

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

Non-technical summary

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1 Introduction



1.1 Purpose of this Non-technical summary

This document is the Non-technical summary (NTS) of the Supplementary Environmental Statement 2 (SES2) and the Additional Provision 2 Environmental Statement (AP2 ES), which the Government has submitted to Parliament in support of the High Speed Rail (Crewe – Manchester) Bill ('the Bill'). Its main purpose is to provide a summary, in non-technical language, of any new, different or removed likely significant residual environmental effects arising from the updates and changes reported in the SES2, and the amendments reported in the AP2 ES. These effects are compared to those contained within the Environmental Statement (ES), which accompanied the Bill submitted to Parliament in January 2022¹ ('the main ES'), and the Supplementary Environmental Statement 1 (SES1) and the Additional Provision 1 Environmental Statement (AP1 ES), which were submitted in July 2022², where relevant.

1.2 Background to High Speed Two

High Speed Two (HS2) is a new high speed rail network proposed by the Government to connect major cities in Britain.

HS2 is being built in phases. Phase One is the section between London and the West Midlands. It was the subject of an ES deposited with the High Speed Rail (London – West Midlands) Bill in November 2013 and works for Phase One are now proceeding in accordance with the High Speed Rail (London – West Midlands) Act 2017.

Phase Two will extend the route north from Phase One and is being taken forward in stages. Phase 2a comprises the section of the route between the West Midlands and Crewe. The High Speed Rail (West Midlands – Crewe) Bill and ES was deposited in Parliament in July 2017 and works for Phase 2a are now proceeding in accordance with the High Speed Rail (West Midlands – Crewe) Act 2021.

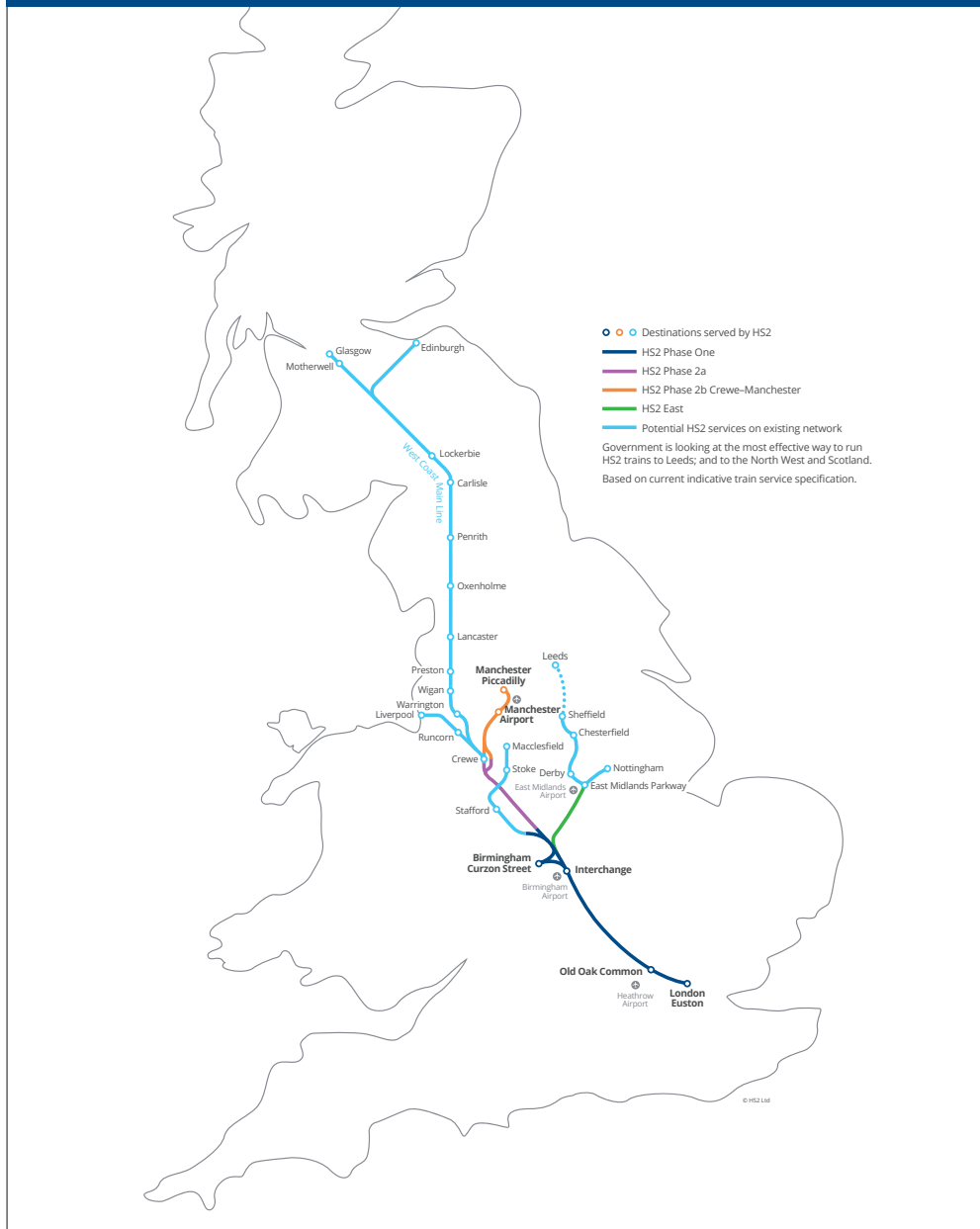
The HS2 Phase 2b Western Leg provided for the section of the route between Crewe and Manchester, including: new stations at Manchester Airport and Manchester Piccadilly; a depot north of Crewe and maintenance facilities; a connection between the HS2 route and the West Coast Main Line (WCML) at Crewe, enabling future Northern Powerhouse Rail (NPR) services to connect with HS2; provision for future NPR routes to connect with HS2; works at locations beyond the Western Leg route corridor (referred to as 'off-route works') to enable HS2 trains to call at existing stations further north on the WCML; and depots to provide overnight stabling for HS2 trains serving the north of England and Scotland.

The High Speed Rail (Crewe – Manchester) Bill ('the Bill') was submitted to Parliament together with an Environmental Statement (ES) ('the main ES') in January 2022. If enacted by Parliament, the Bill will provide the powers to construct, operate and maintain the HS2 Phase 2b Western Leg.

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

2 High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-1-and-additional-provision-1-environmental-statement>

Figure 1: The HS2 network



1.3 The main Environmental Statement and the original scheme

The ‘original scheme’ is the Bill scheme submitted to Parliament in January 2022. This was assessed in the main ES which presented the findings of the environmental impact assessment (EIA) for the scheme proposed at the time of deposit of the Bill. The main ES also outlined the assessment scope and methodology, identified likely significant environmental effects, mitigation measures to avoid, prevent or reduce likely significant environmental effects, and any significant residual environmental effects that remained after all mitigation has been put in place.

1.4 Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement

Following the deposit of the Bill in January 2022, the need for a number of changes and amendments to the design and construction assumptions was identified. New environmental baseline information had also become available since the submission of the main ES and the need for a number of corrections to the main ES was identified. These were all assessed and any new, different or removed likely significant environmental effects compared to the main ES were reported in the SES1 and AP1 ES, submitted in July 2022.

The SES1 and AP1 ES included changes and amendments in the following community areas:

- MA01: Hough to Walley's Green;
- MA02: Wimboldsley to Lostock Gramam;
- MA03: Pickmere to Agden and Hulseheath;
- MA04: Broomedge to Glazebrook; and
- MA05: Risley to Bamfurlong.

The SES1 included removal of the HS2 WCML connection near Bamfurlong, which was in the original scheme, from the Bill. This removed the community areas of Broomedge to Glazebrook (MA04) and Risley to Bamfurlong (MA05) from the HS2 scheme.

1.5 Supplementary Environmental Statement 2 and the Additional Provision 2 Environmental Statement

Since the publication of the SES1 and AP1 ES, the need for further changes in all community areas and for the off-route areas have been identified.

Any new, different or removed significant effects that are likely to result from changes to the design and construction assumptions within the existing Bill powers and limits are reported in the SES2. In addition, new, different or removed significant effects as a result of the new environmental baseline information and corrections are also reported in the SES2.

In a number of other cases, changes to the Bill are needed in order to make amendments to the original scheme. Where these include requirements for the acquisition or use of land outside the existing powers of the Bill, additional access rights or other extensions of the powers conferred by the Bill. These changes require the submission of an Additional Provision ('the AP2'). The AP2 ES reports any new, different or removed significant environmental effects of these amendments, compared to the main ES, SES1 or SES2 as relevant. Some of the AP2 amendments interact with or alter certain proposals included within AP1. Where this is the case, this is reported in the relevant volume report.

The SES2 and AP2 ES provides an update to the main ES and to the SES1 and AP1 ES where relevant, and should be read in conjunction with them. The SES2 is presented first, and the AP2 ES follows.

The SES2 and the AP2 ES will each be the subject of a public consultation in accordance with Parliamentary procedure.

1.6 Scope of the SES2 and AP2 ES

The SES2 and AP2 ES report the assessment of changes to the design and construction assumptions, updates to the environmental baseline information and any corrections to the main ES and the SES1 and AP1 ES where relevant, for the section of the scheme in the following community areas (Figure 2):

- 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;
- MA08: Manchester Piccadilly Station; and
- Off-route works.

The community areas Broomedge to Glazebrook (MA04) and Risley to Bamfurlong (MA05) included in the original scheme were removed through design development presented in the SES1. Where changes in the combined traffic assessment result in effects that would have been reported in these two community areas, these are reported in the Hulseheath to Manchester Airport (MA06) community area report.

The specific technical scope included in each of the assessments is described in the relevant volume or report.

Figure 2 shows the community areas that are included in the scope of the SES2 and AP2 ES.

Figure 3 shows the locations of the off-route works included in the scope of the SES2 and AP2 ES.

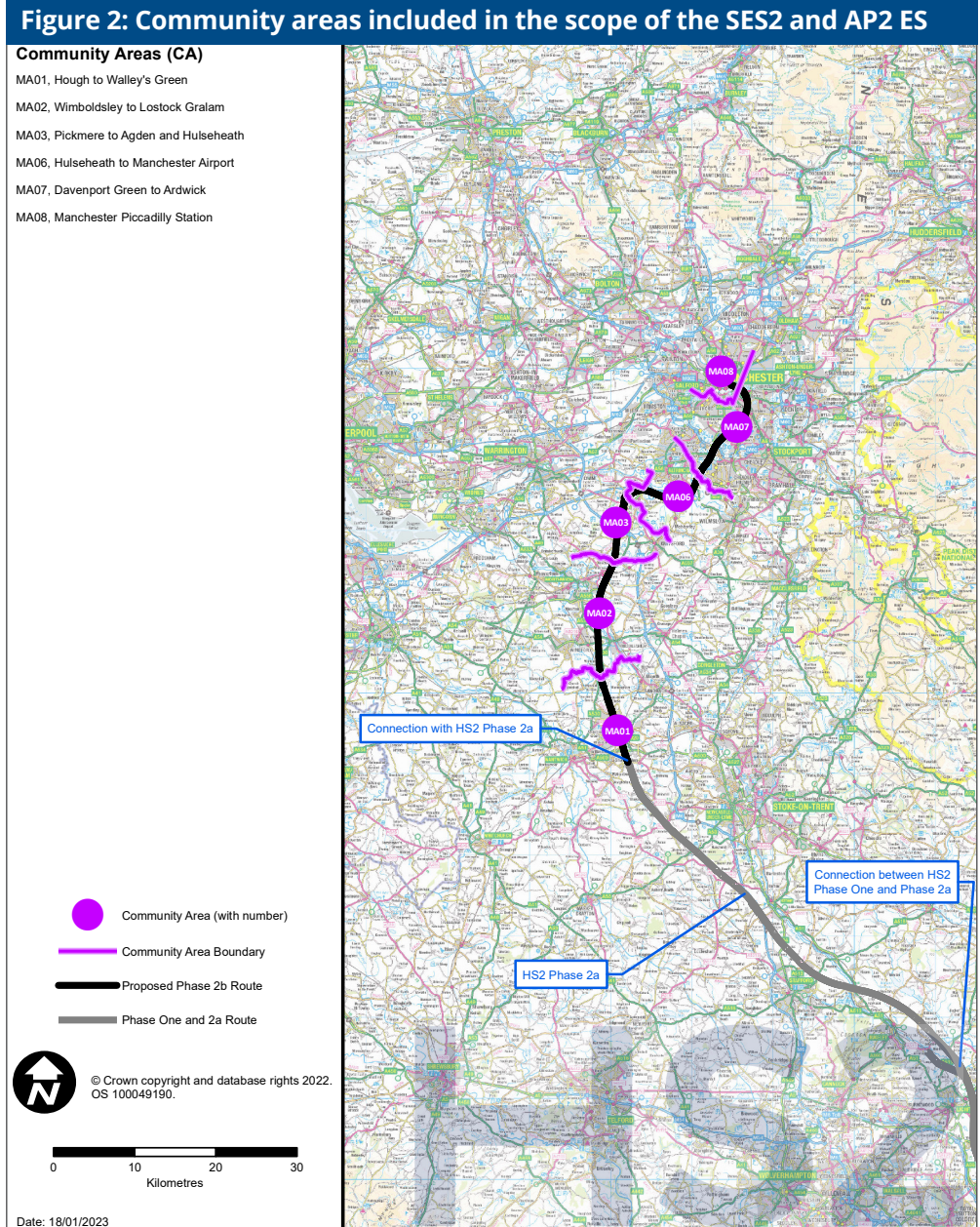
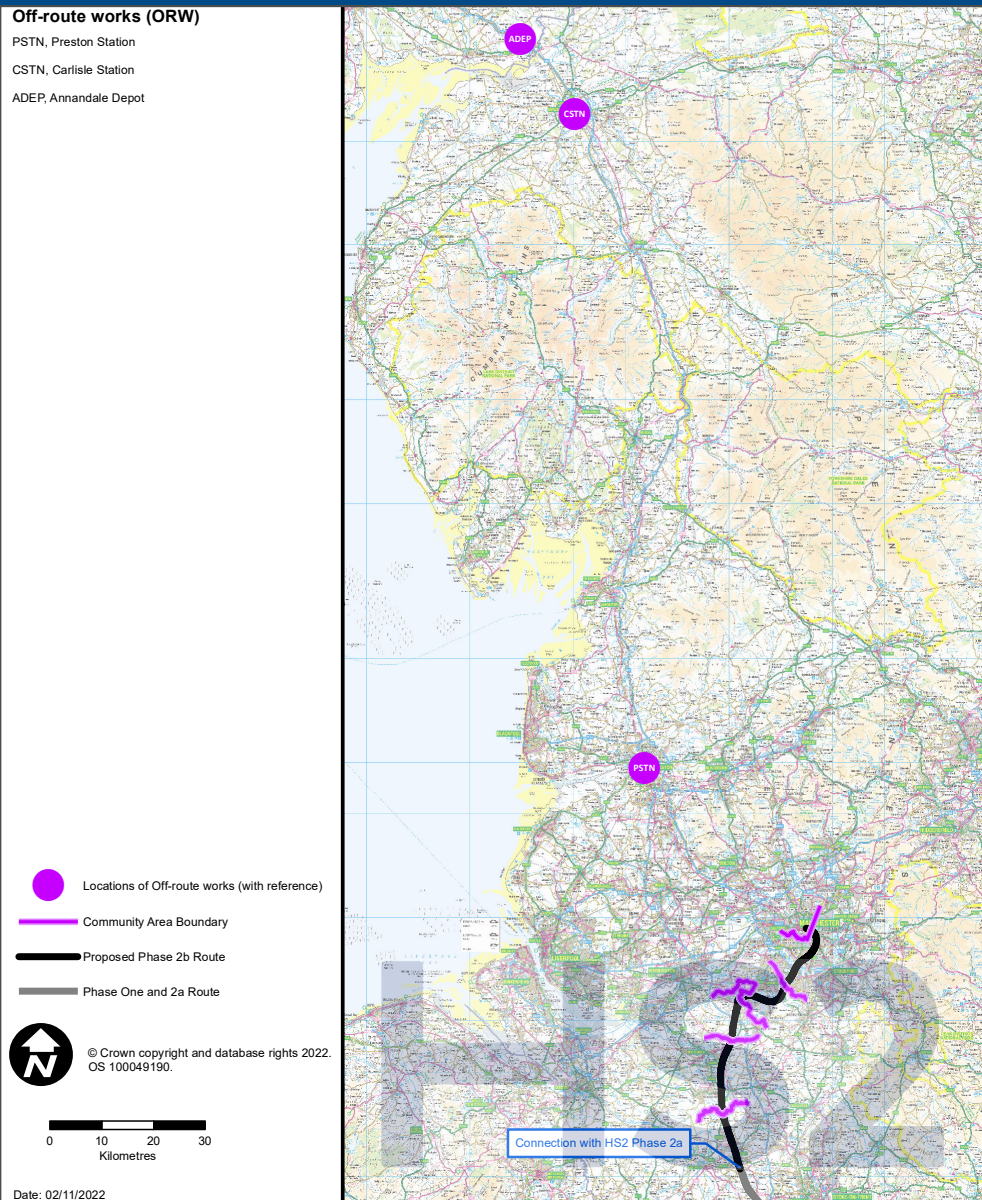


