effects identified in this assessment.

Cumulative effects

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

Landscape and visual

Scope, assumptions and limitations

5.3.71 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.

5.3.72 This amendment has the potential to result in new or different construction and operational landscape and visual effects.

5.3.73 All landscape and visual effects, arising from this amendment, are reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. The locations of significantly affected viewpoints during construction and operation are shown in the SES2 and AP2 ES Volume 2, MA01 Map Book: Map Series LV-03 and LV-04, respectively.

Environmental baseline

Existing baseline

5.3.74 The baseline landscape and visual information is as described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. A summary of the baseline information relevant to the assessment of the amendment is provided below.

Landscape baseline

Mersey Valley Managed Open Space Landscape Character Area (LCA)

5.3.75 The amendment has the potential to significantly affect one LCA. This LCA is described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07 and summarised below.

5.3.76 This LCA is in south Manchester, to the north of the M60 near Junction 5 and to the south-west of Didsbury, West Didsbury and Barlow Moor. Here intensively managed areas of greenspace with interconnected footpaths, are located in the low-lying valley of the meandering River Mersey. The LCA includes the flat valley bottom and its gently sloping

sides. The predominant land use is recreation including the highly maintained landscapes of Northenden, Withington and Didsbury golf clubs and, together with a series of formal playing fields, these contrast with the surrounding built form and road infrastructure. There is an extensive network of well-used PRoW including the Trans Pennine Trail which follows the river. Although traffic can be heard within the LCA, there is an overall sense of relative tranquillity. The LCA is influenced by the presence of the elevated structures of the A5103 Princess Parkway/Princess Road and M60. Although the LCA is unlit, artificial lighting typical of the urban context is present in the surrounding LCA.

5.3.77 The Mersey Valley Managed Open Space LCA is assessed as having an overall **medium-high** landscape value. This is based on its mosaic of managed open and wooded land and its recreational value; the latter being partly supported by a footpath network including long distance trails adjacent to dense urban areas.

Visual baseline

5.3.78 The amendment has the potential to affect 11 viewpoints of which six are new viewpoints. These viewpoints are described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. The amendment has the potential to significantly affect five of these viewpoints and remove significant effects for five viewpoints. These viewpoints are summarised below.

View north-east from the B5167 Palatine Road, the Mersey Path and Footpath Manchester 139 (medium sensitivity receptors) (335-03-008)

5.3.79 This viewpoint is representative of views experienced by recreational users of the Mersey Path, Trans Pennine Trail and Footpath Manchester 139. To the east, dense vegetation along the boundary of Withington Golf Course heavily filters views over the course and towards visually detracting pylons beyond. To the north, there is an open view over the stone parapet of Northenden Bridge into the adjacent Northenden Golf Club. The B5167 Palatine Road is visible towards the north-east, framed by dense vegetation along highway boundary. In the background are trees and other vegetation on the skyline. Summer foliage increases the sense of enclosure.

View north-west from Footpath Manchester 139, Footpath Manchester 212 and the River Mersey (high sensitivity receptors) (335-03-009)

5.3.80 This viewpoint is representative of views experienced by recreational users of the River Mersey and Footpath Manchester 139 and Footpath Manchester 212. The footpath is situated on a raised embankment, associated with the River Mersey, looking over the Withington Golf Course fairways. This is a manicured landscape of fairways separated by intermittent belts of mature trees, hedgerows and occasional sand bunkers and rough grassland. Filtered views are available through the vegetation towards the Withington Golf Course clubhouse, which is visible amongst trees in the far distance. The M60 Palatine Road viaduct is discernible in glimpsed views in the distance. Summer leaf cover strengthens the visual separation between the fairways and further screens views towards the Withington Golf Course clubhouse and the M60.

View south from the B5167 Palatine Road and Footpath Manchester 211, (medium-high sensitivity receptors) (335-02-010)

5.3.81 This viewpoint is representative of views experienced by residents of properties off Palatine Road and Brookside. Properties along the B5167 Palatine Road are separated from the road by boundary walls, hedges and established trees which partly filter views. The tree-lined boundary to Withington Golf Course defines the east of the B5167 Palatine Road, filtering views of the fairways and beyond. The belt of enclosing vegetation leads the eye along the B5167 Palatine Road and towards the entrance to the golf course. In the centre of the view there is a gap in boundary vegetation where Footpath Manchester 211 crosses the B5167 Palatine Road into the golf course with filtered views beyond. Summer leaf cover increases the sense of enclosure along the B5167 Palatine Road further filtering views towards the golf course and its entrance.

5.3.82 Night-time lighting within the view mainly comes from street lighting along the B5167 Palatine Road across the entire view. Withington Golf Course is not lit.

View west from Footpath Manchester 211 and Withington Golf Course (high sensitivity receptors) (335-03-011)

5.3.83 This viewpoint is representative of views experienced by recreational users of Footpath Manchester 211 and visitors to Withington Golf Course. In the near distance and running through to the background towards Withington Golf Course clubhouse is a mature hedge that crosses Withington Golf Course. Footpath Manchester 211 runs parallel to the hedge on its northern side, bordered by a dilapidated concrete post and wire fence. Typical golf course features including sand bunkers, greens and roughs characterise the view, with fairways separated by tree belts which filter some visibility beyond. The far distance view is heavily vegetated. Where gaps in vegetation allow, views of the clubhouse are possible.

View south-west from the B5167 Palatine Road (medium-high sensitivity receptors) (336-02-003)

5.3.84 This viewpoint is representative of views experienced by residents of properties off B5167 Palatine Road and Ashfield Lodge. The B5167 Palatine Road is enclosed to the south-west by low stone wall and hedgerow boundaries of individual properties, and to the south and east by the tree-lined hedge boundary to Withington Golf Course. Views of the golf course bunkers, fairways, rough grassland and wooded areas are filtered. The belt of enclosing vegetation leads the eye along the B5167 Palatine Road and towards the entrance of the golf course. Ashfield Lodge, a three storey building, is set back from the B5167 Palatine Road with established boundary vegetation and hardstanding for car parking. Summer leaf cover increases the sense of enclosure along the B5167 Palatine Road further filtering views towards the golf course and its entrance.

5.3.85 At night-time, the B5167 Palatine Road is a well-lit urban environment, illuminated by street lighting and by the houses to the west with an unlit area (golf course) to the east.

View west from Mersey Meadows (medium-high sensitivity receptors) (336-02-017)

5.3.86 This new viewpoint is located in an area which was unaffected by the original scheme and represents the views experienced by residents of properties off Mersey Meadows and Mersey Road. Mersey Meadows is a residential road of detached properties with driveways and front gardens planted with trees and shrubs. In the middle distance, two-storey houses and associated brick walls screen views beyond. Hollies Path, marked by a green vehicle barrier at the entrance off Mersey Meadows, is used as an informal footpath by local residents. This path is heavily screened by existing mature trees and shrubs either side of the path. A bank of mature, tall trees, approximately double the height of the houses, creates a dense backdrop and forms the skyline.

View south-east from Footpath Manchester 235 (high sensitivity receptors) (336-03-018)

5.3.87 This new viewpoint is located in an area which was unaffected by the original scheme and is representative of views experienced by recreational users of Footpath Manchester 235 and Northenden Golf Club. Footpath Manchester 235 follows the grassed bank of the River Mersey and is fringed by grassland and riparian vegetation. The surfaced Trans Pennine Trail and Mersey Path follows the opposite bank and is visible across the river. Views along the river are partially enclosed by the presence of flood banks and associated vegetation which is particularly notable on the opposite bank. Dense trees and scrub in the middle distance screen and provide a sense of enclosure.

View south-east from Trans Pennine Trail/the Mersey Path/Footpath Manchester 139 (medium-high sensitivity receptors) (336-02-019)

5.3.88 This new viewpoint is located in an area which was unaffected by the original scheme and is representative of views experienced by residents of properties off The Beeches and recreational users of the Trans Pennine Trail/the Mersey Path/Footpath Manchester 139 noted as Trans Pennine Trail. In the near distance is the surfaced footpath. There are long distance views over the River Mersey with associated riparian vegetation and grassed flood banks. The level path is bordered to the east by a tall, vegetated embankment that screens lower-level views. Open views are available along the footpath and River Mersey, partly framed by the flood banks, towards the mature tree planting associated with Northenden Golf Club on the western side of the river and established trees within an open, undeveloped area to the east of the river which form the skyline. Residential properties off The Beeches range between three and five storeys and views south-east are largely filtered and screened by intervening established trees.

View south-east from Barlow Moor Road (medium-high sensitivity receptors) (336-02-020)

5.3.89 This new viewpoint is located in an area where there will be changes from the original scheme. In the near distance is the walled boundary of Didsbury Central Mosque, which fronts onto the A5145 Barlow Moor Road. The former Manchester College Fielden Campus is bounded by a stone wall and mature tree planting which creates an avenue character along

A5145 Barlow Moor Road. The large scale (two storey and six storey) brick and concrete campus buildings are set back behind the stone wall boundary. Mature trees punctuate the skyline in the middle-distance filtering views of the educational buildings in the far distance. There are mature trees along the access road to the former college which follow the rear boundaries of properties on The Beeches and Beech Court.

View west from Barlow Moor Road (medium-high sensitivity receptors) (336-02-021)

5.3.90 This new viewpoint is located in an area where there will be changes from the original scheme. Near-distance views are along the A5145 Barlow Moor Road which is lined with mature trees and planting within the curtilage of adjacent buildings. This also includes two-storey residential properties, the Bright Horizons Didsbury Day Nursery and Pre-School and the multistorey Manchester Islamic Educational Trust Campus. Views of these buildings are partially filtered through the boundary walls and associated vegetation. In the middle-distance, the former Manchester College Fielden Campus stretches to the south-east, comprising large scale, (two and six storey) concrete and brick buildings. The former West Didsbury Sure Start Centre is visible in the middle-distance to the west.

Future baseline

5.3.91 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025 and 2038.

5.3.92 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.3.93 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

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

Assessment of impacts and effects

Landscape assessment

Mersey Valley Open Space LCA

5.3.95 The assessment in the main ES identified effects on the LCA arising from the previous location for the vent shaft within the Withington Golf Club. The main ES reported a **moderate** adverse (significant) effect. This would be due to the removal of the established tree belt along the B5167 Palatine Road accentuating the prominence of the construction activity. Construction activity would be limited to a localised but central part of the LCA and would result in a localised reduction to tranquillity. The amendment will result in the relocation of the vent shaft northwards to an area of open greenspace adjacent to the River Mersey and residential development. The presence of construction activity associated with The Hollies vent shaft will result in a noticeable change in key characteristic features of a localised area in the northern extent of the LCA. The removal of established trees and scrub and the movement of traffic and tall construction plant will create a localised reduction in tranquillity. Therefore, the amendment will give rise to a different significant effect on this LCA; however, the level of significance of the effect will remain as reported in the main ES.

Visual assessment

View north-east from the B5167 Palatine Road, the Mersey Path and Footpath Manchester 139 (medium sensitivity receptors) (335-03-008)

5.3.96 The main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect for recreational users of the Mersey Path, Trans Pennine Trail and Footpath Manchester 139 of **high** susceptibility and with **medium-low** value views. This would be due to the removal of existing vegetation, which would open up middle distance views of large-scale construction works associated with Palatine Road vent shaft and headhouse and Palatine Road vent shaft autotransformer station.

5.3.97 As a result of the amendment, the vent shaft and headhouse will no longer be located within Withington Golf Course. The amendment will therefore remove a significant effect.

View north-west from Footpath Manchester 139, Footpath Manchester 212 and the River Mersey (high sensitivity receptors) (335-03-009)

5.3.98 The main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect for recreational users of the River Mersey and Footpath Manchester 139 and 212 of **high** susceptibility and with **medium-high** value views. This would be due to the large-scale construction works associated with Palatine Road vent shaft and headhouse and Palatine Road vent shaft autotransformer station.

5.3.99 As a result of the amendment, the vent shaft and headhouse will no longer be located within Withington Golf Course. The amendment will therefore remove a significant effect.

View south from the B5167 Palatine Road and Footpath Manchester 211, (medium-high sensitivity receptors) (335-02-010)

5.3.100 The main ES reported a **high** magnitude of change and a **major** adverse (significant) effect for residents of properties off Palatine Road and Brookside of **medium-high** susceptibility and with **medium** value views. This would be due to the large-scale construction works associated with Palatine Road vent shaft and headhouse and Palatine Road vent shaft autotransformer station.

5.3.101 As a result of the amendment, the vent shaft and headhouse will no longer be located within Withington Golf Course. The amendment will therefore remove a significant effect.

Night-time

5.3.102 The main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect. This would be due the presence of lighting for the B5167 Palatine Road vent shaft satellite compound that would intensify sky glow in the surrounding area.

5.3.103 As a result of the amendment, the vent shaft and headhouse will no longer be located within Withington Golf Course. The amendment will therefore remove a significant effect.

View west from Footpath Manchester 211 and Withington Golf Course, (high sensitivity receptors) (335-03-011)

5.3.104 The main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect for recreational users of Footpath Manchester 211 and visitors to Withington Golf Course of **high** susceptibility and with **medium-high** value views. This would be due to the large-scale construction works associated with Palatine Road vent shaft and headhouse and Palatine Road vent shaft autotransformer station.

5.3.105 As a result of the amendment, the vent shaft and headhouse will no longer be located within Withington Golf Course. The amendment will therefore remove a significant effect.

View south-west from the B5167 Palatine Road (medium-high sensitivity receptors) (336-02-003)

5.3.106 The main ES reported a **medium** magnitude of change and a moderate adverse (significant) effect for residents of properties off B5167 Palatine Road and Ashfield Lodge of **medium-high** susceptibility and with **medium** value views. This would be due to the large scale construction works associated with Palatine Road vent shaft and headhouse and Palatine Road vent shaft autotransformer station.

5.3.107 As a result of the amendment the vent shaft and headhouse will no longer be located within Withington Golf Course. The amendment will therefore remove a significant effect.

Night-time

5.3.108 The main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect. This would be due the presence of lighting for the B5167 Palatine Road vent shaft satellite compound that would intensify sky glow in the surrounding area.

5.3.109 As a result of the amendment, the vent shaft satellite compound will no longer be located within Withington Golf Course. The amendment will therefore remove a significant effect.

View west from Mersey Meadows (medium-high sensitivity receptors) (336-02-017)

5.3.110 This new viewpoint is located in an area which was unaffected by the original scheme. Residents of properties off Mersey Meadows and Mersey Road of **high** susceptibility and with **medium** value views will experience a noticeable change in the view due to the presence of construction activities. The removal of mature vegetation along the informal Hollies Path will open up framed views towards construction activity. However, the majority of the existing bank of trees to the west of the properties will be retained, filtering views beyond. 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.

View south-east from Footpath Manchester 235 (high sensitivity receptors) (336-03-018)

5.3.111 This new viewpoint is located in an area which was unaffected by the original scheme. Recreational users of Footpath Manchester 235 of **high** susceptibility and users of Northenden Golf Club of lower susceptibility, all with **medium-high** value views, will experience a noticeable change in middle to far-distance views due to the presence of construction activity and the gradual emergence of The Hollies vent shaft and headhouse. Views will be partially filtered by existing vegetation along the River Mersey. However, the removal of sections of the vegetation associated with the existing flood bank on the opposite bank of the River Mersey, will open up views towards construction activity and The Hollies vent shaft satellite compound. 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.

View south-east from the Trans Pennine Trail /the Mersey Path/Footpath Manchester 139 (medium-high sensitivity receptors) (336-02-019)

5.3.112 This new viewpoint is located in an area which was unaffected by the original scheme. Residents of properties off The Beeches and recreational users of the Trans Pennine Trail/the Mersey Path/Footpath Manchester 139 of **high** susceptibility and with **medium-high** value views will experience views of construction activity beyond the existing flood bank and intervening vegetation where retained. The removal of a section of the vegetation along the eastern flood bank of the River Mersey, vegetation adjacent to the car park of Manchester Islamic Educational Trust Campus and from the undeveloped land beyond, will reduce the density of screening vegetation. Taller construction elements associated with the Hollies vent shaft will be visible above the retained riverside vegetation and floodbank.

However, the majority of the construction activity will be in the background of the view, largely filtered by the intervening flood bank and vegetation. There will be a **medium** magnitude of change a **moderate** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.

View south-east from Barlow Moor Road (medium-high sensitivity receptors) (336-02-020)

5.3.113 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of Barlow Moor Road, The Beeches, Beech Court and Burton Road of **high** susceptibility and people visiting Didsbury Central Mosque of lower susceptibility, all with **medium** value views, will experience near-distance views of construction activities. The demolition of the two-storey educational building and the removal of mature tree planting and stone walls will create a wide entrance off Barlow Moor Road and will open up views to the buildings of Manchester Islamic Educational Trust Campus and towards construction activities. The A5145 Barlow Moor Road will be a construction traffic route. The Hollies vent shaft satellite compound, in the background of the view, will be largely filtered by intervening buildings and vegetation retained within Manchester Islamic Educational Trust Campus. There will be a **high** magnitude of change and a **major** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.

View west from Barlow Moor Road (medium-high sensitivity receptors) (336-02-021)

5.3.114 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of properties off Barlow Moor Road and Northern Grove of **high** susceptibility, and people at Bright Horizons Day Nursery of lower susceptibility, all with **medium** value views, will experience near-distance views of the construction traffic along the A5145 Barlow Moor Road and realignment of the existing junction at the access to the former Manchester College Fielden Campus off Barlow Moor Road. The former West Didsbury Sure Start Centre, now part of the Manchester Islamic Educational Trust Campus will be demolished, and several mature trees removed from within the grounds of the Manchester Islamic Educational Trust Campus to facilitate these junction changes. 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

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

Summary of likely residual significant effects

5.3.116 The amendment will give rise to a different likely residual significant construction effect for the Mersey Valley Open Space LCA, after implementation of construction phase mitigation. The effect will remain **moderate** adverse (significant).

5.3.117 The amendment will give rise to a new likely residual significant construction effect, after implementation of construction phase mitigation, at the following new viewpoints:

- view west from Mersey Meadows (336-02-017). The effect will be **moderate** adverse (significant);
- view south-east from Footpath Manchester 235 (336-03-018). The effect will be **moderate** adverse (significant);
- view south-east from the Trans Pennine Trail, the Mersey Path and Footpath Manchester 139 (336-02-019) The effect will be **moderate** adverse (significant);
- view south-east from Barlow Moor Road (336-02-020). The effect will be **major** adverse (significant); and
- view west from Barlow Moor Road (336-02-021). The effect will be **moderate** adverse (significant).

5.3.118 The amendment will remove likely residual significant construction effects at the following viewpoints:

- view north-east from the B5167 Palatine Road, the Mersey Path and Footpath Manchester 139 (335-03-008);
- view north-west from Footpath Manchester 139, Footpath Manchester 212 and the River Mersey (335-03-009);
- view south from the B5167 Palatine Road and Footpath Manchester 211, (335-02-010);
- view west from Footpath Manchester 211 and Withington Golf Course, (high sensitivity receptors) (335-03-011); and
- view south-west from the B5167 Palatine Road (336-02-003).

5.3.119 The amendment will remove likely residual significant night-time construction effects at the following viewpoints:

- view south from the B5167 Palatine Road and Footpath Manchester 211, (335-02-010); and
- view south-west from the B5167 Palatine Road (336-02-003).

Cumulative effects

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

Effects arising from operation

Avoidance and mitigation measures

5.3.121 Substantial changes have been made to the environmental mitigation to reflect the relocation of The Hollies Vent Shaft and headhouse. All mitigation associated with the Withington Golf Course has been removed. Mitigation measures in the new location include substantial screen planting adjacent to the River Mersey on the western boundary. This will

supplement existing mature tree planting to ensure views from the surrounding PRoW network are limited. Similarly, a strip of screen planting along the eastern and southern boundaries will supplement existing tree planting to screen views from the hotel off the B5167 Palatine Road and residents along Mersey Meadows and Mersey Road. Screen planting is proposed between the access road and eastern boundary to provide replacement screening for residents off The Beeches. An area of planting is proposed along the northern boundary to allow for mature tree planting replacement associated with Barlow Moor Road.

Assessment of impacts and effects

Landscape assessment

Mersey Valley Managed Open Space LCA

5.3.122 The main ES reported a **moderate** adverse (significant) effect. This would be due the loss of established vegetation along B5167 Palatine Road, removed during construction, and the introduction of new structures which would be uncharacteristic features in the immediate landscape. The amendment will result in a noticeable but localised change to this LCA due to the loss of open grassland and scrub areas used for informal recreation. The loss of established trees along the River Mersey during construction will make large-scale structures associated with the vent shaft locally more apparent in the landscape. The informal Hollies Path will be closed, but a new route will be provided retaining connectivity with the River Mersey. Therefore, the amendment will give rise to a different significant effect on the LCA; however, the level of significance of the effect will remain as reported in the main ES.

Visual assessment

View north-east from the B5167 Palatine Road, the Mersey Path and Footpath Manchester 139 (medium sensitivity receptors) (335-03-008)

5.3.123 At year 1, the main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect for recreational users of the Mersey Path, Trans Pennine Trail and Footpath Manchester 139 of **high** susceptibility and with **medium-low** value views. This would be due to the presence of the Palatine Road vent shaft and headhouse and Palatine Road vent shaft auto-transformer station which would be visible beyond retained foreground vegetation.

5.3.124 As a result of the amendment, the vent shaft will no longer be located within Withington Golf course. The amendment will therefore remove a significant effect.

5.3.125 For further information regarding the main ES assessment for years 15 and 30, see SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

View north-west from Footpath Manchester 139, Footpath Manchester 212 and the River Mersey (high sensitivity receptors) (335-03-009)

5.3.126 At year 1, the main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect for recreational users of the River Mersey and Footpath Manchester 139 and 212 of **high** susceptibility and with **medium-high** value views. This would be due to the introduction of the Palatine Road vent shaft and headhouse and Palatine Road vent shaft auto-transformer station.

5.3.127 As a result of the amendment, the vent shaft will no longer be located within Withington Golf course. The amendment will therefore remove a significant effect.

5.3.128 For further information regarding the main ES assessment for years 15 and 30, see SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

View south from the B5167 Palatine Road and Footpath Manchester 211, (medium-high sensitivity receptors) (335-02-010)

5.3.129 At year 1, the main ES reported a **high** magnitude of change and a **major** adverse (non-significant) effect for residents of properties off the B5167 Palatine Road and Brookside of **medium-high** susceptibility and with **medium** value views. This would be due to the introduction of the Palatine Road vent shaft and headhouse and Palatine Road vent shaft auto-transformer station.

5.3.130 As a result of the amendment, the vent shaft and headhouse will no longer be located within Withington Golf course. The amendment will therefore remove this significant effect.

5.3.131 At year 15, the main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect. This would be due to the presence of maturing mitigation planting that would partly screen views towards the Palatine Road vent shaft and headhouse and Palatine Road vent shaft auto-transformer station.

5.3.132 As a result of the amendment, the vent shaft will no longer be located within Withington Golf course. The amendment will therefore remove a significant effect.

5.3.133 For further information regarding the main ES assessment for year 30, see SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

View west from Footpath Manchester 211 and Withington Golf Course, (high sensitivity receptors) (335-03-011)

5.3.134 At year 1, the main ES reported a **medium** magnitude of change and a **moderate** adverse (significant) effect for recreational users of Footpath Manchester 211 and visitors to Withington Golf Course of **high** susceptibility and with **medium-high** value views. This would be due to the introduction of the Palatine Road vent shaft and headhouse and Palatine Road vent shaft auto-transformer station.

5.3.135 As a result of the amendment, the vent shaft will no longer be located within Withington Golf course. The amendment will therefore remove a significant effect.

5.3.136 For further information regarding the main ES assessment for years 15 and 30, see SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

View south-west from the B5167 Palatine Road (medium-high sensitivity receptors) (336-02-003)

5.3.137 At year 1**,** the main ES reported a **low** magnitude of change and a **moderate** adverse (significant) effect for residents of properties off B5167 Palatine Road and Ashfield Lodge of **medium-high** susceptibility and with **medium** value views. This would be due to the introduction of Palatine Road vent shaft and headhouse and Palatine Road vent shaft auto-transformer station.

5.3.138 As a result of the amendment, the vent shaft will no longer be located within Withington Golf course. The amendment will therefore remove a significant effect.

5.3.139 For further information regarding years 15 and 30, see SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

View south-east from Barlow Moor Road (medium-high sensitivity receptors) (336-02-020)

5.3.140 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of Barlow Moor Road, The Beeches, Beech Court and Burton Road of **high** susceptibility, and people visiting Didsbury Central Mosque of lower susceptibility, all with **medium** value views, will experience noticeable change to near-distance views due to the loss of the two-storey educational building and mature tree planting along property boundaries, removed during construction. At year 1, although the stone wall boundary to the college will have been reinstated, landscape mitigation planting along the A5145 Barlow Moor Road will be immature and the character of the tree lined road will not have been restored. Replacement planting at the rear of properties on The Beeches and Beech Court will also be immature and will not provide any visual screening towards the former Manchester College Fielden Campus. The amendment will give rise to a **medium** magnitude of change and a **moderate** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.

5.3.141 At year 15 and 30, the level of significance of the effect will reduce to non-significant as reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

Other mitigation measures

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

Summary of likely residual significant effects

5.3.143 The amendment will remove the likely residual significant operation effects at view south from the B5167 Palatine Road and Footpath Manchester 211, (335-02-010).

Cumulative effects

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

Socio-economics

Scope, assumptions and limitations

5.3.145 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

5.3.146 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

5.3.147 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.3.148 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

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

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.151 The main ES reported that the construction of Palatine Road vent shaft would result in job displacement or possible loss from Withington Golf Club on the B5167 Palatine Road.

5.3.152 The construction of The Hollies vent shaft will require demolition of the former West Didsbury Sure Start Centre building and the loss of all car parking spaces (approximately 126) for six years on Barlow Moor Road. The Manchester Islamic Educational Trust, a private education provider, has acquired the site on the A5145 Barlow Moor Road, including both the building and the car park, to combine their various educational facilities across Manchester in a single location.

5.3.153 The operation of the educational facility might be affected by the loss of the former West Didsbury Sure Start Centre building and of all car parking spaces on the site, which could impact on staff access to their place of employment. The sensitivity of the resource is assessed as high as the Manchester Islamic Educational Trust may struggle to find suitable alternative premises for educational usage on this scale. HS2 Ltd is continuing to consider options with regards to its impacts on the operational educational facility. However, due to demolition, changes in access and the loss of car parking and while options are being explored, it is assumed on a precautionary basis that the Manchester Islamic Educational Trust Campus will not be able to continue to operate. The magnitude is high based on the number of jobs located at this site. The effect is assessed to be major adverse and will therefore be a new permanent significant effect.

5.3.154 The locations of significantly affected resources are shown in the SES2 and AP2 ES Volume 5, Socio-economics Map Book: Map Series SE-01.

5.3.155 It is estimated that, as a result of this amendment, 60 jobs are assumed to be displaced or lost within the Davenport Green to Ardwick area, in addition to those reported for the construction of the original scheme. The socio-economic effects on jobs displaced or lost are assessed at a route-wide level in Volume 3, Route-wide effects (Section 12).

Other mitigation measures

5.3.156 HS2 Ltd is continuing to engage with Manchester Islamic Educational Trust to identify reasonably practicable measures to help mitigate the likely significant effects identified in this assessment.

Summary of likely residual significant effects

5.3.157 The amendment will require the demolition of the former West Didsbury Sure Start Centre building and loss of parking of the proposed Manchester Islamic Educational Trust Campus. This receptor will be subject to a new permanent adverse residual direct effect, which is significant.

Cumulative effects

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

Sound, noise and vibration

Scope, assumptions and limitations

5.3.159 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.

Environmental baseline

Existing baseline

5.3.160 In the Davenport Green to Ardwick area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors adjacent to Mersey Road and in the community of Didsbury West. 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: Davenport Green to Ardwick area (MA07) of the main ES.

5.3.161 The works associated with the amendment are closer to several dwellings on Mersey Road than works associated with the original scheme. Additional assessment locations have been added representing dwellings which were previously represented by other assessment locations in the main ES. The baseline sound levels at the additional assessment locations are presented in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000.

Future baseline

5.3.162 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.3.163 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

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

Effects arising during construction

Avoidance and mitigation measures

5.3.165 To avoid or reduce likely community significant effects as a result of this amendment, taller screening (provided by solid temporary hoarding, temporary stockpiles, screening close to activities or other means to provide equivalent noise reductions), as described in the draft CoCP, has been assumed at The Hollies Vent Shaft near Mersey Road.

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

Assessment of impacts and effects

Residential receptors: direct effects – individual dwellings

5.3.167 Taking account of the avoidance and mitigation measures as outlined in the main ES, as a result of the amendment the following 46 properties are forecast to experience noise levels above the eligibility criteria for noise insulation, as defined in the draft CoCP:

- 22 properties, 1 (flats 1, 2, 5 to 7), 2, 3, 4 (flats 1 to 7), 5 and 6 (flats 1 to 7) The Beeches, Manchester (assessment location ref.: 616925);
- 12 properties, 8 (flats 1 to 6) and 8A (flats 1 to 6) The Beeches, Manchester (assessment location ref.: 616929); and
- 12 properties, 134, 136, 138, and 140 (flats 1 to 9) Barlow Moor Road, Manchester (assessment location ref.: 616947).

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

5.3.169 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

5.3.170 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 effects are discussed in the following paragraph 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.

5.3.171 The amendment has the potential to give rise to a new adverse noise and vibration effect at approximately 10 dwellings at Mersey Meadows, Didsbury West (MA07-C-C7) where no noise and vibration effect was identified in the main ES. The predicted duration of the construction noise impact is up to five years and two months during the daytime and up to four years and

11 months during the night-time. 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. The daytime monthly construction vibration level is above the criteria defined in the SMR for this use[16] for a period of three months. The source of vibration impact is the pass-by of a vibratory roller, which is likely to be transient in nature. The combined construction noise and vibration effect is considered to be a likely significant effect when assessed on a community basis.

5.3.172 The amendment has the potential to introduce a new adverse noise effect at approximately 190 dwellings in the vicinity of Mersey Road, Didsbury West (MA07-C-C8) where no noise effect was identified in the main ES. The predicted duration of the construction noise impact is up to four years and ten 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)[17]	Type of significant effect	Time of day	Location	Cause (construction activities)[18]	Assumed approximate duration of impact
MA07-C-C7 (SV-03-324)	Construction noise and vibration (New)	Daytime and night-time	Didsbury West, Mersey Meadows: Approximately 10 dwellings in the vicinity of Mersey Meadows	During the daytime, highway works at The Hollies vent shaft. The typical and highest monthly noise levels are approximately 70dB and 75dB[19].	Day: Noise for up to five years and two months.
				During the night-time, vent shaft construction at The Hollies vent shaft. The typical and highest monthly noise levels are both approximately 55dB[20].	Night: Noise for up to four years and 11 months.
				Vibratory rollers associated with site setup are predicted to create a minor vibration impact at	Day: Vibration for up to three months.

[16] A vibration dose value of 0.2m/s$^{1.75}$ VDV.

[17] 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.

[18] 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.

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

Significant effect number (and map reference)[17]	Type of significant effect	Time of day	Location	Cause (construction activities)[18]	Assumed approximate duration of impact
				properties near to the amendment.	
MA07-C-C8 (SV-03-324)	Construction noise (New)	Daytime	Didsbury West, Mersey Road: Approximately 190 dwellings in the vicinity of Mersey Road.	Highways works. The typical and highest monthly noise levels are approximately 60dB to 75dB and 70dB to 80dB[20].	Up to four years and ten months.