Figure 3: Locations of the off-route works included in the scope of the SES2 and AP2 ES



1.7 Terminology used to describe the scheme

The 'original scheme' is the Bill scheme submitted to Parliament in January 2022, which was assessed in the main ES.

In the SES1 and AP1 ES, in order to differentiate between the original scheme and the subsequent changes, the following terms were used:

- 'the SES1 scheme' – the original scheme with the changes described in SES1, as submitted in July 2022 (that is the SES1 changes as defined below); and
- 'the AP1 revised scheme' – the SES1 scheme as amended by AP1, as submitted in July 2022 (that is the AP1 amendments as defined below).

In the SES1 and AP1 ES, the following terms were used to differentiate between changes included in the SES1 and those included in the AP1 ES:

- 'SES1 design changes' – changes to the scheme design reported in SES1 that do not require additional powers;
- 'SES1 changes' – all changes reported in SES1 (including SES1 design changes) 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.

For the SES2 and AP2 ES the following terminology is used:

- 'the SES2 scheme' – the original scheme with any changes described in the SES1 and the SES2;
- 'the AP2 revised scheme' – the original scheme as amended by SES1 and SES2 changes (as relevant) and AP2 amendments;

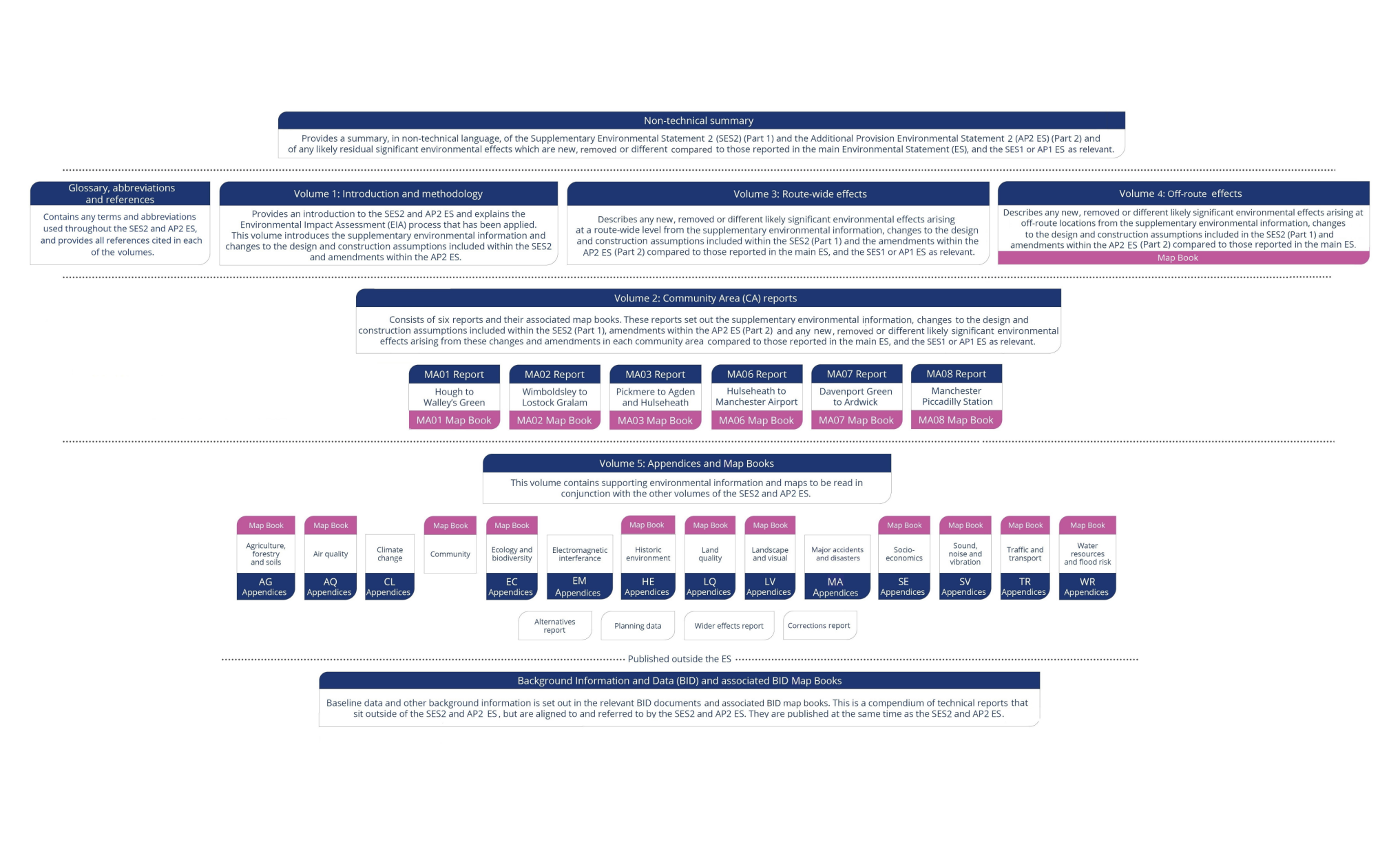
- ‘SES2 design changes’ – changes to the scheme design reported in the SES2 that do not require additional powers;
- ‘SES2 changes’ – all changes reported in the SES2 that do not require additional powers. This may include new baseline information, changes to the design and construction assumptions,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

1.8 Structure of the SES2 and the AP2 ES

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

- this **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 significant residual 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 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 community areas within the scope of the SES2 and AP2 ES.
- The environmental effects are compared to those reported in the main ES or the SES1 and 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 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 or the SES1 and 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 ES (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.

Figure 4: Structure of the SES2 and AP2 ES



Background information and data

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.

1.9 Approach to mitigation and monitoring

As set out in the main ES, legislation requires an ES to include measures to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment. They also require a description of any proposed monitoring arrangements of significant adverse effects on the environment.

The same approach to mitigation and monitoring described in the main ES and the SES1 and AP1 ES applies to the effects set out in the SES2 and AP2 ES. This includes the application of the draft Code of Construction Practice (CoCP), which sets out measures to manage and control the effects of construction. The draft CoCP was submitted with the Bill.

Other new or different mitigation measures are described within Volumes 2, 3 and 4 of the SES2 and AP2 ES, where relevant.

1.10 Consultation on the SES2 and the AP2 ES

A formal public consultation is required by Parliament on both the SES2 and the AP2 ES. Members of the public will have a period of at least 42 days within which to make representations following the deposit of the SES2 and AP2 ES in Parliament and the first publication of the necessary newspaper notices that follows. Parliamentary officials will appoint an independent assessor who will summarise the issues raised in representations received from members of the public and provide a report to Parliament before the Third Reading of the Bill. The SES2 and AP2 ES and details of how to respond to the consultation can be viewed at <https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement>.

There will also be a separate petitioning period in relation to the AP2. Within this period, persons whose property or interests are specially and directly affected by the amendments to the Bill for which powers are sought under AP2 have the right to petition against the AP2.

More information on who may petition against the AP, and how to do so, is available on Parliament's website www.parliament.uk.

1.11 Assessment approach

Scope of the assessment

A scoping exercise has been undertaken by environmental technical specialists to determine whether or not the SES2 changes and the AP2 amendments have the potential to give rise to any new, different or removed likely significant environmental effects compared with those reported in the main ES or the SES1 and AP1 ES as relevant. The scoping exercise considered the construction and operational effects of the SES2 changes and AP2 amendments for the following environmental topics:

- agriculture, forestry and soils;
- air quality;
- climate change (assessed at a route-wide level, rather than at the local community area level);
- community;
- ecology and biodiversity;
- electromagnetic interference (assessed at a route-wide level, rather than at the local community area level);
- health;
- historic environment;
- land quality;
- landscape and visual;
- major accidents and natural disasters (assessed at a route-wide level, rather than at the local community area level);
- socio-economics;

- sound, noise and vibration;
- traffic and transport;
- waste and material resources (assessed at a route-wide level, rather than at the local community area level); and
- water resources and flood risk.

Those SES2 changes and AP2 amendments identified as having the potential to result in new, different or removed likely significant environmental effects were then subject to further assessment.

Part 1 of this report presents a summary of the likely significant effects as a result of the SES2 changes. Part 2 of this report presents a summary of the likely significant effects as a result of the AP2 amendments. In addition, Part 2 reports new or different likely significant 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.

1.12 Assessment methodology

The Environmental Impact Assessment Scope and Methodology Report was published as part of Volume 5 of the main ES in January 2022. As part of the SES1 and AP1 ES, updates were made to the methodology set out in the technical notes for air quality (see SES1 and AP1 ES Volume 5, Appendix: CT-001-00003, Updated guidance on the assessment methodology for Phase 2b SES1 and AP1 ES) and traffic and transport (see SES1 and AP1 ES Volume 5, Appendix: CT-001-00004, Guidance on significance criteria for traffic and transport). The EIA process for the SES2 and the AP2 ES has followed that used for the main ES, subject to the methodology amendments in the SES1 and AP1 ES, and the methodology amendments in the SES2 and AP2 ES described in the following paragraphs.

Air quality

There has been an update to the methodology published alongside the SES1 and AP1 ES for the assessment of air quality. This has been revised to include updated guidance from the Department for Environment, Food and Rural Affairs. The methodology has also been updated to include the assessment of ammonia (NH₃) for protected sites, internationally designated sites and certain statutory designated sites with habitats sensitive to nitrogen. The updated methodology is provided in Volume 5 of the SES2 and AP2 ES.

Ecology and biodiversity

The ecological assessment in the SES2 and AP2 ES is based on the updated methodology for air quality around the assessment of ammonia (NH₃) and habitats sensitive to nitrogen.

Volume 5 of the main ES and SES1 and AP1 ES included reports which provided a draft assessment to inform a Habitats Regulations Assessment for a number of designated sites. Following Second Reading of the Bill, the content and purpose of the SES2 and AP2 ES Volume 5 reports has been revised. The SES2 and AP2 ES Volume 5 reports provide the background assessment for identifying any likely significant effects on designated sites to be reported under the EIA Regulations. Further and separate assessment will be carried out in line with Regulation 63 of the of the Conservation of Habitats and Species Regulations 2017.

Traffic and transport

There has been an update to the guidance published alongside the SES1 and AP1 ES for the assessment of traffic and transport. This has been updated for traffic delay to vehicle occupants in operation to include the number of users affected, aligning with the approach taken for assessment of traffic delay in construction. The updated methodology is provided Volume 5 of the SES2 and AP2 ES.

The peak level of construction traffic activity is expected to be 2031 and the opening year to be 2039. The impact of COVID-19 on travel behaviour 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.

Water resources and flood risk

There has been an update to the guidance published alongside the SES1 and AP1 ES for the assessment of water resources and flood risk. This has been revised to include the updated published climate change allowances and guidance on the application of the peak river flow and peak rainfall intensity allowances from the Environment Agency. The updated methodology is provided in Volume 5 of the SES2 and AP2 ES.

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Part 1: Supplementary Environmental Statement 2



2 Introduction to Supplementary Environmental Statement 2

2.1 Introduction

This part of the NTS relates to the SES2. It reports whether the updates, changes to the design and construction assumptions, or corrections (the 'SES2 changes') would result in any new, different or removed likely significant residual environmental effects compared to those reported in the main ES or the SES1, as relevant.

The SES2 is summarised on a community area basis in this NTS. For each community area the following information is included where relevant:

- updated or new baseline information where it is relevant to the reporting of likely significant residual environmental effects that are new or different compared to those reported in the main ES or the SES1, as relevant. This includes additional information concerning the environmental conditions for the following environmental topics:
 - air quality;
 - climate change;
 - community;
 - ecology and biodiversity;
 - health;
 - historic environment;
 - land quality;
 - socio-economics;
 - sound, noise and vibration;

- traffic and transport;
- waste and material resources; and
- water resources and flood risk;
- changes to construction assumptions that are being made within the existing powers of the Bill;
- SES2 design changes;
- corrections to the main ES or the SES1 and AP1 ES as relevant; and
- details of any new or different likely significant residual effects compared to those reported in the main ES or the SES1, as relevant, which are a result of the SES2 changes at a community area level.

Details of the route-wide effects and off-route effects for the SES2 are also summarised in this part of the NTS.

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

Since the main ES and the SES1 and AP1 ES, the need for a number of corrections has been identified. The Volume 2 Community Area reports are corrected when a factual inaccuracy relating to a previously reported significant effect has been identified or where a correction will result in a potential change to a significant effect. Corrections also clarify elements of the scheme description reported in the main ES or the SES1 and AP1 ES, as relevant.

Each correction has been reviewed to consider whether there is potential for any likely new, different or removed significant environmental effects compared to those described in the main ES or SES1 and AP1 ES, as relevant. Where relevant, these corrections have been taken into account in the technical assessments reported within the SES2. Corrections are reported in the relevant community area summaries under the appropriate topics section.

2.3 Summary of the changes included in the SES2

The SES2 changes to the design and construction assumptions include:

- a review of the earthworks and movement of materials, taking into account changes in design;
- changes to the construction programme. These take account of refinements to construction methods and changes to earthworks and the movement of materials;
- modifications to a Mobberley Road realignment, Mid Cheshire (Railway) and Mobberley Road viaduct and Thorns Green embankment;
- modifications to car park roofs and forecourts at Manchester Airport High Speed station;
- reconfiguration of Manchester tunnel south portal headhouse to accommodate the revised requirement for rail systems equipment;
- modifications to an underground cable diversion beneath Manchester Piccadilly High Speed station;
- alterations to the pier structures beneath Piccadilly approach and the highway alignment;
- the relocation of Network Rail facilities and substations at Manchester Piccadilly High Speed station;
- change to the assessment assumption for the demolition of Gateway House; and
- provision of a section of water main at Store Street.

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3 Hough to Walley's Green community area (MA01)



3.1 New environmental baseline information

Since the main ES and the SES1, additional baseline information has become available that relates to the following environmental topics in the Hough to Walley's Green area:

- air quality – updated traffic baseline and future baseline models and associated background air pollution concentrations;
- ecology and biodiversity – additional Phase 1 habitat, hedgerow, National Vegetation Classification (NVC), pond and canal, river habitat, bat and great crested newt surveys;
- land quality – baseline data updated to include an additional site;
- socio-economics – updated baseline information reflecting changes to economic activity and the labour market, employment land needs and vacancy rates for warehouses, industrial property and office space;
- sound, noise and vibration – updated traffic data used to update existing and future baseline sound modelling and additional surveys and site visits have been undertaken;
- traffic and transport – additional traffic information has been used in the development of updated baseline and future baseline. There has also been a change in the future baseline forecast years from 2030 to 2031 for the peak level of construction traffic activity and 2038 to 2039 for the opening years; and
- water resources and flood risk – updates to the baseline based on surveys and additional water quality data collected from a number of watercourses as well as updated peak rainfall intensity allowances using United Kingdom Climate Projections (UKCP) local projections of extreme rainfall.

3.2 Changes to the design and construction assumptions within the existing powers of the Bill

Since the main ES and the SES1, a route-wide review of earthworks and movement of materials has been undertaken, and changes to assumed construction methods have been made. This has resulted in a need to alter the indicative construction programme.

There will be no changes to the construction workforce at compounds as a result of the AP2 revised scheme.

There are no SES2 design changes in the Hough to Walley's Green area (MA01).

3.3 Summary of significant residual environmental effects for the Hough to Walley's Green area (MA01) in the SES2

The additional baseline information, changes to the design, changes to the construction assumptions and corrections have been reviewed. Those that give rise to new, different or removed likely significant residual effects within the Hough to Walley's Green area are reported in the following paragraphs.

Community

Effects arising during construction

As a result of a correction to the SES1 and AP1 ES, all significant community effects resulting from the combined effects of changes and amendments to construction traffic flows at the following locations will be removed:

- five residential properties on the B5076 North Street in Crewe;
- 20 residential properties on the B5076 Bradfield Road in Crewe;
- 250 residential properties in the vicinity of Broughton Road, Coppenhall;
- 25 residential properties on Sydney Road, Crewe; and
- 30 residential properties on the A530 Middlewich Road, Bradfield Green.

Ecology and biodiversity

Effects arising during construction

Since the SES1, additional hydrological surveys have confirmed that there is no connectivity of the Tributary of Fowle Brook 1 beneath the WCML with Sandbach Flashes Site of Special Scientific Interest (SSSI). Therefore, the precautionary adverse effect on the SSSI reported in the SES1 and AP1 ES is removed.

On a precautionary basis, it is assumed that the SES2 scheme will result in an overall net loss in hedgerow of 16.5km following mitigation (reduced from 17.9km as reported in the main ES). This will remain a permanent adverse effect that is significant at the county/metropolitan level, with the level of effect unchanged from that reported in the main ES.

Sound, noise and vibration

Effects arising during operation

The SES2 changes will result in the removal of the significant ground-borne noise effect at Eurosales Centre and Eurocard Centre (offices), Herald Park, Herald Drive, Crewe reported in the main ES. This is due to the use of the offices and activity as a call centre, and therefore the office use is not likely to be disturbed by ground-borne noise at the predicted noise level to the extent that it would be significant.

Traffic and transport

Effects arising during construction

As a result of a correction to the SES1 and AP1 ES, there is a change to the future baseline and construction assessment for the A530 Middlewich Road/B5076 Flowers Lane/Eardswick Lane junction. Junction performance should have been reported for two junctions (the A530 Middlewich Road/Eardswick Lane junction and the A530 Middlewich Road/B5076 Flowers Lane junction) following a change to the highway network in the future baseline. The effect at the A530 Middlewich Road/Eardswick Lane junction will increase. However, the level of effect will remain the same as that reported in the main ES, a major adverse effect. There is no significant effect at the A530 Middlewich Road/B5076 Flowers Lane junction.

As a result of a correction to the SES1 and AP1 ES, the effect on delays to vehicle occupants and congestion on the B5076 Flowers Lane/B5076 Bradfield Road/Minshull New Road/Smithy Lane junction during construction is reduced from major adverse to moderate adverse.

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4 Wimboldsley to Lostock Gralam community area (MA02)



4.1 New environmental baseline information

Since the main ES and the SES1, additional baseline information has become available that relates to the following environmental topics in the Wimboldsley to Lostock Gralam area:

- air quality – updated traffic baseline and future baseline models and associated background air pollution concentrations;
- ecology and biodiversity – additional Phase 1 habitat surveys, hedgerow, National Vegetation Classification (NVC), pond and canal, river habitat, bat, great crested newt and otter surveys;
- land quality – updated environmental regulatory data including pollution incidents, radioactive and hazardous substances consents, environmental permits and ecological receptors;
- socio-economics – updated baseline information reflecting changes to economic activity and the labour market, employment land needs and vacancy rates for warehouses, industrial property and office space;
- sound, noise and vibration – updated traffic data used to update existing and future baseline sound modelling;
- traffic and transport – additional traffic information has been used in the development of updated baseline and future baseline. There has also been a change in the future baseline forecast years from 2030 to 2031 for the peak level of construction traffic activity and 2038 to 2039 for the opening years; and
- water resources and flood risk – updates to the baseline based on surveys and additional water quality data collected from a number of watercourses as well as updated peak rainfall intensity allowances using United Kingdom Climate Projections (UKCP) local projections of extreme rainfall.

4.2 Changes to the design and construction assumptions within the existing powers of the Bill

Since the main ES and the SES1, a route-wide review of earthworks and movement of materials has been undertaken, and changes to assumed construction methods have been made. This has resulted in a need to alter the indicative construction programme.

There will also be changes to construction workforce at one compound as a result of the AP2 revised scheme.

There are no SES2 design changes in the Wimboldsley to Lostock Gralam area (MA02).

4.3 Summary of significant residual environmental effects for the Wimboldsley to Lostock Gralam area (MA02) in the SES2

The additional baseline information, changes to the design, changes to the construction assumptions and corrections have been reviewed. Those that give rise to new, different or removed likely significant residual effects within the Wimboldsley to Lostock Gralam area are reported in the following paragraphs.

Community

Effects arising during construction

As a result of a correction to the SES1 and AP1 ES, there will be an increase in the in-combination adverse effect reported on staff and pupils at Wimboldsley Community Primary School from moderate to major adverse. This is due to traffic noise, visual and HGV traffic effects.

Changes to the sound, noise and vibration assessment combined with significant visual effects as reported in the main ES, will result in a new moderate adverse in-combination effect on approximately ten residential properties at Pear Tree Farm Cottages on Davenham Road, Whatcroft.

Health

Effects arising from construction

As a result of a correction to the SES1 and AP1 ES, there will be a new in-combination adverse effect reported on staff and pupils at Wimboldsley Community Primary School. This is due to traffic noise, visual and HGV traffic effects resulting in an adverse wellbeing effect associated with primary education.

Changes to the sound, noise and vibration assessment combined with significant visual effects as reported in the main ES, will result in a new adverse neighbourhood quality effect for residents of Pear Tree Farm Cottages on Davenham Road.

Socio-economics

Effects arising during construction

The SES1 and AP1 ES reported a temporary adverse significant in-combination effect on the Holford Hall Estate wedding venue, located east of Lostock Gralam. This was as a result of significant noise effects and effects from heavy goods vehicle construction traffic. The SES2 scheme will decrease the duration of the significant noise effects. This will result in a different temporary adverse significant in-combination effect on the Holford Hall Estate wedding venue.

As a result of a correction to the SES1 and AP1 ES, there will be a new temporary adverse significant in-combination effect on Northwich Drum Studio, which is located west of Lostock Gralam. This is due to a new significant noise effect from the additional land permanently required for modifications to the A530 Griffiths Road and A559 Manchester Road junction (AP1-002-013) in addition to the significant effects from HGV construction traffic reported in the main ES.

As a result of a correction to the SES1 and AP1 ES, there will be a different significant adverse socio-economic in-combination effect upon The Golden Lion Hotel. This is due to a direct noise effect from modifications to the A54 Chester Road/A530 Croxton Lane junction (AP1-002-007).

Sound, noise and vibration

Effects arising during construction

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

The SES2 updates to committed developments has identified the non-residential committed development at Wimboldsley Hall Barns, Nantwich Road, Wimboldsley which will result in the conversion of two existing agricultural buildings into office accommodation. As a result of this update there will be a new temporary adverse significant construction noise effect at the non-residential buildings at Wimboldsley Hall Barns, Nantwich Road, Wimboldsley and committed developments.

The SES2 changes to the construction programme will give rise to a different temporary adverse significant construction noise effect on Holford Hall, a wedding venue located east of Lostock Gralam. This is due to a decreased duration of impact.

As a result of a correction to the main ES, there will be a different significant effect in Clive Green due to construction activities associated with highway works and earthworks.

As a result of a correction to the SES1 and AP1 there will be a new temporary adverse significant noise effect at the Golden Lion Hotel. This is due to modifications to the A54 Chester Road/A530 Croxton Lane junction (AP1-002-007).

As a result of a correction to the SES1 and AP1 ES, there will be a new temporary adverse significant construction noise effect on the residential community in the vicinity of the junction between Griffiths Road and Manchester Road in Lostock Gralam. This is due to additional land permanently required for modifications to the A530 Griffiths Road and A559 Manchester Road junction (AP1-002-013). The correction will also give rise to a new temporary adverse significant construction noise effect on the Northwich Drum Studio, Wincham Wharf, Manchester Road.

As a result of a correction to the SES1 and AP1 ES, on a precautionary basis, there will be a new temporary adverse likely significant noise effect reported on staff and pupils at Wimboldsley Community Primary School. This is due to construction traffic noise.

Traffic and transport

Effects arising during construction

As a result of a correction to the main ES, the effect of delays to vehicle occupants and congestion on the A50 Tofts Road/Goughs Lane during construction is reduced from major to moderate adverse, for a scenario where peak construction is between spring 2031 and spring 2036.

As a result of a correction to the main ES, temporary closure during utility works will lead to a new temporary moderate adverse significant effect with regards to changes in journey lengths for non-motorised users on the following footpaths:

- Footpath Lostock Gralam 4/1;
- Footpath Lostock Gralam 10/1;
- Footpath Lostock Gralam 4/2;
- Restricted Byway Lostock Gralam 1/1
- Restricted Byway Lostock Gralam 1/2; and
- Footpath Lostock Gralam 7/1.

5 Pickmere to Agden and Hulseheath community area (MA03)



5.1 New environmental baseline information

Since the main ES and the SES1, additional baseline information has become available that relates to the following environmental topics in the Pickmere to Agden and Hulseheath area:

- air quality – updated traffic baseline and future baseline models and associated background air pollution concentrations;
- ecology and biodiversity – additional Phase 1 habitat surveys, hedgerow, protected and notable flora, pond and canal, bat, great crested newt, breeding bird and otter surveys;
- historic environment - updated baseline from additional surveys including additional heritage assets where this is relevant to the SES2 scheme and AP2 revised scheme
- land quality – updated environmental regulatory data including pollution incidents, radioactive and hazardous substances consents, environmental permits and ecological receptors;
- socio-economics – updated baseline information reflecting changes to economic activity and the labour market, employment land needs and vacancy rates for warehouses, industrial property and office space;
- sound, noise and vibration – updated traffic data used to update existing and future baseline sound modelling;

- traffic and transport – additional traffic information has been used in the development of updated baseline and future baseline models which includes recently committed or completed transport schemes. There has also been a change in the future baseline forecast years from 2030 to 2031 for the peak level of construction traffic activity and 2038 to 2039 for the opening year; and
- water resources and flood risk – updates to the baseline based on surveys and additional water quality data collected from a number of watercourses as well as updated peak rainfall intensity allowances using United Kingdom Climate Projections (UKCP) local projections of extreme rainfall.

5.2 Changes to the design and construction assumptions within the existing powers of the Bill

Since the main ES and the SES1, a route-wide review of earthworks and movement of materials has been undertaken, and changes to assumed construction methods have been made. This has resulted in a need to alter the indicative construction programme.

There will also be changes to construction workforce at one compound as a result of the AP2 revised scheme.

There are no SES2 design changes in the Pickmere to Agden and Hulseheath area (MA03).

5.3 Summary of significant residual environmental effects for the Pickmere to Agden and Hulseheath area (MA03) in the SES2

The additional baseline information, changes to the design, changes to the construction assumptions and corrections have been reviewed. Those that give rise to new, different or removed likely significant residual effects within the Pickmere to Agden and Hulseheath area are reported in the following paragraphs.