Non-residential receptors: direct effects

5.3.173 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[20] compared with the existing baseline sound level) at the following non-residential receptors:

- Britannia Country House Hotel, Palatine Road, Manchester (assessment location ref.: 617016);
- Manchester Islamic Educational Trust Campus, Barlow Moor Road, Manchester (assessment location ref.: 616930);
- Bright Horizons Day Nursery, Barlow Moor Road, Manchester (assessment location ref.: 616951); and
- Didsbury Central Mosque, Burton Road, Manchester (assessment location ref.: 616946).

5.3.174 These locations are identified in the Davenport Green to Ardwick 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 receptors 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.

5.3.175 The Britannia Country House Hotel is a hotel, bar and restaurant which is located on the B5167 Palatine Road located approximately 40m south of the land required for construction of the amendment. The hotel is a mixture of three and five storey buildings with windows that appear to be openable. Air-conditioning is provided for all bedrooms. The Britannia Country House Hotel has been assessed against the hotel criteria. The predicted daytime monthly construction noise level is above the screening criterion defined in the SMR for

[20] 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-002-00000.

hotel use[21] for a period of up to five years and two months. The typical and highest predicted daytime monthly construction noise levels are 16dB and 18dB above the screening criterion defined in the SMR. The predicted night-time monthly construction noise level is above the screening criterion defined in the SMR for hotel use[22] for a period of up to five years and two months. The typical and highest predicted night-time monthly construction noise level are both 7dB above the screening criterion defined in the SMR. The Britannia Country House Hotel is identified, on the basis of a precautionary assessment, as being subject to a new likely adverse significant effect (denoted by MA07-C-N5 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000). This temporary adverse effect may take the form of activity and sleep disturbance to guests at the hotel.

5.3.176 The Manchester Islamic Educational Trust Campus is located on the boundary of the land required for construction of the amendment. The Manchester Islamic Educational Trust Campus has been assessed against the criteria for education use. The predicted daytime and night-time monthly construction noise level is above the screening criterion defined in the SMR for educational use[23] for a period of up to one year and one month. The typical and highest predicted daytime monthly construction noise level are 16dB and 18dB above the screening criterion defined in the SMR. Demolition, changes in access and the loss of car parking may make it difficult for the Manchester Islamic Educational Trust to operate an education facility on this site. HS2 Ltd is continuing to consider options with regards to its impacts on the operational educational facility. On a precautionary basis for the sound, noise and vibration assessment, it is assumed that Manchester Islamic Educational Trust Campus will continue to operate and is identified as being subject to a new likely adverse significant effect (denoted by MA07-C-N6 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000). This temporary adverse effect may take the form of activity disturbance to users of the educational facility.

5.3.177 The Bright Horizons Day Nursery is located on the A5145 Barlow Moor Road, approximately 50m east of the land required for construction of the amendment. The building is a two-storey brick building with windows that appear to be openable. It is assumed that the building is not provided with alternative means of ventilation to openable windows. The nursery 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[24] for a period of up to six months. The typical and highest predicted daytime monthly construction noise level are 17dB and 19dB above the screening criterion defined in the SMR. The Bright Horizons Day Nursery is identified, on the basis of a precautionary assessment, as being subject to a new likely significant adverse effect (denoted by MA07-C-N7 in 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 nursery users.

[21] 50dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 53dB $L_{pAeq,0700-2300}$ (façade).

[22] 45dB $L_{pAeq,2300-0700}$ (free-field) during the night which is equivalent to 48dB $L_{pAeq,2300-0700}$ (façade).

[23] 50dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 53dB $L_{pAeq,0700-2300}$ (façade).

[24] 50dB $L_{pAeq,0700-2300}$ (free-field) during the day, which is equivalent to 53dB $L_{pAeq,0700-2300}$ (façade).

5.3.178 Didsbury Central Mosque is located on Burton Road at the junction with the A5145 Barlow Moor Road, approximately 20m north of the land required for construction of the amendment. The building is a traditional brick-built building with direct line of sight of the works. It is assumed that the building is not provided with alternative means of ventilation to openable windows. Didsbury Central Mosque 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[25] for a period of up to six months. The typical and highest predicted daytime monthly construction noise level are 23dB and 25dB above the screening criterion defined in the SMR. Didsbury Central Mosque is identified, on the basis of a precautionary assessment, as being subject to a new likely adverse significant effect (denoted by MA07-C-N8 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000). This temporary adverse effect may take the form of activity disturbance to users of the Mosque.

5.3.179 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

5.3.180 HS2 Ltd is continuing to engage with Manchester Islamic Educational Trust to identify reasonably practicable measures to help mitigate the likely significant effects identified in this assessment.

Summary of likely residual significant effects

5.3.181 The amendment will give rise to a new likely temporary residual adverse significant construction daytime and night-time noise and vibration effects on the residential community of Didsbury West, in the vicinity of Mersey Meadows, Manchester.

5.3.182 The amendment will give rise to a new likely temporary residual adverse significant construction daytime noise effect on the residential community of Didsbury West, in the vicinity of Mersey Road, Manchester.

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

- Britannia Country House Hotel, Palatine Road, Manchester;
- Manchester Islamic Educational Trust Campus, Barlow Moor Road, Manchester;
- The Bright Horizons Day Nursery, Barlow Moor Road, Manchester; and
- Didsbury Central Mosque, Burton Road, Manchester.

Cumulative effects

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

[25] 50dB $L_{pAeq,0700-2300}$ (free-field) during the day which is equivalent to 53dB $L_{pAeq,0700-2300}$ (façade).

Traffic and transport

Scope, assumptions and limitations

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

5.3.186 This amendment has the potential to result in new or different significant construction and operational effects for traffic and transport.

5.3.187 The assessment of changes to traffic flows during construction and operation as a result of all AP2 amendments in combination with all SES2 changes is reported in Section 7.

5.3.188 The assessment in this section considers the potential effects on PRoW and roadside footway users and on parking and loading. No effects on other traffic and transport topics, with the exception of traffic-related effects reported in Section 7, are considered to require reassessment as a result of the amendment.

Environmental baseline

Existing baseline

5.3.189 The baseline traffic and transport information is described in Section 14 of Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES, as amended in Section 2 of this report. A summary of the baseline information relevant to the assessment of the amendment is provided below.

5.3.190 There are a number of PRoW and roadside footways in the Davenport Green to Ardwick area. The footway of relevance to the assessment of this amendment is Hollies Path (public footway). No survey information is available for Hollies Path (public footway); however, in the absence of information, the assessment is based on reasoned assumptions regarding usage.

5.3.191 There is off-street parking within the Davenport Green to Ardwick area. The off-street parking area of relevance to the assessment of this amendment is located at The Manchester Islamic Educational Trust Campus, off the A5145 Barlow Moor Road.

Future baseline

5.3.192 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025 and 2038.

5.3.193 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.195 The main ES reported no significant effects on non-motorised users of Hollies Path as a result of the original scheme. The amendment will require the temporary closure and diversion of Hollies Path (see SES2 and AP2 ES Volume 2, MA07 Map Book: map CT-05-360-L1[26]) between Mersey Meadows and Footpath Manchester 139, via Mersey Road, B5167 Palatine Road and Footpath Manchester 211 (see SES2 and AP2 ES Volume 2, MA07 Map Book: map CT-05-360-L1[27]) for a duration of five years and seven months. This will give rise to a new temporary major adverse effect on non-traffic related severance, which is significant, due to an increase in journey length for users of Hollies Path of up to 919m.

5.3.196 The main ES reported no significant effects on parking and loading at The Manchester Islamic Educational Trust Campus as a result of the original scheme. The amendment will result in the temporary loss of 127 off-street parking spaces (including three blue badge parking spaces) from The Manchester Islamic Educational Trust Campus, for a period of six years and six months. Demolition, changes in access and the loss of car parking may make it difficult for the Manchester Islamic Educational Trust Campus to operate an education facility on this site. HS2 Ltd is continuing to consider options with regards to its impacts on the operational educational facility. On a precautionary basis for the traffic and transport assessment, it is assumed that Manchester Islamic Educational Trust Campus will continue to operate. The temporary loss of 127 off-street parking spaces (including three blue badge parking spaces) will therefore give rise to a new temporary major adverse effect for parking and loading, which is significant.

Other mitigation measures

5.3.197 HS2 Ltd is continuing to engage with Manchester Islamic Educational Trust to identify reasonably practicable measures to help mitigate the likely significant effects identified in this assessment.

Summary of likely residual significant effects

5.3.198 The amendment will give rise to the following new likely residual temporary significant effects:

[26] See SES2 and AP2 ES Volume 2, MA07 Map Book: Map Series CT-05 – Construction Phase.

[27] See SES2 and AP2 ES Volume 2, MA07 Map Book: Map Series CT-05 – Construction Phase.

- major adverse significant effect on non-traffic related severance for users of Hollies Path, due to an increase in journey length of up to 919m; and
- major adverse significant effect on parking and loading, due to the temporary loss of 127 off-street parking spaces at the Manchester Islamic Educational Trust Campus.

Cumulative effects

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

5.3.200 The assessment of combined effects associated with changes in traffic flows as a result of this amendment in combination with all SES2 changes and AP2 amendments is reported in Section 7.

Effects arising during operation

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.202 The main ES reported no significant effects on parking and loading at the Manchester Islamic Educational Trust Campus as a result of the original scheme. The amendment will result in the permanent loss of 54 off-street parking spaces at the Manchester Islamic Educational Trust Campus. This will give rise to a new major adverse effect on parking and loading, which is significant. Note that significant effects during construction may make it difficult for the Manchester Islamic Educational Trust to operate an education facility on this site.

Other mitigation measures

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

Summary of likely residual significant effects

5.3.204 The amendment will give rise to a new likely residual permanent major adverse significant effect on parking and loading at the Manchester Islamic Educational Trust Campus, due to the loss of 54 off-street parking spaces.

Cumulative effects

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

5.3.206 The assessment of combined effects associated with changes in traffic flows as a result of this amendment in combination with all SES2 changes and AP2 amendments is reported in Section 7.

Water resources and flood risk

Scope, assumptions and limitations

5.3.207 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. This amendment has the potential to result in new or different significant construction effects on groundwater resources and flood risk only. Therefore, there are no construction effects on surface water and no operational assessment for water resources and flood risk.

Environmental baseline

Existing baseline

5.3.208 The baseline water resources and flood risk information is as described in Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES. New baseline information is reported in Section 2 of this report. A summary of the baseline information relevant to the assessment of this amendment is provided below.

Groundwater

5.3.209 As set out in the main ES, the superficial geology that underlies the HS2 route in this area is alluvium. This is classified as a Secondary A aquifer that may be capable of supporting water supplies at a local level rather than a regional scale and may also form an important source of baseflow to rivers. It is therefore defined as a Moderate value receptor.

5.3.210 The bedrock geology unit mapped as underlying the HS2 route in this area is the Wilmslow Sandstone Formation, a member of the Sherwood Sandstone Group. This is classified as a Principal aquifer which can provide water supplies that are of strategic importance and can also provide an important source of baseflow to rivers. It is therefore defined as a High value receptor.

5.3.211 The WFD waterbody that underlies the elements of this amendment is the Manchester and East Cheshire Permo-Triassic Sandstone Aquifers. Under the 2019 WFD assessment cycle classification, it has poor overall status due to both its quality/chemical status and quantitative status. The objective was to reach good overall status by 2021. At present, the reasons for not achieving good overall status are largely due to saline intrusion.

5.3.212 There is one private licenced groundwater abstraction in the area of this amendment. The ‘Borehole at Didsbury Golf Club, Northenden, Wythenshawe’ is located 800m south-east of the land required for construction of the amendment. It is used for spray and irrigation purposes and is classed as a moderate value receptor.

5.3.213 The Tributary of River Mersey 2 is a watercourse in proximity to this amendment that receives a significant baseflow from groundwater. It is located 240m from the proposed new vent shaft location and is classed as a moderate value receptor.

5.3.214 Wrengate Wood and Heyscroft site of biological importance (SBI) is a partially groundwater dependant habitat which is located 150m south-east of the land required for the construction of the amendment.

Flood risk

5.3.215 Due to the location of The Hollies vent shaft, the following receptors have been identified as at potential risk from the River Mersey. The relative vulnerability to flooding of each receptor (as defined in NPPF and Table 55 of the SMR) is also indicated:

- Palatine Road/The Hollies area:
  - two secondary electricity substations (essential infrastructure);
  - nine residential properties along the B5167 Palatine Road (more vulnerable);
  - one commercial property along the B5167 Palatine Road (less vulnerable);
  - hotel along the B5167 Palatine Road (more vulnerable);
  - the B5167 Palatine Road (less vulnerable);
  - two car parks (less vulnerable);
  - disused sports pitches (water compatible);
  - Beeches Mews (less vulnerable);
  - 14 residential properties around Beeches Mews, The Beeches and Beeches Court (hereafter known collectively as Beeches Mews) (more vulnerable);
  - Northenden Golf Club (water compatible); and
  - Northenden Golf Club club house (more vulnerable).
- east of Didsbury flood storage basin (Stenner Lane):
  - four residential properties (more vulnerable);
  - one commercial property (less vulnerable);
  - Stenner Lane (less vulnerable);
  - allotments (water compatible); and
  - Didsbury Sport Ground (water compatible).

Future baseline

5.3.216 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.3.217 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

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

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.220 As set out in Section 3, the change in SES2 baseline has reduced the number of potential significant effects on flood risk associated with the Palatine Road vent shaft from 52 to 21 (which are already affected by flooding in a 1 in 100 year +CC event). This amendment will relocate the Palatine Road vent shaft to the former playing fields of The Hollies Convent School which avoids the Environment Agency's Didsbury flood storage basin.

5.3.221 The raised compound and vent shaft at The Hollies site would displace flood storage, once the Didsbury flood storage basin and/or the River Mersey flood defences are overwhelmed, displacing floodwater in the River Mersey floodplain. Hydraulic modelling of the River Mersey at The Hollies vent shaft has informed the design and assessment of the AP2 revised scheme. The modelling has been used to determine the likely impact of the vent shaft and compound on the peak flood levels in the 1 in 100 year +CC event.

5.3.222 The detailed modelling shows that the presence of the AP2 revised scheme will lead to localised changes in the conveyance of water through the floodplain and the loss of floodplain storage could lead to increase flood flows downstream.

5.3.223 The localised changes in the conveyance of water through the floodplain are of a lesser extent than those modelled for the original scheme, and The Hollies vent shaft will therefore lead to the removal of some of the significant effects reported in the SES2 (see Section 3). Details of the removed and remaining significant effects are set out in Table 9.

5.3.224 The modelling shows that for the AP2 revised scheme, the loss of floodplain storage leads to a 0.1% increase in peak flood flows (0.5m^3/s increase in peak flood flow compared to a baseline flow of 568m^3/s) downstream of Princess Road during the 1 in 100 year +CC event. Similarly, the permanent operational site also leads to a 0.1% increase in peak flood flows (0.3m^3/s increase in peak flood flow compared to a baseline flow of 287m^3/s) downstream of Princess Road during the 1 in 100 year event. No increase in peak flood flows is observed in the 1 in 20 year event.

5.3.225 As a result of this relatively small percentage increase in flow, it is anticipated that the increase in peak flood flows downstream of Princess Road has the potential to lead to some further minor local increases in peak flood depth, in areas already at risk of flooding, which may contain sensitive receptors.

5.3.226 The AP2 revised scheme model 2D extent ends just downstream of Princess Road bridge and therefore this model is not suitable to identify any potential downstream impacts. The 2D extent of the 2018 Environment Agency regional model extends downstream of Princess

Road to the Manchester Ship Canal. This EA model has a coarser resolution and is not designed to predict flood impacts on individual properties or parcels of land. It is therefore not considered to be sufficiently robust, to predict the impacts of such as small increase in peak flows downstream of Princess Road, with a reasonable degree of accuracy.

5.3.227 On a precautionary basis, the potential minor impacts on peak flood level, affecting sensitive receptors downstream of Princess Road, are predicted to lead to potential significant effects. Details of the removed and remaining significant effects are set out in Table 9.

Table 9: New, different and removed significant effects during the 1 in 100 year + CC event compared to the SES2 scheme

Location	Number and type of receptor (value) reported in main ES	Significance of effect reported in main ES	Significance of effect for AP2 revised scheme	Change in significance of effect in AP2 revised scheme
Palatine Road area	2 multi-occupancy residential properties (western 2 blocks of Riverside Court)	Minor impact, Moderate adverse effect, significant	**Minor impact, Moderate permanent adverse effect, significant**	**No change, significant effect remains**
	1 commercial property (Withington golf club – club house)	Major impact, Moderate adverse effect, significant	Minor impact, Minor permanent adverse effect, not significant	Effect reduced to not significant
	Secondary electricity substation	Moderate impact, Major adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	Secondary electricity substation	Minor impact, Moderate adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	4 residential properties	Major impact, Major adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	2 residential properties	Moderate impact, Moderate adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	1 residential property	Minor impact, Moderate adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	Palatine Road	Major impact, Moderate adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	Palatine Road	Moderate impact, Moderate adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	1 residential property	Moderate decrease, Moderate beneficial effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	Palatine Road	Major decrease, Moderate beneficial effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed

Location	Number and type of receptor (value) reported in main ES	Significance of effect reported in main ES	Significance of effect for AP2 revised scheme	Change in significance of effect in AP2 revised scheme
East of Didsbury flood storage basin (Stenner Lane)	4 residential properties	Moderate impact, Moderate adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	1 commercial property	Moderate impact, Moderate adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
	Stenner Lane	Moderate impact, Moderate adverse effect, significant	Negligible impact, negligible effect, not significant	Significant effect removed
Downstream of Princess Road	Unquantified potential sensitive receptors	None	**Minor impact, Moderate permanent adverse effects, significant**	**New significant effect**

5.3.228 The AP2 revised baseline modelling suggests that under existing conditions the flood defences along the River Mersey overtop at approximately the 1.0% AEP event. Therefore, the detailed information for the 1 in 100 year event was also reviewed, to understand if there would be any changes to flood extents and flood depths due to the AP2 revised scheme, when flood defences are overtopping. This assessment includes the raised land associated with the permanent site and temporary construction site.

5.3.229 The temporary construction site and the permanent presence of the AP2 revised scheme leads to increases in peak flood levels, during the 1 in 100 year event, to the local receptors which are already at risk of flooding in the baseline as shown in Table 10.

5.3.230 During construction, the additional loss of floodplain storage, due to the additional presence of the raised construction compound, leads to an 0.2% increase in peak flood flows (0.5m^3/s increase in peak flood flow compared to a baseline flow of 287m^3/s) downstream of Princess Road Bridge.

Table 10: New and different significant effects during the 1 in 100 year event

Number and type of receptor	Receptor value	Impact, effect and significance in AP2
2 multi-occupancy residential properties on the B5167 Palatine Road (western 2 blocks of Riverside Court - same receptors as those reported for the 1 in 100 yr + CC event above)	High	**Different** minor impact, Moderate permanent adverse effect, significant
Commercial property (Northenden Golf Club club house)	High	**New** moderate impact, Moderate permanent adverse effect, significant
12 residential properties and 2 multi-occupancy residences at Beeches Mews	High	**New** minor impact, Moderate permanent adverse effect, significant
Unquantified potential sensitive receptors downstream of Princess Road – receptors expected to	High to very high	Similar effects to those reported for the 1 in 100 year +CC event

Number and type of receptor	Receptor value	Impact, effect and significance in AP2
be the same as those reported for the 1 in 100 year +CC event.		

5.3.231 Additional modelling will be undertaken during the passage of the Bill, to identify avoidance and mitigation measures to reduce the impact of the AP2 revised scheme on peak flood levels at Beeches Mews, western 2 blocks of Riverside Court and downstream of Princess Road, as far as reasonably practicable. The options under investigation are discussed further in the Other mitigation measures section below.

Other mitigation measures

5.3.232 The hydraulic modelling has identified two flood risk impact mechanisms associated with the relocation of the vent shaft. The mitigation measures for the associated effects are presented below.

Impact of changes in local flood conveyance

5.3.233 The raised ground surrounding The Hollies vent shaft will change the pattern of flood conveyance in the local area. During the 1 in 100 year +CC event and the 1 in 100 year event this leads to minor increases in peak flood level to two high value residential receptors along the B5167 Palatine Road, already at risk of flooding. The next stage of the design development process will involve incorporation of topographical survey information to confirm the threshold levels of the properties identified using the hydraulic model as being potentially at significant increased risk of flooding. If any effects are confirmed, mitigation could include property level resilience measures to help protect these individual properties from flooding.

5.3.234 In addition, the AP2 revised scheme could lead to earlier overtopping of flood defences on Northenden Golf Club, and earlier circumvention of the Beeches Mews flood wall during the 1 in 100 year event. Therefore, further mitigation will be required. Additional flood risk management measures will be explored, during the passage of the Bill, to reduce any residual impacts on peak flood levels, during the 1 in 100 year event, as far as reasonably practicable. The avoidance and mitigation options that could reduce flood impacts may include an extension of the existing Beeches Mews flood wall to the north, to maintain the level of flood protection currently in place.

Impact of loss of floodplain storage

5.3.235 The loss of floodplain storage due to the presence of The Hollies vent shaft leads to a potential 0.2% increase in peak flood flow passed downstream of Princess Road bridge during the 1 in 100 year event. This has the potential to lead to minor increases in peak flood level overtopping flood defences downstream of the AP2 revised scheme in areas already at risk of flooding.

5.3.236 Additional modelling will be undertaken, during the passage of the Bill, to identify any additional avoidance and/or mitigation measures to offset the loss of floodplain storage and avoid increasing the peak flow in the River Mersey downstream of Princess Road. The mitigation options that could reduce flood impacts include provision of volume for volume replacement flood storage, in the immediate vicinity of the vent shaft and lowering land elsewhere within the River Mersey catchment to create a managed washland area. This would require additional land and therefore a separate AP amendment, during later stages of the Bill passage.

5.3.237 Further topographical survey, other surveys as required, hydraulic modelling, including incorporation of the replacement flood storage, design development, and refinement of the additional avoidance and/or mitigation measures will be undertaken during passage of the Bill and design development.

Summary of likely residual significant effects

5.3.238 The preliminary assessment work carried out to date has identified mitigation measures to ensure no significant effects on the 14 residential receptors around Beeches Mews. However, until such time as other avoidance and mitigation measures have been identified, residual significant effects will remain on the following receptors:

- residual significant effects on two multi-occupancy residential properties on the B5167 Palatine Road which remain the same as reported in the main ES;
- new potential residual significant effects on unquantified receptors downstream of Princess Road; and
- a new residual significant effect on Northenden Golf Club club house.

5.3.239 Due to the existing flood risk at Northenden Golf Club, additional mitigation is unlikely to be possible and the increase in flood risk is likely to remain.

5.3.240 The AP2 revised scheme will lead to the removal of significant effects from 19 receptors reported in SES2, in the areas around the B5167 Palatine Road and East of Didsbury flood storage basin (Stenner Lane).

Cumulative effects

5.3.241 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

Community

5.3.242 The amendment will result in new major adverse residual significant effects on:

- The Manchester Islamic Educational Trust Campus due to the demolition of the former West Didsbury Sure Start Centre, significant construction noise effects, loss of parking and change to access. On a precautionary basis, this will result in the permanent loss of this resource; and
- approximately 190 residential properties on Mersey Road, West Didsbury due to new noise and visual effects.

5.3.243 The amendment will result in a new moderate adverse residual significant effect on approximately six residential properties on Mersey Meadows, West Didsbury due to new noise and visual effects.

Landscape and visual

5.3.244 The amendment will give rise to different likely residual significant construction effects, for the Mersey Valley Open Space LCA. The effect will remain **moderate** adverse (significant).

5.3.245 The amendment will give rise to a new likely residual significant construction effects, after implementation of construction phase mitigation, at the following new viewpoints:

- view west from Mersey Meadows (336-02-017). The effect will be **moderate** adverse (significant);
- view south-east from Footpath Manchester 235 (336-03-018). The effect will be **moderate** adverse (significant);
- view south-east from the Trans Pennine Trail, the Mersey Path and Footpath Manchester 139 (336-02-019) The effect will be **moderate** adverse (significant);
- view south-east from Barlow Moor Road (336-02-020). The effect will be **major** adverse (significant); and
- view west from Barlow Moor Road (336-02-021). The effect will be **moderate** adverse (significant).

Socio-economics

5.3.246 The amendment will require the demolition of the former West Didsbury Sure Start Centre and loss of parking of the proposed Manchester Islamic Educational Trust Campus. This receptor will be subject to a new permanent adverse residual direct effect, which is significant.

Sound, noise and vibration

5.3.247 The amendment will give rise to new likely temporary residual adverse significant construction noise and vibration effects on the residential community of Didsbury West, in the vicinity of Mersey Meadows, Manchester.

5.3.248 The amendment will give rise to a new likely temporary residual adverse significant construction noise effect on the residential community of Didsbury West, in the vicinity of Mersey Road, Manchester.

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

- Britannia Country House Hotel, Palatine Road, Manchester;
- Manchester Islamic Educational Trust, Barlow Moor Road, Manchester;
- The Bright Horizons Day Nursery, Barlow Moor Road, Manchester; and
- Didsbury Central Mosque, Burton Road, Manchester.

Traffic and transport

5.3.250 The amendment will give rise to the following new likely residual temporary significant effects:

- major adverse significant effect on non-traffic related severance for users of Hollies Path, due to an increase in journey length of up to 919m; and
- major adverse significant effect on parking and loading, due to the temporary loss of 127 off-street parking spaces at the Manchester Islamic Educational Trust.

Water resources and flood risk

5.3.251 The preliminary assessment work carried out to date has identified mitigation measures to ensure no significant effects on the 14 residential receptors around Beeches Mews. However, until such time as other avoidance and mitigation measures have been identified, residual significant effects will remain on the following receptors:

- residual significant effects on two multi residential properties on the B5167 Palatine Road which remain the same as reported in the main ES;
- new potential residual significant effects on unquantified receptors downstream of Princess Road; and
- a new residual significant effect on Northenden Golf Club club house.

Operation

Traffic and transport

5.3.252 The amendment will give rise to a new likely residual permanent major adverse significant effect on parking and loading at the Manchester Islamic Educational Trust, due to the permanent loss of 54 off-street parking spaces.

Summary of likely residual significant effects that will be removed

Construction

Community

5.3.253 The amendment will result in the removal of a temporary and permanent residual significant effect on Withington Golf Club.

Ecology and biodiversity

5.3.254 The amendment will remove the temporary adverse effect on great crested newt population GCNP1.7.5 reported in the main ES, which was significant at up to county/metropolitan level.

Landscape and visual

5.3.255 The amendment will remove likely residual significant construction effects at the following viewpoints:

- view north-east from the B5167 Palatine Road, the Mersey Path and Footpath Manchester 139 (335-03-008);
- view north-west from Footpath Manchester 139, Footpath Manchester 212 and the River Mersey (335-03-009);
- view south from the B5167 Palatine Road and Footpath Manchester 211, (335-02-010);
- view west from Footpath Manchester 211 and Withington Golf Course, (high sensitivity receptors) (335-03-011); and
- view south-west from the B5167 Palatine Road (336-02-003).

5.3.256 The amendment will remove likely residual significant night-time construction effects at the following viewpoints:

- view south from the B5167 Palatine Road and Footpath Manchester 211, (335-02-010); and
- view south-west from the B5167 Palatine Road (336-02-003).

Water resources and flood risk

5.3.257 The AP2 revised scheme will lead to the removal of significant effects from 19 receptors reported in SES2, in the areas around the B5167 Palatine Road and East of Didsbury flood storage basin (Stenner Lane).

Operation

Landscape and visual

5.3.258 The amendment will remove likely significant operation effects at view south from the B5167 Palatine Road and Footpath Manchester 211, (335-02-010).

5.4 Change to Bill powers required for the modifications to the Wilmslow Road vent shaft headhouse (AP2-007-004)

5.4.1 The Bill provides for the Manchester tunnel and Wilmslow Road vent shaft (see Volume 2, MA07 Map Book: map CT-06-361, F6 to G6 in the main ES).

5.4.2 Since the main ES, additional work has identified the requirement to increase the height of the vent shaft headhouse. The change to the height of the headhouse will be from 7.3m to 12.7m and is due to changes in railway system requirements. This increase in height by 5.4m is to accommodate a redesign of the tunnel ventilation system and the addition of a parapet around the roof of the structure. The fans will be reduced from three to two and remain in a vertical orientation within the shaft (see SES2 and AP2 ES Volume 2, MA07 Map Book: Map CT-06-361, F5 to F6 and G5 to G6.

5.4.3 The amendment will be constructed from the Wilmslow Road vent shaft satellite compound and will be completed within the indicative construction programme for this compound provided in Section 6.

5.4.4 No additional land is required for the amendment. However, a change to Bill powers is required to accommodate the increased headhouse height (see SES2 and AP2 ES Volume 2, MA07 Map Book: maps CT-06-361, G5 and F6 to G6).

Topics included in the AP2 assessment

5.4.5 The assessment of this amendment has identified new, different or removed likely significant effects for landscape and visual.

5.4.6 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, 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 traffic and transport.

Landscape and visual

Scope, assumptions and limitations

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

5.4.8 This amendment has the potential to result in new or different operational visual effects only. Therefore, there is no construction phase visual assessment and no construction or operational phase landscape assessment.

5.4.9 All visual effects arising from this amendment are reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. The locations of significantly affected viewpoints during the operational phase are shown in the SES2 and AP2 ES Volume 2, MA07 Map Book: Map Series LV-04.

Environmental baseline

Existing baseline

5.4.10 The baseline visual information is as described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. A summary of the visual baseline information relevant to the assessment of the amendment is provided below.

Visual baseline

5.4.11 The amendment has the potential to significantly affect three viewpoints. These viewpoints are described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07 and summarised below.

View north-east from the B5093 Wilmslow Road (medium-high sensitivity receptors) (336-02-009)

5.4.12 This viewpoint is representative of views experienced by residents of properties off the B5093 Wilmslow Road, Ferndene Road, and cyclists travelling along the Wilmslow Road cycleway. In the near distance is the B5093 Wilmslow Road, with associated cycleway and footway, and edged by red brick front garden walls. In the middle distance and into the background, the view follows the B5093 Wilmslow Road. To the north is Christie Hospital Car Park D enclosed by a low-level brick wall topped by a green mesh security fence. The grassed verges adjacent to the car park include several mature trees which are prominent features within the view. The background comprises a combination of built form and vegetation with rooflines of houses and garden trees seen against the skyline. During the summer, the trees

between the B5093 Wilmslow Road and the hospital car park further filter views to the residential properties beyond and form prominent skyline features.

View west from Lynway Drive (medium-high sensitivity receptors) (336-02-011)

5.4.13 This viewpoint is representative of views experienced by residents of properties off Lynway Drive and Ferndene Road and Ferndene Gardens. Lynway Drive is bordered by the footway and brick-walled front garden boundaries, some with hedges. The roofs of the properties on Lynway Drive are seen against the skyline and largely prevent visibility beyond. The residential properties on the western side of Lynway Drive and Ferndene Gardens have views west and north over rear boundaries towards the Christie Hospital Car Park D. Occasional car park trees and street light columns are visible above the boundary wall. Gaps between the houses allow visibility of trees within the Christie Hospital Car Park D and rooflines of some properties on the B5093 Wilmslow Road to the north-west and Parkville Road to the north. The additional leaf cover in summer further filters all background views of built form and trees become the focus of skyline views.