Ecology and biodiversity

Effects arising during construction

On a precautionary basis, it is assumed that the SES2 scheme will result in an overall net loss in hedgerow of 39.2km following mitigation (reduced from 40.2km reported in the SES1). This will remain a permanent adverse effect that is significant at the county/metropolitan level, with the level of effect unchanged from that reported in the SES1.

On a precautionary basis, it is assumed that as a result of the SES2 scheme there will be two further veteran trees lost compared to the main ES. This will result in new permanent adverse effects that are significant at national level in each case.

Historic environment

Effects arising during construction

The Cottage off Hulseheath Lane (site of) is an additional non-designated heritage asset of low value that was omitted from the main ES and the SES1 and AP1 ES. It is located within the land required for the SES2 scheme. As a result, the archaeological remains of the post-medieval cottage, its gardens and agricultural fields will be removed. The SES2 scheme will therefore give rise to a new permanent moderate adverse significant effect on the Cottage off Hulseheath Lane (site of).

Traffic and transport

Effects arising during construction

As a result of a correction to the main ES, temporary closure during utility works will lead to a new significant effects with regards to changes in journey lengths for non-motorised users on the following footpaths:

- Footpath Tabley Inferior 1/1 - change from minor adverse to moderate adverse effect;
- Footpath Tabley Inferior 4/1 - new temporary minor adverse significant effect;
- Footpath Pickmere 9/2 - new temporary minor adverse significant effect;
- Footpath Pickmere 8/1 - new temporary moderate adverse significant effect;
- Bridleway Mere 1/1 - new temporary moderate adverse significant effect; and
- Restricted Byway Mere 2/1 - new temporary major adverse significant effect.

As a result of a correction to the SES1 and AP1 ES, the new significant adverse effects reported for the following three roads during construction are removed:

- major adverse effect on traffic-related severance for non-motorised users of the B5569 Chester Road (between Chapel Lane and A556 southbound off-slip);
- moderate adverse effect on traffic-related severance for non-motorised users of Millington Lane (between Booth Bank Lane and Chester Road); and
- moderate adverse effect due to all-vehicle movements and major adverse effect due to HGV movements on traffic-related severance for non-motorised users of Ashley Road (between A5034 Mereside Road and Rostherne Lane).

6 Hulseheath to Manchester Airport community area (MA06)



6.1 New environmental baseline information

Since the main ES and the SES1, additional baseline information has become available that relates to the following environmental topics in the Hulseheath to Manchester Airport area:

- air quality – updated traffic baseline and future baseline models and associated background air pollution concentrations;
- community – updated baseline based on a review of residential properties, community resources, recreational facilities and open spaces;
- ecology and biodiversity – additional Phase 1 habitat surveys, hedgerow, protected and notable species, National Vegetation Classification (NVC), pond and canal, aquatic and terrestrial invertebrate, bat, great crested newt, and otter surveys;
- health – updated baseline based on a review of residential properties, community resources, healthcare facilities, recreational and educational resources and open spaces;
- historic environment - updated baseline including additional heritage assets where this is relevant to the SES2 scheme and AP2 revised scheme
- land quality – updated environmental regulatory data including pollution incidents, radioactive and hazardous substances consents, environmental permits and ecological receptors;
- socio-economics – updated baseline information reflecting changes to economic activity and the labour market, employment land needs and vacancy rates for warehouses, industrial property and office space;
- sound, noise and vibration – updated traffic data used to update existing and future baseline sound modelling;
- traffic and transport: additional traffic information has been used in the development of updated baseline and future baseline models which includes recently committed or completed transport schemes. There has also been a change in the future baseline forecast years from 2030 to 2031 for the peak level of construction traffic activity and 2038 to 2039 for the opening year; and
- water resources and flood risk – updates to the baseline based on surveys and additional water quality data collected from a number of watercourses as well as updated peak rainfall intensity allowances using United Kingdom Climate Projections (UKCP) local projections of extreme rainfall.

6.2 Changes to the design and construction assumptions within the existing powers of the Bill

Since the main ES and the SES1, a route-wide review of earthworks and movement of materials has been undertaken, and changes to assumed construction methods have been made. This has resulted in a need to alter the indicative construction programme.

There will also be changes to construction workforce at eight compounds as a result of the AP2 revised scheme.

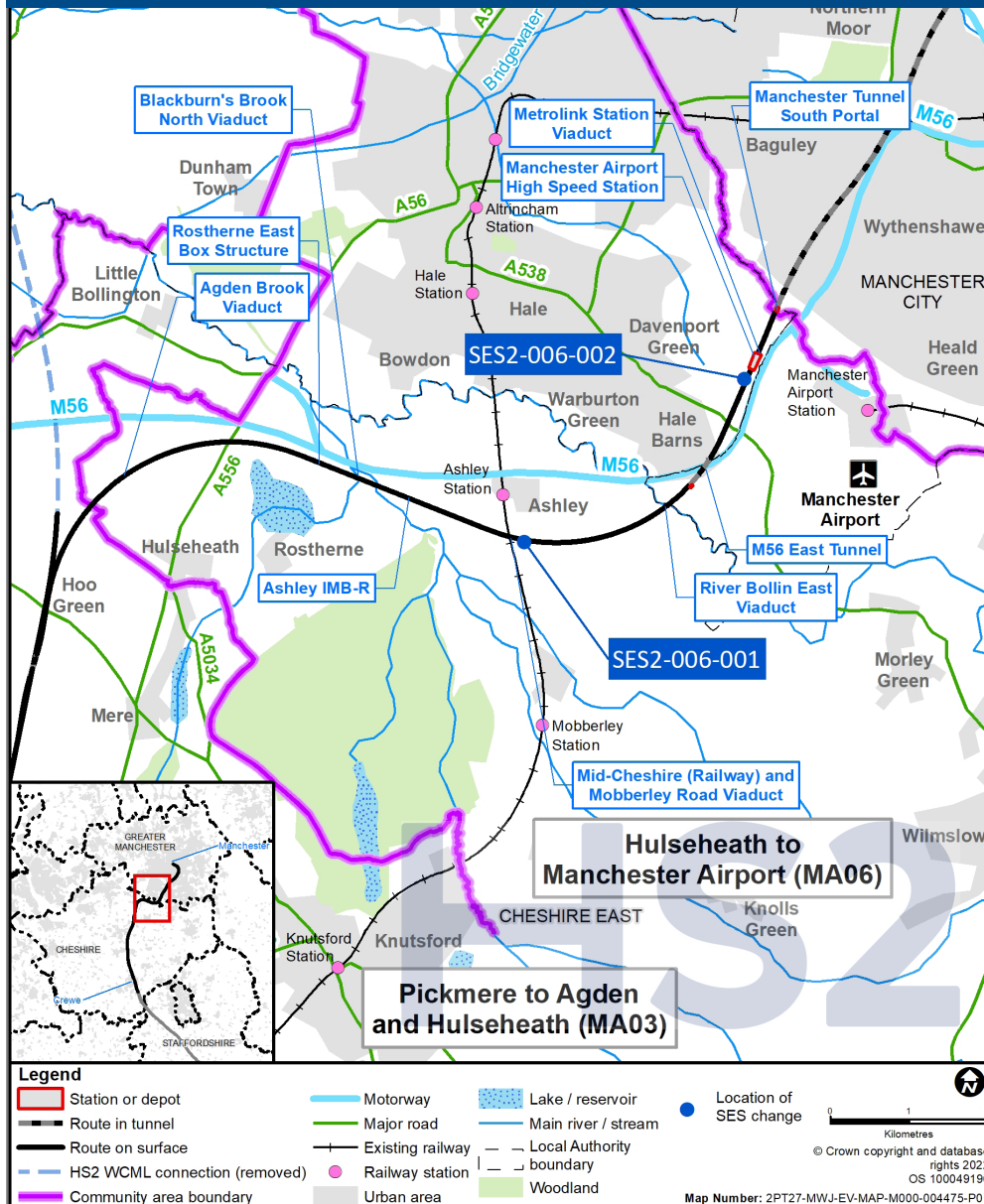
Table 1 presents a summary of these changes to the design within the Hulseheath to Manchester Airport area (MA06) and provides a description of the original scheme and the SES2 scheme.

A Volume 2 report for the Hulseheath to Manchester Airport area (MA06) was not produced as part of the SES1 and AP1 ES. Therefore, all new, different or removed effects reported in the SES2 for the MA06 community area are compared to the main ES.

Table 1: Summary of changes to the design not requiring a change to the Bill in the Hulseheath to Manchester Airport area

| Name of SES2 design change | Description of the original scheme | Description of the SES2 scheme |
|---|---|---|
| <p>Modifications to Mobberley Road realignment, Mid Cheshire (Railway) and Mobberley Road viaduct and Thorns Green embankment</p> <p>SES2-006-001</p> | <p>The Bill provides for the Mid-Cheshire (Railway) and Mobberley Road viaduct on which the HS2 route would be carried over the Mid-Cheshire railway line and the realigned Mobberley Road. The viaduct would be 266m in length and 9m in height above ground level. Mobberley Road would be realigned to cross over the Mid-Cheshire Line via Mobberley Road offline overbridge.</p> | <p>Modifications to the Mid-Cheshire (Railway) and Mobberley Road viaduct to remove the requirement for rail movement joints. The realignment of Mobberley Road will cross the HS2 route 40m west of the location proposed in the original scheme. This allows the length of the Mid Cheshire (Railway) and Mobberley Road viaduct to be shortened.</p> |
| <p>Modifications to car park roofs and forecourts at Manchester Airport High Speed station</p> <p>SES2-006-002</p> | <p>Provision for car parking at the Manchester Airport High Speed station, including two multi-storey car parks and western and eastern forecourts for private vehicle and public transport access. Each multi storey car park would be separated into four parking areas making eight parking areas in total.</p> | <p>Modifications to the east and west multi-storey car parks to provide additional car parking spaces on the roofs of four of the eight northernmost parking areas. Drainage provisions to convey surface water run-off into attenuation tanks via raingardens.</p> |

Figure 5: Locations of the SES2 changes not requiring a change to the Bill in the Hulseheath to Manchester Airport area



6.3 Summary of significant residual environmental effects for the Hulseheath to Manchester Airport area (MA06) in the SES2

The additional baseline information, changes to the design, changes to the construction assumptions and corrections have been reviewed. Those that give rise to new, different or removed likely significant residual effects within the Hulseheath to Manchester Airport area are reported in the following paragraphs.

Community

Effects arising from construction

As a result of a correction to the main ES there will be a new moderate adverse effect for users of the Children’s Adventure Farm Trust. This is as a result of significant visual effects due to views of construction activities combining with significant HGV traffic effects along Reddy Lane, outside of the main entrance to the facility.

Construction of Manchester Airport High Speed station will require the demolition of the Marriott Hotel on the A538 Hale Road. The SES2 change to the baseline information will result in a new major adverse significant effect due to the permanent loss of the Marriott Hotel leisure centre on the A538 Hale Road.

Ecology and biodiversity

Effects arising during construction

On a precautionary basis, it is assumed that the SES2 scheme will result in an overall net loss in hedgerow of 44.9km following mitigation (reduced from 46.1km reported in the main ES). This will remain a permanent adverse effect that is significant at the county/metropolitan level. The level of effect is unchanged from that reported in the main ES.

Health

Effects arising from construction

As a result of the SES2 change to the baseline, construction of Manchester Airport High Speed station will require the demolition of the Marriott Hotel on the A538 Hale Road. Permanent loss of this facility in this location will reduce the opportunity for beneficial health outcomes achieved through physical exercise and is therefore considered to result in an adverse health effect.

Landscape and visual

Effects arising from operation

Modifications to car park roofs and forecourts at Manchester Airport High Speed station (SES2-006-002) will give rise to different significant operational effects at the following viewpoints:

- View east from the A538 Hale Road. The effect will remain major adverse, with the level of effect unchanged from that reported in the main ES; and
- View south-east from Brooks Drive. The effect will remain moderate adverse, with the level of effect unchanged from that reported in the main ES.

The design change will also give rise to a different significant operational night-time effect at view south-east from Brooks Drive; however the effect will remain moderate adverse, with the level of effect unchanged from that reported in the main ES.



View south-east from Brooks Drive (operational phase - Summer year 1)

Socio-economics

Effects arising during construction

The SES2 scheme will result in a different adverse significant effect on Holiday Inn Express Manchester Airport. This will reduce to moderate adverse from the major adverse effect reported in the main ES. This is as a result of new information obtained from the recent baseline update showing that employment at this business has been reduced.

The SES2 scheme will result in a different temporary adverse significant in-combination effect on a management company operating from Cherry Tree Farm due to an increase in the duration of the significant noise effects.

The SES2 scheme will result in a different temporary adverse significant in-combination effect on South Arden Lodge and Little Lodge Holiday lets, all run by Tatton Stays, due to an increase in the duration of the significant noise effects.

As a result of the SES2 scheme, the significant adverse temporary in-combination effect on a bed and breakfast at Sugar Brook Farm will be removed. This is due to new information obtained from the recent baseline update showing that the bed and breakfast at Sugar Brook Farm is no longer operating.

As a result of a correction to the main ES, there will be an in-combination effect upon Children's Adventure Farm Trust. The facility will experience significant visual effects and effects from HGV construction traffic as a result of the construction, which may discourage users.

Sound, noise and vibration

Effects arising during construction

The SES2 changes will give rise to a different temporary adverse significant construction noise effect at Cherry Tree Offices located on Cherry Tree Lane. This is due to an increased duration of impact.

The SES2 changes will give rise to a different temporary adverse significant construction noise and vibration effect at Tatton Stays Holiday Lets (Little Lodge and South Arden Lodge) located along Mobberley Road. This is due to an increased duration of impact.

The SES2 changes will result in the removal of the temporary adverse significant construction noise effect at Sugar Brook Farm Bed and Breakfast. This is due to the bed and breakfast at Sugar Brook Farm no longer operating.

As a result of a correction to the main ES there will be a new temporary adverse significant noise effect on the Holiday Inn Express Manchester Airport hotel and committed development located on Runger Lane in Manchester.

Traffic and transport

Effects arising during construction

As a result of a correction to the main ES, temporary closure during utility works will lead to a new or different temporary significant effects with regards to changes in journey lengths for non-motorised users on the following footpaths:

- Footpath Millington 2/1 - change in effect from minor adverse to moderate adverse;
- Footpath Millington 5/2 - new temporary minor adverse significant effect;
- Footpath Millington 4/1 - new temporary minor adverse significant effect;
- Footpath Millington 3/2 - new temporary moderate adverse significant effect;
- Footpath Millington 4/2 - new temporary moderate adverse significant effect;
- Footpath Millington 14/2 - new temporary minor adverse significant effect; and
- Footpath Ashley 1/2 - new temporary minor adverse significant effect.

Effects arising during operation

As a result of a corrections to the main ES, the effect on delays to vehicle occupants and congestion at the following junctions is reduced from major adverse to moderate adverse:

- Enterprise Way/World Way/Airport Spur junction during operation in 2038; and
- the A538 Hale Road/Elmridge Drive junction during operation in 2046.

Water and flood risk

Effects arising during construction

The potential spring at Keeper's Cottage, Sunbank Lane (north) was considered a groundwater receptor on a precautionary basis, pending survey, in the main ES. As a result of updates to the baseline, the potential spring at Keeper's Cottage, Sunbank Lane (north) is removed as a receptor. This will lead to the removal of the significant effect on this receptor reported in the main ES due to the presence of the cuttings around Manchester Airport Station.

7 Davenport Green to Ardwick community area (MA07)



7.1 New environmental baseline information

Since the main ES and the SES1, additional baseline information has become available that relates to the following environmental topics in the Davenport Green to Ardwick area:

- air quality – updated traffic baseline and future baseline models and associated background air pollution concentrations;
- ecology and biodiversity – additional amphibian, aquatic macro-invertebrate, bat and wintering bird surveys;
- historic environment - updated baseline including additional heritage assets where this is relevant to the SES2 scheme and AP2 revised scheme;
- land quality – updated environmental regulatory data including pollution incidents, radioactive and hazardous substances consents, environmental permits and ecological receptors;
- socio-economics – updated baseline information reflecting changes to economic activity and the labour market, employment land needs and vacancy rates for warehouses, industrial property and office space;
- sound, noise and vibration – updated traffic data used to update existing and future baseline sound modelling;
- traffic and transport – additional traffic information has been used in the development of updated baseline and future baseline models which includes recently committed or completed transport schemes. There has also been a change in the future baseline forecast years from 2030 to 2031 for the peak level of construction traffic activity and 2038 to 2039 for the opening year; and

- water resources and flood risk – updates to the baseline based on surveys and additional water quality data collected from a number of watercourses as well as updated peak rainfall intensity allowances using United Kingdom Climate Projections (UKCP) local projections of extreme rainfall.

7.2 Changes to the design and construction assumptions within the existing powers of the Bill

Since the main ES and the SES1, a route-wide review of earthworks and movement of materials has been undertaken, and changes to assumed construction methods have been made. This has resulted in a need to alter the indicative construction programme.

There will be no changes to construction workforce at compounds as a result of the AP2 revised scheme.

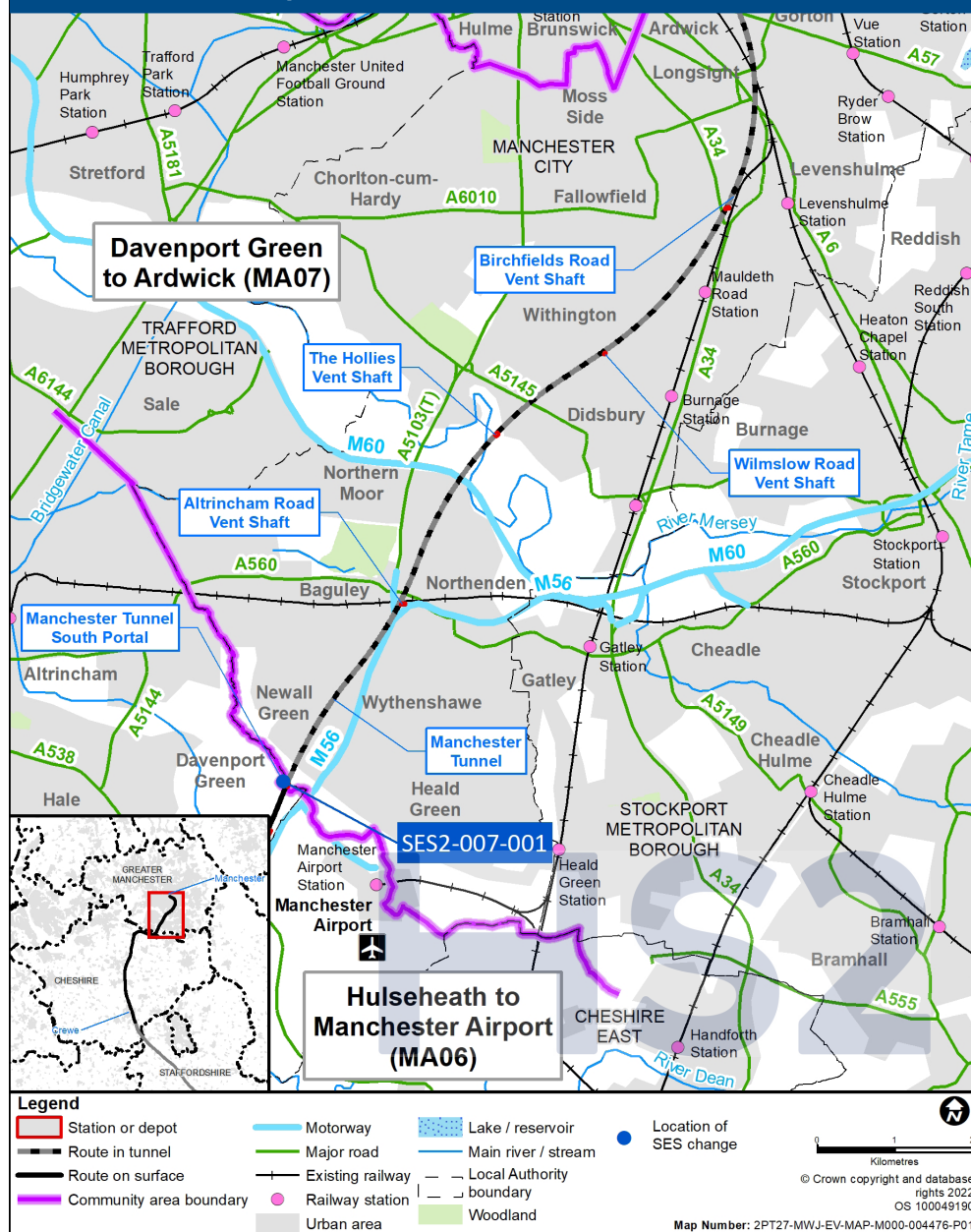
Table 2 presents a summary of this change to the design within the Davenport Green to Ardwick area (MA07) and provides a description of the original scheme and the SES2 scheme.

A Volume 2 report for the Davenport Green to Ardwick area (MA07) was not produced as part of the SES1 and AP1 ES. Therefore, all new, different or removed effects reported in the SES2 for the MA07 community area are compared to the main ES.

Table 2: Summary of changes to the design not requiring a change to the Bill in the Davenport Green to Ardwick area

| Name of 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 | 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 6: Location of the SES2 design change not requiring a change to the Bill in the Davenport Green to Ardwick area



7.3 Summary of significant residual environmental effects for the Davenport Green to Ardwick area (MA07) in the SES2

The additional baseline information, changes to the design, changes to the construction assumptions and corrections have been reviewed. Those that give rise to new, different or removed likely significant residual effects within the Davenport Green to Ardwick area are reported in the following paragraphs.

Community

Effects arising from construction

As a result of a correction to the main ES there will be a new permanent moderate adverse effect due to loss of eight private, off-street residential parking spaces at 569 Wilmslow Road.

Socio-economics

Effects arising during construction

As a result of a correction to the main ES, the temporary effect on a group of 13 businesses, accessed via the junction of the A57 Hyde Road and Bennett Street, including Diamond Hand Car Wash' is reduced from major adverse to moderate adverse.

Sound, noise and vibration

Effects arising during construction

On a precautionary basis, the SES2 changes to committed developments will give rise to a new temporary adverse significant effect on the proposed children's nursery at Ashton Old Road due to construction noise. This temporary adverse effect from construction site noise may take the form of activity disturbance to nursery users.

Traffic and transport

Effects arising during construction

As a result of a correction to the main ES, 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 is reduced from major adverse to moderate adverse.

As a result of a correction to the main ES there will be a new permanent major adverse significant effect with regard to the loss of eight private, off-street parking and loading spaces at 569 Wilmslow Road.

Water and flood risk

Effects arising during construction

The SES2 baseline updates 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) reported in the main ES. This effect was due to changes in the conveyance of flood flows around the Palatine Road vent shaft site.

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8 Manchester Piccadilly Station community area (MA08)



8.1 New environmental baseline information

Since the main ES and the SES1, additional baseline information has become available that relates to the following environmental topics in the Manchester Piccadilly Station area:

- air quality – updated traffic baseline and future baseline models and associated background air pollution concentrations;
- ecology and biodiversity – additional bat surveys;
- historic environment – updated baseline including additional heritage assets where this is relevant to the SES2 scheme and AP2 revised scheme;
- land quality – updated environmental regulatory data including pollution incidents, radioactive and hazardous substances consents, environmental permits and ecological receptors;
- socio-economics – updated baseline information reflecting changes to economic activity and the labour market, employment land needs and vacancy rates for warehouses, industrial property and office space;
- sound, noise and vibration – updated traffic data used to update existing and future baseline sound modelling;
- traffic and transport – additional traffic information has been used in the development of updated baseline and future baseline models which includes recently committed or completed transport schemes. There has also been a change in the future baseline forecast years from 2030 to 2031 for the peak level of construction traffic activity and 2038 to 2039 for the opening year; and

- water resources and flood risk – updates to the baseline based on surveys and additional water quality data collected from a number of watercourses as well as updated peak rainfall intensity allowances using United Kingdom Climate Projections (UKCP) local projections of extreme rainfall.

8.2 Changes to the design and construction assumptions within the existing powers of the Bill

Since the main ES and the SES1, a route-wide review of earthworks and movement of materials has been undertaken, and changes to assumed construction methods have been made. This has resulted in a need to alter the indicative construction programme.

There will be no changes to construction workforce at compounds as a result of the AP2 revised scheme.

Table 3 presents a summary of this change to the design within the Manchester Piccadilly Station (MA08) and provides a description of the original scheme and the SES2 scheme.

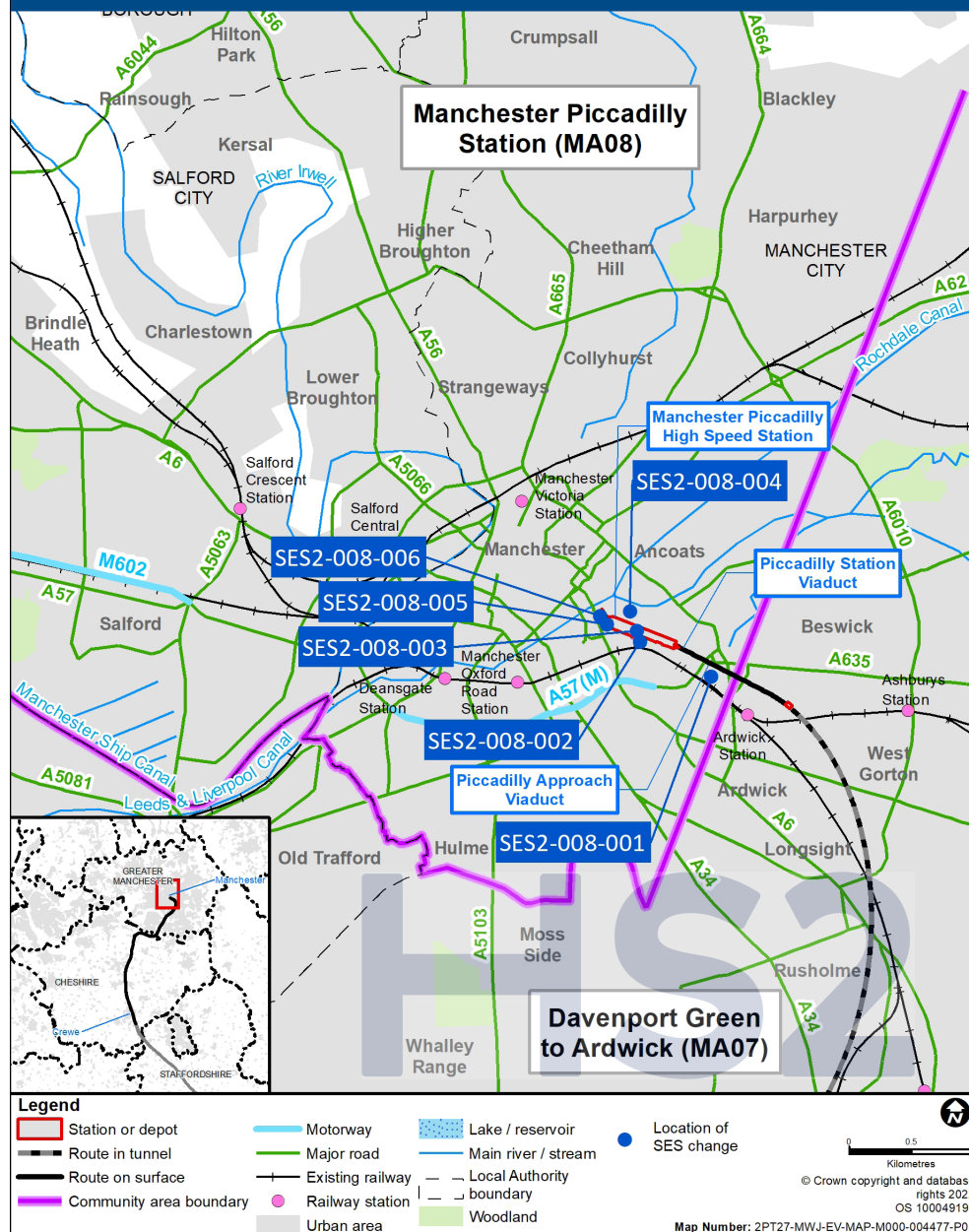
A Volume 2 report for the Manchester Piccadilly Station area (MA08) was not produced as part of the SES1 and AP1 ES. Therefore, all new, different or removed effects reported in the SES2 for the MA08 community area are compared to the main ES.