View south-west from Parkville Road (medium-high sensitivity receptors) (336-02-012)

5.4.14 This viewpoint is representative of views experienced by residents of properties off Parkville Road and apartments on the B5093 Wilmslow Road. Parkville Road is characterised by two storey semi-detached properties with front garden boundaries comprising hedges, tree planting, low brick walls, and railings. Longer views are largely curtailed by the houses at the western end of Parkville Road, but where gaps allow, there is visibility of the rooflines of properties on Lynway Drive, chimneys of houses at Ferndene Gardens and trees within the Christie Hospital Car Park D off the B5093 Wilmslow Road. Properties to the southern side of Parkville Road have views south-west over rear gardens and boundary fences towards the Christie Hospital Car Park D. Views from apartments on the B5093 Wilmslow Road are largely screened by intervening buildings and vegetation. In summer, the trees in leaf within the Christie Hospital Car Park D further filter views towards properties on Lynway Drive and Ferndene Gardens.

Future baseline

5.4.15 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2038.

5.4.16 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.4.17 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts for landscape and visual.

Effects arising from operation

Avoidance and mitigation measures

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

Assessment of impacts and effects

Visual assessment

View north-east from the B5093 Wilmslow Road (medium-high sensitivity receptors) (336-02-009)

5.4.19 At year 1, the main ES reported a **moderate** adverse (significant) effect for residents of the B5093 Wilmslow Road and Ferndene Road of **high** susceptibility and cyclists travelling along the Wilmslow Road cycleway of lower susceptibility, all with **medium** value views. This would be due to a noticeable change in the streetscape in the middle distance of the view, with the introduction of the Wilmslow Road vent shaft headhouse which would replace Christie Hospital Car Park D and would foreshorten the view.

5.4.20 At year 1, the amendment will slightly change the visual effect at this viewpoint as the Wilmslow Road vent shaft headhouse will have a similar footprint to the original scheme but will be taller than the surrounding residential properties. At year 1 mitigation planting will be immature and will not assist with the integration of the scheme into views. The amendment will therefore give rise to a different significant effect; however, the level of significance of the effect will remain as reported in the main ES.

5.4.21 At year 15 and 30 the level of significance of the effect will reduce to non-significant as reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

View west from Lynway Drive (medium-high sensitivity receptors) (336-02-011)

5.4.22 At year 1 the main ES reported a **moderate** adverse (significant) effect for residents of Lynway Drive, Ferndene Road and Ferndene Gardens of **high** susceptibility and with **medium** value views. This would be as a result of the loss of intervening trees, removed during construction, opening up near-distance views towards the Wilmslow Road vent shaft headhouse replacing the Christie Hospital Car Park D.

5.4.23 At year 1, the amendment will change the visual effect at this viewpoint due to the presence of a taller headhouse building in proximity to properties. Although the amendment will result in a minor change in the area available for mitigation planting adjacent to properties, this would not be perceptible as landscape mitigation planting will not provide any screening or integration at year 1. The amendment will therefore give rise to a different significant effect; however, the level of significance of the effect will remain as reported in the main ES.

5.4.24 In year 15, the main ES reported a **low** magnitude of change and a **minor** adverse (non-significant) effect. This would be due to the presence of maturing landscape mitigation planting that would help partially screen the Wilmslow Road vent shaft headhouse and aid integration of the structures into the wider landscape.

5.4.25 At year 15, the amendment will change the visual effect at this viewpoint due to the presence of a taller headhouse building in proximity to properties. The Wilmslow Road vent shaft headhouse will be visible beyond and above the line of maturing landscape mitigation planting. However, the reduction in the area available for mitigation planting, adjacent to the properties at Ferndene Gardens, will limit the depth and effectiveness of screen planting in views north towards the headhouse. There will be a **medium** magnitude of change and a **moderate** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.

5.4.26 In year 30, the main ES reported a **low** magnitude of change and a **minor** adverse (non-significant) effect. This would be due to greater maturity of landscape mitigation planting that would further filter views of the lower and middle sections of Wilmslow Road vent shaft headhouse and integrate the original scheme elements into the wider landscape.

5.4.27 At year 30, the amendment will change the visual effect at this viewpoint, as the taller headhouse will be visible beyond and above the maturing mitigation planting. 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.

View south-west from Parkville Road (medium-high sensitivity receptors) (336-02-012)

5.4.28 At year 1 the main ES reported a **moderate** adverse (significant) effect for residents of Parkville Road and apartments on the B5093 Wilmslow Road of **high** susceptibility with **medium** value views. This would be as a result of the demolition of buildings on the B5093 Wilmslow Road and removal of established trees in the Christie Car Park D, during construction, which would open up near-distance views from residential properties towards the Wilmslow Road vent shaft headhouse.

5.4.29 At year 1, the amendment will change the visual effect at this viewpoint as a result of the increase in height of the headhouse. Although the amendment will result in a minor change in the area available for mitigation planting, this would not be perceptible as landscape mitigation planting will not provide any screening or integration at year 1. The amendment will therefore give rise to a different significant effect; however, the level of significance of the effect will remain as reported in the main ES.

5.4.30 In year 15, the main ES reported a **low** magnitude of change and a **minor** adverse (non-significant) effect. This would be due to the presence of maturing landscape mitigation planting that would help partially screen the Wilmslow Road vent shaft headhouse and aid integration of the structures into the wider landscape.

5.4.31 At year 15, the amendment will increase the visual effect at this viewpoint due to the presence of a taller headhouse building in proximity to properties. The change in the area available for mitigation planting adjacent to the property boundaries along Parkville Road will have a limited influence on the depth and effectiveness of screen planting. Views of the Wilmslow Road vent shaft headhouse will be filtered but it would remain visible above and beyond the line of maturing landscape mitigation planting. There will be a **medium** magnitude of change and a **moderate** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.

5.4.32 In year 30, the main ES reported a **low** magnitude of change and a **minor** adverse (non-significant) effect. This would be due to the greater maturity of landscape mitigation planting that would further screen and integrate the Wilmslow Road vent shaft headhouse into the wider landscape.

5.4.33 At year 30, the amendment will change the visual effect at this viewpoint, as the taller headhouse will be filtered but would remain visible above and beyond the maturing mitigation planting. 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

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

Summary of likely residual significant effects

5.4.35 In many cases, significant effects will reduce over time as the proposed mitigation planting matures and reaches its designed intention. However, the amendment will give rise to new likely residual significant operation effects, at the following viewpoints:

- view west from Lynway Drive (336-02-011). The effect will increase from **minor** adverse (non-significant) to **moderate** adverse (significant); and
- view south-west from Parkville Road (336-02-012). The effect will increase from **minor** adverse (non-significant) to **moderate** adverse (significant).

Cumulative effects

5.4.36 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

Operation

Landscape and visual

5.4.37 The amendment will give rise to new likely residual significant operation effects at the following viewpoints:

- view west from Lynway Drive (336-02-011). The effect will increase from **minor** adverse (non-significant) to **moderate** adverse (significant); and
- view south-west from Parkville Road (336-02-012). The effect will increase from **minor** adverse (non-significant) to **moderate** adverse (significant).

5.5 Change to Bill powers required for modifications to the Birchfield Road vent shaft headhouse (AP2-007-005)

5.5.1 The Bill provides for the Manchester tunnel and Birchfield Road vent shaft headhouse (see Volume 2, MA07 Map Book: map CT-06-363, A6 in the main ES).

5.5.2 Since the main ES, additional work has identified the requirement for the Birchfield Road vent shaft and headhouse to be reconfigured to accommodate a redesign of the tunnel ventilation system. To minimise the surface profile and efficiency of the headhouse and ventilation exhaust structure, the fan room level of the redesigned headhouse will be contained within an L-shaped basement. The fans will be reduced from three vertical fans in the original scheme to two horizontal fans.

5.5.3 The ventilation shaft internal diameter will be reduced from 24m to 21m. Rail systems equipment rooms will be located within the shaft where possible to minimise headhouse size at the surface. As a result, the dimensions of the headhouse will reduce from 30m by 30m and 7.8m in height to 28.2m by 27.9m and 5.8m in height plus a 0.9m high parapet around the roof. An additional ventilation exhaust will also be installed, with dimensions of 18.9m by 5.6m and 3.3m high (see SES2 and AP2 ES Volume 2, MA07 Map Book: map CT-06-362, J5 to J6 and map CT-06-363, A5 to A6).

5.5.4 The vent shaft permanent compound area will be expanded to allow for the increase in the combined headhouse and exhaust size, from 0.4ha to 0.6ha. The compound surface water attenuation tank will be increased in size from 250m^3 to 450m^3 to accommodate the increase of impermeable surfaces that limit infiltration within the compound.

5.5.5 The amendment will be constructed from the Birchfield Road vent shaft satellite compound and will be completed within the indicative construction programme for this compound provided in Section 6.

5.5.6 No additional land is required for the amendment. However, a change to Bill powers is required to allow the vent shaft permanent compound design updates (see SES2 and AP2 ES Volume 2, MA07 Map Book: maps CT-06-362, J5 to J6 and map CT-06-363, A5 to A6).

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: landscape and visual; and water resources and flood risk.

5.5.8 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, 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 traffic and transport.

Landscape and visual

Scope, assumptions and limitations

5.5.9 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.

5.5.10 This amendment has the potential to result in new or different construction and operational visual effects only. Therefore, there is no construction or operational phase landscape assessment.

5.5.11 All visual effects arising from this amendment are reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. The locations of significantly affected viewpoints during construction and operation are shown in the SES2 and AP2 ES Volume 2, MA07 Map Book: Map Series LV-03 and LV-04, respectively.

Environmental baseline

Existing baseline

5.5.12 The baseline visual information is as described in in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. A summary of the visual baseline information relevant to the assessment of the amendment is provided below.

Visual baseline

5.5.13 The amendment has the potential to affect two viewpoints. These viewpoints are described in the SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. The amendment has the potential to significantly affect one of these viewpoints which is summarised below.

View east from Footpath Manchester 156 and the A34 Birchfields Road (medium-high sensitivity receptors) (337-02-001)

5.5.14 This viewpoint is representative of views experienced by residents of properties off the A34 Birchfields Road and recreational users of Footpath Manchester 156. In the near distance is the A34 Birchfields Road which is tree-lined, beyond which the flat landform allows open views towards the car park of Fallowfield Retail Park to the south-east. The skyline is punctuated by lighting columns, signage and trees. To the north, visibility towards the middle distance is limited by the trees along the western boundary of Birchfields Primary School. To the east, the red brick and white rendered concrete retail buildings are prominent in the view and the roof lines of Fallowfield Retail Park form the skyline. Overhead line equipment associated with the South Trans Pennine Styal Railway Line can be seen in part, appearing above the roofline of the retail buildings. In summer, foliage of boundary vegetation further obscures visibility of Birchfields Primary School to the north.

5.5.15 At night, the A34 Birchfields Road and the existing Fallowfield Retail Park area are lit. The surrounding area is also well lit, typical of an urban area.

Future baseline

5.5.16 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025 and 2038.

5.5.17 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.5.18 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts for landscape and visual.

Effects arising during construction

Avoidance and mitigation measures

5.5.19 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 Footpath Manchester 156 and the A34 Birchfields Road (medium-high sensitivity receptors) (337-02-001)

5.5.20 The main ES reported a **moderate** adverse (significant) effect for residents of properties off the A34 Birchfields Road and recreational users of Footpath Manchester 156 of high susceptibility and with medium value views. This would be due to the introduction of large-scale construction activity, in the near and middle distance of the view, associated with construction of Birchfield Road vent shaft and Birchfields Road vent shaft auto-transformer station.

5.5.21 The amendment will slightly change the visual effect at this viewpoint, as the construction of Birchfields Road vent shaft auto-transformer station will be brought closer in the view for residents and footpath users, due to reconfiguration of the construction compound. The amendment will therefore give rise to a different significant effect; however, the level of significance of the effect will remain as reported in the main ES.

5.5.22 A photomontage illustrating this scenario from this viewpoint is included in the SES2 and AP2 ES, Volume 5, Appendix: LV-001-0MA07, Part 3.

Other mitigation measures

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

Summary of likely residual significant effects

5.5.24 The amendment will give rise to a different likely residual significant construction effect at the view east from Footpath Manchester 156 and the A34 Birchfields (337-02-001) after implementation of construction phase mitigation. The effect will remain **moderate** adverse (significant).

Cumulative effects

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

Effects arising from operation

Avoidance and mitigation measures

5.5.26 Changes have been made to the environmental mitigation to reflect the increase in footprint of the Birchfields Road vent shaft headhouse and Birchfields Road auto-transformer station. This includes new screen planting to the western boundary along the A34 Birchfields Road and hedgerow planting along the northern and southern boundaries.

Assessment of impacts and effects

Visual assessment

View east from Footpath Manchester 156 and the A34 Birchfields Road (medium-high sensitivity receptors) (337-02-001)

5.5.27 At year 1 the main ES reported a **moderate** adverse (significant) effect for residents of A34 Birchfields Road, users of Footpath Manchester 156 and visitors to Birchfields Primary School of **high** susceptibility and with **medium** value views. This would be due to the northern part of Fallowfield Retail Park car park being replaced with Birchfields Road vent shaft headhouse and Birchfields Road vent shaft auto-transformer station in the middle distance of the view and the presence of hoarding around the land to be returned to suitable development use in the near distance.

5.5.28 At year 1, the amendment will change the visual effect at this viewpoint due to the increase in footprint of the above ground buildings, and the reconfiguration of the compound area, replacing the land to be returned to suitable development with the Birchfields Road vent shaft auto-transformer station. The mitigation planting will be immature at year 1 and will provide limited screening and integration into views. The amendment will therefore give rise to a different significant effect; however, the level of significance of the effect will remain as reported in the main ES.

5.5.29 A photomontage illustrating this scenario from this viewpoint is included in the SES2 and AP2 ES, Volume 5, Appendix: LV-001-007, Part 3.

5.5.30 At year 15 and 30, the level of significance of the effect will reduce to non-significant as reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

Other mitigation measures

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

Summary of likely residual significant effects

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

Cumulative effects

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

Water resources and flood risk

Scope, assumptions and limitations

5.5.34 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. This amendment has the potential to result in new or different significant construction effects on groundwater resources only. Therefore, there are no construction effects on surface water or flood risk and no operational assessment for water resources and flood risk.

Environmental baseline

Existing baseline

5.5.35 The baseline water resources and flood risk information is as described in Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES. New baseline information is reported in Section 2 of this report. A summary of the baseline information relevant to the assessment of this amendment is provided below.

Groundwater

5.5.36 As set out in the main ES, the superficial geology that underlies the HS2 route in this area is glacial till. This is classified as a Secondary (Undifferentiated) aquifer that may supply baseflow to watercourses or may store and yield limited amounts of groundwater for supply. It is, therefore, defined as a moderate value receptor.

5.5.37 There are two bedrock geology units mapped as underlying the HS2 route in this area; the Collyhurst Sandstone Formation and the Halesowen Formation. The Collyhurst Sandstone Formation (part of the Appleby Group) is classified as a Principal aquifer. Principal aquifers can provide water supplies that are of strategic importance and can also contribute an important component of baseflow to rivers. This has, therefore, been assessed as a high value receptor. The Halesowen Formation (part of the Warwickshire Group) is a Secondary A aquifer. Such aquifers can provide a component of baseflow to rivers and for water supply. Therefore, this aquifer has been classified as a moderate value receptor.

5.5.38 The two Water Framework Directive[28] (WFD) waterbodies that underlay the elements of this amendment are:

- Weaver and Dane Quaternary Sand and Gravel Aquifers. Under the 2019 WFD assessment cycle classification, it has poor overall status due to its quality/chemical status. The objective is to reach good overall status by 2027. At present, the reasons for

[28] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (SI 2017 No. 407). Available online at: https://www.legislation.gov.uk/uksi/2017/407/made.

not achieving good status are due to diffuse pollution from agricultural and rural land management practices and other unknown reasons; and

- Manchester and East Cheshire Permo-Triassic Sandstone Aquifers. Under the 2019 WFD assessment cycle classification, it has poor overall status due to both its quality/chemical status and quantitative status. The objective was to reach good overall status by 2021. At present, the reasons for not achieving good overall status are largely due to saline intrusion.

Future baseline

5.5.39 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.5.40 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

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

Effects arising during construction

Avoidance and mitigation measures

5.5.42 The avoidance and mitigation measures specific to water resources and flood risk are set out in the Volume 2, Community Area report: Davenport Green to Ardwick (MA07) 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

5.5.43 This amendment includes a new basement structure to accommodate the changes from vertical to horizontally mounted fans. This 8.5m deep basement will be constructed within a continuous piled box of approximately 64m by 28m. The piles will extend through the superficial glacial till deposits into the underlying Appleby Group, Collyhurst Sandstone Formation. This structure could therefore form a permanent barrier to groundwater movement in the glacial till in this area. Similarly, the structure will form a partial permanent barrier to groundwater flow in the upper parts of the Collyhurst Sandstone Formation. Given the thickness of the aquifer, groundwater is likely to be able to move around the obstruction but a partial barrier to flow may be formed. Groundwater levels could rise on the upgradient side of the vent shaft, potentially giving rise to groundwater flooding at the surface at times of high groundwater levels, or groundwater flooding of any existing basements.

5.5.44 A land drainage solution has been included within the design to allow groundwater to flow around the basement structure of the new proposed fan room to facilitate re-infiltration of water on the south-western side. With this mitigation in place, no new or different groundwater flooding significant effects are anticipated due to this amendment.

Other mitigation measures

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

Summary of likely residual significant effects

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

Cumulative effects

5.5.47 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

Landscape and visual

5.5.48 The amendment will give rise to a different likely residual significant construction effect at the view east from Footpath Manchester 156 and the A34 Birchfields (337-02-001) after implementation of construction phase mitigation. The effect will remain **moderate** adverse (significant).

5.6 Additional land permanently required for the diversion of Blackbrook Culvert (AP2-007-006)

5.6.1 The Bill provides for tunnelling activities beneath Blackbrook Culvert, an existing culverted watercourse running in a south-east/north-west orientation beneath the Siemens Ardwick Train Care Facility and adjacent railway lines to the south. The HS2 route would pass beneath Blackbrook Culvert (see Volume 2, MA07 Map Book: map CT-06-364, I5 to I6 in the main ES).

5.6.2 Since the main ES, additional work has identified a risk of potential damage to the Blackbrook Culvert structure due to HS2 tunnelling works. To mitigate this impact, a diversion of the culverted watercourse will be provided to remove the risk of damage to the existing culvert.

5.6.3 The permanent diversion works comprise three new manholes:

- Manhole A located in the eastern extent of the Universal Square office complex property and north of the Olympic Freight Terminal;
- Manhole B located between the Network Rail tracks and Siemens Ardwick Train Care Facility; and
- Manhole C located in the Network Rail embankment to the north of Anthony Close (northeast branch), which will link two new pipes to divert the existing culvert above the HS2 tunnels south of the Siemens Ardwick Train Care Facility.

5.6.4 Manhole A, B and C will all be 2.1m in internal diameter. The pipe length between Manhole A and Manhole C will be 120m. The pipe length between Manholes B and C will be 30m. Both pipes will have an internal diameter of 0.9m and will be approximately 7m below ground level. The section of existing culvert made redundant by the diversion will be backfilled to prevent instability (See SES2 and AP2 ES Volume 2, MA07 Map Book: map CT-06-364, I5 to I6).

5.6.5 The amendment will be constructed from the Manchester tunnel north portal main compound and will be completed within the indicative construction programme for this compound provided in Section 6.

5.6.6 The land required for the amendment is outside the limits of the Bill. The amendment will result in the permanent requirement of approximately 1.7ha of additional land. A change to Bill powers is required to enable access for the maintenance of the culvert (See SES2 and AP2 ES Volume 2, MA07 Map Book: map CT-06-364, I3 to I6 and H4).

Topics included in the AP2 assessment

5.6.7 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; sound, noise and vibration; and traffic and transport.

5.6.8 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, 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 traffic and transport.

Community

Scope, assumptions and limitations

5.6.9 The assessment scope, key assumptions and limitations for community 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 community.

Environmental baseline

Existing baseline

5.6.10 A summary of baseline information relevant to the assessment of the amendment is provided below.

5.6.11 Residential properties are located to the south of land required for construction of the amendment in West Gorton. The nearest residential properties are located on Anthony Close, immediately to the south of land required for the construction of the amendment. The area has a number of industrial estates located to the north, east and west of the land required for construction of the amendment.

Future baseline

5.6.12 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.6.13 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.6.14 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts for community.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.6.16 This amendment will result in a new moderate adverse in-combination effect on approximately 45 residential properties on Anthony Close, Ardwick. New significant noise effects are expected to combine with new significant visual effects for approximately six 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. 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

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

Summary of likely residual significant effects

5.6.18 The amendment will result in a new moderate adverse in-combination residual significant effect on approximately 45 residential properties on Anthony Close, Ardwick due to new noise and visual effects.

Cumulative effects

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

Health

Scope, assumptions and limitations

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

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

Environmental baseline

Existing baseline

5.6.22 A summary of baseline information relevant to the assessment of the amendment is provided below.

5.6.23 The area is urban in character. Residential properties are located to the south of land required for the construction of the amendment in West Gorton. The nearest residential properties are located on Anthony Close, immediately to the south of land required for the construction of the amendment. The area has a number of industrial estates located to the north, east and west of the land required for construction of the amendment.

Future baseline

5.6.24 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.6.25 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future

baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.6.26 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

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

Assessment of impacts and effects

5.6.28 This amendment will result in a new adverse neighbourhood quality effect for residents of Anthony Close, Ardwick. Construction noise is expected to be noticeable for approximately six months. Construction activities will be visible from street level. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, diminishing the amenity of the settlement.

Other mitigation measures

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

Cumulative effects

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

Landscape and visual

Scope, assumptions and limitations

5.6.31 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.

5.6.32 This amendment has the potential to result in new or different construction visual effects only. Therefore, there is no operational phase visual assessment and no construction or operational phase landscape assessment.

5.6.33 All visual effects arising from this amendment are reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. The locations of significantly affected viewpoints during the construction phase are shown in the SES2 and AP2 ES Volume 2, MA07 Map Book: Map Series LV-03.

Environmental baseline

Existing baseline

5.6.34 The baseline visual information is as described in in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. A summary of the visual baseline information relevant to the assessment of the amendment is provided below.

Visual baseline

5.6.35 The amendment has the potential to significantly affect one viewpoint. This viewpoint is described in the SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07 and summarised below.

View north from Anthony Close (medium-high sensitivity receptors) (340-02-001)

5.6.36 This viewpoint is representative of views experienced by residents of properties off Anthony Close. Two storey residential red brick properties, in the near-distance, front onto Anthony Close and frame the view. At the end of Anthony Close, a substantial brick wall with mature trees to the rear, screens the elevated Glossop Line, overhead line equipment and the Siemens Ardwick Train Care Facility. In summer months, the trees are more prominent in the view and fully screen views towards railway infrastructure and the train care facility.

Future baseline

5.6.37 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.6.38 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.6.39 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts for landscape and visual.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Visual assessment

View north from Anthony Close (medium-high sensitivity receptors) (340-02-001)

5.6.41 The main ES reported a **low** magnitude of change and a **minor** adverse (non-significant) effect for residents off Anthony Close of **high** susceptibility and with **medium** value views. This would be due to the introduction of construction activities associated with Manchester tunnel north portal main compound and the Manchester tunnel north portal satellite compound in the background of the view. The presence of the existing wall and trees at the end of Anthony Close would largely screen views.

5.6.42 The amendment will increase the visual effect at this viewpoint, due to the introduction of construction activity into near-distance views including localised vegetation clearance of trackside trees and scrub associated with the embankment along the Glossop Line, and the temporary, partial removal of the existing wall at the end of Anthony Close. 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

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

Summary of likely residual significant effects

5.6.44 The amendment will give rise to a new likely residual significant construction effect at view north from Anthony Close (340-02-001). The effect will increase from **minor** adverse (non-significant) to **moderate** adverse (significant).

Cumulative effects

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

Socio-economics

Scope, assumptions and limitations

5.6.46 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

5.6.47 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

5.6.48 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.6.49 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

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

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.6.52 The construction works for the diversion of Blackbrook Culvert will require the temporary loss of approximately 234 car parking spaces for nine months from the overspill car park of Universal Square, a group of offices accessed from Devonshire Street North. The operations of the businesses occupying this office block might be affected by the temporary loss of approximately 26% of the total car parking spaces. The sensitivity of this resource is medium as the businesses may be reliant on the parking spaces for employee and customer parking.

5.6.53 The magnitude is high, based on the number of jobs located at the site. The effect is major adverse and will therefore be a new temporary significant direct effect. 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

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

Summary of likely residual significant effects

5.6.55 The amendment will require loss of parking for Universal Square resulting in a direct temporary major adverse residual significant effect.

Cumulative effects

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

Sound, noise and vibration

Scope, assumptions and limitations

5.6.57 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.

Environmental baseline

Existing baseline

5.6.58 In the Davenport Green to Ardwick area, the updated sound modelling described in Section 2 has resulted in updates to the existing baseline sound levels at receptors adjacent to Anthony Close and in the community of Ardwick. 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: Davenport Green to Ardwick area (MA07) of the main ES.

5.6.59 The works associated with the amendment are closer to several dwellings on Anthony Close than works associated with the original scheme. Additional assessment locations have been added, which represent dwellings which were previously represented by other assessment locations in the main ES. The baseline sound levels at the additional assessment locations are presented in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000.

Future baseline

5.6.60 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.6.61 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.6.62 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

5.6.63 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

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

- two properties, 58 and 60 Anthony Close, Ardwick (assessment location ref.: 615183); and
- three properties, 52, 54, and 56 Anthony Close, Ardwick (assessment location ref.: 615184).

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

5.6.66 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

5.6.67 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 11. 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.

5.6.68 The amendment has the potential to introduce a new adverse noise effect at approximately 45 dwellings on Anthony Close, Ardwick (MA07-C-C9) where no noise effect was identified in the main ES. The predicted duration of the construction noise impact is up to six 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 11: 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)[29]	Type of significant effect	Time of day	Location	Cause (construction activities)[30]	Assumed approximate duration of impact
MA07-C-C9 (SV-03-326a)	Construction noise (New)	Daytime	Anthony Close, Ardwick: Approximately 45 dwellings in the vicinity of Anthony Close.	Culvert diversion. The typical and highest monthly noise levels are approximately 60dB to 80dB and 65dB to 85dB[31].	Up to six months

Other mitigation measures

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

Summary of likely residual significant effects

5.6.70 The amendment will give rise to a new likely temporary residual adverse significant construction noise effects on the residential community on Anthony Close, Ardwick.

Cumulative effects

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

Traffic and transport

Scope, assumptions and limitations

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

5.6.73 This amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for traffic and transport.

5.6.74 The assessment of the changes to traffic flows during construction and operation as a result of all AP2 amendments in combination with all SES2 changes is reported in Section 7.

[29] 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.

[30] 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.

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

5.6.75 The assessment in this section considers the potential effects on parking, loading and possessions. No effects on other traffic and transport topics, with the exception of traffic-related effects reported in Section 7, are considered to require reassessment as a result of the amendment.

Environmental baseline

Existing baseline

5.6.76 The baseline traffic and transport information is described in Section 14 of Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES, as amended in Section 2 of this report. A summary of the baseline information relevant to the assessment of the amendment is provided below.

5.6.77 There is off-street parking within the Davenport Green to Ardwick area. The off-street parking area of relevance to the assessment of this amendment is located at Universal Square, off the A665 Devonshire Street North.

5.6.78 There are a number of passenger and freight railways that run through the Davenport Green to Ardwick area. The railway of relevance to the assessment of this amendment is the Glossop Line.

Future baseline

5.6.79 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.6.80 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.6.82 The main ES reported no significant effects on parking and loading at Universal Square as a result of the original scheme. The amendment will result in the temporary loss of 234 off-street parking spaces from the overspill car park of Universal Square for a duration of nine months. This will give rise to a new temporary major adverse effect on parking and loading, which is significant.

5.6.83 The main ES reported that the original scheme would require a number of possessions in the Davenport Green to Ardwick area. The main ES reported that while individually these possessions were not considered significant the possessions would occur over a lengthy period and their combined impact was considered to have a minor adverse effect, which is significant.

5.6.84 The amendment will require one additional possession of up to 54 hours on the Glossop Line resulting from the diversion of the Blackbrook Culvert, with 27 and 72 hour possessions unchanged. This will increase the number of possessions of up to 54 hours in the area from four, as reported in the main ES, to five. This will not in isolation result in any new or different significant effects. The combined effects of all changes to possessions are reported in the SES2 and AP2 ES Volume 3, Route-wide effects.

Other mitigation measures

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

Summary of likely residual significant effects

5.6.86 The amendment will give rise to a new temporary major adverse residual significant effect on parking and loading, due to the loss of 234 off-street parking spaces at the overspill car park of Universal Square.

Cumulative effects

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

5.6.88 The assessment of combined effects associated with changes in traffic flows as a result of this amendment in combination with all SES2 changes and AP2 amendments is reported in Section 7.

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

Construction

Community

5.6.89 The amendment will result in a new moderate adverse in-combination residual significant effect on approximately 45 residential properties on Anthony Close, Ardwick due to new noise and visual effects.

Landscape and visual

5.6.90 The amendment will give rise to a new likely residual significant construction effect at view north from Anthony Close (340-02-001). after implementation of construction phase

mitigation. The effect will increase from **minor** adverse (non-significant) to **moderate** adverse (significant).

Socio-economics

5.6.91 The amendment will require loss of parking for Universal Square resulting in a direct temporary major adverse residual significant effect.

Sound, noise and vibration

5.6.92 The amendment will give rise to a new temporary residual adverse significant construction noise and vibration effects on the residential community on Anthony Close, Ardwick.

Traffic and transport

5.6.93 The amendment will give rise to a new temporary major adverse residual significant effect on parking and loading, due to the loss of 234 off-street parking spaces at the overspill car park of Universal Square.

5.7 Change in Bill powers for modifications to size, height and layout of Manchester tunnel north portal headhouse (AP2-007-007)

5.7.1 The Bill provides for the Manchester tunnel north portal, Manchester tunnel north porous portal, Manchester tunnel north portal building and Manchester tunnel (see SES2 and AP2 ES Volume 2, MA07 Map Book: map CT-06-365a, A5 and B5 in the main ES).

5.7.2 Since the main ES, additional work has identified that there is a need to change the design of the headhouse and headhouse compound to accommodate the revised spatial requirements for rail systems equipment and the addition of an access road and retaining wall to the south and east perimeter of the Manchester tunnel north portal compound. The amendments will consist of the following:

- increase the size of the headhouse from 27.9m by 25.5m to 29.5m by 26.2m to accommodate rail systems equipment; and
- alter the layout of the headhouse to minimise the headhouse footprint and improve access around buildings and structures.

5.7.3 The amendment will reduce the overall footprint of the Manchester tunnel north portal main compound from 0.45ha to 0.32ha.

5.7.4 The amendment will be constructed from the Manchester tunnel north portal main compound, within the indicative construction programme for this compound provided in Section 6.

5.7.5 No additional land is required for the amendment. However, a change to Bill powers is required for a proposed access road associated with the Manchester tunnel north portal compound and to accommodate the updated compound configuration. This will result in changes to the Limit of Deviation (LOD) for the headhouse and compound, with the LOD being increased into area of land adjacent to Blind Lane which is within the limits of the Bill and will also be partly required to construct the access road (see SES2 and AP2 ES Volume 2, MA07 Map Book: maps CT-06-364, I3 and I4 and CT-06-365a, A3 and A4).

Topics included in the AP2 assessment

5.7.6 The amendment is not considered to require a reassessment of the environmental effects or mitigation set out in the main ES and SES2 with respect to any environmental topics.

5.7.7 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, 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 traffic and transport.

5.8 Additional land permanently required for changes to design elements managed by the Manchester tunnel north portal main compound (AP2-007-008)

5.8.1 The Bill provides for the Manchester tunnel north portal main compound that will manage the construction of the Midland Street sectioning auto-transformer station, Electricity North West Limited (ENWL) substation and Manchester tunnel north portal building. The Bill also includes provision for a connection between HS2 and a future Northern Powerhouse Rail (NPR) route between Manchester and Leeds (see Volume 2, MA07 Map Book: map CT-06-365a, A5 to C5 in the main ES).