Table 3: Summary of changes to the design not requiring a change to the Bill in the Manchester Piccadilly Station area

| Name of SES2 design change | Description of the original scheme | Description of the SES2 scheme |
|--|--|---|
| Provision of a 6.6kV underground cable between the existing Electricity North West Primary Substation and the relocated Piccadilly Metrolink stop beneath Manchester Piccadilly High Speed station SES2-008-001 | As part of the original scheme, utilities and drainage requirements for the Piccadilly Metrolink stop would be relocated. The electrical connection would be taken from the existing Metrolink Substation off the B6469 Fairfield Street and the other utilities would be supplied from the diverted supplies in New Sheffield Street. | A new connection point will be required to supply the Piccadilly Metrolink stop. A new supply will be taken from the proposed Electricity North West Limited substation located in the Ardwick area, requiring a new 1.3km long 6.6kV underground cable. |
| Alterations to the pier structures beneath Piccadilly approach viaduct and gyratory northbound highway alignment SES2-008-002 | Realignment of the A635 Mancunian Way northbound carriageway within the footprint of the existing road for 307m, crossing the route of the original scheme under the Piccadilly approach viaduct. | The Piccadilly approach viaduct piers will be reconfigured, reducing the number of piers by one. The A635 Mancunian Way northbound carriageway will be realigned to accommodate the resultant change in pier spacing. |
| Relocation of North Block comprising Network Rail facilities at Manchester Piccadilly High Speed station SES2-008-003 | The existing North Block, comprising Network Rail facilities, would be relocated from its current location north-west of the existing Manchester Piccadilly Station to above the existing Network Rail relay room. | Construction of a new North Block building on the existing Network Rail viaduct deck, 16m west of the existing Relay Room. The new North Block building, comprising Network Rail facilities, will incorporate the existing Network Rail catering facilities into the ground floor at viaduct level. |
| Relocation of six substations at Manchester Piccadilly High Speed station SES2-008-004 | Six Electricity North West substations in the Piccadilly area (Sheffield Street; Piccadilly Station; Boad Street; Generator (associated with Boad Street Substation); Gateway House and Store Street) will be relocated to an area off Store Street, outside the footprint of the Manchester Piccadilly High Speed station. | The substations located at Sheffield Street, Manchester Piccadilly Station and Store Street will be relocated as described in the main ES. The relocation and alteration of the substation on Boad Street and its associated generator will be removed from the SES2 scheme. An additional substation, Railway Tower Substation, located in the Store Steet underpass will be re-provided to an area off Store Street. In addition, a Network Rail Switch Room, located in the substation rooms beneath the Manchester Piccadilly Station, will be re-provided within the Piccadilly Station basement. The Gateway House Substation will be decommissioned in the event Gateway House is demolished. |

| Name of SES2 design change | Description of the original scheme | Description of the SES2 scheme |
|--|---|--|
| Change to requirement/ assessment assumption for the demolition of Gateway House SES2-008-005 | Although the Bill provides demolition powers, it is assumed in the main ES that Gateway House would be retained in its current location. | Since the main ES, it has been identified that there is the potential requirement to demolish Gateway House, however this would be a worst case scenario. |
| Provision of a 60m section of water main at Store Street SES2-008-006 | The original scheme provides for the permanent diversion or decommissioning of minor utilities along Store Street, they include: <ul style="list-style-type: none"> • Electricity North West electricity cables; • Vodafone, Openreach, Instalcoms, • Sky, Level 3 and Virgin telecommunications cables; • United Utilities wastewater sewers and potable water main; and • a Cadent gas main. | A new section of water main is required in order to maintain supply of water to the existing Manchester Piccadilly Station during the construction and operation of the proposed Manchester Piccadilly High Speed station. |

Figure 7: Locations of the SES2 design changes not requiring a change to the Bill in the Manchester Piccadilly Station area



8.3 Summary of significant residual environmental effects for the Manchester Piccadilly Station area (MA08) in the SES2

The additional baseline information, changes to the design, changes to the construction assumptions and corrections have been reviewed. Those that give rise to new, different or removed likely significant residual effects within the Manchester Piccadilly Station area are reported in the following paragraphs.

Community

Effects arising from operation

The SES2 changes will result in a different major significant adverse in-combination effect on approximately 800 residential properties in the vicinity of Old Mill Street, New Islington. This is due to an increase in the duration of noise effects resulting in different noise effects combining with the visual effects reported in the main ES.

Health

Effects arising from operation

The main ES reported an adverse neighbourhood quality effect in the vicinity of Old Mill Street, New Islington. As a result of changes to the sound, noise and vibration assessment there will be an increase in duration of the noise effect, resulting in a different noise effect. Visual effects reported in the main ES will remain the same. This will result in a different adverse neighbourhood quality effect in the vicinity of Old Mill Street, New Islington.

Historic environment

Effects arising during construction

The relocation of the North Block (SES2-008-003) and substation changes around Manchester Piccadilly High Speed station (SES2-008-004) will give rise to a different medium adverse impact on the Grade II listed Train shed and undercroft at Manchester Piccadilly Station. However, this will not change the level of the permanent moderate adverse significant effect reported in the main ES.

The change in assessment assumption for the demolition of Gateway House at Manchester Piccadilly Station (SES2-008-005), will give rise to a different high adverse impact on the Goods Shed (site of), a non-designated asset of low value. However, this will not change the level of the permanent moderate adverse significant effect reported in the main ES.

The change in assessment assumption for demolition of Gateway House, a non-designated asset, at Manchester Piccadilly Station (SES2-008-005) will give rise to a new permanent moderate adverse significant effect.

Landscape and visual

Effects arising during construction

The relocation of North Block comprising Network Rail facilities at Manchester Piccadilly High Speed station (SES2-008-003) will give rise to different significant construction effects at the following viewpoints. The level of effect for each will be unchanged from that reported in the main ES:

- view south-west from Baird Street and Portugal Street East. The effect will remain moderate adverse; and
- view south-west from Chapeltown Street. The effect will remain moderate adverse.

The change in assessment assumption for the demolition of Gateway House (SES2-008-005) will give rise to a different significant construction effect at view south-east from Ducie Street. The effect will remain moderate adverse, with the level of effect unchanged from that reported in the main ES.

The change in assessment assumption for the demolition of Gateway House (SES2-008-005) will also give rise to new significant construction effects at the following viewpoints:

- view south-east from Piccadilly Place pedestrian bridge. The effect will increase from minor adverse (non-significant) reported in the main ES to moderate adverse (significant); and
- view south from Dale Street, Lena Street and Piccadilly. The effect will increase from minor adverse (non-significant) reported in the main ES to moderate adverse (significant).

Effects arising from operation

The change in assessment assumption for the demolition of Gateway House (SES2-008-005) will give rise to a new significant operational effect at view south-east from Piccadilly Place pedestrian bridge. The effect will increase from minor adverse (non-significant) as reported in the main ES to moderate adverse (significant). The same SES2 design change will give rise to a different significant operational effect at view south-east from Ducie Street. The effect will remain moderate beneficial, with the level of effect unchanged from that reported in the main ES.

Socio-economics

Effects arising during construction

The SES2 scheme will result in the following significant effects:

- a different adverse significant permanent direct effect on a group of 11 resources reported in the main ES on the A665 Chancellor Lane and Midland Street;
- a new adverse significant permanent direct effect on a group of nine resources at Aldow Enterprise Park on Blakett Street;
- a new adverse significant permanent direct effect on Staycity Aparthotels at Gateway House;
- a new adverse significant permanent direct effect on a group of 13 retail outlets at Gateway House;
- a new adverse significant temporary in-combination effect on the committed development at Unit 1 Bridge House, Manchester which will change use from an indoor golf centre to a hotel with bar;
- a different adverse significant temporary isolation effect on a group of six businesses on Ducie Street including the committed development for a change of use from indoor golf centre to a hotel with bar;
- a new adverse significant temporary in-combination effect on DoubleTree by Hilton;
- a new adverse significant temporary in-combination effect on The Reach at Piccadilly;
- a different adverse significant temporary in-combination effect on Premier Inn; and
- a new adverse significant residual temporary isolation effect on Urban Reform.

The change in assessment assumption for demolition of Gateway House will result in the removal of an adverse significant temporary in-combination effect on Staycity Aparthotels at Gateway House and the removal of an adverse significant permanent isolation effect on Sunshine Studios Dance School.

Sound, noise and vibration

Effects arising during construction

The SES2 changes will give rise to a different temporary adverse significant construction noise effect on the following residential communities:

- Hulme in the vicinity of Wadeson Road due to increased duration of noise impacts and increased number of dwellings affected;
- Piccadilly Point in the vicinity of Berry Street due to increased duration of noise impacts;
- Piccadilly in the vicinity of Brewer Street, due to increased duration of noise impacts; and
- New Islington in the vicinity of Old Mill Street, due to increase duration of noise impact.

The SES2 changes will give rise to a new temporary adverse significant construction noise effect on the residential community of Piccadilly in the vicinity of Laystall Street and committed development for the erection of a nine storey residential dwelling. The committed development has the potential to introduce a new adverse noise effect at approximately 90 dwellings at Piccadilly.

The SES2 changes will give rise to a different temporary adverse significant construction noise effect on the following non-residential receptors, due to an increased duration of noise impact:

- DoubleTree by Hilton Hotel, Piccadilly Place, Manchester;
- Malmaison Hotel, Gore Street, Manchester;
- Your Smile Clinic, Dale Street, Manchester;
- Premier Inn, Dale Street, Manchester;
- The Reach at Piccadilly Hotel (formerly La Reserve Aparthotel), Ducie Street
- Bridge House (Hotel), Ducie Street and committed development which is a change of use from indoor golf centre to a hotel with bar; and
- Piccadilly (Hotel), Manchester and committed development.

As a result of the change in assumption for the demolition of Gateway House (SES2-008-005), the significant adverse significant effect at Staycity Aparthotels, Gateway House will be removed.

Traffic and transport

Effects arising during construction

As a result of a correction to the main ES, the traffic diversion route and change in journey distance due to the partial temporary closure of Chapeltown Street during construction will lead to a new temporary moderate adverse significant effect with regard to changes to journey lengths for vehicle occupants on Chapeltown Street.

As a result of a correction to the main ES, the major adverse effect on delays to vehicle occupants and congestion at the A635 Mancunian Way/ Hoyle Street junction during construction will be removed.

Effects arising during operation

As a result of corrections to the main ES, the following effects are reduced from a major adverse to moderate adverse:

- delays to vehicle occupants and congestion at the A665 Pin Mill Brow realignment/A635 Mancunian Way Northbound realignment junction during operation in 2038;
- delays to vehicle occupants and congestion at the A6 Crescent/A6 Chapel Street/A5066 Adelphi Street/A5066 Oldfield Road junction during operation in 2038; and
- delays to vehicle occupants and congestion at the A6041 Chapel Street/ A6 Blackfriars Street/A6 Chapel Street/A6041 Blackfriars Road junction during operation in 2046.

As a result of corrections to the main ES, the following adverse effects are removed:

- major adverse effect on delays to vehicle occupants and congestion at the A635 Mancunian Way/Hoyle Street junction during operation in 2038 and 2046;
- the major adverse effect on parking under Gateway House and ramp during operation; and
- major adverse effect on congestion and delay for vehicle occupants at the A665 Chancellor Lane diversion/A635 Mancunian Way Southbound realignment/A635 Fairfield Street diversion junction in 2038 and 2046.

9 Volume 3, Route-wide effects



9.1 Introduction

Volume 3 presents a summary of the new, different or removed likely residual environmental effects that have been identified on a route-wide basis as a result of the SES2 changes. Further information is provided in the SES2 and AP2 ES, Volume 3: Route-wide effects report.

Changes as a result of the SES2 scheme are reported in this section for the following topics: agriculture, forestry and soils; ecology and biodiversity; socio-economics; and water resources and flood risk.

Some route-wide topic assessments of the SES2 changes and AP2 amendments have been assessed collectively due to the nature of the topic assessment methodology. These assessments are reported in Section 18 (Part 2: AP2 ES, Volume 3, Route-wide effects) of this document.

Agriculture, forestry and soils

Temporary effects

The total area of land required temporarily for the construction of the SES2 scheme is 1521ha, with 1408ha in England and 113ha in Scotland. In England 455ha is best and most versatile (BMV) land and in Scotland 20ha is prime agricultural land.

The area of agricultural land required temporarily for the construction of the SES2 scheme has decreased by 7ha in England compared to the SES1 scheme (as corrected). In Scotland there has been no change in land required temporarily for the construction from the main ES.

The total area of land to be restored from the construction of the SES2 scheme is 810ha with 734ha in England and 76ha in Scotland. The area of agricultural land to be restored for the construction of the SES2 scheme has decreased by 14ha in England compared to the SES1 scheme (as corrected). In Scotland there has been no change in land required temporarily for the construction from the main ES.

These changes do not result in any new, different or removed temporary significant route-wide level effects on agriculture, forestry or soils.

Permanent effects

The total area of land required permanently for the construction of the SES2 scheme is 711ha, with 674ha in England and 37ha in Scotland. In England 174ha is BMV land and in Scotland 6ha is prime agricultural land.

The area of agricultural land required permanently for the construction of the SES2 scheme has increased by 7ha in England compared to the as corrected SES1 scheme. In Scotland there has been no change in land required permanently for the construction from the main ES.

The total area of land to be used for newly planted woodland, trees, visual screening, habitat creation or floodplain storage from the SES2 scheme in England is 95ha. This has decreased by 7ha compared to the SES1 scheme (as corrected). In Scotland there is no agricultural land to be used for newly planted woodland, trees, visual screening, habitat creation or floodplain storage, which is unchanged from the main ES.

The SES2 changes do not result in any new, different or removed permanent significant route-wide effects on agriculture, forestry or soils.

Ecology and biodiversity

Non-statutory designations

As a result of changes to the designation of Sugar Brook Farm Grasslands Local Wildlife Site (LWS) and Birkin Brook LWS, there will be different adverse effects that are significant at the county/metropolitan level. There will be 33 non-statutory nature conservation sites affected by SES2, two more than the 31 affected by the SES1 scheme (as corrected), however, the regional level effect will remain the same.

The SES2 scheme will result in the loss of at least 24 veteran trees lost, compared to at least 22 reported in SES1.

The SES2 scheme will result in the loss of 4.5ha of ancient woodland, compared to 5.1ha reported in SES1, however this does not result in a new or different significant route-wide level effect on ancient woodland.

Socio-economics

Construction effects

As a result of a correction to the SES1 and AP1 ES, there is predicted to be a total relocation of 5,400 jobs from businesses due land required for construction of the AP1 revised scheme. This will result in a major adverse route-wide effect on businesses compared to the effect reported in the SES1 and AP1 ES.

The total number of jobs that are estimated to be lost due to businesses being displaced as a result of in-combination or isolation effects is expected to increase from a total of 470 jobs, as reported in Volume 3 of SES1, to 560 jobs as a result of the SES2 scheme. This will change the effect reported in SES1 from a minor to a moderate adverse effect, which is significant.

Water resources and flood risk

Water Framework Directive

The Water Framework Directive (WFD) aims to protect and enhance the quality of the water environment. It takes a holistic approach to the sustainable management of water by considering the interactions between surface water, groundwater and water-dependent ecosystems.

As a result of updated environmental baseline data since the SES1 and AP1 ES, the previously reported amber effect and risk of deterioration associated with potential impacts on surface water quality from highway drainage to both Wade Brook and Timperley Brook have been removed. However, a new potential amber effect and risk of deterioration associated with potential impacts on surface water quality from highway drainage to Tributary of Timperley Brook 1 has been identified.

As a result of the new SES2 baseline information, there will be an adverse (amber) effect from the Manchester Airport High Speed Station inverted siphon on the hydromorphological status of Timperley Brook.

These new adverse (amber) effects may give rise to the potential risk of the SES2 scheme being non-compliant with the statutory objectives of the WFD. A range of mitigation measure options have been identified in consultation with the Environment Agency with the aim to ensure no residual risks of status deterioration will remain. It is currently anticipated that it will be feasible to develop and implement mitigation measures to ensure that there is no residual risk of deterioration in status for these water bodies, though further detailed work is required to inform the best suitable solution.

Flood risk

Volume 3 of the SES1 identified the potential for significant adverse effects related to flood risk at two locations along the HS2 route, requiring development of additional mitigation in order to ensure that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, to reduce flood risk overall.

The SES2 change in Environment Agency climate change guidance and climate allowances has led to the removal of some of the previously reported significant effects associated with the presence of Palatine Road vent shaft at Northenden (in the MA07 area).

10 Volume 4, Off-route effects



10.1 Introduction

Volume 4, Off-route effects of the SES2 presents a summary of the new, different or removed likely residual environmental effects that have been identified on an off-route basis as a result of the SES2 changes.

A Volume 4, Off-route effects report was not produced as part of the SES1 and AP1 ES. As a result of the SES1 change to remove the HS2 West Coast Main Line (WCML) connection, some of the forecast operational jobs reported in Volume 4 of the main ES will not be delivered through the HS2 Phase 2b Crewe – Manchester Bill. These employment opportunities would have been accessible to residents within the locality of Preston Station, Carlisle Station and the Annandale depot. The changes to the forecast operational jobs as a result of the removal of the HS2 WCML connection are reported in Volume 4, Off-route effects of the SES2.

The main ES reported within the Preston Station area there would be 750 HS2-related train crew jobs created based at the existing station. This would reduce to 200 HS2-related train crew jobs created based at the existing station.

The main ES reported within the Carlisle Station area there would be 400 HS2-related train crew jobs created based at the existing station. This would reduce to no HS2-related train crew jobs created based at the existing station.

The main ES reported within the Annandale area there would be a depot creating 170 HS2-related jobs. This would reduce to no operational HS2-related jobs created at the depot. The impact of operational jobs would be assessed at the point that a future connection to the WCML is promoted through a separate consenting process.

The route-wide effects of these removed operational jobs were reported in the SES1 and AP1 ES Volume 3, Route-wide effects report.

10.2 New environmental baseline information

Since the main ES and the SES1, additional baseline information has become available that relates to the following environmental topics:

- air quality – updated traffic baseline and future baseline models and associated background air pollution concentrations have been made available for the air quality assessment;
- socio-economics – updated baseline information reflecting changes to economic activity and the labour market, employment land needs and vacancy rates for warehouses, industrial property and office space;
- traffic and transport – additional traffic information has been used in the development of updated baseline and future baseline models. There has also been a change in the future baseline forecast years from 2030 to 2031 for the peak level of construction traffic activity and 2038 to 2039 for the opening year; and
- water resources and flood risk – updates to the baseline based on surveys and additional water quality data collected from a number of watercourses as well as updated peak rainfall intensity allowances using United Kingdom Climate Projections (UKCP) local projections of extreme rainfall.

10.3 Changes to the design and construction assumptions within the existing powers of the Bill

Since the main ES, the need to make changes to the design and to construction assumptions has been identified. The changes of relevance in the off-route works areas relate to the construction programme.

10.4 Changes to the construction programme

The main ES provided indicative details of the construction works to be managed from the construction compounds in the area. 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.

A Volume 4, Off-route effects report was not produced as part of the SES1 and AP1 ES. However, the AP1 revised scheme resulted in the need to alter the indicative construction programme as set out in the main ES. The main SES1 design change which gives rise to changes to the off-route works construction programme is the Removal of the HS2 West Coast Main Line (WCML) connection (SES1-004-001). A summary of the assessment of SES1 changes is reported in Part 2: AP2 ES, Section 19, where relevant. There are no SES2 changes to consider for the Volume 4, Off-route effects report.

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

Traffic and transport

Since the main ES, the baseline and future baseline models have been updated for the assessment of the SES2 scheme and AP2 revised scheme to reflect the change in the future baseline forecast years from 2028 to 2031, 2038 to 2039 and 2046 to 2051.

A summary of 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 Part 2: AP2 ES, Section 19, as the change in traffic flows cannot be directly attributed to a specific SES2 change or AP2 amendment.

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Part 2: Additional Provision 2 Environmental Statement



11 Introduction to Additional Provision 2 Environmental Statement

11.1 Introduction

Since the main ES and the SES1 and AP1 ES, a number of amendments have been identified. These amendments include requirements to use land outside the existing powers of the Bill and additional access rights or other extensions of the powers included in the Bill. These amendments to the Bill are now being sought under AP2.

Part 2 of this NTS is presented on a community area basis, in sections 10 to 16. For each community area the following information is included:

- a summary of the amendments that require an additional provision to be included within the Bill;
- a summary of significant residual environmental effects as a result of the amendments; and
- a summary of combined effects of amendments within the community area due to changes in construction traffic flows.

Figures 8, 9, 10, 11, 12 and 13 show the approximate location of the AP2 amendments within each of the community areas.

11.2 Other amendments requiring change to Bill powers

Since the submission of the Bill and the Additional Provision 1, the need for amendments to Part 4 of Schedule 5 ('Highways') and Schedule 18 of the Bill ('Listed buildings') have been identified.

Schedule 5 contains provisions for highways (Access, Interference, Construction and Maintenance). Table 3 in Part 4 of Schedule 5 specifies proposed creation of new public rights of way.

The amendment to column 2 of Table 3 of Schedule 5 upgrades the right of way proposed at AP1 to include a cycle track, including a right of way on foot. The provision of a cycle track, including a right of way on foot, was assessed within the SES1 and AP1 ES and therefore this amendment does not require any further assessment additional to that set out in the SES1 and AP1 ES with respect to any environmental topics is required.

Schedule 18 contains provisions for the disapplication or modifications of controls relating to listed buildings. Buildings and structures included within Table 2 of Schedule 18 allow for buildings to be altered or extended for heritage or monitoring purposes. Buildings and structures included within Table 3 of Schedule 18 allow for buildings to be modified for noise mitigation works.

The amendments add certain listed buildings or structures to the tables in Schedule 18 as these assets were not included in the hybrid Bill as deposited. The inclusion of the buildings and structures listed in Table 5 was however considered in the preparation of the main ES. Therefore these amendments do not require any further assessment of the environmental effects or mitigation additional to that set out in the main ES with respect to any environmental topics.

Table 5 identifies which buildings and structures have been added to which tables in Schedule 18 of the Bill and for what purpose.

Table 4: Summary of amendments to column 2 of Table 3 in Part 4 of Schedule 5 of the Bill, as amended by AP1

| Name of amendment | Community Area | Description of the AP1 revised scheme | Description of the AP2 revised scheme |
|--|----------------|--|---|
| Change to Bill powers to upgrade proposed new footpath to cycle track, including a right of way on foot AP2-202-001 | MA02 | New footpath proposed between Restricted Byway Lostock Gralam 1/1 and Birches Lane | New cycle track, including a right of way on foot, between Restricted Byway Lostock Gralam 1/1 and Birches Lane |

Table 5: Summary of amendments to Schedule 18 of the Bill

| Name of amendment | Community Area | Description of the original scheme | Description of the AP2 revised scheme |
|---|----------------|---|---|
| Change to Bill powers to include Store Street Aqueduct, Manchester, within Table 2 of Schedule 18 of the Bill AP2-208-001 | MA08 | Structures were not included within Schedule 18 of the Bill | Provision of heritage and/or monitoring works on the Grade II* listed Store Street Aqueduct |
| Change to Bill powers to include the Former Goods Offices to Piccadilly Station, Manchester, within Table 2 of Schedule 18 of the Bill AP2-208-002 | MA08 | | Provision of heritage and/or monitoring works on the Grade II listed Former Goods Offices to Piccadilly Station |
| Change to Bill powers to include Hollow Wood Farmhouse, Old Hall Lane, Tabley Superior, within Table 3 of Schedule 18 of the Bill AP2-203-001 | MA03 | | Provision for noise mitigation works to the Grade II listed Hollow Wood Farmhouse, Old Hall Lane |
| Change to Bill powers to include Mere Covert Cottage, Dirty Lane, Rostherne, within Table 3 of Schedule 18 of the Bill AP2-206-001 | MA06 | | Provision for noise mitigation works to the Grade II listed Mere Covert Cottage, Dirty Lane |
| Change to Bill powers to include Sycamore Cottage, Ashley Road, Ashley within Table 3 of Schedule 18 of the Bill AP2-206-002 | MA06 | | Provision for noise mitigation works to the Grade II Sycamore Cottage, Ashley Road |

11.3 Summary of the changes included in the AP2 ES

The changes introduced through the AP2 amendments include:

- modifications to the Manchester Airport High Speed station area including the extension of Metrolink provisions;
- modifications to Manchester tunnel south portal including the main compound and sewer connection and the Manchester tunnel north portal including the headhouse and main compound;
- reconfiguration of Ardwick construction sidings;
- modification to the Manchester Piccadilly Station area including provision of access ramp, loading bay and parking;
- modifications to the multi-modal transport hub;
- modifications to vent shafts and headhouses;
- modifications to road realignments and junctions, property or maintenance access and pedestrian and cycle path provision and diversions;
- changes to traffic management;
- additional land required for the operation of Ashley railhead;
- modifications to utility works;
- landscape earthworks, landscape mitigation planting; and
- watercourse diversions, surface water drainage and groundwater trenches.

12 Hough to Walley's Green community area (MA01)



12.1 Summary of amendments in the Hough to Walley's green area (MA01) within the AP2 ES

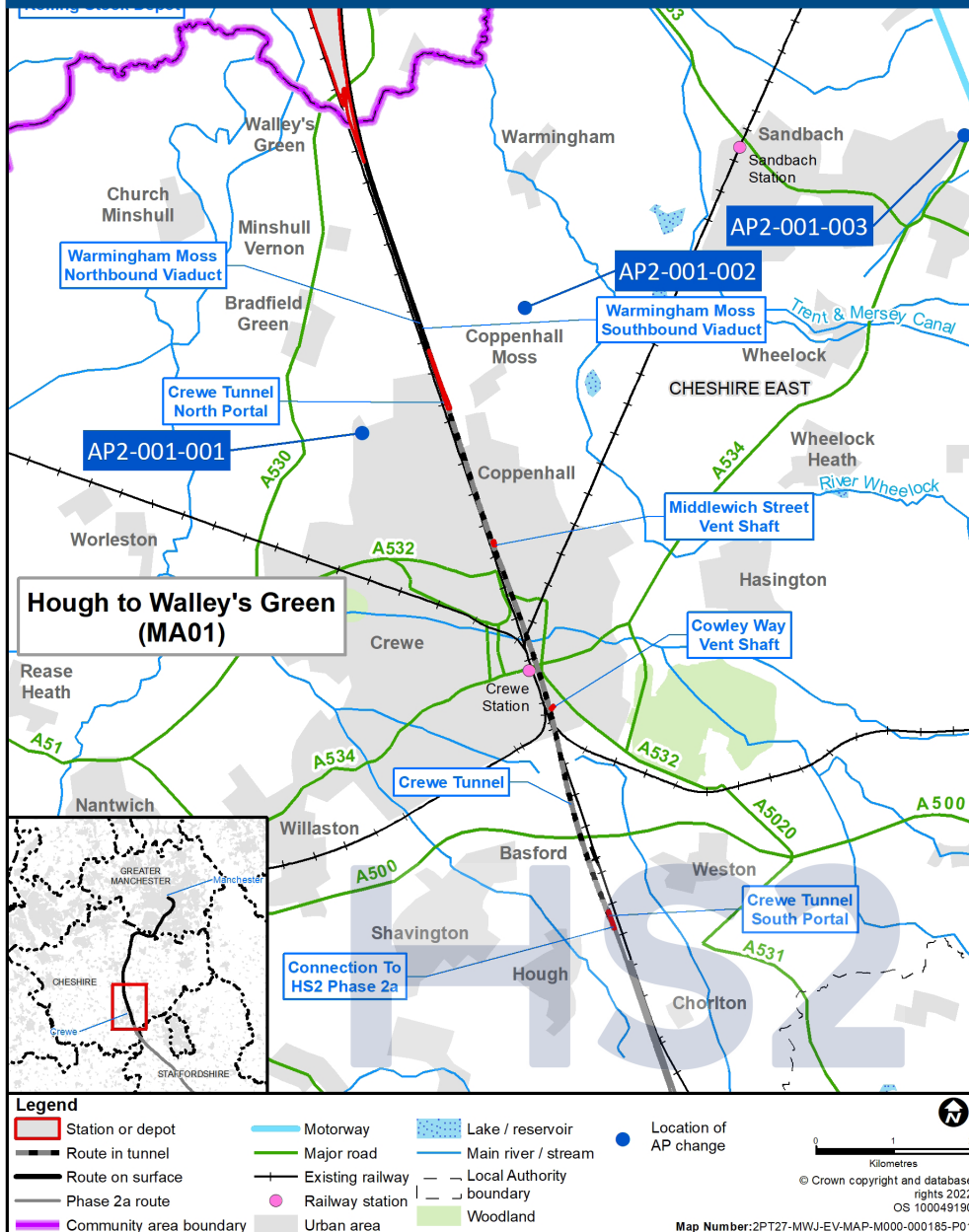
Table 6 provides a summary of each engineering amendment reported within the AP2 ES, along with a description of the original scheme, which is used as the baseline for the comparison of new and different significant environmental effects.