5.8.2 Since the main ES, following engagement with Transport for Greater Manchester, Transport for the North and Manchester City Council the need has been raised to:

- relocate the Midland Street sectioning auto-transformer station (SATS), as the original scheme location was impacting the potential route of the proposed Metrolink line;
- relocate the railway telecommunications mast located within the Midland Street sectioning auto-transformer station, as the original scheme location was close to the railway telecommunications mast within the Manchester tunnel north portal; and
- relocate the ENWL substation to remove the requirement for a temporary substation, reconfigure the Manchester tunnel north portal building and the addition of an active provision at the NPR Manchester to Leeds junction (see SES2 and AP2 ES Volume 2, MA07 Map Book: maps CT-06-364 I5 to J3.

5.8.3 The amendment will consist of the following (see the SES2 and AP2 ES Volume 2, MA07 Map Book: maps CT-06-364 I5 to J3):

- relocation of SATS compound from the north side of the HS2 route adjacent to Midland Street, to the south side of the HS2 route adjacent to the tunnel portal within the Ardwick area. The railway telecommunication mast will be removed from the SATS compound in this new location;
- a relocated railway telecommunication mast from Midland Street SATS compound will be located on the top of the platform core with radio equipment 15m above track level;
- relocation of the ENWL substation and provision of additional cabling adjacent to the relocated SATS compound;
- modifications to the Manchester tunnel north portal headhouse (see AP2-007-007) which interacts with this amendment;
- installation of a new access road, footways, verges, turning head, wastewater sewer and associated earthworks from Midland Street, tying in to the existing Rondin Road alignment adjacent to the existing Siemens depot. These changes will provide access to the relocated SATS, telecommunication mast and ENWL substation, Manchester tunnel north portal building and existing Siemens depot;
- a new maintenance access point and associated earthworks for the vehicle parking area and pedestrian access route will be added between Midland Street and the ENWL substation;
- surface water drainage facilities for the SATS compound will be provided to discharge directly to the proposed wastewater sewer along the compound access road;
- land drainage will be provided to the east of the HS2 route, to intercept surface water flows and will discharge into a sewer. This has been updated to suit the earthworks from the proposed compound access road; and
- the addition of a single track viaduct as part of the NPR Manchester to Leeds junction, between Ardwick box structure and Manchester to Leeds approach embankment.

5.8.4 The amendment will be constructed from the Manchester tunnel north portal main compound, within the indicative construction programme for this compound provided in Section 6.

5.8.5 The land required for the amendment is outside the limits of the Bill. The amendment will result in the permanent requirement for approximately 0.1ha of additional land (see SES2 and AP2 ES Volume 2, MA07 Map Book: map CT-06-364 I5 to J3).

Topics included in the AP2 assessment

5.8.6 The assessment of this amendment has identified new, different or removed likely significant effects for ecology and biodiversity.

5.8.7 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, 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 traffic and transport.

Ecology and biodiversity

Scope, assumptions and limitations

5.8.8 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.

5.8.9 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.

5.8.10 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.

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

Environmental baseline

Existing baseline

5.8.12 The baseline ecology and biodiversity information is as described in Section 7 of Volume 2, Community Area report: Davenport Green to Ardwick of the main ES and SES2. A summary of the baseline information relevant to the assessment of the AP2 amendment is provided below.

Habitats

5.8.13 The main ES reported an area of 0.6ha, which may qualify as open mosaic habitat on previously developed land, a habitat of principal importance within the land required for construction of the original scheme at Ardwick. On a precautionary basis, assumed open mosaic habitat is considered to be of up to district/borough value.

5.8.14 Habitats within the land required for construction of the amendment, additional to the habitat required for the original scheme include:

- a mixture of scrub, ephemeral/short perennial, semi-improved and species rich grassland covering an area of 0.7ha which is assumed to qualify as open mosaic habitat on previously developed land; and
- semi natural broadleaved woodland that is considered to be up to local/parish value.

Future baseline

5.8.15 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.8.16 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.8.17 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts for ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.8.19 On a precautionary basis, the main ES reported that the construction of the original scheme would result in the loss of 0.6ha of habitat which was assumed to qualify as open mosaic habitat on previously developed land. This would result in a permanent adverse effect at up to district/borough level. The amendment will result in the loss of an additional 0.7ha, increasing the total loss of assumed open mosaic habitat to a total of 1.3ha. This will result in a different permanent adverse effect. However this will not change the level of significance of the effect as reported in the main ES.

Other mitigation measures

Habitats

5.8.20 The main ES reported that 1ha of open mosaic habitat would be created within the land required for construction of the original scheme. An additional 1.7ha of open mosaic habitat will be created adjacent to the 1ha habitat creation reported in the main ES. Following establishment, the adverse effect on open mosaic habitat will be reduced to a level that is not significant.

Summary of likely residual significant effects

5.8.21 There are no changes to the likely residual significant construction ecology and biodiversity effects identified in the main ES as a result of the amendment.

Cumulative effects

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

5.9 Additional land temporarily required for the reconfiguration of Ardwick construction sidings (AP2-007-009)

5.9.1 The Bill provides for Manchester tunnel north portal construction sidings (see Volume 2, MA07 Map Book: maps CT-06-364, H9 to J6 and CT-06-365a, A6 to B6 in the main ES).

5.9.2 The sidings would be used to remove material excavated during works to construct the Manchester tunnel, Manchester tunnel north portal and box structure and the relocated Piccadilly Metrolink tram stop. In the original scheme, this excavated material would be transported off-site via rail. The Manchester tunnel north portal construction sidings would connect with the Glossop Line for the movement of excavated materials. This would reduce the volume of construction vehicles using the public road network.

5.9.3 Since the main ES, further work has identified constraints on the conventional rail network that limit both the number of trains and the timing of available train paths. These constraints mean that there will be a shortfall in the transportation capacity needed to keep pace with excavation activities, and the layout of the construction sidings will be reconfigured to provide additional storage capacity for the duration of the tunnel works and removal of all the tunnel excavated material (see SES2 and AP2 ES Volume 2, MA07 Map Book: mapCT-06-365a, A6 to A7 and B6 to B7.

5.9.4 To provide additional storage capacity, the following changes will be needed to the Manchester tunnel north portal construction sidings (with references to the SES2 and AP2 ES Volume 2, MA07 Map Book):

- railway sidings extended by 15m in length, with wider track alignment and associated earthworks (see map CT-06-365a, A6 to A7 in the SES2 and AP2 ES Volume 2, MA07 Map Book);
- permanent realignment of Rondin Road, forming a four-arm signalised junction with Ashton Old Road and Viaduct Street and associated changes to highway drainage (see map CT-06-365a, A6 to B6 in the SES2 and AP2 ES Volume 2, MA07 Map Book);
- permanent diversion of all utilities from the existing Rondin Road (see map CT-06-365a, A6 to B6 in the SES2 and AP2 ES Volume 2, MA07 Map Book);
- replacement planting for the loss of three trees located at the junction of Ashton Old Road and Viaduct Street within the construction compound boundary (see map CT-06-365a, B6 to B7 in the SES2 and AP2 ES Volume 2, MA07 Map Book); and
- an increase in the area of land for temporary stockpiles prior to removal off-site. Two additional areas of land outside the land required for construction of the original scheme will be provided, comprising one area of 2ha (adjacent to Ashton Old Road) and one area

of 1.5ha (adjacent to the junction of Ashton Old Road and Viaduct Street) (see map CT-06-365a, A6 to B6 in the SES2 and AP2 ES Volume 2, MA07 Map Book).

5.9.5 These changes to the layout of the sidings will be supplemented by the use of night-time trains to remove excavated material.

5.9.6 In addition to this reconfiguration of the Ardwick construction sidings, changes will be made to the volume of excavated material to be removed by road from:

- the tunnel construction; and
- the Metrolink box structure at Piccadilly Station.

5.9.7 The amendment will be constructed from the Manchester tunnel north portal satellite compound, within the indicative construction programme for this compound provided in Section 6.

5.9.8 The land required for the amendment is outside the limits of the Bill. The amendment will result in the temporary requirement for an additional 4ha of land (see SES2 and AP2 ES Volume 2, MA07 Map Book: maps CT-06-365a, A6 to A7 and B6 to B7).

Topics included in the AP2 assessment

5.9.9 The assessment of this amendment has identified new, different or removed likely significant effects for the following topics: historic environment; and landscape and visual.

5.9.10 The assessment of changes to traffic flows and traffic related effects as a result of all the SES2 changes and AP2 amendments, 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 traffic and transport.

Historic environment

Scope, assumptions and limitations

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

5.9.12 This amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for historic environment.

Environmental baseline

Existing baseline

5.9.13 The baseline historic environment information is described in Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES. A summary of the baseline information relevant to the assessment of the amendment is provided below.

5.9.14 There are no designated heritage assets relevant to the assessment of the amendment.

5.9.15 There is one non-designated heritage asset relevant to the assessment of the amendment. The site of a Brick Kiln off Gorton Road (MA07_0254) is of low value and lies within the land required for the amendment. The heritage value of the asset lies in its archaeological interest, due to the potential for archaeological remains to survive which may further understanding of the development of the post-medieval brick industry.

Future baseline

5.9.16 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.9.17 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.9.18 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on historic environment.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.9.20 The main ES reported no effects on the site of a Brick Kiln off Gorton Road (MA07_0254).

5.9.21 The site of a Brick Kiln off Gorton Road (MA07_0254) is located within the land required for the amendment and will be removed. This will constitute a new high adverse impact on a low value asset, resulting in a permanent moderate adverse significant effect.

Other mitigation measures

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

Summary of likely residual significant effects

5.9.23 The amendment will give rise to a new permanent moderate adverse residual significant effect on the site of a Brick Kiln off Gorton Road (MA07_0254).

Cumulative effects

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

Landscape and visual

Scope, assumptions and limitations

5.9.25 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.

5.9.26 This amendment has the potential to result in new construction and operational visual effects only. Therefore, there is no construction or operational phase landscape assessment.

5.9.27 All visual effects, arising from this amendment, are reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. The locations of significantly affected viewpoints during construction and operation are shown in the SES2 and AP2 ES Volume 2, MA07 Map Book: Map Series LV-03 and LV-04, respectively.

Environmental baseline

Existing baseline

5.9.28 The baseline visual information is as described in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. A summary of the visual baseline information relevant to the assessment of the amendment is provided below.

Visual baseline

5.9.29 The amendment has the potential to affect two viewpoints. These viewpoints are described in the SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07. The amendment has the potential to significantly affect one of these two viewpoints, which is a new viewpoint, and is summarised below.

View south-west from Wren Way (medium-high sensitivity receptors) (341-02-009)

5.9.30 This new viewpoint is located in an area where there will be changes from the original scheme and is representative of views experienced by residents in properties off Wren Way

and cyclists along the A635 Ashton Old Road. The near-distance view is of Wren Way and a block of flats at the junction with Rylance Street and the A635 Ashton Old Road. A grass verge with shrub and tree planting separates Wren Way from the A635 Ashton Old Road. To the south side of the A635 Ashton Old Road is an existing construction site, enclosed by a red brick wall, embankment (behind the wall) and mature boundary vegetation which also extends along Gorton Road. Gaps in the vegetation and earthworks allow glimpsed and filtered views of a large spoil mound and railway bridge in the background. Summer leaf cover provided by trees in the near and middle-distance further encloses the view and screens/partially screens the features beyond.

Future baseline

5.9.31 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025 and 2038.

5.9.32 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 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.9.33 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts for landscape and visual.

Effects arising during construction

Avoidance and mitigation measures

5.9.34 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 south-west from Wren Way (medium-high sensitivity receptors) (341-02-009)

5.9.35 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of **high** susceptibility and cyclists of lower susceptibility, all with **medium** value views, will experience a noticeable change to middle-distance views. The amendment will introduce areas for the storage of spoil, south of the viewpoint within the area of land required for construction. Residents will experience a noticeable change to middle-distance views as a result of the loss of mature boundary vegetation along the A635 Ashton Old Road and Gorton Road. Large-scale construction activity associated with the HS2 route will be seen in the background of the view, but largely screened by the existing viaduct, due to the loss of mature boundary vegetation along the A635 Ashton Old Road and Gorton Road.

There will be a **medium** magnitude of change and a **moderate** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.

Other mitigation measures

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

Summary of likely residual significant effects

5.9.37 The amendment will give rise to a new likely residual significant construction effect after implementation of construction phase mitigation, at the view south-west from Wren Way (341-02-009) which will be **moderate** adverse (significant).

Cumulative effects

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

Effects arising from operation

Assessment of impacts and effects

Visual assessment

View south-west from Wren Way (medium-high sensitivity receptors) (341-02-009)

5.9.39 This new viewpoint is located in an area where there will be changes from the original scheme. Residents of **high** susceptibility and cyclists of lower susceptibility, all with **medium** value views, will experience a noticeable change to middle-distance views. At year 1, the loss, during construction, of mature boundary vegetation along the A635 Ashton Old Road and Gorton Road will be noticeable within the view, and will open up views of the land returned for suitable development beyond. Replacement tree planting will be immature at Year 1. There will be a **medium** magnitude of change and a **moderate** adverse (significant) effect. The amendment will therefore give rise to a new significant effect.

5.9.40 At year 15 and 30 the level of significance of the effect will reduce to non-significant as reported in SES2 and AP2 ES Volume 5, Appendix: LV-001-0MA07.

Other mitigation measures

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

Summary of likely residual significant effects

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

Cumulative effects

5.9.43 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

Historic environment

5.9.44 The amendment will give rise to a new permanent moderate adverse residual significant effect on the site of a Brick Kiln off Gorton Road (MA07_0254).

Landscape and visual

5.9.45 The amendment will give rise to a new likely residual significant construction effect after implementation of construction phase mitigation, at view south-west from Wren Way (341-02-009) which will be **moderate** adverse (significant).

6 Construction programme

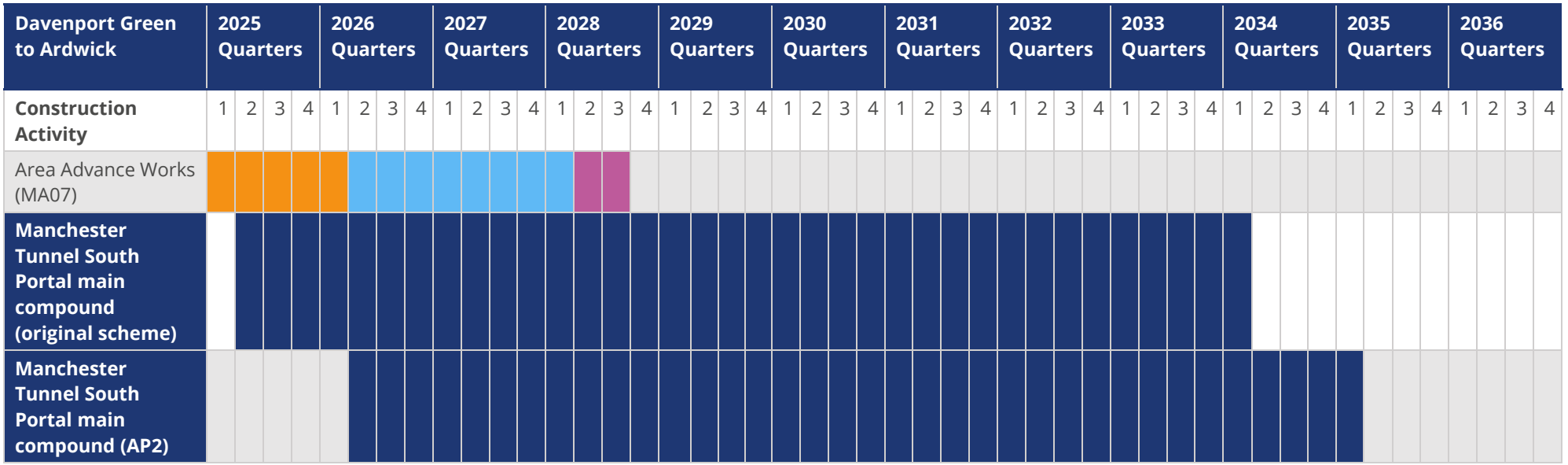
6.1 Introduction

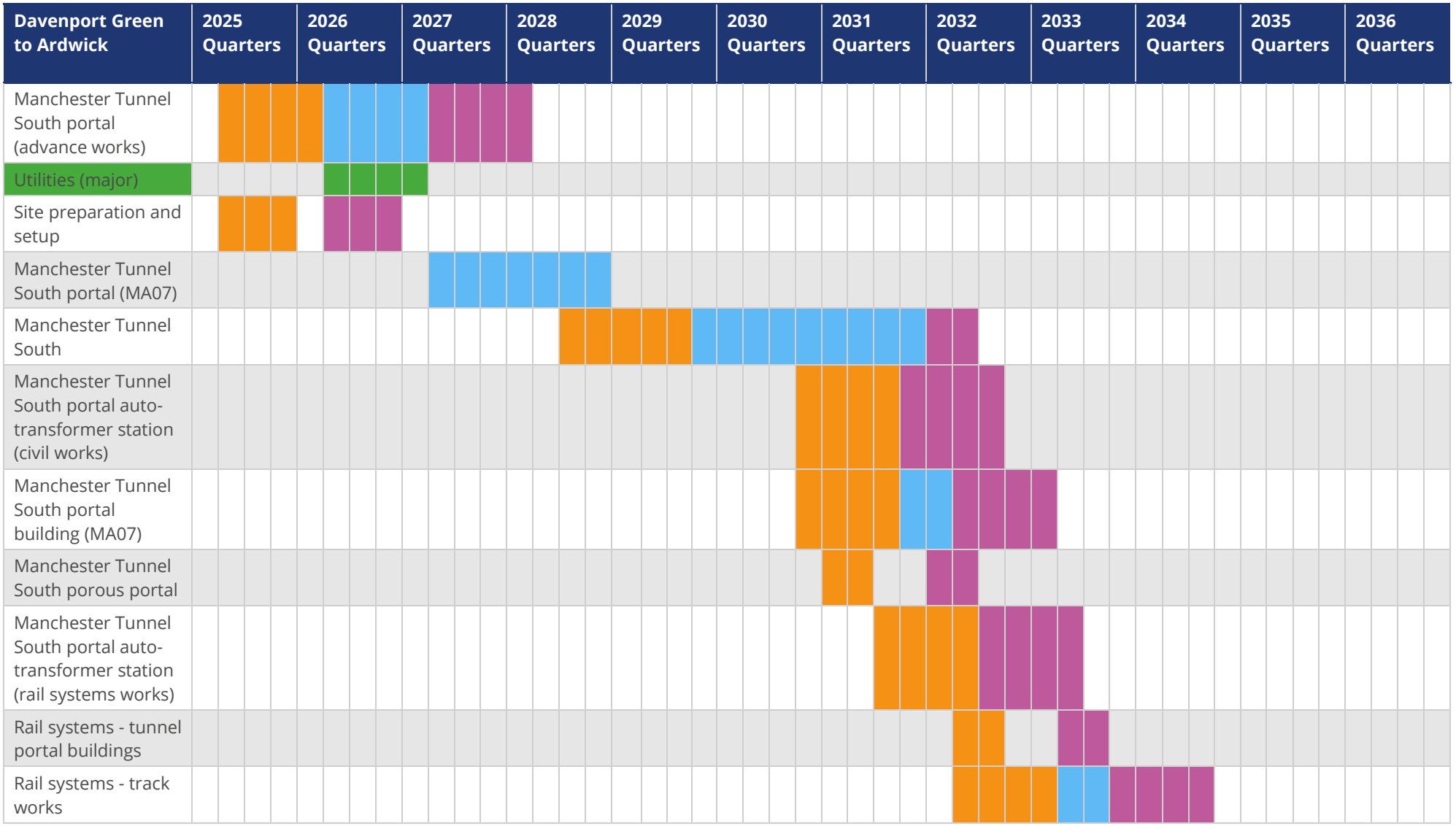
6.1.1 The AP2 revised scheme has resulted in the need to alter the indicative construction programme set out in the main ES.

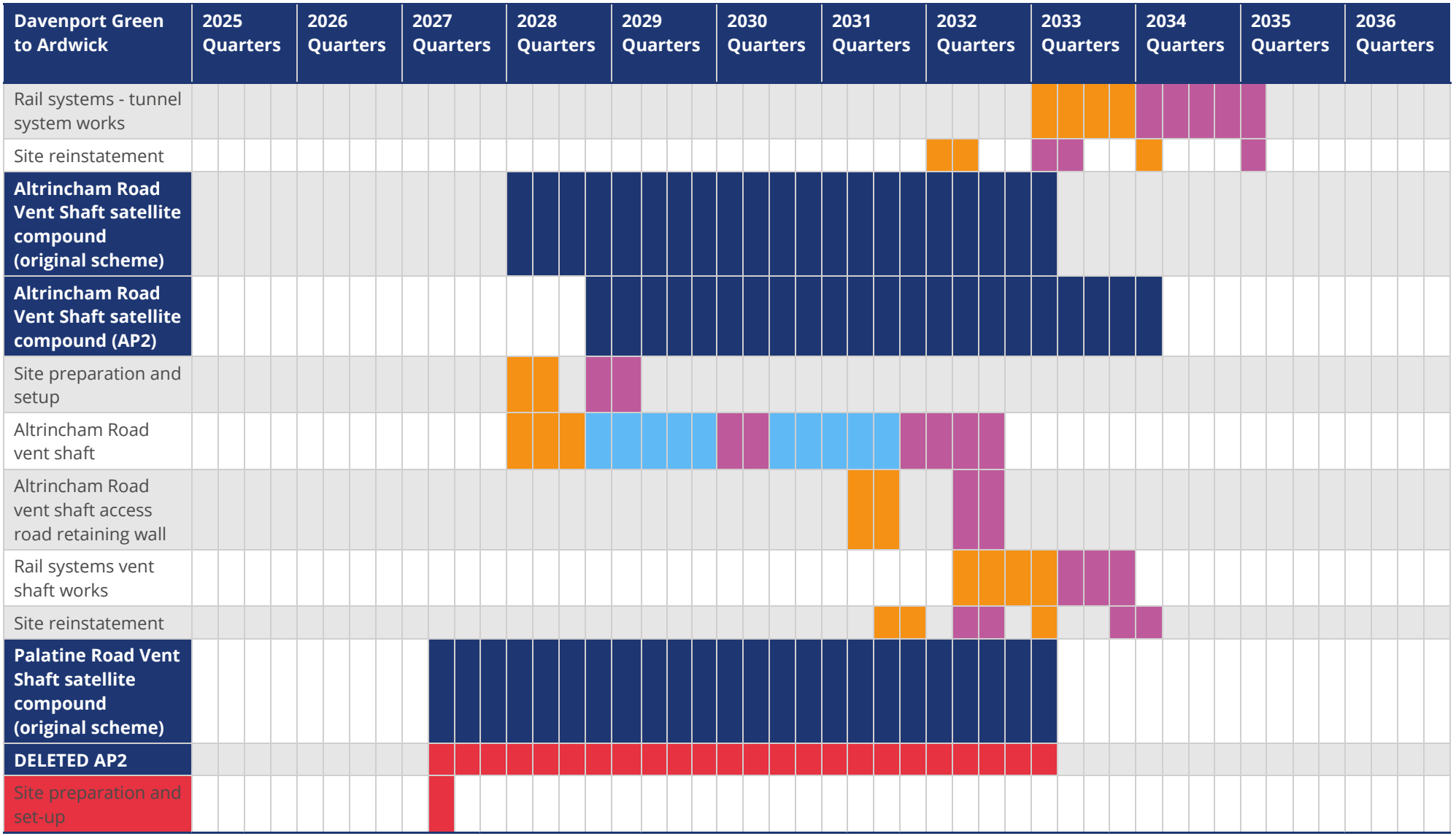
6.1.2 The revised indicative programme compared to the programme included in the main ES is shown in Figure 4.

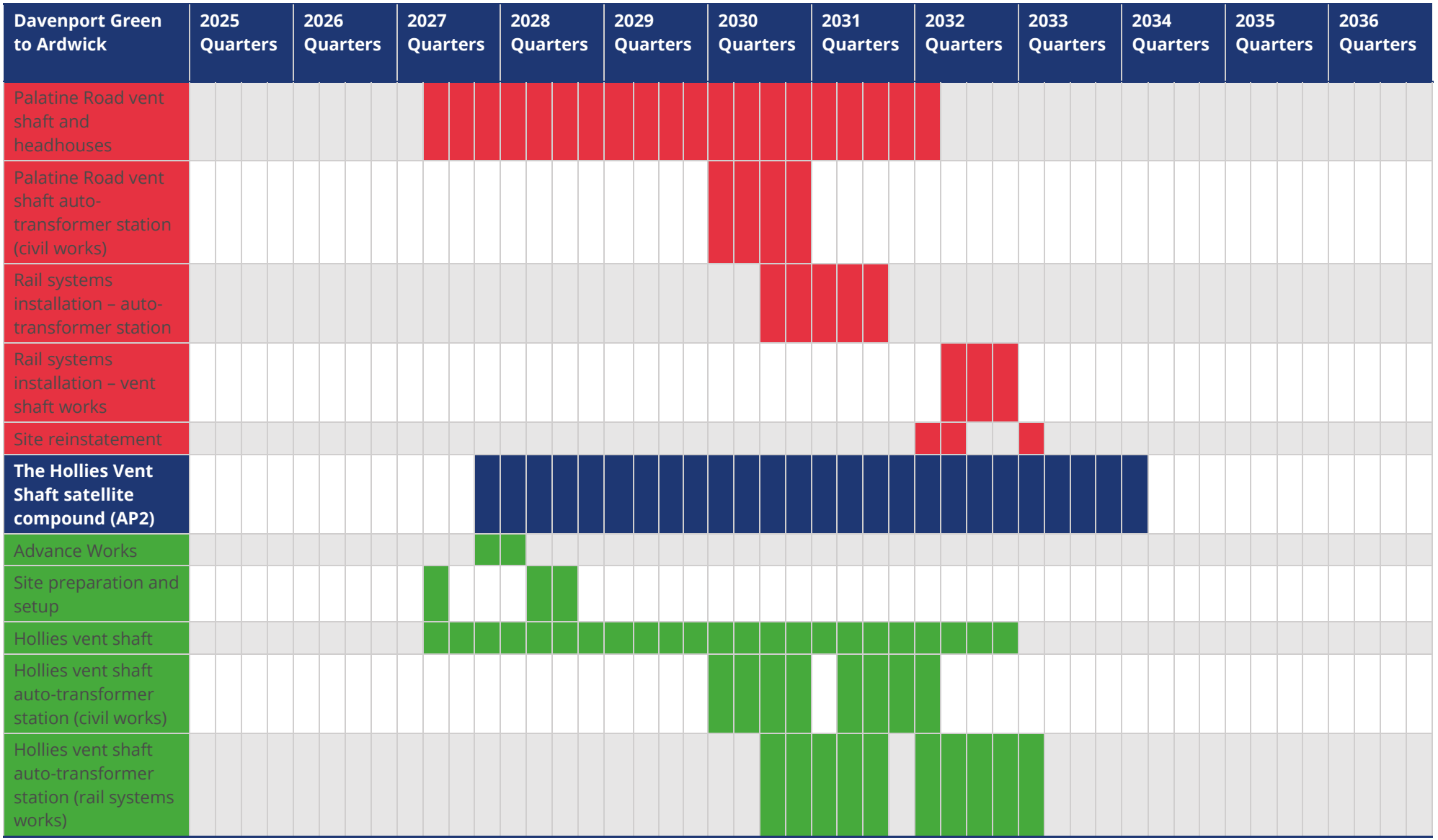
Figure 4: Indicative construction programme for the SES2 and AP2 ES compared to the main ES

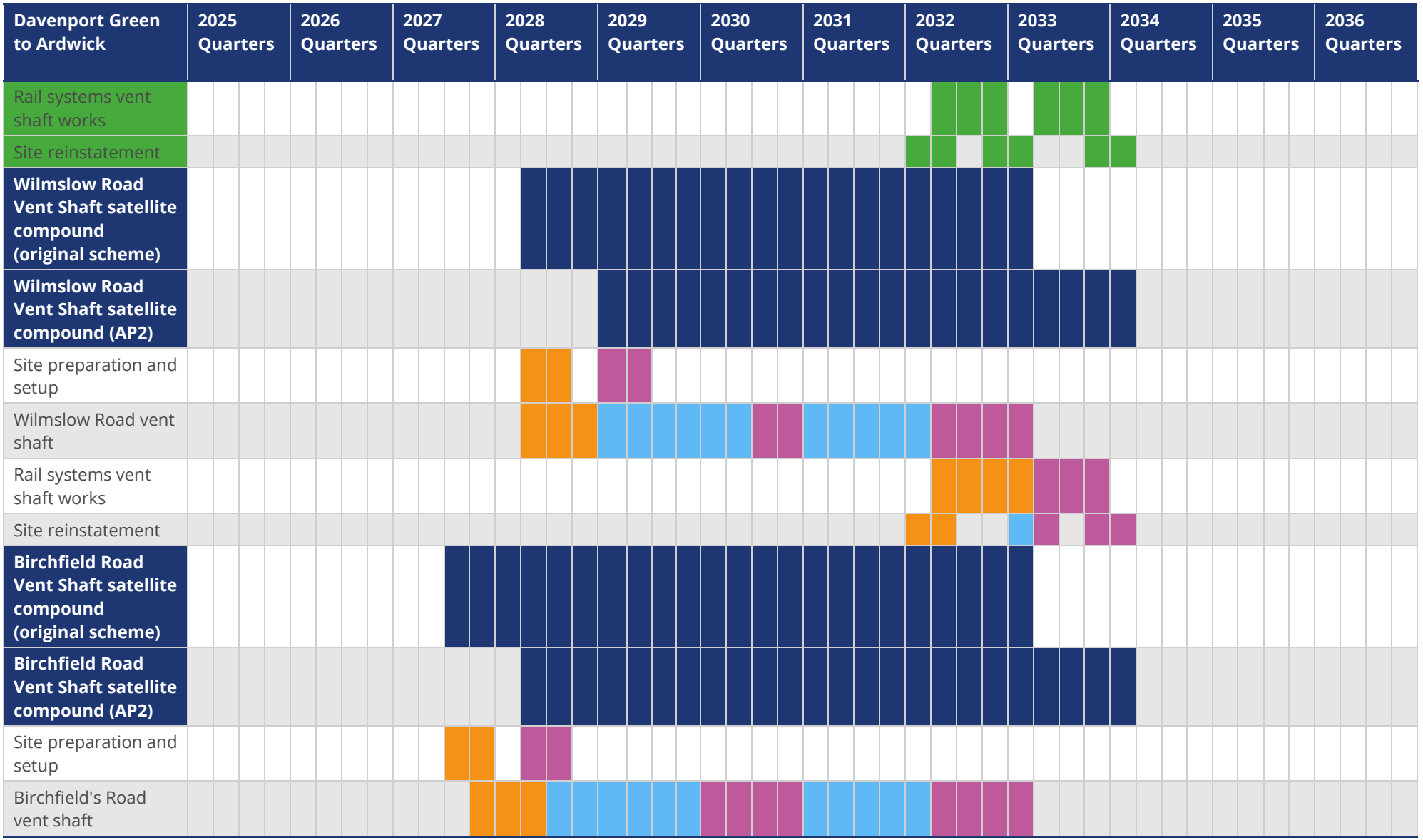
Key	
	Compound duration showing start and end of mobilisation. Activities below will be managed from the above compound. Second phase site reinstatement can occur post the compound demobilisation.
	Activity duration (indicates where there is no change from the main ES taking into consideration SES2 changes 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 SES change or AP 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.

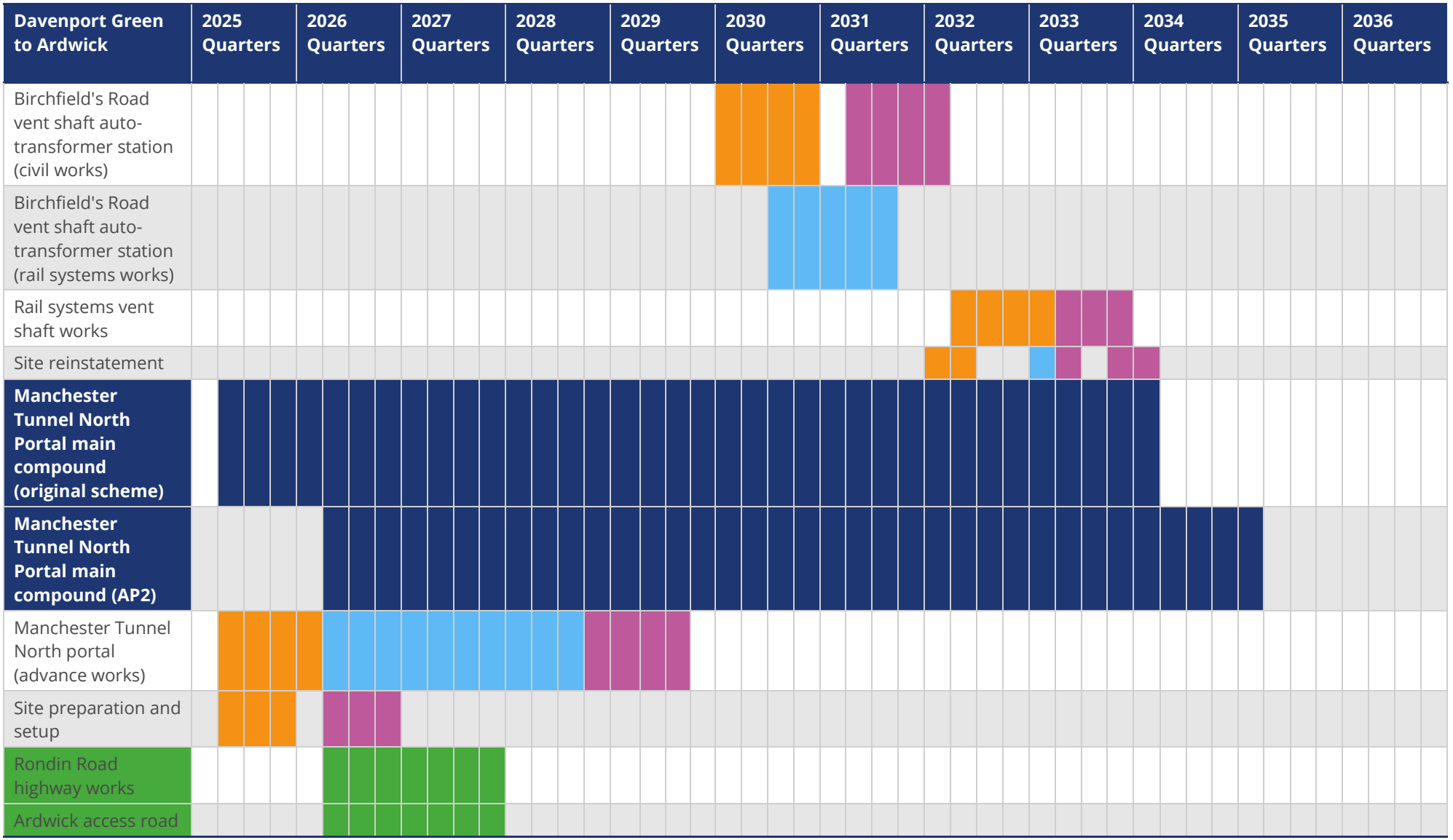


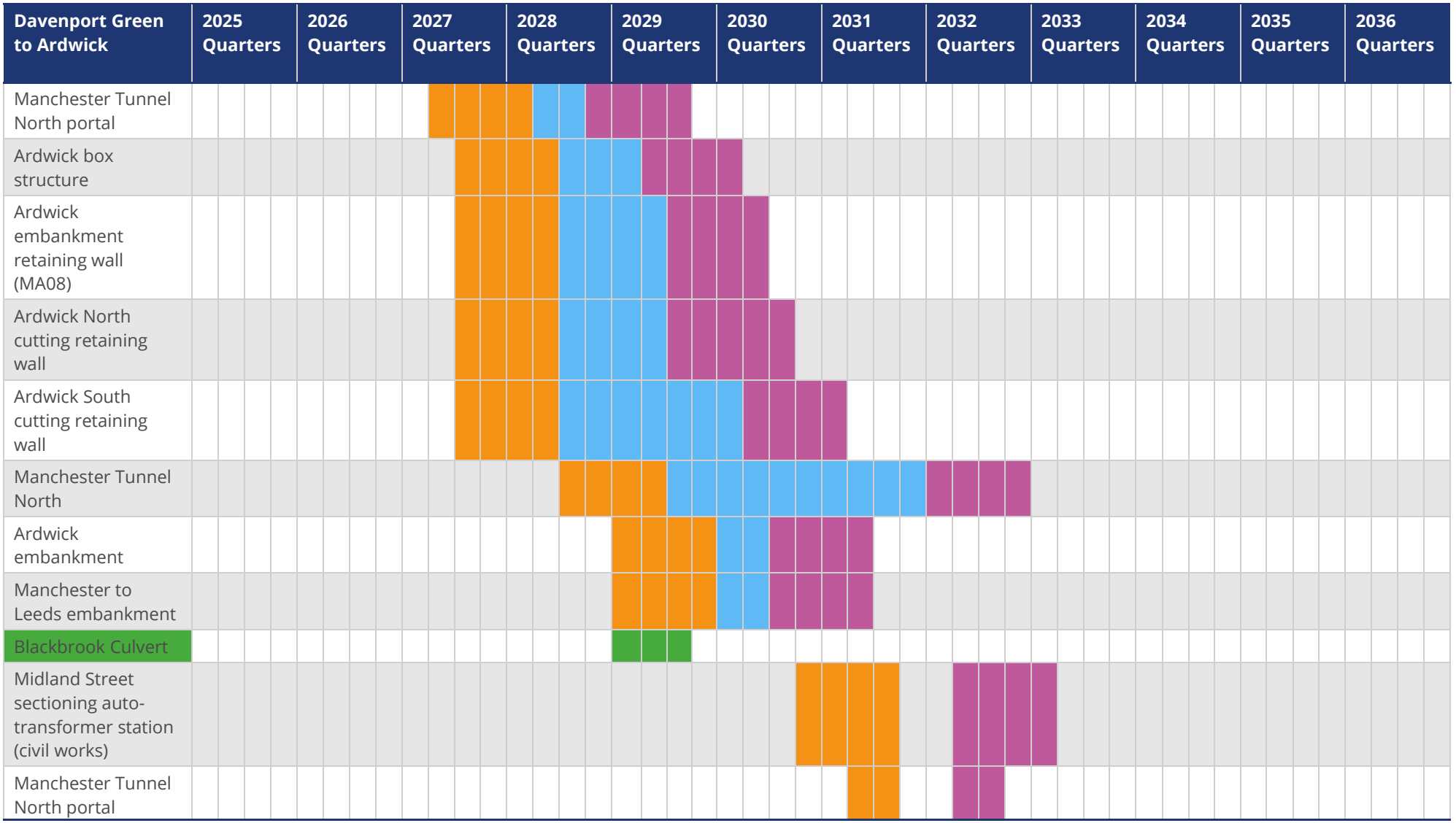

Davenport Green to Ardwick
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
Manchester Tunnel South portal (advance works)
Utilities (major)
Site preparation and setup
Manchester Tunnel South portal (MA07)
Manchester Tunnel South
Manchester Tunnel South portal auto-transformer station (civil works)
Manchester Tunnel South portal building (MA07)
Manchester Tunnel South porous portal
Manchester Tunnel South portal auto-transformer station (rail systems works)
Rail systems - tunnel portal buildings
Rail systems - track works

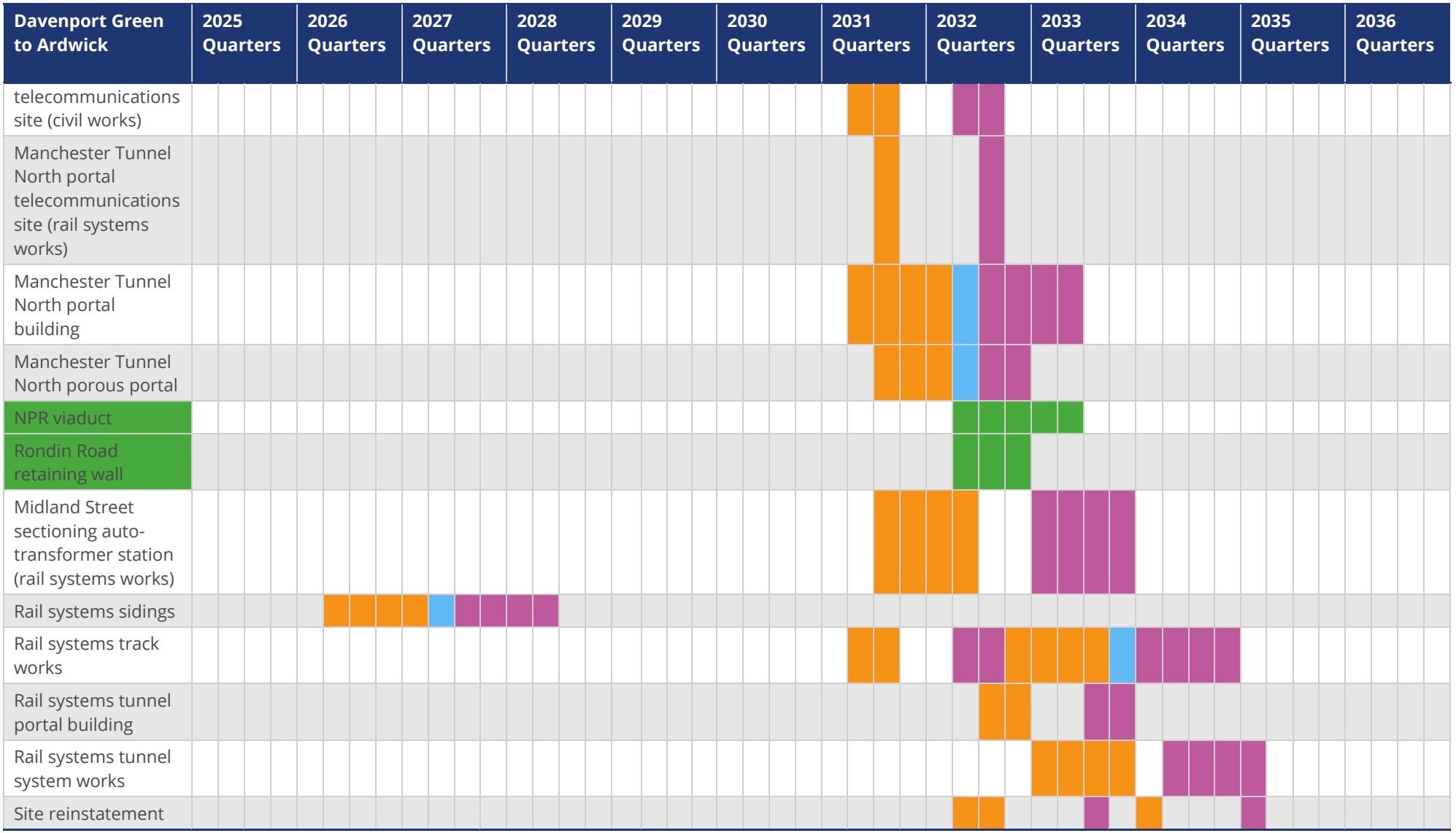

Davenport Green to Ardwick
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
Rail systems - tunnel system works
Site reinstatement
Altrincham Road Vent Shaft satellite compound (original scheme)
Altrincham Road Vent Shaft satellite compound (AP2)
Site preparation and setup
Altrincham Road vent shaft
Altrincham Road vent shaft access road retaining wall
Rail systems vent shaft works
Site reinstatement
Palatine Road Vent Shaft satellite compound (original scheme)
DELETED AP2
Site preparation and set-up

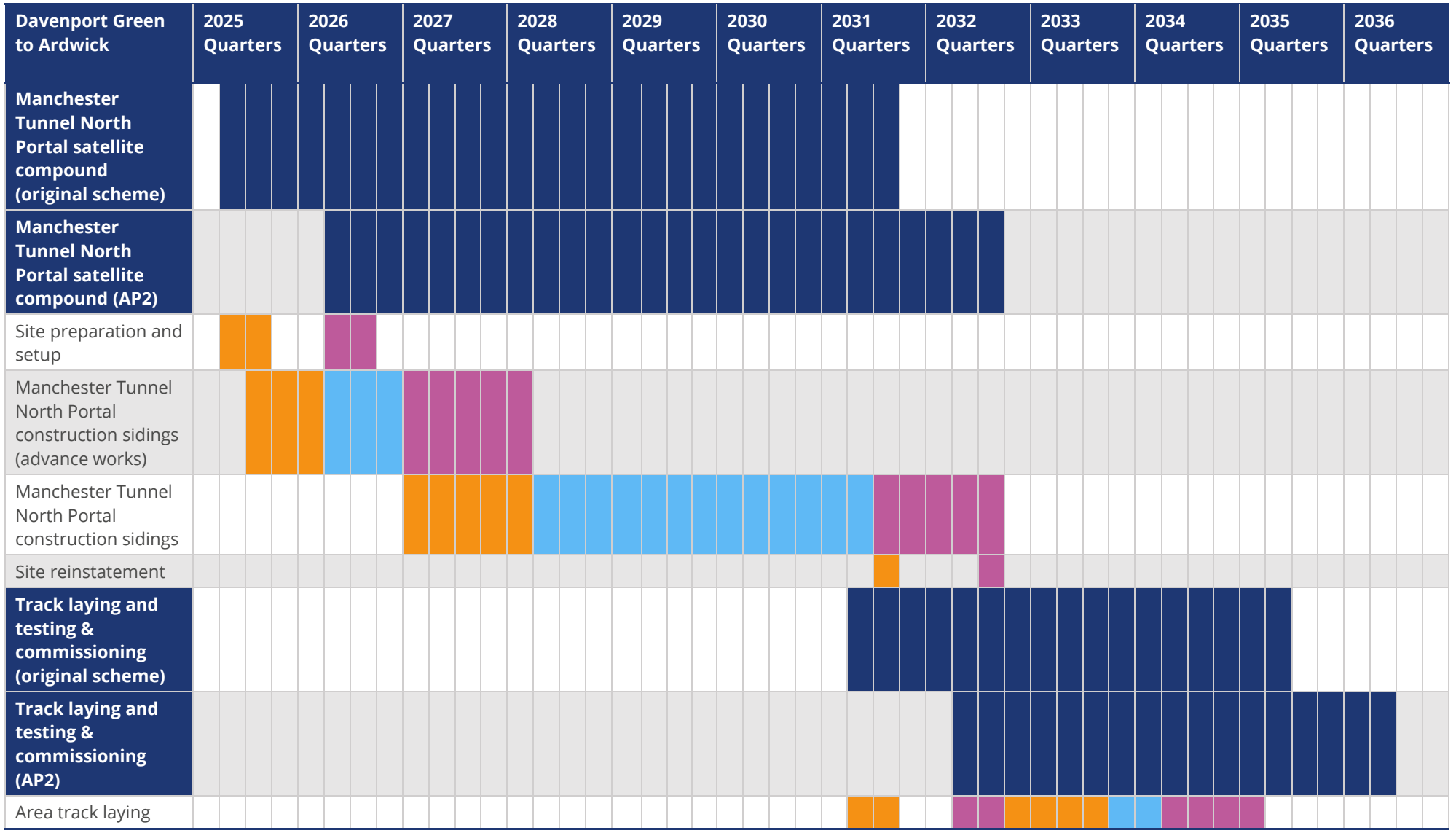

Davenport Green to Ardwick
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
Palatine Road vent shaft and headhouses
Palatine Road vent shaft auto-transformer station (civil works)
Rail systems installation – auto-transformer station
Rail systems installation – vent shaft works
Site reinstatement
The Hollies Vent Shaft satellite compound (AP2)
Advance Works
Site preparation and setup
Hollies vent shaft
Hollies vent shaft auto-transformer station (civil works)
Hollies vent shaft auto-transformer station (rail systems works)


Davenport Green to Ardwick
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
Rail systems vent shaft works
Site reinstatement
Wilmslow Road Vent Shaft satellite compound (original scheme)
Wilmslow Road Vent Shaft satellite compound (AP2)
Site preparation and setup
Wilmslow Road vent shaft
Rail systems vent shaft works
Site reinstatement
Birchfield Road Vent Shaft satellite compound (original scheme)
Birchfield Road Vent Shaft satellite compound (AP2)
Site preparation and setup
Birchfield's Road vent shaft


Davenport Green to Ardwick
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
Birchfield's Road vent shaft auto-transformer station (civil works)
Birchfield's Road vent shaft auto-transformer station (rail systems works)
Rail systems vent shaft works
Site reinstatement
Manchester Tunnel North Portal main compound (original scheme)
Manchester Tunnel North Portal main compound (AP2)
Manchester Tunnel North portal (advance works)
Site preparation and setup
Rondin Road highway works
Ardwick access road


Davenport Green to Ardwick
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
Manchester Tunnel North portal
Ardwick box structure
Ardwick embankment retaining wall (MA08)
Ardwick North cutting retaining wall
Ardwick South cutting retaining wall
Manchester Tunnel North
Ardwick embankment
Manchester to Leeds embankment
Blackbrook Culvert
Midland Street sectioning auto-transformer station (civil works)
Manchester Tunnel North portal


Davenport Green to Ardwick
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
telecommunications site (civil works)
Manchester Tunnel North portal telecommunications site (rail systems works)
Manchester Tunnel North portal building
Manchester Tunnel North porous portal
NPR viaduct
Rondin Road retaining wall
Midland Street sectioning auto-transformer station (rail systems works)
Rail systems sidings
Rail systems track works
Rail systems tunnel portal building
Rail systems tunnel system works
Site reinstatement


Davenport Green to Ardwick
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
2036 Quarters
Manchester Tunnel North Portal satellite compound (original scheme)
Manchester Tunnel North Portal satellite compound (AP2)
Site preparation and setup
Manchester Tunnel North Portal construction sidings (advance works)
Manchester Tunnel North Portal construction sidings
Site reinstatement
Track laying and testing & commissioning (original scheme)
Track laying and testing & commissioning (AP2)
Area track laying

Davenport Green to Ardwick	2025 Quarters	2026 Quarters	2027 Quarters	2028 Quarters	2029 Quarters	2030 Quarters	2031 Quarters	2032 Quarters	2033 Quarters	2034 Quarters	2035 Quarters	2036 Quarters
Testing and commissioning												

7 Combined effects of changes and amendments in the Davenport Green to Ardwick 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 SES2 changes and AP2 amendments, where the change in traffic flows cannot be directly attributed to a specific SES2 change or an AP2 amendment.

7.1.2 The assessment has also considered any impacts in the Davenport Green to Ardwick 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:

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

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 Davenport Green to Ardwick area:

- Additional land temporarily required for changes to permanent sewer connection from Manchester Tunnel South Portal (AP2-007-001);
- Change to Bill powers required for relocation of vent shaft and headhouse from Palatine Road to the Hollies (AP2-007-003);

- Additional land permanently required for changes to design elements managed by the Manchester tunnel north portal main compound (AP2-007-008); and
- Additional land temporarily required for the reconfiguration of Ardwick construction sidings (AP2-007-009).

7.2.3 In addition, updates to the transport highway model and Planet Framework Model (PFM) existing and future baselines described in Section 2 will lead to changes to the future baseline traffic forecasts reported in the main ES. For the assessment of the AP2 revised scheme, the PFM10a forecasts for the with HS2 scenarios also reflect the removal of the HS2 West Coast Main Line (WCML) connection (SES1-004-001), which was reported in SES1. These model changes could give rise to new or different significant effects compared to those reported in the main 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 Volume 1 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. For the SES2 and AP2 ES the future baselines have been updated to 2031 and 2039 to reflect the revised programme presented in Section 6 and to 2051 in order to give the assessment greater resilience to long term growth in travel demand. 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 main ES. Similarly, effects reported in 2039 and 2051 due to operation of the AP2 revised scheme are compared against effects reported for 2038 and 2046 respectively in the main 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, although longer term traffic forecasts for the Greater Manchester area show a reduction compared to those assessed. 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 Davenport Green to Ardwick area as a result of the AP2 revised scheme are described in SES2 and AP2 ES Volume 5, Appendix: TR-003-00007 Transport Assessment Part 3 Addendum.

7.3.6 There were no SES1 changes and AP1 amendments in the Davenport Green to Ardwick area. As a result, the assessment of combined effects due to changes in traffic flows reports the new or different likely significant effects arising from all SES2 changes and AP2 amendments compared to the original scheme reported in the main ES.

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 in the Davenport Green to Ardwick area is described in Section 14 of Volume 2, Community Area Report: Davenport Green to Ardwick, (MA07) of the main ES, as amended in Section 2 of this report and below.

7.3.10 Since the main 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 Davenport Green to Ardwick area. This includes traffic data from National Highways and TfGM and Trafficmaster journey time data from the DfT, as set out in the BID[32] report TR-004-00001 SES2 and AP2 ES. This data has been combined with the information collected

[32] 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.

for local junction modelling set out in the BID report TR-004-00001[33] 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: Davenport Green to Ardwick, (MA07) of the main ES, and is updated for the AP2 revised scheme below.

7.3.12 The assumptions regarding underlying committed developments and transport schemes for each assessment year have been reviewed and updated taking into account information from National Highways, Manchester City Council (MCC), Trafford Metropolitan Borough Council (TMBC), TfGM and Greater Manchester Combined Authority (GMCA) and are considered to be appropriately reflected in the traffic forecasts.

7.3.13 Since the main ES there have been two committed or recently completed substantial highway schemes in the Davenport Green to Ardwick area that have been taken into account in the future baseline for the AP2 revised scheme. These schemes have now been incorporated into the Greater Manchester Saturn Model (GMSM) for the AP2 revised scheme in the 2031, 2039 and 2051 future baseline scenarios. These are:

- Tan Yard Brow changes; and
- A6 Stockport Road pinch point relief scheme.

7.3.14 The Manchester Airport Rainbow Works scheme comprises capacity improvements for M56 junction 6, realignment and capacity improvement of Runger Lane between M56 Junction 6 and Terminal 2, improvements to the M56 westbound on-slip and future proofing of land adjacent to the M56 mainline. Since the main ES, changes to the programme of the Manchester Airport Rainbow Works scheme means that these are not expected to be completed until the mid 2030s. Consequently, the Manchester Airport Rainbow Works scheme has been removed from the 2031 future baseline in the AP2 revised scheme. The Manchester Airport Rainbow Works scheme is included in the future baseline for 2039 and 2051.

7.3.15 Places for Everyone[34] (PfE) is the long-term joint development plan for jobs, new homes and sustainable growth in nine Greater Manchester districts (Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan). PfE sets out the policy framework to help meet local housing and employment needs by identifying strategic site allocations and

[33] 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-phase2b-crewe-manchester-environmental-statement.

[34] Greater Manchester Combined Authority (2021), Places for Everyone, *Joint Development Plan Document - Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford, Wigan*. Available online at: https://www.greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/places-for-everyone/.

infrastructure requirements to support growth. However, PfE is not yet adopted and growth in the traffic modelling is based on the draft 2016 Greater Manchester Spatial Framework (core scenario).

7.3.16 In any case, PfE does not give detail of the likely changes to transport infrastructure that would accompany these developments, nor does it provide detail about the development proposals, such as the levels of car parking and phasing of development. There is also uncertainty in delivery of the growth suggested, so actual growth in the time period covered may be lower than included in PfE. Given these uncertainties, the AP2 strategic traffic modelling is based on the forecast matrices supplied to HS2 Ltd by TfGM, which include travel demand based on the core scenario from the draft 2016 Greater Manchester Strategic Framework. These are considered to be the best available representation of forecast travel demand across Greater Manchester.

Effects arising during construction

Avoidance and mitigation measures

7.3.17 No avoidance or mitigation measures additional to those reported in the main ES and draft Code of Construction Practice (CoCP)[35] are proposed.

Assessment of impacts and effects

Temporary effects

Key construction transport issues

7.3.18 Table 31 of Volume 2, Community Area report: Davenport Green to Ardwick, (MA07) of the main ES provides details of construction compounds in the Davenport Green to Ardwick area. This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 12.

[35] 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 12: Typical vehicle trip generation for construction compounds in the Davenport Green to Ardwick 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	Altrincham Road vent shaft satellite compound	2028 Q4	5 years	38-54	62-80	11
Satellite	Palatine Road vent shaft satellite compound (renamed The Hollies vent shaft satellite compound)	2028 Q2	6 years	42-102	158-178	8
Satellite	Wilmslow Road vent shaft satellite compound	2029 Q1	5 years and 3 months	46-54	70-90	7
Satellite	Birchfields Road vent shaft satellite compound	2028 Q2	6 years	48-104	138-180	2
Main	Manchester tunnel north portal main compound	2026 Q2	9 years	148-258	168-232	61
Satellite	Manchester tunnel north portal satellite compound	2026 Q2	6 years and 6 months	10-22	318-318	1

7.3.19 Details of the construction traffic routes for construction compounds in the Davenport Green to Ardwick area are reported in Table 32 of Volume 2, Community Area report: Davenport Green to Ardwick, (MA07) of the main ES. This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 13.

7.3.20 The AP2 revised scheme will introduce amended construction traffic routes for the following compounds in the Davenport Green to Ardwick area compared to the main ES:

- Palatine Road vent shaft satellite compound (renamed The Hollies vent shaft satellite compound); and
- Manchester tunnel north portal main compound.

Table 13: Construction traffic routes for construction compounds in the Davenport Green to Ardwick area

Compound name(s)	Access routes to/from compound(s) to main road network
Altrincham Road vent shaft satellite compound	A560 Altrincham Road

Compound name(s)	Access routes to/from compound(s) to main road network
Palatine Road vent shaft satellite compound (renamed The Hollies vent shaft satellite compound)	A5145 Barlow Road and A5103 Princess Parkway
Wilmslow Road vent shaft satellite compound	B5093 Wilmslow Road, A5145 Barlow Moor Road and A5103 Princess Parkway B5093 Wilmslow Road, A5145 Wilmslow Road and A34 Kingsway B5093 Wilmslow Road, Tatton Grove (westbound), B5167 Palatine Road, A5145 Barlow Moor Road and A5103 Princess Parkway (outgoing only) A5103 Princess Parkway, A5145 Barlow Moor Road, B5093 Wilmslow Road, Marriott Street (eastbound) and B5167 Palatine Road (incoming only) B5093 Wilmslow Road, A6010/A34 Moseley Road and A34 Kingsway
Birchfields Road vent shaft satellite compound	A34 Birchfields Road, A34 Moseley Road and A34 Kingsway A34 Birchfields Road/Anson Road/Upper Brook Street and A57(M) Mancunian Way* A34 Birchfields Road, A6010 Moseley Road, B5093 Wilmslow Road, B5167 Palatine Road, A5145 Barlow Moor Road and A5103 Princess Parkway (for infrequent use only)
Manchester tunnel north portal main compound	Rondin Road and A635 Ashton Old Road Midland Street, Chancellor Lane and A635 Ashton Old Road Rondin Road, A635 Ashton Old Road, A635 Mancunian Way west to A57(M), A57 and M602 Gorton Road, A635 Ashton Old Road Gorton Road, A6010 Pottery Lane, A635 Ashton Old Road
Manchester tunnel north portal satellite compound	Rondin Road and A635 Ashton Old Road Rondin Road, west on A635 Ashton Old Road to A635 Mancunian Way west to A57(M), A57

**A small percentage of HS2 construction HGV traffic will use A34 Birchfields Road north to and from Manchester tunnel north portal satellite compound in the Ardwick area, or to or from local material suppliers.*

7.3.21 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 12.

7.3.22 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.

7.3.23 The effects of construction of the AP2 revised scheme on the highway network in the Davenport Green to Ardwick area have been assessed by undertaking strategic model runs for a number of 'with AP2 revised scheme' construction scenarios and comparing the traffic flows and delays against the 2031 future baseline scenario. The assessment is based on the highest volume of construction traffic on each construction route in each construction scenario. Where construction routes will serve more than one construction compound, the

assessment is based on the highest combined volume of construction traffic on each section of each route in each construction scenario.

7.3.24 Whilst the AP2 revised scheme within the Davenport Green to Ardwick area will be mainly in tunnel, the construction of Manchester Piccadilly High Speed station in the adjacent Manchester Piccadilly Station area (MA08) will lead to changes to traffic levels in the Davenport Green to Ardwick area.

7.3.25 In using the strategic model, the impacts and effects have been considered in five scenarios covering the main construction phases. These scenarios ensure that the assessment addresses the different combinations and interactions of advance works, utility works, temporary highway closures and diversions and construction HGV movements through the construction period. It should be noted that, due to changes in the construction programme of the AP2 revised scheme, these scenarios differ slightly from those reported in the main ES:

- scenario 1, 2026 Q1 - 2028 Q1. This corresponds with the utility works in the area including any works to low voltage overhead or underground lines, gas pipes, sewers and telecommunication cables. This scenario equates to 44% of the overall peak in construction traffic across the whole construction period;
- scenario 2, 2028 Q2 – 2029 Q3. This corresponds with the peak in construction traffic movements following the closure of the A665 Midland Street and the temporary closure of the Metrolink Ashton Line. This scenario equates to 83% of the overall peak in construction traffic across the whole construction period;
- scenario 3, 2029 Q4 - 2030 Q4. This corresponds with the peak in construction traffic movements following construction works at the A635/A665 Pin Mill Brow gyratory. In this scenario, a temporary road layout is in place for the partially constructed A635/A665 Pin Mill Brow gyratory. The permanent A635 Fairfield Street diversion will be open. The A635 Mancunian Way northbound realignment, the A665 Chancellor Lane diversion and the existing A665 Chancellor Lane (north of the A665 Chancellor Lane diversion) will each operate one-way. This scenario equates to 100% of the overall peak in construction traffic across the whole construction period;
- scenario 4, 2031 Q1 - 2031 Q4. This corresponds with the peak in construction traffic movements following opening of the new A635/A665 Pin Mill Brow gyratory. The A635 Mancunian Way southbound realignment will be open, the A665 Chancellor Lane diversion will operate two-way and the existing A665 Chancellor Lane will be closed north of Midland Street. This scenario equates to 89% of the overall peak in construction traffic across the whole construction period; and
- scenario 5, 2032 Q1 – 2036 Q4. This corresponds with the peak in construction traffic movements following the decommissioning of construction compounds and the completion of all construction works. This scenario equates to 85% of the overall peak in construction traffic across the whole construction period.

7.3.26 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.

7.3.27 Table 33 of Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES, gives details of the most relevant highway interventions and works for each scenario in the Davenport Green to Ardwick area. This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 14.

Table 14: Construction highway interventions by scenario

Type	Intervention	Scenario 1 2026 Q1 – 2028 Q1	Scenario 2 2028 Q2 2029 Q3	Scenario 3 2029 Q4 – 2030 Q4	Scenario 4 2031 Q1 – 2031 Q4	Scenario 5 2032 Q1 – 2036 Q4
Utilities	Works associated with low voltage overhead or underground lines, gas pipes, sewers and telecommunication cables	Included	Not included	Not included	Not included	Not included
Main works	Closure of the A665 Midland Street	Not Included	Included	Included	Included	Included
Main works	Diversion of the A665 Chancellor Lane (Manchester Piccadilly Station area (MA08))	Not included	Not included	Included	Included	Included
Main works	Temporary road layout around the A635/A665 Pin Mill Brow gyratory (Manchester Piccadilly Station area (MA08))	Not Included	Not Included	Included	Not Included	Not Included
Main works	New A635/A665 Pin Mill Brow gyratory (Manchester Piccadilly Station area (MA08))	Not Included	Not Included	Not Included	Included	Included
	Construction HGV traffic as percentage of peak construction HGV traffic	44%	83%	100%	89%	85%

7.3.28 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 and public transport delay.

Highway network

7.3.29 The AP2 revised scheme includes a number of changes to the highway network compared to the original scheme. This includes the temporary closure of Viaduct Street at the junction with the A635 Ashton Old Road (AP2-007-009) for a duration of three months. This

amendment is temporary and will be in place during construction only of the AP2 revised scheme.

7.3.30 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.

7.3.31 The combined impact of all 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 main ES. The significant traffic congestion and delay effects for vehicle occupants with the highest magnitude at each junction are set out in Table 15. Locations not listed in Table 15 remain unchanged from those reported in the main ES. The significance of the effect reported in the main ES is indicated in brackets.

Table 15: 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
A34 Handforth Bypass/B5094 Stanley Road	No effect (Previously minor adverse)	-
A555 Ringway Road/B5166 Styal Road	No effect (Previously minor adverse)	-
B5166 Styal Road/Finney Lane/Simonsway	Moderate adverse (Previously minor adverse)	Scenarios 1, 2 and 3
Portway/Selstead Road	Major beneficial (Previously no effect)	Scenarios 2 and 5
Simonsway/Poundswick Lane	Minor adverse (Previously no effect)	Scenario 2
Greenbrow Road/Newall Road	Major adverse (Previously moderate adverse)	Scenarios 1 and 2
Barnacre Avenue/Newall Road/Whitecarr Lane	Major adverse (Previously no effect)	Scenarios 2, 3, 4 and 5
M56 junction 4 southbound off-slip/Simonsway	Major adverse (Previously no effect)	Scenario 4
Greenbrow Road/Tuffley Road	Minor adverse (Previously minor beneficial)	Scenario 2
A34 Kingsway/Broadway	No effect (Previously minor adverse)	-
Floats Road/Southmoor Road	Major adverse (Previously no effect)	Scenarios 3 and 4
Hollyhedge Road/Wendon Road	Minor adverse (Previously no effect)	Scenario 1
Greenwood Road/Royalthorn Road	Minor adverse (Previously no effect)	Scenario 1
M60 junction 3	No effect (Previously moderate adverse)	-

Junction Name	Significant Effect	AP2 Construction Scenario
M56 junction 3a/A560 Altrincham Road	Major adverse (Previously moderate adverse)	Scenario 4
A560 Altrincham Road/A560 Shaftesbury Avenue/B5165 Stockport Road/Brooklands Road	No effect (Previously minor adverse)	-
A560 Stockport Road/B5465 Edgeley Road	No effect (Previously minor adverse)	-
B5166 Longley Lane/B5168 Sharston Road/Longley Lane	Moderate adverse (Previously no effect)	Scenario 1
A560 Stockport Road/St Lesmo Road/Essex Avenue	No effect (Previously minor adverse)	-
B5167 Palatine Road/Longley Lane/Greenpark Road	No effect (Previously minor adverse)	-
B5167 Wythenshawe Road/Moorcroft Road	Major adverse (Previously moderate adverse)	Scenarios 1, 2, 3 and 4
Brooklands Road/Norris Road	No effect (Previously minor adverse)	-
M60 junction 27 (A560 Portwood Roundabout)	Minor beneficial (Previously minor adverse)	Scenario 3
B5166 Northenden Road/Norris Road	No effect (Previously minor adverse)	-
A6188 Tiviot Way/Water Street	Moderate adverse (Previously minor adverse)	Scenarios 3 and 4
A6188 Tiviot Way/A6188 Manchester Road/B6167 Sandy Lane/B6167 Lancashire Hill/Belmont Way	Minor adverse (Previously no effect)	Scenario 3
A6144 Northenden Road/A6144 Old Hall Road	No effect (Previously moderate adverse)	-
A5145 Barlow Moor Road/B5167 Palatine Road	No effect (Previously minor adverse)	-
B5093 Wilmslow Road/Fog Lane/Lapwing Lane	No effect (Previously major adverse)	-
M60 junction 25/A6017 Ashton Road/A560 Crookilley Way/Oldmoor Road	Moderate adverse (Previously no effect)	Scenario 3
Mauldeth Road West/Nell Lane	No effect (Previously minor adverse)	-
A5103 Princess Road/Whitchurch Road	No effect (Previously minor beneficial)	-
A34 Kingsway/Grangethorpe Drive/Talbot Road	No effect (Previously minor adverse)	-
Yew Tree Road/Mauldeth Road West	No effect (Previously minor adverse)	-
A5103 Princess Road/Mauldeth Road West	Major adverse (Previously no effect)	Scenarios 3 and 4
B5093 Wilmslow Road/Egerton Road	No effect (Previously minor adverse)	-

Junction Name	Significant Effect	AP2 Construction Scenario
A6010 Edge Lane/A6010 Wilbraham Road/A5145 Edge Lane/Hampton Road	No effect (Previously minor adverse)	-
A6010 Wilmslow Road/A6010 Wilbraham Road/B5093 Moseley Road/B5093 Wilmslow Road	No effect (Previously moderate adverse)	-
A6010 Willbraham Road/Yew Tree Road	Minor adverse (Previously no effect)	Scenarios 4 and 5
B6167 Gorton Road/Mill Lane/Gainford Road	Minor adverse (Previously no effect)	Scenario 3
A5181 Barton Road/A5145 Kingsway/B5213 Urmston Lane	No effect (Previously minor adverse)	-
A56 Chester Road/A5145 Edge Lane/A5145 Kingsway	Minor adverse (Previously no effect)	Scenarios 2, 3, 4 and 5
A6010 Dickenson Road/A6010 Wilmslow Road/B5117 Wilmslow Road	No effect (Previously minor adverse)	-
A34 Birchfields Road/A34 Anson Road/A6010 Dickenson Road	No effect (Previously moderate adverse)	-
B5217 Seymour Grove/Kings Road	No effect (Previously minor adverse)	-
M60 junction 24/A57 Manchester Road	Moderate adverse (Previously major adverse)	Scenario 3
A6 Stockport Road/A6010 Dickenson Road/Stanley Grove	No effect (Previously minor adverse)	-
B5117 Wilmslow Road/B5219 Moss Lane East	Moderate adverse (Previously no effect)	Scenario 1
A6 Stockport Road/A6010 Kirkmanshulme Lane/A6010 St John's Road	Moderate adverse (Previously no effect)	Scenario 5
A34 Upper Brook Street/Hathersage Road	No effect (Previously minor adverse)	-
A57 Hyde Road/Tan Yard Brow/Willow Grove	No effect (Previously major adverse)	-
A6010 Kirkmanshulme Lane/New Bank Street	Major adverse (Previously no effect)	Scenario 3
A57 Hyde Road/Wellington Street/Hengist Street	Minor adverse (Previously no effect)	Scenario 3
A5184 Plymouth Grove/Plymouth Grove West/Hathersage Road	Minor adverse (Previously no effect)	Scenario 1
A57 Hyde Road/Knutsford Road/Whitwell Way	No effect (Previously minor adverse)	-
A57 Hyde Road/B6178 Hyde Road/B6178 Mount Road	Moderate adverse (Previously major adverse)	Scenario 3
Wellington Street/Cross Lane/Garratt Way	Major adverse (Previously no effect)	Scenario 3
A57 Hyde Road/Birch Street	No effect (Previously major adverse)	-

Junction Name	Significant Effect	AP2 Construction Scenario
A6010 Pottery Lane/A57 Hyde Road	No effect (Previously major adverse)	-
A57 Hyde Road/Clowes Street	Minor adverse (Previously major adverse)	Scenario 3
A665 Devonshire Street/Coverdale Crescent/Hellidon Close	Major adverse (Previously moderate adverse)	Scenario 2
A665 Devonshire Street North/A57 Hyde Road/A665 Devonshire Street	Major adverse (Previously moderate adverse)	Scenarios 1, 2, 4 and 5
A6010 Pottery Lane/Gorton Lane/Wenlock Way	Minor adverse (Previously major adverse)	Scenarios 3, 4 and 5
A665 Chancellor Lane diversion/A665 Devonshire Street North/Higher Ardwick	No effect (Previously major adverse)	-
A665 Chancellor Lane/A665 Devonshire Street North/Higher Ardwick	Major adverse (Previously no effect)	Scenarios 1, 2 and 3
A635 Ashton Old Road/Capital Road	No effect (Previously minor beneficial)	-
A635 Ashton Old Road/Vine Street	No effect (Previously minor adverse)	-
A635 Ashton Old Road/Ogden Lane/Fairfield Road	Major adverse (Previously moderate adverse)	Scenario 5
A635 Manchester Road/Ashton Hill Lane	Minor adverse (Previously major adverse)	Scenarios 2, 3, 4 and 5
A635 Ashton Old Road/A6010 Alan Turing Way/A6010 Pottery Lane	Minor adverse (Previously no effect)	Scenario 1
A635 Ashton Old Road/Stainforth Street	Minor adverse (Previously moderate adverse)	Scenario 1
A635 Ashton Old Road/Gable Street	No effect (Previously moderate adverse)	-
Fairfield Road/Edge Lane	Moderate adverse (Previously no effect)	Scenario 1
A635 Ashton Old Road/Rondin Road	Major adverse (Previously no effect)	Scenarios 2, 4 and 5
Clayton Lane/Cycle Street	Major adverse (Previously no effect)	Scenarios 1, 2, 3, 4 and 5
M60 junction 23/A6140 Moss Way	No effect (Previously minor adverse)	-
A662 Manchester Road/A662 Ashton Road/Market Street	Minor adverse (Previously no effect)	Scenarios 3, 4 and 5
A662 Manchester Road/A662 Ashton New Road/Edge Lane	Minor adverse (Previously no effect)	Scenarios 4 and 5
A662 Ashton New Road/Grey Mare Lane	Moderate adverse (Previously no effect)	Scenario 1
A662 Ashton New Road/Bank Street	Moderate adverse (Previously no effect)	Scenario 3

Junction Name	Significant Effect	AP2 Construction Scenario
Sunnyside Road/Chappell Road	Minor adverse (Previously no effect)	Scenario 1
Briscoe Lane/Ten Acres Lane	No effect (Previously minor adverse)	-
Moston Lane/Nuthurst Road	Minor adverse (Previously no effect)	Scenarios 2, 3, 4 and 5
A663 Broadway/Long Lane/Costco access	No effect (Previously minor adverse)	-

7.3.32 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 16 for all-traffic effects and Table 17 for HGV traffic effects. The significant effects with the highest magnitude in each location are set out in Table 16 for all-traffic effects and Table 17 for HGV traffic effects. Where changes to effects are reported, these changes are compared to the original scheme reported in the main ES. Locations not listed in Table 16 and Table 17 remain unchanged from those reported in the main ES. The significance of the effect reported in the main ES is indicated in brackets.

Table 16: 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
Simonsway (between Greenbrow Road and M56 North Cheshire Motorway)	Moderate beneficial (Previously no effect)	Scenario 1
Simonsway (between Greenbrow Road and Firbank Road)	Moderate beneficial (Previously no effect)	Scenario 4
Greenbrow Road (between Newall Road and Tuffley Road)	Moderate beneficial (Previously no effect)	Scenario 4
Tuffley Road (between Firbank Road and Greenbrow Road)	Moderate beneficial (Previously no effect)	Scenarios 3 and 4
Floats Road/Clay Lane/Barnacre Avenue/Newall Road (between Dobbinetts Lane and Whitecarr Lane)	Moderate beneficial (Previously no effect)	Scenarios 2, 3 and 4
Greenbrow Road (between Tuffley Road and Wastdale Road)	Moderate beneficial (Previously no effect)	Scenarios 1 and 4
Highdales Road (between Hollyhedge Road and Firbank Road)	Moderate adverse (Previously no effect)	Scenario 1
Firbank Road (between Highdales Road and Greenbrow Road)	Major adverse (Previously no effect)	Scenario 1
Greenwood Road (between Hollyhedge Road and A560 Altrincham Road)	Moderate adverse (Previously no effect)	Scenario 1
Hall Lane (between Bowland Road and A560 Altrincham Road)	Minor adverse (Previously no effect)	Scenario 1
Benchill Road (between Greenwood Road and Rothley Avenue)	Moderate adverse (Previously no effect)	Scenarios 1 and 2

Road Name	Significant Effect	AP2 Construction Scenario
Southmoor Road (between Ledson Road and Floatshall Road)	Moderate adverse (Previously no effect)	Scenario 4
Moor Road (between A560 Altrincham Road and A5167 Wythenshawe Road)	Moderate adverse (Previously no effect)	Scenario 2
Wendover Road (between Ferndown Road and Maple Road)	Minor adverse (Previously no effect)	Scenarios 2, 3, 4 and 5
Cranleigh Drive (between Maple Road and Brooklands Road)	Minor adverse (Previously no effect)	Scenarios 2, 3, 4 and 5
Belmont Way (between Short Street and A6188 Manchester Road)	Minor adverse (Previously no effect)	Scenarios 3 and 4
A34 Kingsway (between Green End Road and Mauldeth Road)	Major adverse (Previously no effect)	Scenarios 1, 2, 3, 4 and 5
Lytham Road (between A34 Birchfields Road and A5079 Slade Lane)	Minor beneficial (Previously no effect)	Scenarios 1, 2, 3, 4 and 5
New Bank Street (between Dillon Drive and A6010 Kirkmanshulme Lane)	Moderate adverse (Previously no effect)	Scenarios 3 and 4
Kirkmanshulme Lane (between Scarcroft Road and B6178 Mount Road)	Moderate adverse (Previously no effect)	Scenario 1
Whitwell Way (between Garratt Way and A57 Hyde Road)	No effect (Previously moderate adverse)	-
Thornbury Way/Garratt Way (between A57 Hyde Road and Whitwell Way)	Moderate adverse (Previously no effect)	Scenarios 1 and 3
Devonshire Street South (between A6 Stockport Road and A5184 Plymouth Grove)	No effect (Previously moderate adverse)	-
Abbey Hey Lane (between Vine Street and Jetson Street)	Moderate adverse (Previously no effect)	Scenario 5
Jetson Street (between Abbey Hey Lane and Burstead Street)	Minor adverse (Previously no effect)	Scenario 5
Vine Street (between Abbey Hey Lane and A635 Ashton Old Road)	Moderate adverse (Previously major adverse)	Scenario 3
Abbey Hey Lane (between Jetson Street and Capital Road)	Moderate adverse (Previously no effect)	Scenario 5
Cornwall Street (between Ogden Lane and A635 Ashton Old Road)	Moderate adverse (Previously major adverse)	Scenario 3
Abbey Hey Lane (between A635 Ashton Old Road and Capital Road)	No effect (Previously moderate adverse)	-
Higher Ardwick (between Union Street and A665 Chancellor Lane)	Moderate adverse (Previously no effect)	Scenarios 1, 2, 3, 4 and 5
Gorton Road (between Stainforth Street and A6010 Pottery Lane)	No effect (Previously moderate adverse)	-
A665 Midland Street (between A665 Chancellor Lane and Handsworth Street)	No effect (Previously moderate beneficial)	-
Victoria Street/Parkhouse Street (between A635 Ashton Old Road and Greenside Street)	Moderate adverse (Previously no effect)	Scenarios 3, 4 and 5

Road Name	Significant Effect	AP2 Construction Scenario
Greenside Street (between A635 Ashton Old Road and Parkhouse Street)	No effect (Previously minor adverse)	-
Stainforth Street (between A635 Ashton Old Road and Gorton Road)	No effect (Previously moderate adverse)	-
Gable Street (between A635 Ashton Old Road and Stainforth Street)	No effect (Previously moderate adverse)	-
A635 Ashton Old Road (between Gable Street and Stainforth Street)	Moderate beneficial (Previously no effect)	Scenario 3
A635 Ashton Old Road (between A665 Chancellor Lane and A665 Midland Street)	No effect (Previously moderate beneficial)	-
Wheler Street (between A635 Ashton Old Road and Edge Lane)	Moderate adverse (Previously no effect)	Scenario 5
Parkhouse Street (between Greenside Street and Cycle Street)	Minor adverse (Previously no effect)	Scenarios 4 and 5
Grey Mare Lane (between Sunny Lowry Road and Albert Street)	No effect (Previously major adverse)	-
Grey Mare Lane/Sunny Lowry Road (between Albert Street and A6010 Alan Turing Way)	Major adverse (Previously no effect)	Scenarios 3, 4 and 5
Albert Street (between Darley Street and Grey Mare Lane)	Major adverse (Previously moderate adverse)	Scenarios 1, 3, 4 and 5
Albert Street (between Councillor Street and Darley Street)	Major adverse (Previously moderate adverse)	Scenario 1
Palmerston Street (between Councillor Street and Gurney Street)	Major adverse (Previously moderate adverse)	Scenario 3
Grey Mare Lane (between Albert Street and A662 Ashton New Road)	Major adverse (increased) (Previously major adverse)	Scenario 1
Darley Street (between Albert Street and A662 Ashton New Road)	Moderate adverse (Previously minor adverse)	Scenarios 1, 2 and 3
Councillor Street (between Palmerston Street and A662 Ashton New Road)	No effect (Previously moderate adverse)	-
A662 Ashton New Road (between Beswick Street and A6010 Alan Turing Way)	Moderate beneficial (Previously no effect)	Scenario 1
Margaret Street (between A635 Manchester Road and A635 Park Parade)	Minor adverse (Previously no effect)	Scenario 3

Table 17: 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
Greenwood Road (between Simonsway and Gladeside Road)	Moderate adverse (Previously no effect)	Scenario 1
Dobbinets Lane (between Clay Lane and Floats Road)	Major adverse (Previously no effect)	Scenarios 3 and 4
Floats Road (between Dobbinets Lane and Southmoor Road)	Moderate adverse (Previously no effect)	Scenarios 3 and 4

Road Name	Significant Effect	AP2 Construction Scenario
Hollyhedge Road (between Wendon Road and Greenwood Road)	Moderate adverse (Previously no effect)	Scenario 1
Highdales Road (between Hollyhedge Road and Firbank Road)	Major adverse (Previously no effect)	Scenario 1
Firbank Road (between Highdales Road and Greenbrow Road)	Major adverse (Previously no effect)	Scenario 1
Hollyhedge Road (between Highdales Road and Wendon Road)	Major adverse (Previously no effect)	Scenario 1
Greenwood Road (between Hollyhedge Road and A560 Altrincham Road)	Major adverse (Previously no effect)	Scenario 1
B5167 Wythenshawe Road (between B5167 Ferndown Road and Moor Road)	Moderate adverse (Previously no effect)	Scenario 1
A34 Kingsway (between Fairmile Drive and B5095 Wilmslow Road)	No effect (Previously moderate adverse)	-
B5167 Wythenshawe Road (between Moor Road and Moorcroft Road)	Moderate adverse (Previously no effect)	Scenario 1
A34 Kingsway (between B5095 Wilmslow Road and A5145 Wilmslow Road)	No effect (Previously moderate adverse)	-
A5145 Wilmslow Road (between A5145 Parrs Wood Lane and A34 Kingsway)	Moderate adverse (Previously no effect)	Scenario 2
A34 Kingsway (between A5145 Parrs Wood Lane and Queensway)	No effect (Previously moderate adverse)	-
Water Street (between Marsland Street and A6188 Tiviot Way)	Major adverse (Previously no effect)	Scenarios 2, 3, 4 and 5
A34 Kingsway (between Queensway and Lane End Road)	No effect (Previously moderate adverse)	-
Belmont Way (between Short Street and A6188 Manchester Road)	Moderate adverse (Previously no effect)	Scenarios 3 and 4
A34 Kingsway (between Lane End Road and Southlea Road)	No effect (Previously moderate adverse)	-
A34 Kingsway (between Southlea Road and Green End Road)	No effect (Previously moderate adverse)	-
A34 Kingsway (between Green End Road and Mauldeth Road)	Major adverse (Previously moderate adverse)	Scenarios 1, 2, 3, 4 and 5
A34 Kingsway (between Mauldeth Road and Talbot Road)	No effect (Previously moderate adverse)	-
A34 Kingsway (between Talbot Road and B5093 Moseley Road)	No effect (Previously moderate adverse)	-
A34 Moseley Road (between A34 Birchfields Road and A34 Kingsway)	No effect (Previously moderate adverse)	-
A34 Birchfields Road (between A34 Moseley Road and Lytham Road)	No effect (Previously major adverse)	-
Platt Lane (between Lloyd Street South and A5103 Princess Road)	No effect (Previously moderate adverse)	-

Road Name	Significant Effect	AP2 Construction Scenario
Platt Lane (between Hart Road and Lloyd Street South)	No effect (Previously moderate adverse)	-
A34 Birchfields Road (between Lytham Road and Old Hall Lane)	No effect (Previously moderate adverse)	-
A34 Birchfields Road (between Old Hall Lane and Birch Hall Lane)	No effect (Previously moderate adverse)	-
A34 Birchfields Road (between Birch Hall Lane and A6010 Dickenson Road)	No effect (Previously major adverse)	-
A34 Anson Road (between A6010 Dickenson Road and Denison Road)	No effect (Previously major adverse)	-
A34 Upper Brook Street (between Hathersage Road and Grafton Street)	No effect (Previously moderate adverse)	-
Belle Vue Street (between A57 Hyde Road and Birch Street)	No effect (Previously major adverse)	-
Belle Vue Street (between Birch Street and Gorton Lane)	No effect (Previously major adverse)	-
A635 Manchester Road (between Capital Road and Ashton Hill Lane)	Moderate adverse (Previously no effect)	Scenarios 3, 4 and 5
A635 Manchester Road (between B6390 Audenshaw Road and A662 Lumb Lane)	Major adverse (increased) (Previously major adverse)	Scenarios 2, 3, 4 and 5
A662 Manchester Road (between Market Street and Davenport Street)	No effect (Previously moderate adverse)	-
Palmerston Street (between Councillor Street and Gurney Street)	Major adverse (Previously moderate adverse)	Scenario 3
A6140 Lord Sheldon Way (between A635 Manchester Road and Ashton Leisure Park)	No effect (Previously moderate adverse)	-
A6140 Wellington Road (between A627 Cavendish Street and A627 Oldham Road)	No effect (Previously moderate adverse)	-
A6140 Lord Sheldon Way (between A627 Cavendish Street and Richmond Street)	No effect (Previously moderate adverse)	-

7.3.33 The construction of the AP2 revised scheme in the Davenport Green to Ardwick area will require temporary bus route diversions and traffic management, with consequential changes in journey times and the need to relocate bus stops. The impact of these bus route changes and diversions, as well as changes in the traffic flows on the highway network, will result in changes to public transport delay. Bus routes that will experience a significant effect due to changes in public transport delay are set out in Table 18. The significance of the effect reported in the main ES is indicated in brackets.

Table 18: New or different significant effects on delays to public transport

Bus Route(s)	Roads operating on	2031
192, 733 and X92	A6 Stockport Road between A6010 Alan Turing Way and Manchester City Centre	Major adverse (Previously moderate adverse)

Bus Route(s)	Roads operating on	2031
216, 230, 231	A662 Ashton New Road between A6010 Alan Turing Way and Manchester City Centre	Moderate beneficial (Previously moderate adverse)
201, 202, 203 and 205	A57 Hyde Road between A6010 Alan Turing Way and Manchester City Centre	Major adverse (Previously moderate adverse)

Other mitigation measures

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

Summary of likely residual significant effects

7.3.35 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.

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

- change (decrease) from major adverse effect to moderate adverse effect at two junctions;
- change (increase) from moderate adverse effect to major adverse effect at six junctions;
- change (increase) from minor adverse effect to moderate adverse effect at two junctions;
- change (decrease) from major adverse effect to minor adverse effect at three junctions;
- change (decrease) from moderate adverse effect to minor adverse effect at one junction;
- change (decrease) from minor adverse effect to minor beneficial effect at one junction;
- change (increase) from minor beneficial effect to minor adverse effect at one junction;
- new major adverse effect at nine junctions;
- new moderate adverse effect at seven junctions;
- new minor adverse effect at 14 junctions; and
- new major beneficial effect at one junction.

7.3.37 The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users reported in the main ES:

- change (decrease) from major adverse effect to moderate adverse effect on two roads;
- change (increase) from moderate adverse effect to major adverse effect on four roads;
- change (increase) from minor adverse effect to moderate adverse effect on one road;
- new major adverse effect on seven roads;

- new moderate adverse effect on 18 roads;
- new minor adverse effect on seven roads;
- new moderate beneficial effect on eight roads;
- new minor beneficial effect on one road; and
- different (increased) major adverse significant effects on two roads.

7.3.38 The AP2 revised scheme will result in the following changes to public transport delay in 2031 in the Davenport Green to Ardwick area:

- a change (increase) from a moderate adverse effect to a major adverse effect on public transport delay in 2031 on two bus corridors; and
- a decrease from a moderate adverse effect to a moderate beneficial effect on public transport delay in 2031 on one bus corridor.

Summary of likely residual significant effects that will be removed

7.3.39 The AP2 revised scheme will result in the removal of the following effects on congestion and delay for vehicle occupants reported in the main ES:

- significant adverse effects removed at 35 junctions (five major, five moderate, 25 minor); and
- significant beneficial effects removed at two junctions (two minor).

7.3.40 The AP2 revised scheme will result in the removal of the following effects on traffic-related severance for non-motorised users reported in the main ES:

- significant adverse effects removed on 30 roads (four major, 25 moderate and one minor); and
- significant beneficial effects removed on two roads (two moderate).

Cumulative effects

7.3.41 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

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

Assessment of impacts and effects

7.3.43 The assessment of effects arising during operation is described in Section 14 of Volume 2, Community Area report: Davenport Green to Ardwick, (MA07) of the main ES.

7.3.44 The AP2 revised scheme includes the permanent realignment of Rondin Road to form a four-arm signalised junction with the A635 Ashton Old Road and Viaduct Street (AP-007-009).

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

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

Junction Name	Significant Effect
A555 Ringway Road/B5166 Styal Road	Moderate adverse (Previously minor adverse)
Portway/Selstead Road	Moderate beneficial (Previously minor beneficial)
Simonsway/Poundswick Lane	No effect (Previously minor adverse)
Greenbrow Road/Newall Road	Major adverse (Previously no effect)
Barnacre Avenue/Newall Road/Whitecarr Lane	Major adverse (Previously minor adverse)
M56 junction 4 southbound off-slip/Simonsway	Minor adverse (Previously no effect)
Floats Road/Southmoor Road	Major adverse (Previously no effect)
Southmoor Road/Hollyhedge Road	Minor adverse (Previously no effect)
M60 junction 3	Minor adverse (Previously no effect)
M60 junction 2/A560 Stockport Road/Heathside Park Road/Carrs Road/Cheadle Point	No effect (Previously minor adverse)
M56 junction 3a/A560 Altrincham Road	No effect (Previously moderate adverse)
A6 Wellington Road South/Wellington Street/Station Road	No effect (Previously minor adverse)
A5103 Princess Road/A6010 Wilbraham Road	Moderate adverse (Previously no effect)
A5181 Barton Road/A5145 Kingsway/B5213 Urmston Lane	No effect (Previously minor adverse)

Junction Name	Significant Effect
A57 Hyde Road/Lime Grove/Saxon Street	No effect (Previously major adverse)
A57 Hyde Road/Tan Yard Brow/Willow Grove	No effect (Previously moderate adverse)
A57 Hyde Road/Chapman Street	Moderate adverse (Previously major adverse)
Chapman Street/Cross Lane	No effect (Previously moderate adverse)
A57 Hyde Road/Clowes Street	No effect (Previously major adverse)
A57 Hyde Road/Bennett Street	No effect (Previously major adverse)
Stamford Road/Corporation Road	No effect (Previously minor adverse)
A665 Devonshire Street North/A57 Hyde Road/A665 Devonshire Street	No effect (Previously minor beneficial)
Gorton Lane/Belle Vue Street	No effect (Previously major adverse)
A6010 Pottery Lane/Gorton Lane/Wenlock Way	Moderate adverse (Previously minor adverse)
A665 Chancellor Lane diversion/A665 Devonshire Street North/Higher Ardwick	Major adverse (Previously moderate adverse)
A635 Ashton Old Road/Capital Road	No effect (Previously minor beneficial)
A635 Ashton Old Road/Ogden Lane/Fairfield Road	No effect (Previously minor beneficial)
A635 Manchester Road/Ashton Hill Lane	Minor beneficial (Previously no effect)
A635 Ashton Old Road/Gable Street	Minor beneficial (Previously no effect)
A627 King Street/B6169 Astley Street	Moderate adverse (Previously no effect)
A662 Manchester Road/A662 Ashton Road/Market Street	Minor adverse (Previously no effect)
A662 Manchester Road/A662 Ashton New Road/Edge Lane	Minor adverse (Previously minor beneficial)
Millstream Lane/Edge Lane/Berry Brow	Minor beneficial (Previously no effect)
Culcheth Lane/Briscoe Lane	No effect (Previously minor adverse)
Moston Lane/Nuthurst Road	Minor adverse (Previously no effect)

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

Junction Name	Significant Effect
A555 Ringway Road/B5166 Styal Road	Moderate adverse (Previously minor adverse)

Junction Name	Significant Effect
A555 Ringway Road West/Enterprise Way	Major adverse (Previously moderate adverse)
Shadowmoss Road/Cornishway	Minor beneficial (Previously no effect)
B5166 Styal Road/Finney Lane/Simonsway	Minor beneficial (Previously no effect)
Portway/Selstead Road	Moderate beneficial (Previously no effect)
Simonsway/Poundswick Lane	Moderate adverse (Previously no effect)
Greenbrow Road/Newall Road	Major adverse (Previously moderate adverse)
Barnacre Avenue/Newall Road/Whitecarr Lane	Major adverse (Previously no effect)
Floats Road/Southmoor Road	Major adverse (Previously minor adverse)
Southmoor Road/Hollyhedge Road	Moderate adverse (Previously no effect)
Southmoor Road/Ledson Road	Minor adverse (Previously major adverse)
M56 junction 2/A560 Altrincham Road/B5168 Sharston Road	Minor adverse (Previously no effect)
Greenwood Road/Royalthorn Road	No effect (Previously minor adverse)
M60 junction 2/A560 Stockport Road/Heathside Park Road/Carrs Road/Cheadle Point	Minor adverse (Previously no effect)
M56 junction 3a/A560 Altrincham Road	No effect (Previously minor adverse)
Hall Lane/Nearcroft Road	Minor adverse (Previously no effect)
A560 Altrincham Road/A560 Shaftesbury Avenue/B5165 Stockport Road/Brooklands Road	Moderate adverse (Previously minor adverse)
B5166 Longley Lane/B5168 Sharston Road/Longley Lane	Major beneficial (Previously no effect)
A5103 Princess Parkway/B5167 Palatine Road	Minor adverse (Previously no effect)
M60 junction 27 (A560 Portwood Roundabout)	Minor beneficial (Previously no effect)
A6144 Northenden Road/A6144 Old Hall Road	No effect (Previously minor beneficial)
A5145 Barlow Moor Road/A5103 Princess Road	Minor beneficial (Previously no effect)
A6 Wellington Road North/Crossley Road	Minor adverse (Previously no effect)
A5103 Princess Road/Whitchurch Road	No effect (Previously major adverse)

Junction Name	Significant Effect
Yew Tree Road/Mauldeth Road West	Moderate adverse (Previously no effect)
A5103 Princess Road/A6010 Wilbraham Road	Major beneficial (Previously moderate adverse)
B6167 Gorton Road/Mill Lane/Gainford Road	Minor adverse (Previously no effect)
A5103 Princess Road/Platt Lane/Parkway Access	No effect (Previously minor adverse)
Upper Lloyd Street/Claremont Road/Lloyd Street South	No effect (Previously moderate adverse)
A6 Stockport Road/A5079 Slade Lane	Minor beneficial (Previously no effect)
A57 Hyde Road/Lime Grove/Saxon Street	Major adverse (Previously no effect)
B5219 Moss Lane East/Upper Lloyd Street/Lloyd Street North	No effect (Previously minor adverse)
A34 Upper Brook Street/Hathersage Road	No effect (Previously minor adverse)
A57 Hyde Road/Tan Yard Brow/Willow Grove	No effect (Previously minor adverse)
A57 Hyde Road/Wellington Street/Hengist Street	No effect (Previously minor adverse)
Wellington Street/Cross Lane/Garratt Way	No effect (Previously moderate adverse)
Chapman Street/Cross Lane	No effect (Previously moderate adverse)
A5067 Stretford Road/A5068 Chorlton Road/B5218 Chorlton Road	Minor beneficial (Previously no effect)
A57 Hyde Road/Clowes Street	No effect (Previously major adverse)
A57 Hyde Road/Bennett Street	No effect (Previously major adverse)
Stamford Road/Corporation Road	No effect (Previously minor adverse)
Gorton Lane/Belle Vue Street	No effect (Previously major adverse)
A6010 Pottery Lane/Gorton Lane/Wenlock Way	Minor adverse (Previously no effect)
A635 Ashton Old Road/Vine Street	No effect (Previously minor adverse)
A635 Ashton Old Road/Stainforth Street	No effect (Previously minor beneficial)
A662 Droylsden Road/A662 Lumb Lane	Moderate adverse (Previously no effect)
A662 Manchester Road/A662 Ashton Road/Market Street	Moderate adverse (Previously no effect)

Junction Name	Significant Effect
A662 Manchester Road/A662 Ashton New Road/Edge Lane	No effect (Previously minor beneficial)
A662 Ashton New Road/Hillkirk Street	No effect (Previously minor beneficial)
Millstream Lane/Edge Lane/Berry Brow	No effect (Previously minor adverse)
Westminster Road/Ashton Road East	Minor adverse (Previously no effect)
A663 Broadway/Long Lane/Costco access	No effect (Previously minor beneficial)

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

Table 21: 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
Shadowmoss Road (between Simonsway and Cornishway)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously minor adverse)
Bailey Lane/Selstead Road (between Thorley Lane and Portway)	Moderate beneficial (Previously no effect)	No effect (No change)	Major beneficial (Previously no effect)	No effect (No change)
Portway (between Cornishway and Ruddpark Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Ruddpark Road (between Portway and Simonsway)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Portway (between Oatlands Road and Cornishway)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Portway (between Selstead Road and Simonsway)	Moderate beneficial (Previously no effect)	No effect (No change)	Major beneficial (Previously major adverse)	Moderate beneficial (Previously no effect)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Peel Hall Road (between Simonsway and Lomond Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Brownley Road (between Crossacres Road and Simonsway)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)	No effect (No change)
Greenbrow Road (between Hucklow Avenue and Newall Road)	Major adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously moderate beneficial)	Moderate adverse (Previously no effect)
Simonsway (between Portway and Greenwood Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Greenbrow Road (between Simonsway and Hucklow Avenue)	Major adverse (Previously no effect)	Moderate adverse (Previously no effect)	Major adverse (Previously moderate beneficial)	Major adverse (Previously no effect)
Greenbrow Road (between Newall Road and Tuffley Road)	Major beneficial (Previously no effect)	Major beneficial (Previously no effect)	Major beneficial (Previously no effect)	Major beneficial (Previously no effect)
Poundswick Lane (between Simonsway and Gladeside Road)	No effect (No change)	No effect (No change)	Moderate beneficial (Previously no effect)	Moderate adverse (Previously no effect)
Newall Road (between Greenbrow Road and Whitecarr Lane)	Moderate adverse (Previously no effect)	No effect (No change)	No change (Previously moderate adverse)	No effect (No change)
Poundswick Lane (between Gladeside Road and Rowlandsway)	Major adverse (Previously no effect)	No effect (No change)	Major adverse (Previously no effect)	Moderate adverse (Previously no effect)
Rowlandsway (between Simonsway and Poundswick Lane)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (Previously minor adverse)
Whitecarr Lane (between Newall Road and Roaring Gate Lane)	Moderate adverse (Previously no effect)	No effect (Previously moderate adverse)	Major adverse (Previously moderate adverse)	No effect (No change)
Poundswick Lane (between Rowlandsway and Woodhouse Lane)	Major adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)
Simonsway (between Greenbrow Road and	No effect (No change)	No effect (No change)	Moderate adverse	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
M56 North Cheshire Motorway)			(Previously no effect)	
Simonsway (between Greenbrow Road and Firbank Road)	Major beneficial (Previously moderate adverse)	Major beneficial (Previously no effect)	Major beneficial (Previously major adverse)	Major beneficial (Previously no effect)
Gladeside Road (between Greenwood Road and Poundswick Lane)	Moderate beneficial (Previously no effect)	Moderate adverse (Previously no effect)	Moderate beneficial (Previously no effect)	No effect (Previously moderate adverse)
Tuffley Road (between Firbank Road and Greenbrow Road)	Major beneficial (Previously major adverse)	Major beneficial (Previously no effect)	Major beneficial (Previously major adverse)	Major beneficial (Previously no effect)
Greenwood Road (between Simonsway and Gladeside Road)	Major adverse (Previously no effect)	No effect (No change)	No change (Previously major adverse)	Moderate beneficial (Previously no effect)
Crossacres Road (between Brownley Road and Hollyhedge Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Floats Road/Clay Lane/Barnacre Avenue/Newall Road (between Dobbinetts Lane and Whitecarr Lane)	Major beneficial (Previously moderate beneficial)	No effect (Previously moderate beneficial)	Major beneficial (Previously no effect)	No effect (Previously moderate beneficial)
Broadoak Road (between Poundswick Lane and Hollyhedge Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Greenbrow Road (between Tuffley Road and Wastdale Road)	Major beneficial (Previously moderate adverse)	Major beneficial (Previously no effect)	Major beneficial (Previously major adverse)	Major beneficial (Previously moderate adverse)
Greenwood Road (between Gladeside Road and Hollyhedge Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
Brownley Road (between Hollyhedge Road and Royalthorn Road)	No effect (No change)	Moderate beneficial (Previously no effect)	Moderate adverse (Previously no effect)	No effect (No change)
Greenbrow Road (between Wastdale Road and Firbank Road)	No effect (Previously moderate adverse)	No effect (No change)	No change (Previously major adverse)	No effect (No change)
Southmoor Road (between Floats Road	Major adverse (Previously	Moderate beneficial	No change (Previously	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
and Wythenshawe Hospital Visitor Car Park)	moderate adverse)	(Previously major beneficial)	moderate adverse)	
Highdales Road (between Hollyhedge Road and Firbank Road)	Minor adverse (Previously no effect)	Moderate beneficial (Previously no effect)	No effect (Previously minor adverse)	Moderate beneficial (Previously no effect)
Firbank Road (between Highdales Road and Greenbrow Road)	Moderate adverse (Previously minor adverse)	Moderate beneficial (Previously no effect)	No effect (Previously moderate adverse)	Moderate beneficial (Previously no effect)
Southmoor Road (between Wythenshawe Hospital Car Parking and Hollyhedge Road)	No effect (No change)	No change (Previously moderate beneficial)	No effect (Previously moderate adverse)	No effect (No change)
Floats Road (between Southmoor Road and Ledson Road)	No effect (No change)	No change (Previously major adverse)	Moderate adverse (Previously moderate beneficial)	Major adverse (Previously moderate adverse)
Southmoor Road (between Hollyhedge Road and Ledson Road)	Major adverse (Previously no effect)	Major adverse (Previously no effect)	No effect (No change)	No effect (No change)
Greenbrow Road (between Firbank Road and Hollyhedge Road)	No effect (Previously moderate adverse)	No effect (No change)	No change (Previously major adverse)	No effect (No change)
Hollyhedge Road (between Southmoor Road and Marden Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Greenwood Road (between Hollyhedge Road and A560 Altrincham Road)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (Previously moderate adverse)	Moderate beneficial (Previously no effect)
Hollyhedge Road (between Greenbrow Road and Highdales Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Hollyhedge Road (between Marden Road and Greenbrow Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Ledson Road (between Floats Road and Southmoor Road)	Moderate adverse (Previously no effect)	No effect (No change)	Major adverse (Previously moderate adverse)	No change (Previously major adverse)
A560 Altrincham Road (between B5166 Park Road and Church Road)	Moderate adverse	No effect (No change)	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
	(Previously no effect)			
A560 Altrincham Road (between Brownley Road and B5166 Park Road)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)
A560 Gatley Road (between A34 Kingsway and A5149 Wilmslow Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Benchill Road (between Greenwood Road and Rothley Avenue)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)
Brownley Road (between Royalthorn Road and A560 Altrincham Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Southmoor Road (between Ledson Road and Floatshall Road)	Major adverse (Previously no effect)	No change (Previously major adverse)	No effect (Previously moderate adverse)	Moderate adverse (Previously major adverse)
A560 Altrincham Road (between A560 Altrincham Road and M56 junction 2)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Southmoor Road (between Royal Oak Road and A560 Altrincham Road)	No effect (No change)	Moderate adverse (Previously major adverse)	No effect (No change)	No effect (No change)
Floatshall Road (between Southmoor Road and Hall Lane)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)
B5168 Sharston Road (between M56 junction 2 and B5166 Longley Lane)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
B5166 Longley Lane (between A560 Altrincham Road and B5168 Sharston Road)	Major adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
A560 Altrincham Road (between M56 junction 3a and Greenwood Road)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)
Lowfield Road (between B6184 Shaw Heath and	No effect (No change)	No effect (No change)	Moderate adverse	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
A6 Wellington Road South)			(Previously no effect)	
Royal Oak Road (between Spark Road and Hall Lane)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)
Hall Lane (between Bowland Road and A560 Altrincham Road)	No effect (No change)	Moderate beneficial (Previously no effect)	Major beneficial (Previously no effect)	No effect (No change)
A560 Altrincham Road (between Southmoor Road and M56 junction 3a)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)	Moderate adverse (Previously no effect)
B5465 Edgeley Road (between Northgate Road and Castle Street)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
A560 Altrincham Road (between Brooklands Road and B5167 Ferndown Road)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)
A560 Altrincham Road (between B5167 Ferndown Road and Moor Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Morningside Drive (between A34 Kingsway and B5095 Wilmslow Road)	Minor adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Bloom Street (between Northgate Road and Grenville Street)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Wendover Road (between Ferndown Road and Maple Road)	Minor adverse (Previously no effect)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)
Longley Lane (between Moor End and Beech Avenue)	No effect (No change)	No effect (No change)	No effect (Previously moderate beneficial)	No effect (No change)
Moor End (between Longley Lane and B5167 Palatine Road)	No effect (No change)	No effect (No change)	No effect (Previously moderate beneficial)	No effect (No change)
Longley Lane (between Moor End and B5167 Palatine Road)	No effect (No change)	No effect (No change)	No effect (Previously moderate beneficial)	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
B5166 Church Road (between Patterdale Road and B5167 Palatine Road)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Maple Road (between Keats Mews and Cranleigh Drive)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Cranleigh Drive (between Maple Road and Brooklands Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
B5167 Wythenshawe Road (between Moorcroft Road and B5166 Sale Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
B5166 Sale Road (between B5167 Wythenshawe Road and Orton Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Thornfield Road (between Mauldeth Road and B5169 Heaton Moor Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
B5169 Heaton Moor Road (between Green Lane and Clifton Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Conway Road (between Norris Road and A6144 Marsland Road)	Minor adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Temple Road (between Broad Road and B5397 Dane Road)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)	No effect (No change)
B5166 Ashton Lane (between York Road and A56 Cross Street)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Doncaster Avenue/Old Moat Lane (between Whitchurch Road and Yew Tree Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Kingswood Road/Wald Avenue (between Ladybarn Lane and Talbot Road)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)	No effect (No change)
A6010 Wilbraham Road (between Lloyd Street South and Yew Tree Road)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate adverse (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
Lytham Road (between A34 Birchfields Road and A5079 Slade Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)
Platt Lane (between Hart Road and Lloyd Street South)	Major adverse (Previously no effect)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Platt Lane (between Hart Road and Yew Tree Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
Lloyd Street South (between Platt Lane and Hart Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously minor adverse)	Moderate beneficial (Previously no effect)
Lloyd Street South (between Garswood Road and Thornton Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously minor adverse)	Moderate beneficial (Previously no effect)
A5103 Princess Road (between Platt Lane and Claremont Road)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)	Major adverse (Previously no effect)
Yew Tree Road (between Platt Lane and Claremont Road)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)	No effect (No change)
East Road (between A6 Stockport Road and Northmoor Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
A57 Manchester Road South (between Oldham Street and Seymour Street)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)
A57 Seymour Street (between A57 Manchester Road South and A57 Manchester Road North)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Birch Lane (between A6010 Dickenson Road and A6 Stockport Road)	No effect (Previously minor adverse)	No effect (No change)	No effect (Previously minor adverse)	No effect (No change)
Northmoor Road (between Stanley Grove and Kirkmanshulme Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
Seymour Street (between Taylor Lane and A57 Manchester Road North)	No effect (No change)	No effect (No change)	Moderate adverse (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
A5184 Plymouth Grove (between A6 Stockport Road and Clarence Road)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)
A6010 Kirkmanshulme Lane (between New Bank Street and A6010 Pottery Lane)	No effect (No change)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)
Pink Bank Lane (between Stanley Grove and Kirkmanshulme Lane)	No effect (No change)	Minor adverse (Previously no effect)	Moderate adverse (Previously no effect)	No effect (No change)
A6 Stockport Road (between A5184 Plymouth Grove and Plymouth Grove West)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
Whitwell Way (between Garratt Way and A57 Hyde Road)	Moderate adverse (Previously major adverse)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
Thornbury Way/Garratt Way (between A57 Hyde Road and Whitwell Way)	No effect (No change)	No effect (No change)	Moderate adverse (Previously minor adverse)	Moderate adverse (Previously no effect)
Garratt Way (between Whitewell Way and Wellington Street)	Moderate adverse (Previously major adverse)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
Plymouth Grove West (between A6 Stockport Road and A5184 Plymouth Grove)	Moderate adverse (Previously no effect)	Moderate beneficial (Previously no effect)	No effect (No change)	No effect (No change)
Coverdale Crescent/New Bank Street (between A665 Devonshire Street and Dillon Drive)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
New Bank Street (between Dillon Drive and A6010 Kirkmanshulme Lane)	Moderate adverse (Previously no effect)	Major adverse (Previously no effect)	Major adverse (Previously no effect)	Major adverse (Previously no effect)
Chapman Street (between Cross Lane and Highmead Street)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
High Bank (between Cross Lane and Highmead Street)	No effect (No change)	No effect (No change)	No effect (Previously moderate beneficial)	No change (Previously moderate adverse)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Highmead Street (between Chapman Street and High Bank)	No effect (Previously moderate beneficial)	No effect (No change)	No effect (No change)	No effect (No change)
East Union Street (between A5067 Stretford Road and A5014 Chester Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Taylor Lane/Corporation Road (between Seymour Street and Stamford Road)	No effect (No change)	No effect (No change)	Major adverse (Previously no effect)	No effect (No change)
Wellington Street/Gorton Lane (between Garratt Way and A6010 Pottery Lane)	No effect (No change)	No change (Previously moderate adverse)	No effect (No change)	Moderate adverse (Previously major adverse)
Belle Vue Street (between A57 Hyde Road and Birch Street)	No change (Previously major adverse)	Moderate adverse (Previously no effect)	No change (Previously major adverse)	Moderate adverse (Previously no effect)
Birch Street (between A57 Hyde Road and Belle Vue Street)	No change (Previously moderate adverse)	Minor adverse (Previously no effect)	No change (Previously moderate adverse)	No effect (No change)
Chapman Street (between Highmead Street and Railway Street)	No effect (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
A6010 Pottery Lane (between A57 Hyde Road and Wenlock Way)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	No change (Previously moderate adverse)
Abbey Hey Lane (between Vine Street and Jetson Street)	No effect (No change)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)
Jetson Street (between Abbey Hey Lane and Burstead Street)	No effect (No change)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)
Corporation Road (between Stamford Road and Maytree Crescent)	No effect (Previously moderate adverse)	No effect (No change)	No effect (No change)	No effect (No change)
City Road (between A5014 Chester Road and A5067 Chorlton Road)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	Moderate beneficial (Previously no effect)
Clowes Street (between A57 Hyde Road and Wenlock Way)	No effect (No change)	No effect (No change)	No effect (Previously	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
			moderate beneficial)	
A665 Devonshire Street (between Coverdale Crescent and A57 Hyde Road)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
Belle Vue Street (between Birch Street and Gorton Lane)	No change (Previously major adverse)	Moderate adverse (Previously no effect)	No change (Previously major adverse)	Moderate adverse (Previously no effect)
Wenlock Way (between Kniveton Road and A6010 Pottery Lane)	No effect (No change)	No effect (No change)	No effect (Previously moderate beneficial)	No effect (No change)
Vine Street (between Abbey Hey Lane and A635 Ashton Old Road)	No effect (No change)	No effect (Previously moderate adverse)	Minor adverse (Previously no effect)	No effect (Previously major adverse)
A57 Hyde Road (between Higher Ardwick and A665 Devonshire Street North)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	No effect (No change)
Cornwall Street (between Railway Street and Ogden Lane)	No effect (Previously moderate adverse)	No effect (No change)	No effect (No change)	No effect (No change)
Abbey Hey Lane (between Jetson Street and Capital Road)	No effect (No change)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)
Inverness Road (between Thorncliffe Avenue and Armadale Road)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)	No effect (No change)
Thorncliffe Avenue (between A627 King Street and Inverness Road)	No effect (No change)	No effect (No change)	Minor adverse (Previously no effect)	No effect (No change)
Cornwall Street (between Ogden Lane and A635 Ashton Old Road)	Moderate adverse (Previously no effect)	No change (Previously moderate adverse)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)
A665 Devonshire Street North (between Higher Ardwick and A57 Hyde Road)	No change (Previously moderate beneficial)	Major beneficial (Previously moderate beneficial)	No change (Previously moderate beneficial)	Major beneficial (Previously moderate beneficial)
Press Street/Whitworth Street East (between Widnes Street and Lawton Street)	No effect (Previously major adverse)	Moderate beneficial (Previously no effect)	No effect (Previously major adverse)	No effect (No change)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
B6390 Audenshaw Road (between Kings Road and Stamford Road)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Gorton Road (between Stainforth Street and A6010 Pottery Lane)	Major beneficial (Previously no effect)	No effect (Previously major adverse)	Major beneficial (Previously no effect)	No effect (Previously major adverse)
A665 Chancellor Lane (between Higher Ardwick and A665 Midland Street)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)
B6390 Audenshaw Road (between Kershaw Lane and Kings Road)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
A665 Midland Street (between A665 Chancellor Lane and Handsworth Street)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)	Moderate beneficial (Previously no effect)
B6390 Audenshaw Road (between Stamford Road and A6140 Moss Way)	No effect (Previously major adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Victoria Street/Parkhouse Street (between A635 Ashton Old Road and Greenside Street)	Moderate adverse (Previously no effect)	Major adverse (Previously minor adverse)	Major adverse (Previously no effect)	Major adverse (Previously moderate adverse)
A6010 Pottery Lane (between Wenlock Way and A635 Ashton Old Road)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)
Gable Street (between A635 Ashton Old Road and Stainforth Street)	Major beneficial (Previously no effect)	No effect (Previously major adverse)	Major beneficial (Previously moderate beneficial)	No effect (Previously major adverse)
A635 Ashton Old Road (between Stainforth Street and A6010 Pottery Lane)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
A635 Ashton Old Road (between Gable Street and Stainforth Street)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
A6010 Alan Turing Way (between A635 Ashton Old Road and Wilson street)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Greenside Street (between A635 Ashton Old Road and Parkhouse Street)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
A635 Ashton Old Road (between A665 Midland Street and Gable Street)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)
Parkhouse Street (between Greenside Street and Cycle Street)	Minor adverse (Previously no effect)	Moderate adverse (Previously moderate beneficial)	Major adverse (Previously no effect)	Major adverse (Previously no effect)
Sunny Lowry Road (between A6010 Alan Turing Way and Grey Mare Lane)	No effect (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Greenside Street (between Parkhouse Street and Clayton Lane)	Moderate adverse (Previously no effect)	No effect (Previously moderate adverse)	Moderate adverse (Previously no effect)	No effect (Previously minor adverse)
A6017 Stockport Road (between Howe Street and Birch Street)	No effect (Previously major adverse)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
A6010 Alan Turing Way (between Wilson Street and Sunny Lowry Road)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)
Wilson Street (between Ridings Street and Clayton Lane)	No effect (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
A6140 Moss Way (between M60 junction 23 eastbound off-slip and M60 junction 23 westbound on-slip)	No effect (Previously moderate adverse)	No effect (No change)	No effect (No change)	No effect (No change)
Grey Mare Lane (between Sunny Lowry Road and Albert Street)	No effect (Previously major adverse)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
A6010 Alan Turing Way (between Sunny Lowry Road and A662 Ashton New Road)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
Grey Mare Lane/Sunny Lowry Road (between Albert Street and A6010 Alan Turing Way)	Major adverse (Previously no effect)	Major adverse (Previously no effect)	Major 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
Clayton Lane (between Cycle Street and Greenside Street)	No effect (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	Moderate beneficial (Previously no effect)
A6017 Stockport Road (between Birch Street and Hamilton Street)	No effect (Previously major adverse)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
Albert Street (between Darley Street and Grey Mare Lane)	No change (Previously major adverse)	Major adverse (Previously no effect)	No change (Previously major adverse)	Major adverse (Previously no effect)
A6017 Stockport Road (between Cecil Walk and Hamilton Street)	No effect (Previously major adverse)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
Albert Street (between Councillor Street and Darley Street)	No change (Previously moderate adverse)	Moderate adverse (Previously moderate beneficial)	No change (Previously moderate adverse)	Moderate adverse (Previously moderate beneficial)
Palmerston Street (between Councillor Street and Gurney Street)	No change (Previously major adverse)	Moderate adverse (Previously moderate beneficial)	No change (Previously major adverse)	Major adverse (Previously major beneficial)
Grey Mare Lane (between Albert Street and A662 Ashton New Road)	Moderate adverse (Previously major adverse)	No change (Previously moderate adverse)	Moderate adverse (Previously major adverse)	No change (Previously moderate adverse)
Darley Street (between Albert Street and A662 Ashton New Road)	Moderate adverse (Previously minor adverse)	No change (Previously moderate adverse)	Moderate adverse (Previously minor adverse)	No change (Previously moderate adverse)
Clayton Lane (between Greenside Street and Oldfield Street)	No change (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	Moderate beneficial (Previously no effect)
Manor Road (between A662 Manchester Road and Cooper Street)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)	Major adverse (Previously no effect)
Manor Road (between Cooper Street and Lewis Road)	Moderate beneficial (Previously no effect)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
A662 Ashton New Road (between North Road and Edge Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)
Councillor Street (between Palmerston	No change (Previously major adverse)	No effect (No change)	No effect (Previously major adverse)	No effect (Previously moderate beneficial)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Street and A662 Ashton New Road)				
A662 Ashton New Road (between Beswick Street and A6010 Alan Turing Way)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)
Clayton Lane (between Oldfield Street and A662 Ashton New Road)	No change (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	Moderate beneficial (Previously no effect)
Edge Lane (between A662 Ashton New Road and North Road)	Moderate adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Hallkirk Street/Cambrian Street (between A662 Ashton New Road and Phillips Park Road)	Moderate adverse (Previously no effect)	No change (Previously moderate adverse)	Moderate adverse (Previously no effect)	No effect (Previously moderate adverse)
Clayton Street (between A662 Ashton New Road and North Road)	No change (Previously moderate adverse)	No effect (No change)	No change (Previously moderate adverse)	Moderate beneficial (Previously no effect)
Bank Street (between A662 Ashton New Road and John Heywood Street)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Margaret Street (between A635 Manchester Road and Cotton Street West)	No effect (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Bank Street (between John Heywood Street and Ravensbury Street)	Major adverse (Previously no effect)	No effect (No change)	Major adverse (Previously moderate adverse)	No effect (No change)
Tartan Street/Clayton Street (between Bank Street and John Heywood Street)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	Minor adverse (Previously no effect)
Richmond Street/Cotton Street West (between Margaret Street and Katherine Street)	No effect (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Bank Street (between Ravensbury Street and Tartan Street)	No effect (No change)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Chatsworth Road (between North Road and Edge Lane)	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
Katherine Street (between Margaret Street and Richmond Street)	No effect (Previously major adverse)	No effect (No change)	No effect (Previously major adverse)	No effect (No change)
Katherine Street (between Margaret Street and A627 Cavendish Street)	No effect (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Katherine Street (between A627 Cavendish Street and A627 Oldham Road)	No effect (Previously moderate adverse)	No effect (No change)	No effect (Previously moderate adverse)	No effect (No change)
Bradford Road (between A6010 Alan Turing Way and Varley Street)	Major beneficial (Previously moderate beneficial)	No change (Previously moderate beneficial)	Major beneficial (Previously no effect)	No change (Previously moderate beneficial)
A6010 Alan Turing Way (between Bradford Road and Lord North Street)	Moderate beneficial (Previously no effect)	No effect (No change)	Moderate beneficial (Previously no effect)	No effect (No change)
Ten Acres Lane (between Briscoe Lane and Riverpark Road)	Moderate adverse (Previously no effect)	No effect (No change)	No change (Previously moderate adverse)	No effect (No change)
Grimshaw Lane (between Lord North Street and Briscoe Lane)	No effect (No change)	No effect (No change)	No effect (No change)	Moderate beneficial (Previously moderate adverse)
Ten Acres Lane (between Briscoe Lane and A62 Oldham Road)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Daisy Bank (between Terence Street and Droylsden Road)	Minor adverse (Previously no effect)	No effect (No change)	Moderate adverse (Previously no effect)	Minor beneficial (Previously no effect)
Clive Road (between Propps Hall Drive and Lord Lane)	No effect (No change)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)
Lord Lane (between Paddock Lane and Brierley Avenue)	No effect (No change)	Moderate adverse (Previously no effect)	No effect (No change)	No effect (No change)
Lord Lane (between Brierley Avenue and School Road)	No effect (No change)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)

Road name	2039 AM peak hour	2039 PM peak hour	2051 AM peak hour	2051 PM peak hour
Lord Lane (between School Road and Ashton Road West)	No effect (No change)	Major adverse (Previously no effect)	Moderate adverse (Previously no effect)	Moderate adverse (Previously no effect)

7.3.47 The operation of the AP2 revised scheme in the Davenport Green to Ardwick area will result in the permanent re-routeing of several bus routes due in particular to road closures, and diversions. The impact of these bus route changes and diversions, as well as changes in the traffic flows on the highway network, will result in changes to public transport delay. Bus routes that will experience a significant effect due to changes in public transport delay are set out in Table 22. The significance of the effect reported in the main ES is indicated in brackets.

Table 22: Bus routes resulting in significant effects on delays to public transport

Bus Routes	Roads operating on	2039	2051
7, 7A, 7B, 171, 172, 219, 220, 221, 703, 704, 707, 719, 747 and 768	A635 Ashton Old Road between the A6010 Alan Turing Way and Manchester City Centre	Minor Adverse (Previously moderate adverse)	Minor Adverse (Previously moderate adverse)

Other mitigation measures

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

Summary of likely residual significant effects

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

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

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

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

7.3.51 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 main ES:

- change (decrease) from major adverse effect to moderate adverse effect on four roads;
- change (increase) from moderate adverse effect to major adverse effect on one road;
- change (increase) from minor adverse effect to major adverse effect on one road;
- change (increase) from minor adverse effect to moderate adverse effect on one road;
- change (decrease) from major adverse effect to major beneficial effect on three roads;
- change (decrease) from moderate adverse effect to major beneficial effect on two roads;
- change (decrease) from major adverse effect to moderate beneficial effect on one road;
- change (increase) from moderate beneficial effect to major beneficial effect on three roads;
- change (increase) from moderate beneficial effect to moderate adverse effect on one road;
- new major adverse effect on 12 roads;
- new moderate adverse effect on 33 roads;
- new minor adverse effect on six roads;
- new major beneficial effect on one road; and
- new moderate beneficial effect on 18 roads.

7.3.52 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 main 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 four roads;

- change (increase) from minor adverse effect to moderate adverse effect on three roads;
- change (decrease) from major adverse effect to minor adverse effect on one road;
- change (decrease) from major adverse effect to major beneficial effect on six roads;
- change (decrease) from moderate adverse effect to moderate beneficial effect on eight roads;
- change (decrease) from minor adverse effect to moderate beneficial effect on three roads;
- change (increase) from moderate beneficial effect to major beneficial effect on three 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 one road;
- new major adverse effect on 13 roads;
- new moderate adverse effect on 45 roads;
- new minor adverse effect on eight roads;
- new major beneficial effect on three roads; and
- new moderate beneficial effect on 10 roads.

7.3.53 The AP2 revised scheme will result in a change (decrease) from a moderate adverse effect to a minor adverse effect on public transport delay in 2039 and 2051 on one bus corridor.

7.3.54 The AP2 revised scheme will result in the removal of the following effects on congestion and delay for vehicle occupants in 2039 reported in main ES:

- significant adverse effects removed at 13 junctions (four major, three moderate and six minor); and
- significant beneficial effects removed at three junctions (three minor).

7.3.55 The AP2 revised scheme will result in the removal of the following effects on congestion and delay for vehicle occupants in 2051 reported in the main ES:

- significant adverse effects removed at 17 junctions (four major, three moderate and 10 minor); and
- significant beneficial effects removed at five junctions (five minor).

7.3.56 The AP2 revised scheme will result in the removal of the following effects on traffic-related severance for non-motorised users in 2039 reported in the main ES:

- significant adverse effects removed on 22 roads (six major, 15 moderate and one minor); and
- significant beneficial effects removed on one road (one moderate).

7.3.57 The AP2 revised scheme will result in the removal of the following effects on traffic-related severance for non-motorised users in 2051 reported in the main ES:

- significant adverse effects removed on 33 roads (10 major, 21 moderate and two minor); and
- significant beneficial effects removed on five roads (five moderate).

Cumulative effects

7.3.58 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 Community

Scope, assumptions and limitations

7.4.1 The assessment scope, key assumptions and limitations for the community assessment are as set out in Volume 1 (Section 8) and the SMR (see Volume 5, Appendix: CT-001-00001) of the main ES.

7.4.2 The changes of relevance to this assessment have the potential to result in new or different construction effects only. Therefore, there is no operational assessment for Community.

Environmental baseline

Existing baseline

7.4.3 The baseline community information is as described in Section 6 of the main ES Volume 2, Community Area report Davenport Green to Ardwick (MA07). A summary of the baseline information relevant to the assessment of the AP2 revised scheme in this area is provided below.

7.4.4 The Manchester tunnel south portal will be located west of the M56 junction 5 and accessed from a new access track off Thorley Lane. The study area around Manchester tunnel south portal is primarily residential and covers parts of Newall Green.

7.4.5 The Birchfields Road vent shaft will be located in Fallowfield. The study area around the vent shaft site is primarily residential, with nearby retail and educational facilities. Community facilities in the study area in proximity to the vent shaft site include Birchfields Primary School.

Future baseline

7.4.6 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

7.4.7 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 ES Volume 5,

Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

7.4.8 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts for community.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

7.4.10 The main ES reported a moderate adverse in-combination effect on approximately 45 residential properties on the A34 Kingsway between Talbot Road and Mauldeth Road. Significant HGV traffic effects were expected to combine with significant noise effects.

7.4.11 Changes to construction traffic flows and the sound, noise and vibration assessment as result of new construction traffic data will remove the significant HGV traffic and noise effects. This will result in the removal of the significant in-combination effect on approximately 45 residential properties on the A34 Kingsway, between Talbot Road and Mauldeth Road.

7.4.12 The main ES reported a moderate adverse in-combination effect on approximately 20 residential properties at the south of the A34 Birchfields Road. Significant noise effects were expected to combine with significant visual and significant HGV traffic effects for approximately seven months.

7.4.13 Changes to construction traffic flows will result in the removal of HGV traffic effects. Significant noise and visual effects reported in the main ES remain significant. This will result in a different in-combination effect on approximately 20 residential properties at the south of the A34 Birchfield Road, which is significant. However, this will not change the level of significance of the effect reported in the main ES.

7.4.14 The main ES reported a major adverse in-combination effect on Birchfields Primary School on Lytham Road. Significant noise effects were expected to combine with significant visual and significant HGV traffic effects for approximately five years and two months.

7.4.15 Changes to construction traffic flows will result in the removal of HGV traffic effects. Significant noise and visual effects reported in the main ES remain significant. This will result in a different in-combination effect on Birchfields Primary School, which is significant. However, this will not change the level of significance of the effect reported in the main ES.

7.4.16 Changes to construction traffic flows will result in a new major adverse significant effect on approximately 60 residential properties on Firbank Road, Baguley. Firbank Road will experience a significant increase in HGV traffic. This new significant HGV traffic effect will combine with new traffic noise effects for approximately two years. Together, these noise effects and HGV traffic effects will result in a new major adverse in-combination effect on amenity for residents at these properties, which is significant.

7.4.17 Changes to construction traffic flows will result in a new major adverse significant effect on Noddy's Day Nursery on Firbank Road, Baguley. Firbank Road will experience a significant increase in HGV traffic. This new significant HGV traffic effect will combine with new traffic noise effects at Noddy's Day Nursery for approximately two years. Together, these noise effects and HGV traffic effects will result in a new major adverse in-combination effect on staff and children at the nursery, which is significant.

7.4.18 Changes to construction traffic flows will result in a new moderate adverse significant effect on approximately 150 residential properties on the A635 Manchester Road between Capital Road and Ashton Hill Lane. The A635 Manchester Road is a construction traffic route and will experience a significant increase in HGV traffic. This new significant HGV traffic effect will combine with traffic noise effects reported in the main ES 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.

7.4.19 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

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

Summary of likely residual significant effects

7.4.21 Changes to traffic flows will result in a different moderate adverse residual significant effect on approximately 20 residential properties at the south of the A34 Birchfields Road due to the removal of HGV traffic effects.

7.4.22 Changes to traffic flows will result in a different major adverse residual significant effect on Birchfields Primary School due to the removal of HGV traffic effects.

7.4.23 Changes to traffic flows and to the sound, noise and vibration assessment will result in new major adverse residual significant effects on:

- approximately 60 residential properties on Firbank Road, Baguley, due to new noise and HGV traffic effects; and
- Noddy's Day Nursery on Firbank Road, Baguley due to new noise and HGV traffic effects.

7.4.24 Changes to traffic flows and to the sound, noise and vibration assessment will result in a new moderate adverse residual significant effect on approximately 150 residential

properties on the A635 Manchester Road between Capital Road and Ashton Hill Lane due to new HGV traffic effects and existing noise effects.

7.4.25 Changes to traffic flows and to the sound, noise and vibration assessment will result in the removal of the residual significant in-combination effect on approximately 45 residential properties on the A34 Kingsway between Talbot Road and Mauldeth Road.

Cumulative effects

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

7.5 Ecology and biodiversity

Scope, assumptions and limitations

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

7.5.2 The changes of relevance to this assessment have the potential to result in new or different significant permanent construction and operational effects.

7.5.3 The assessment of combined traffic effects on designated sites in this section draws its conclusions from the designated site assessment for Rochdale Canal Special Area of Conservation (see SES2 and AP2 ES Volume 5, Appendix: EC-016-00004).

7.5.4 The assessment in this section identifies effects on designated sites that would be significant at the international level, as well as any significant effects on nationally designated sites 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 main ES to identify any new, different or removed significant effects.

7.5.5 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 are the only new or different impact of the AP2 revised scheme that requires consideration for the sites described below.

Environmental baseline

Existing baseline

Designated sites

7.5.6 The baseline ecology and biodiversity information is as described in Section 7 of Volume 2, Community Area report: Davenport Green to Ardwick (MA07) of the main ES. A summary of the baseline information relevant to the AP2 revised scheme is provided below.

7.5.7 There is one statutory site of international importance of relevance to the assessment of the AP2 revised scheme, which is Rochdale Canal Special Area of Conservation (SAC) that is designated for a population of the aquatic plant floating water-plantain (*Luronium natans*).

7.5.8 There are two nationally important Site of Special Scientific Interest (SSSI) that are of potential relevance to the assessment in the Davenport Green to Ardwick area. They are:

- Rochdale Canal SSSI is designated for assemblages of aquatic plants and generally common invertebrates, and the presence of waterside bird species. It is approximately 2.7km and 4.2km north-east of the land required for the construction of the AP2 revised scheme in the Davenport Green to Ardwick and Manchester Piccadilly Station (MA08) areas, respectively. It is also close to roads on which traffic flows will be affected by the construction and operation of the AP2 revised scheme, notably the M60, M62 and A663 Broadway, which at their closest points lie immediately adjacent to the SAC; and
- Hollinwood Branch Canal SSSI is designated for its aquatic and wetland habitats and diverse open water plant communities that contain several regionally and nationally rare species. It is located 3.8km and 5.5km from the land required for the construction of the AP2 revised scheme in the Davenport Green to Ardwick and the Manchester Piccadilly Station (MA08) areas respectively. The SSSI is situated 26m to the west of M60 on which traffic flows will be affected by the AP2 revised scheme.

Future baseline

7.5.9 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

7.5.10 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 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

7.5.11 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

7.5.12 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

Rochdale Canal SAC

7.5.13 On the information available and on a precautionary basis, the main ES reported that there was the potential for changes in air quality associated with the construction of the original scheme to have an adverse effect on Rochdale Canal SAC that was significant at the international level. An updated assessment of changes in air quality at Rochdale Canal SAC associated with the AP2 revised scheme has been carried out. The assessment of effects demonstrates that the relevant thresholds for NOx and NH_3 will not be exceeded and there are no thresholds for acid deposition as the SAC is not considered to be vulnerable to this pollutant due to its mesotrophic status. However, the relevant threshold for nitrogen deposition will be exceeded. Therefore, on a precautionary basis and as reported in the main ES, there is an adverse effect on the SAC site that is significant at the international level. Information on the findings of the assessment of effects for the SAC is provided in Section 3 of the designated site assessment reports for Rochdale Canal SAC (SES2 and AP2 ES Volume 5, Appendix: EC-016-00004).

Rochdale Canal SSSI

7.5.14 The main ES reported that, on a precautionary basis, there may be an adverse effect on the aquatic plant community that forms the reason for the designation of the SSSI, that would be significant at the national level. The exceedance described in relation to Rochdale SAC will, on a precautionary basis, also result in an adverse effect on the structure and function of Rochdale Canal SSSI. The exceedance indicates a precautionary significant adverse effect at the national level at the SSSI.

Hollinwood Branch Canal SSSI

7.5.15 The main ES reported that there would be no significant effects on the Hollinwood Branch Canal SSSI from changes in air quality. The 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, therefore, provided below. The updated assessment of changes in air quality for the AP2 revised scheme (based on a single 200m transect and on daily peak derived traffic data) shows that in 2026 NOx is predicted to fall within the air quality standard with or without the AP2 revised scheme. NH_3 is predicted to marginally exceed the air quality standard, though only in an area within 50m of the M60 with or without the AP2 revised scheme. The dominant communities are not considered to

be sensitive to nitrogen or acid deposition. None of the modelled receptors for any of the pollutants display an increase of 1% or greater than 1% of the relevant critical load or level (where these apply) as a result of the AP2 revised scheme. 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 less than 1% of the critical level for NOx at all modelled receptor points on the single transect. The maximum increase within the unimproved neutral grassland is 0.7%, occurring on the northern side of the canal, up to 40m from the M60. Within the open water habitats of the canal, the maximum increase is 0.3% 75-100m from the road;
- nitrogen deposition: the dominant habitats at Hollinwood Branch Canal are not considered sensitive to nitrogen deposition;
- NH_3: there is an increase of less than 1% of the critical level for NH_3 at all modelled receptors on the single transect. The maximum increase within the unimproved neutral grassland is 0.5%, occurring on the northern side of the canal 34m from the M60. Within the open water habitats of the canal, the maximum increase is 0.3% at 75m from the road (where background levels fall below the air quality standard); and
- acid deposition: the dominant habitats at Hollinwood Branch Canal are not considered sensitive to acid deposition.

7.5.16 As the dominant habitats at Hollinwood Branch Canal are not considered sensitive to nitrogen or acid deposition and there will not be an exceedance of the 1% threshold of either NOx of NH_3 as a result of the AP2 revised scheme, no significant adverse effects are anticipated at the national level.

Other mitigation measures

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

7.5.18 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

7.5.19 In the absence of mitigation, at this stage, the significant adverse effects from the construction of the AP2 revised scheme reported above at Rochdale Canal SAC and Rochdale Canal SSSI remain.

Cumulative effects

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

Effects arising during operation

Avoidance and mitigation measures

7.5.21 No further avoidance or mitigation measures, additional to those reported in the main ES, have been identified.

Assessment of impacts and effects

7.5.22 The main ES reported, on precautionary basis, that there would be an adverse effect from ongoing changes in traffic flows, leading to permanent changes in air quality, that would have an adverse effect on the Rochdale SAC that was significant at the international level and an adverse effect on Rochdale Canal SSSI at the national level. The updated assessment for the operation of the AP2 revised scheme demonstrates that the changes in traffic will not exceed the thresholds required for air quality assessment. As such, there will be no adverse effects on the SAC and SSSI, and the adverse effects reported in the main ES on a precautionary basis will not occur.

Other mitigation measures

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

Summary of likely residual significant effects

7.5.24 At this stage, no residual significant effects arising from operation of the AP2 revised scheme are anticipated.

Cumulative effects

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

Ongoing work

7.5.26 Section 4 of SES2 and AP2 ES Volume 5, Appendix: EC-016-00004 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 at the Rochdale Canal SAC. It demonstrates that the thresholds for NOx and NH_3 and nitrogen deposition are exceeded during construction and operation. Therefore, at this stage and on a precautionary basis, an adverse effect on the SAC that is significant at the international level has been identified. Further assessment of this potential effect will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

7.6 Health

Scope, assumptions and limitations

7.6.1 The assessment scope, key assumptions and limitations for the health assessment 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 construction effects only. Therefore, there is no operational assessment for Health.

Environmental baseline

Existing baseline

7.6.3 The baseline community information is as described in Section 8 of the main ES Volume 2, Community Area report Davenport Green to Ardwick (MA07). A summary of the baseline information relevant to the assessment of the SES change is provided below.

7.6.4 The Manchester tunnel south portal will be located west of the M56 junction 5 and accessed from a new access track off Thorley Lane. The study area around Manchester tunnel south portal is primarily residential and covers parts of Newall Green.

7.6.5 The Birchfields Road vent shaft will be located in Fallowfield. The study area around the vent shaft site is primarily residential, with nearby retail and educational facilities. Community facilities in the study area in proximity to the vent shaft site include Birchfields Primary School.

Future baseline

7.6.6 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

7.6.7 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 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

7.6.8 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

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

Assessment of impacts and effects

7.6.10 The main ES reported an adverse neighbourhood quality effect for residents along the A34 Kingsway (between Talbot Road and Mauldeth Road). The A34 Kingsway is a designated route for construction traffic and was expected to experience a significant increase in HGV traffic movements. Significant HGV traffic effects were expected to combine with significant traffic noise effects on residential properties on the A34 Kingsway during the peak months of construction. Changes to construction traffic flows and the sound, noise and vibration assessment as a result of new construction traffic data will remove the significant HGV traffic and traffic noise effects. These changes will result in the removal of the neighbourhood quality effect along the A34 Kingsway.

7.6.11 The main ES reported an adverse neighbourhood quality effect for residents at the south of the A34 Birchfields Road. Construction noise was expected to be noticeable in the area for approximately seven months. The A34 Birchfields Road was expected to experience a significant increase in HGV traffic, and construction was expected to be visible from street level. People in this community 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 adverse neighbourhood quality effect for residents at the south of the A34 Birchfields Road.

7.6.12 The main ES reported an adverse health effect at Birchfields Primary School on Lytham Road. Construction noise was expected to be noticeable at the school for approximately five years and two months. The A34 Birchfields Road was expected to experience a significant increase in HGV traffic, and construction was expected to be visible from the school and its playground. This was expected to result in an adverse effect educational attainment. 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 adverse health effect on staff and pupils at Birchfields Primary School with regard to educational attainment through primary education.

7.6.13 Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents on Firbank Road, Baguley. Firbank Road will experience a significant increase in HGV traffic. New traffic noise effects are expected to be noticeable along Firbank Road for approximately two years. People in this community are likely to experience these

effects as changing the quality of their neighbourhood and to regard that change as adverse, diminishing the amenity of the settlement.

7.6.14 Changes to construction traffic flows will result in a new adverse health effect at Noddy's Day Nursery on Firbank Road, Baguley. Firbank Road will experience a significant increase in HGV traffic. New traffic noise effects are expected to be noticeable along Firbank Road for approximately two years. These activities affecting the nursery may combine to reduce the beneficial wellbeing effects associated with educational settings and attainment.

7.6.15 Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents on the A635 Manchester Road, between Capital Road and Ashton Hill Lane. The A635 Manchester Road is a construction traffic route and will experience a new HGV traffic effect. Traffic noise effects were reported in the main ES and are expected to be noticeable along the A635 Manchester Road, between Capital Road and Ashton Hill Lane during the 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

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

Cumulative effects

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

7.7 Socio-economics

Scope, assumptions and limitations

7.7.1 The assessment scope, key assumptions and limitations for socio-economics are as set out in Volume 1 and the SMR of the main ES. The changes in traffic flows have the potential to result in new, removed or different significant construction effects only. Therefore, there is no operational assessment for socio-economics.

Environmental baseline

Existing baseline

7.7.2 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

7.7.3 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

7.7.4 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 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

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

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

7.7.7 As a result of changes in traffic flows, Noddy's Day Nursery, located in Wythenshawe, will experience new significant noise effects for two years and new significant effects from HGV construction traffic (traffic-related severance for non-motorised users). The sensitivity of Noddy's Day Nursery is assessed to be high as users may be sensitive to impacts on the local environment and setting. The construction works may discourage parents and carers from choosing this business. Given the duration of effects and the high level of sensitivity, the changes in traffic flows will result in a new temporary adverse in-combination effect on Noddy's Day Nursery, 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

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

Summary of likely residual significant effects

7.7.9 The changes in traffic flows will result in a new temporary adverse significant in-combination effect on Noddy's Day Nursery.

Cumulative effects

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

7.8 Sound, noise and vibration

Scope, assumptions and limitations

7.8.1 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. 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.

Environmental baseline

Existing baseline

7.8.2 In the Davenport Green to Ardwick 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: Davenport Green to Ardwick (MA07) of the main ES.

Future baseline

7.8.3 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides 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 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

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

7.8.6 Updates have 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

Assessment of impacts and effects

Residential receptors: indirect effects

7.8.7 The main ES identified an indirect likely construction significant effect on a community basis at approximately 45 residential dwellings along Kingsway, Manchester between Mauldeth Road and Grangethorpe Drive. This was denoted as MA07-C-C4 in Table 8 in Volume 5, Appendix: SV-002-0MA07 of the main ES. The AP2 revised scheme reduces the average and peak monthly construction road traffic movements on this road, and thus the associated traffic noise levels. For further information see SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. The reduction in construction traffic noise levels will remove the likely indirect residual significant effect reported in the main ES on dwellings along Kingsway.

7.8.8 As a result of the AP2 revised scheme, construction traffic is likely to cause adverse noise effects on residential receptors along Firbank Road and Highdales Road between Greenbrow Road and Hollyhedge Road. Approximately 60 dwellings located along these roads are forecast to experience a change in road traffic noise levels of approximately 7dB $L_{pAeq,0700-2300}$ during peak months due to additional traffic diverting away from nearby construction routes. This is considered to be a new likely significant indirect effect on a community basis at the dwellings on these roads, denoted as MA07-C-C10 in SES2 and AP2 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.

7.8.9 As a result of the AP2 revised scheme, construction traffic is likely to cause adverse noise effects on residential receptors along Birch Street between Malpas Street and Runhall Close. Approximately 40 dwellings located along these roads are forecast to experience a change in road traffic noise levels of approximately 5dB $L_{pAeq,0700-2300}$ during peak months due to additional traffic diverting away from nearby construction routes. This is considered to be a new likely significant indirect effect on a community basis at the dwellings on this road, denoted as MA07-C-C11 in SES2 and AP2 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.

7.8.10 As a result of the AP2 revised scheme, construction traffic is likely to cause adverse noise effects on residential receptors along Old Lane and Wheler Street between Louisa Street and Prenton Street. Approximately 40 dwellings located along these roads are forecast to experience a change in road traffic noise levels of approximately 8dB $L_{pAeq,0700-2300}$ during peak months due to additional traffic diverting away from nearby construction routes. This is considered to be a new likely significant indirect effect on a community basis at the dwellings on these roads, denoted as MA07-C-C12 in SES2 and AP2 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.

7.8.11 As a result of the AP2 revised scheme, construction traffic is likely to cause adverse noise effects on residential receptors along Parkhouse Street between Wilson Street and Vincent Street. Approximately 40 dwellings located along these roads are forecast to experience a change in road traffic noise levels of approximately 5dB $L_{pAeq,0700-2300}$ during peak months due to additional traffic diverting away from nearby construction routes. This is considered to be a new likely significant indirect effect on a community basis at the dwellings on this road, denoted as MA07-C-C13 in SES2 and AP2 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.

7.8.12 As a result of the AP2 revised scheme, construction traffic is likely to cause adverse noise effects on residential receptors along Albert Street and Grey Mare Lane between Councillor Street and Howarth Close . Approximately 100 dwellings located along these roads are forecast to experience a change in road traffic noise levels of approximately 5dB $L_{pAeq,0700-2300}$ during peak months due to additional traffic diverting away from nearby construction routes. This is considered to be a new likely significant indirect effect on a community basis at the dwellings on these roads, denoted as MA07-C-C14 in 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

7.8.13 As a result of the AP2 revised scheme, construction traffic is likely to cause an adverse noise effect on Noddy's Day Nursery, Firbank Road, Manchester. Road traffic noise levels due to additional traffic diverting away from nearby construction routes are predicted to be above the daytime screening criteria defined in the SMR for Educational use[36] during the peak months, with an increase of approximately 4dB $L_{pAeq,\ 0700\ -\ 2300}$. The main ES did not identify an indirect noise effect at this location; therefore, a new likely significant effect has been identified at Noddy's Day Nursery, Firbank Road, Manchester, denoted as MA07-C-N9 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect may take the form of activity disturbance to users of the nursery.

7.8.14 As a result of the AP2 revised scheme, construction traffic is likely to cause an adverse noise effect on Your Nursery Ltd, St. Vincent's School House, Greenside Street, Manchester. Road traffic noise levels due to additional traffic diverting away from nearby construction routes are predicted to be above the daytime screening criteria defined in the SMR for Educational use[38] during the peak months, with an increase of approximately 5dB $L_{pAeq,\ 0700\ -\ 2300}$. The main ES did not identify an indirect noise effect at this location; therefore, a new likely

[36] 50dB $L_{pAeq,\ 0700\ –\ 2300}$ (free field) during the day, which is equivalent to 53dB $L_{pAeq,\ 0700\ –\ 2300}$ (facade).

significant effect has been identified at Your Nursery Ltd, St. Vincent's School House, Greenside Street, Manchester, denoted as MA07-C-N10 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect may take the form of activity disturbance to users of the nursery.

7.8.15 As a result of the AP2 revised scheme, construction traffic is likely to cause an adverse noise effect on St. Barnabas C of E Primary Academy, Parkhouse Street, Manchester. Road traffic noise levels due to additional traffic diverting away from nearby construction routes are predicted to be above the daytime screening criteria defined in the SMR for Educational use[38] during the peak months, with an increase of approximately 5dB $L_{pAeq, 0700 - 2300}$. The main ES did not identify an indirect noise effect at this location; therefore, a new likely significant effect has been identified at St. Barnabas C of E Primary Academy, Parkhouse Street, Manchester, denoted as MA07-C-N11 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect may take the form of activity disturbance to users of the school.

7.8.16 As a result of the AP2 revised scheme, construction traffic is likely to cause an adverse noise effect on St Brigid's Primary School, Grey Mare Lane, Manchester. Road traffic noise levels due to additional traffic diverting away from nearby construction routes are predicted to be above the daytime screening criteria defined in the SMR for Educational use[38] during the peak months, with an increase of approximately 5dB $L_{pAeq, 0700 - 2300}$. The main ES did not identify an indirect noise effect at this location; therefore, a new likely significant effect has been identified at St Brigid's Primary School, Grey Mare Lane, Manchester, denoted as MA07-C-N12 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect may take the form of activity disturbance to users of the school.

7.8.17 As a result of the AP2 revised scheme, construction traffic is likely to cause an adverse noise effect on The East Manchester Academy (School), Grey Mare Lane, Manchester. Road traffic noise levels due to additional traffic diverting away from nearby construction routes are predicted to be above the daytime screening criteria defined in the SMR for Educational use[37] during the peak months, with an increase of approximately 5dB $L_{pAeq, 0700 - 2300}$. The main ES did not identify an indirect noise effect at this location; therefore, a new likely significant effect has been identified at The East Manchester Academy (School), Grey Mare Lane, Manchester, denoted as MA07-C-N13 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect may take the form of activity disturbance to users of the school.

7.8.18 As a result of the AP2 revised scheme, construction traffic is likely to cause an adverse noise effect on the Church of the Resurrection and St Barnabas, Albert Street, Manchester. Road traffic noise levels due to additional traffic diverting away from nearby construction routes are predicted to be above the daytime screening criteria defined in the SMR for religious worship use[39] during the peak months, with an increase of approximately 5dB $L_{pAeq, 0700 - 2300}$. The main ES did not identify an indirect noise effect at this location; therefore, a new likely

[37] 50dB $L_{pAeq, 0700 – 2300}$ (free field) during the day, which is equivalent to 53dB $L_{pAeq, 0700 – 2300}$ (facade).

significant effect has been identified at Church of the Resurrection and St Barnabas, Albert Street, Manchester, denoted as MA07-C-N14 in SES2 and AP2 ES Volume 5, Appendix: SV-002-00000. This temporary adverse effect may take the form of activity disturbance to users of the church.

Other mitigation measures

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

Summary of likely residual significant effects

7.8.20 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:

- Firbank Road and Highdales Road, Manchester;
- Birch Street, Manchester;
- Wheler Street and Old Lane, Manchester;
- Parkhouse Street, Manchester; and
- Albert Street and Grey Mare Lane, Manchester.

7.8.21 As a result of the AP2 revised scheme, changes in traffic in this area are likely to result in the new likely residual significant noise effects at the following non-residential properties:

- Noddy's Day Nursery, Firbank Road, Manchester;
- Your Nursery Ltd., St. Vincent's School House, Greenside Street, Manchester;
- St. Barnabas C of E Primary Academy, Parkhouse Street, Manchester;
- St Brigid's Primary School, Grey Mare Lane, Manchester;
- The East Manchester Academy (School), Grey Mare Lane, Manchester; and
- The Church of the Resurrection and St Barnabas, Albert Street, Manchester.

7.8.22 The reduction in construction traffic noise levels on Kingsway, Manchester, will remove the likely indirect residual significant effect reported in the main ES on dwellings along this road.

Cumulative effects

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

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

Traffic and transport

7.9.1 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.

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

- change (decrease) from major adverse effect to moderate adverse effect at two junctions;
- change (increase) from moderate adverse effect to major adverse effect at six junctions;
- change (increase) from minor adverse effect to moderate adverse effect at two junctions;
- change (decrease) from major adverse effect to minor adverse effect at three junctions;
- change (decrease) from moderate adverse effect to minor adverse effect at one junction;
- change (decrease) from minor adverse effect to minor beneficial effect at one junction;
- change (increase) from minor beneficial effect to minor adverse effect at one junction;
- new major adverse effect at nine junctions;
- new moderate adverse effect at seven junctions;
- new minor adverse effect at 14 junctions; and
- new major beneficial effect at one junction.

7.9.3 The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users reported in the main ES:

- change (decrease) from major adverse effect to moderate adverse effect on two roads;
- change (increase) from moderate adverse effect to major adverse effect on four roads;
- change (increase) from minor adverse effect to moderate adverse effect on one road;
- new major adverse effect on seven roads;
- new moderate adverse effect on 18 roads;
- new minor adverse effect on seven roads;
- new moderate beneficial effect on eight roads;
- new minor beneficial effect on one road; and
- different (increased) major adverse significant effects on two roads.

7.9.4 The AP2 revised scheme will result in the following changes to public transport delay in 2031 in the Davenport Green to Ardwick area:

- a change (increase) from a moderate adverse effect to a major adverse effect on public transport delay in 2031 on two bus corridors; and
- a decrease from a moderate adverse effect to a moderate beneficial effect on public transport delay in 2031 on one bus corridor.

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

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

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

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

7.9.7 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 main ES:

- change (decrease) from major adverse effect to moderate adverse effect on four roads;
- change (increase) from moderate adverse effect to major adverse effect on one road;
- change (increase) from minor adverse effect to major adverse effect on one road;

- change (increase) from minor adverse effect to moderate adverse effect on one road;
- change (decrease) from major adverse effect to major beneficial effect on three roads;
- change (decrease) from moderate adverse effect to major beneficial effect on two roads;
- change (decrease) from major adverse effect to moderate beneficial effect on one road;
- change (increase) from moderate beneficial effect to major beneficial effect on three roads;
- change (increase) from moderate beneficial effect to moderate adverse effect on one road;
- new major adverse effect on 12 roads;
- new moderate adverse effect on 33 roads;
- new minor adverse effect on six roads;
- new major beneficial effect on one road; and
- new moderate beneficial effect on 18 roads.

7.9.8 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 main 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 four roads;
- change (increase) from minor adverse effect to moderate adverse effect on three roads;
- change (decrease) from major adverse effect to minor adverse effect on one road;
- change (decrease) from major adverse effect to major beneficial effect on six roads;
- change (decrease) from moderate adverse effect to moderate beneficial effect on eight roads;
- change (decrease) from minor adverse effect to moderate beneficial effect on three roads;
- change (increase) from moderate beneficial effect to major beneficial effect on three 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 one road;
- new major adverse effect on 13 roads;
- new moderate adverse effect on 45 roads;
- new minor adverse effect on eight roads;
- new major beneficial effect on three roads; and
- new moderate beneficial effect on 10 roads.

7.9.9 The AP2 revised scheme will result in a change (decrease) from a moderate adverse effect to a minor adverse effect on public transport delay in 2039 and 2051 on one bus corridor.

Community

7.9.10 Changes to traffic flows will result in a different moderate adverse residual significant effect on approximately 20 residential properties at the south of the A34 Birchfields Road due to the removal of HGV traffic effects.

7.9.11 Changes to traffic flows will result in a different major adverse residual significant effect on Birchfields Primary School due to the removal of HGV traffic effects.

7.9.12 Changes to traffic flows and to the sound, noise and vibration assessment will result in new major adverse residual significant effects on:

- approximately 60 residential properties on Firbank Road, Baguley, due to new noise and HGV traffic effects; and
- Noddy's Day Nursery on Firbank Road, Baguley due to new noise and HGV traffic effects.

7.9.13 Change to traffic flows and to the sound, noise and vibration assessment will result in a new moderate adverse significant effect on approximately 150 residential properties on the A635 Manchester Road between Capital Road and Ashton Hill Lane due to new HGV traffic effects and existing noise effects.

Ecology and biodiversity

7.9.14 At this stage, without any mitigation taken into account, the construction of the AP2 revised scheme will result in significant adverse effects on the Rochdale Canal SAC. On a precautionary basis, this will result in an adverse effect on the Rochdale Canal SAC that is significant at the international level. It will also result in an adverse effect on the Rochdale Canal SSSI that is significant at the national level. These are new significant effects compared to those reported in the main ES.

7.9.15 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

7.9.16 The changes in traffic flows will result in a new temporary adverse significant in-combination effect on Noddy's Day Nursery.

Sound, noise and vibration

7.9.17 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:

- Firbank Road and Highdales Road, Manchester;
- Birch Street, Manchester;

- Wheler Street and Old Lane, Manchester;
- Parkhouse Street, Manchester; and
- Albert Street and Grey Mare Lane, Manchester.

7.9.18 As a result of the AP2 revised scheme, changes in traffic in this area are likely to result in new likely residual significant noise effects at the following non-residential properties:

- Noddy's Day Nursery, Firbank Road, Manchester;
- Your Nursery Ltd., St. Vincent's School House, Greenside Street, Manchester;
- St. Barnabas C of E Primary Academy, Parkhouse Street, Manchester;
- St Brigid's Primary School, Grey Mare Lane, Manchester;
- The East Manchester Academy (School), Grey Mare Lane, Manchester; and
- The Church of the Resurrection and St Barnabas, Albert Street, Manchester.

7.10 Summary of likely residual significant effects that will be removed as a result of combined effects due to changes in traffic flows

Traffic and transport

Construction

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

- significant adverse effects removed at 35 junctions (five major, five moderate, 25 minor); and
- significant beneficial effects removed at two junctions (two minor).

7.10.2 The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users reported in the main ES:

- significant adverse effects removed on 30 roads (four major, 25 moderate and one minor); and
- significant beneficial effects removed on two roads (two moderate).

Operation

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

- significant adverse effects removed at 13 junctions (four major, three moderate and six minor); and

- significant beneficial effects removed at three junctions (three minor).

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

- significant adverse effects removed at 17 junctions (four major, three moderate and 10 minor); and
- significant beneficial effects removed at five junctions (five minor).

7.10.5 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 main ES:

- significant adverse effects removed on 22 roads (six major, 15 moderate and one minor); and
- significant beneficial effects removed on one road (one moderate).

7.10.6 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 main ES:

- significant adverse effects removed on 33 roads (10 major, 21 moderate and two minor); and
- significant beneficial effects removed on five roads (five moderate).

Community

7.10.7 Changes to traffic flows and to the sound, noise and vibration assessment will result in the removal of the residual significant in-combination effect on approximately 45 residential properties on the A34 Kingsway between Talbot Road and Mauldeth Road.

Sound, noise and vibration

7.10.8 The reduction in construction traffic noise levels on Kingsway, Manchester, will remove the likely indirect residual significant effect reported in the main ES on dwellings along this road.

hs2.org.uk

High Speed Two (HS2) Limited
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA
Freephone: 08081 434 434
Minicom: 08081 456 472
Email: HS2enquiries@hs2.org.uk