Figure 8 shows the approximate location of each AP2 amendment within the Hough to Walley's Green area.

Table 6: Summary of the AP2 amendments requiring changes to the Bill powers in the Hough to Walley's Green area

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|---|---|
| Additional land temporarily required for modifications to the B5076 Bradfield Road and Parkers Road junction AP2-001-001 | The main ES did not propose any mitigation works in this location for road users. | The junction of Bradfield Road and Parkers Road will be temporarily modified to include carriageway widening and alterations to traffic signals. |
| Additional land permanently required for modifications to the Warmingham Road and Hall Lane junction. AP2-001-002 | The main ES did not propose any mitigation works in this location for road users. | The junction of Warmingham Road and Hall Lane will be temporarily modified to include carriageway widening to enable the formation of a right-turn lane at the junction of Warmingham Road and Hall Lane. |
| Additional land temporarily required for modifications to the A534 Old Mill Road and Congleton Road junction AP2-001-003 | The main ES did not propose any mitigation works in this location for road users. | The junction of the A534 Old Mill Road and Congleton Road will be temporarily modified to include carriageway widening to enable the formation of a right-turn lane on Old Mill Road, to the east of the junction of Congleton Road and the A534 Old Mill Road. |

Figure 8: Locations of the AP2 amendments within the Hough to Walley's Green area



12.2 Assessment of amendments in the Hough to Walley's Green area (MA01) in the AP2 ES

Community

Effects arising during construction

Additional land temporarily required for modifications to the B5076 Bradfield Road and Parkers Road junction (AP2-001-001)

This amendment will result in a new temporary major adverse in-combination effect on amenity for residents of approximately 35 residential properties at the junction of Parkers Road and the B5076 Bradfield Road, Crewe. This is due to new noise and visual effects combining with existing HGV traffic effects.

Additional land temporarily required for modifications to the A534 Old Mill Road and Congleton Road junction (AP2-001-003)

This amendment will result in a new temporary major adverse in-combination effect on amenity for residents of approximately 20 residential properties at the junction of the A534 Old Mill Road and Congleton Road in Sandbach. This is due to new significant noise effects combining with new significant visual effects.

The amendment will also result in a new temporary major adverse in-combination effect on amenity for residents of Park House Care Home on Congleton Road, Sandbach. This is due to new significant noise combining with new significant visual effects.

Ecology and biodiversity

Effects arising during construction

Additional land permanently required for modifications to the Warmingham Road and Hall Lane junction (AP2-001-002)

On a precautionary basis, it is assumed in the SES2 that there will be a net loss in hedgerows of 16.5km in the Hough to Walley's Green area. The amendment will result in a further loss of 569m of hedgerow. This will remain a permanent adverse effect that is significant at the county/metropolitan level.

Health

Effects arising during construction

Additional land temporarily required for modifications to the B5076 Bradfield Road and Parkers Road junction (AP2-001-001)

This amendment will result in a new adverse neighbourhood quality effect for residents in the vicinity of the junction of Parkers Road and the B5076 Bradfield Road, Barrow Green in Crewe. This is due to the combination of existing HGV traffic and new noise and visual effects. 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.

Additional land temporarily required for modifications to the A534 Old Mill Road and Congleton Road junction (AP2-001-003)

This amendment will result in a new adverse neighbourhood quality effect for residents in the vicinity of the junction of the A534 Old Mill Road and Congleton Road in Sandbach. This is due to the combination of new construction noise and new visual effects.

The amendment will also result in an adverse health effect on residents of Park House Care Home on Congleton Road, Sandbach. The combination of new construction noise and new visual effects will result in a temporary adverse effect on the beneficial health outcomes of accessing services, health and social care.

Landscape and visual

Effects arising during construction

Additional land temporarily required for modifications to the B5076 Bradfield Road and Parkers Road junction (AP2-001-001)

This amendment will give rise to a new moderate adverse significant construction effect at view north from Parkers Road.

Additional land permanently required for modifications to the Warmingham Road and Hall Lane junction (AP2-001-002)

This amendment will give rise to a new moderate adverse significant construction effect at view west from Hall Lane Cottage, Hall Lane.

Additional land temporarily required for modifications to the A534 Old Mill Road and Congleton Road junction (AP2-001-003)

This amendment will give rise to a new moderate adverse significant construction effect at view north from Gatekeeper Close.

Socio-economics

Effects arising during construction

Additional land temporarily required for modifications to the B5076 Bradfield Road and Parkers Road junction (AP2-001-001)

This amendment will result in a new temporary adverse significant in-combination effect on Cygnet Nield House, a mental health hospital. This is due to a new significant noise effect in addition to the significant effects from HGV traffic reported in the main ES as a result of construction works which may discourage users from using this facility.

Additional land temporarily required for modifications to the A534 Old Mill Road and Congleton Road junction (AP2-001-003)

This amendment will result in new significant noise effects combining with the significant effects from HGV construction traffic reported in the main ES and the SES1 and AP1 ES. This will result in a new adverse significant in-combination effect on Park House Care Home located north-east of Sandbach.

Sound, noise and vibration

Effects arising during construction

Additional land temporarily required for modifications to the B5076 Bradfield Road and Parkers Road junction (AP2-001-001)

This amendment will result in a new temporary adverse noise effect at approximately 35 dwellings in the vicinity of the junction of Bradfield Road and Parkers Road at Barrows Green.

The amendment will also give rise to a new temporary adverse significant construction noise effect on Cygnet Nield House, a mental health hospital.

Additional land temporarily required for modifications to the A534 Old Mill Road and Congleton Road junction (AP2-001-003)

This amendment will result in a new temporary adverse noise effect at approximately 20 dwellings in the vicinity of the junction of the A534 Old Mill Road and Congleton Road in Sandbach.

The amendment will also result in a new temporary adverse significant noise effects from construction activities on Park House Care Home. This temporary adverse effect may take the form of activity disturbance to residents of the care home.

12.3 Assessment of combined effects of changes and amendments in the Hough to Walley's Green area due to changes in traffic flows

This section reports the combined assessment of new, different or removed 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.

The assessment has also considered any impacts in the Hough to Walley's Green area associated with SES2 changes and AP2 amendments in other community areas.

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:

- ecology and biodiversity;
- socio-economics; and
- sound, noise and vibration.

Traffic and transport

Effects arising during construction

The significant effects reported in this section will be temporary and reversible in nature lasting only for the duration of the construction works.

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

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

- new minor adverse effect at seven junctions; and
- different (increased) major adverse significant effect at one junction.

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

- significant adverse effects removed on 15 roads (six moderate and nine minor);
- change (decrease) from major adverse effect to moderate adverse effect on two roads;
- change (increase) from moderate adverse effect to major adverse effect on two roads;
- new major adverse effect on five roads;
- new moderate adverse effect on 14 roads;
- new minor adverse effect on six roads; and
- different (increased) major adverse significant effect on one road.

Ecology and biodiversity

Effects arising during construction

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

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

- Oakhanger Moss SSSI component of the Midland Meres and Mosses Phase 2 Ramsar Site. On a precautionary basis, this will result in an adverse effect on the Midland Meres and Mosses Phase 2 Ramsar site that is significant at the international level. It will also result in an adverse effect on the SSSI that is significant at the national level. These are new significant effects compared to those reported in the SES1 and AP1 ES

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.

Ongoing work

The designated site assessment reports (SES2 and AP2 ES Volume 5, Appendices: EC-016) include the emerging results of an assessment of air quality impacts on designated sites during construction and operation of the AP2 revised scheme in-combination with other schemes. At this stage, it is identified that there are potentially significant effects at the following sites as a result of the AP2 revised scheme in combination with other schemes:

- Midland Meres and Mosses Phase 1 Ramsar site (construction and operation);
- West Midlands Mosses SAC (construction); and
- Midlands Meres and Mosses Phase 2 Ramsar site (construction).

Further assessment of these potential effects will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Socio-economics

Effects arising during construction

The changes in traffic flows will result in new temporary moderate adverse significant isolation effects on Rising Sun Nurseries and Rising Sun Inn due to construction works impacting pedestrian and vehicular traffic along the A530 Middlewich Road.

Sound, noise and vibration

Effects arising during construction

As a result of the AP2 revised scheme, construction traffic in the Hough to Walley's Green area will give rise to a new temporary adverse significant noise effect on dwellings adjacent to Chambers Street between the A534 Nantwich Road and Catherine Street.

Construction traffic in this area will also give rise to a different temporary adverse significant noise effect on dwellings adjacent to Waldron's Lane between Warmingham Road and Stoneley Road, and adjacent to Stoneley Road between Groby Road and Waldron's Lane.

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13 Wimboldsley to Lostock Gralam community area (MA02)



13.1 Summary of amendments in the Wimboldsley to Lostock Gralam area (MA02) within the AP2 ES

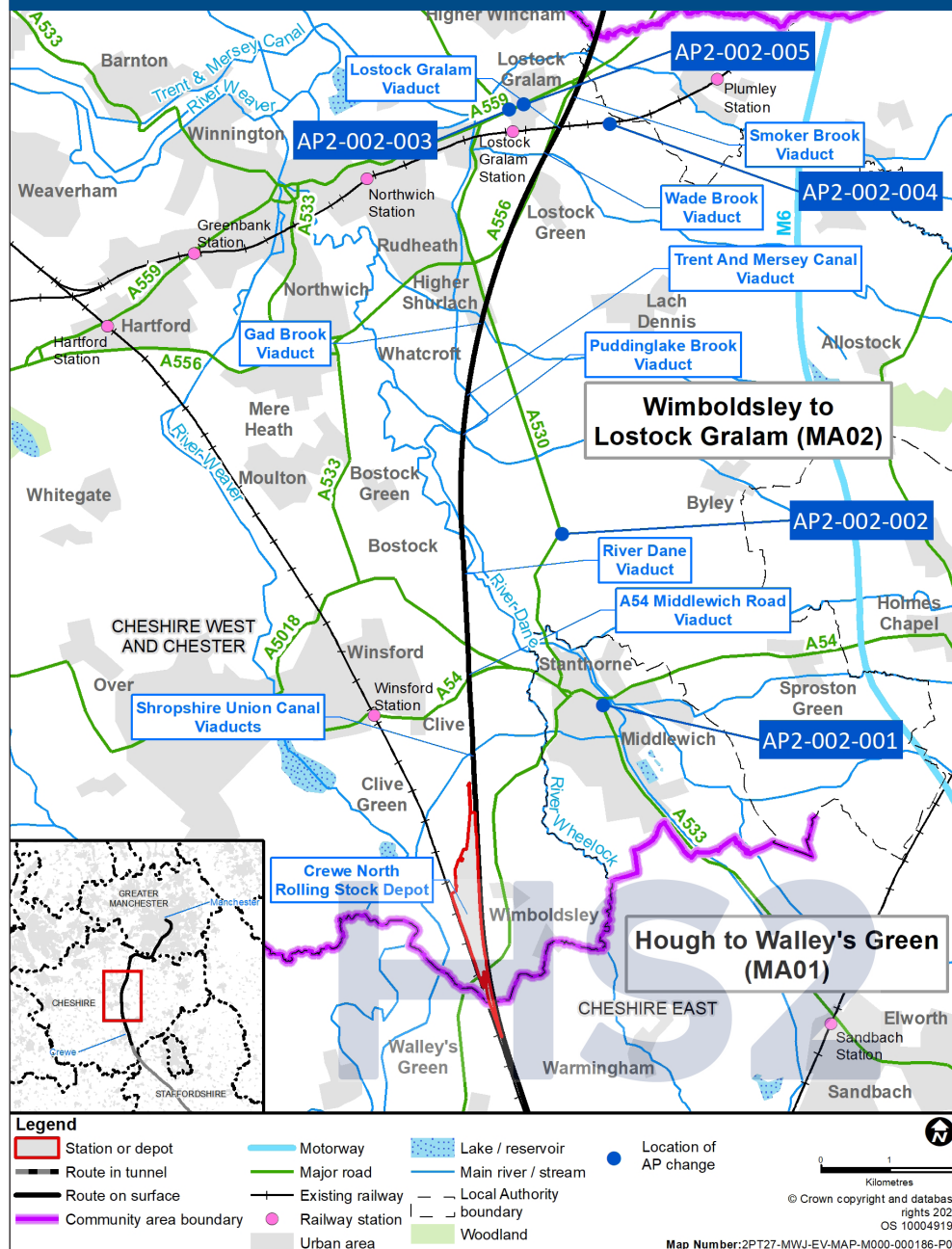
Table 7 provides a summary of each engineering amendment reported within the AP2 ES, along with a description of the original scheme, which is used as the baseline for the comparison of new and different significant environmental effects.

Figure 9 shows the approximate location of each AP2 amendment within the Wimboldsley to Lostock Gralam area.

Table 7: Summary of the AP2 amendments requiring changes to the Bill powers in the Wimboldsley to Lostock Gralam area

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|--|---|---|
| Additional land temporarily required for modifications to the A54 St Michael's Way, A533 Leadsmithy Street and A54 Kinderton Street junction AP2-002-001 | The main ES did not propose any mitigation works in this location for road users. | The junction of A54 St Michael's Way/A533 Leadsmithy Street/A54 Kinderton Street will be temporarily modified to include carriageway widening to enable the extension and optimisation of a signalised left turn lane on A533 Leadsmithy Street. |
| Additional land temporarily required for modifications to the A530 King Street, A530 Croxton Lane and B5309 King Street junction AP2-002-002 | The main ES did not propose any mitigation works in this location for road users. | The junction of A530 King Street/ A530 Croxton Lane/B5309 King Street will temporarily be modified to include signalisation of the junction and will introduce a right turn lane on A530 King Street and a left turn lane on A530 Croxton Lane. |
| Additional land permanently required for modifications to the A559 Manchester Road, A559 Hall Lane and Station Road junction AP2-002-003 | The main ES did not propose any mitigation works in this location for road users. | The junction of A559 Manchester Road/A559 Hall Lane/Station Road will be permanently modified to include carriageway widening to enable the formation of a left turn lane on the south-west side of the A559 Manchester Road. |
| Additional land permanently required for modifications to Distribution Network Operator (DNO) connections to A556 Shurlach Road auto-transformer station and Peacock Lane auto-transformer feeder station AP2-002-004 | The Bill provides for a non-traction power (NTP) supply, which provides power for operation of the railway, via a number of intake points, including: <ul style="list-style-type: none"> • A556 Shurlach Road auto-transformer station in the Wimboldsley to Lostock Gralam area; and • Peacock Lane auto-transformer feeder station in the Pickmere to Agden and Hulseheath area (MA03). | Modifications have been made to the design for the NTP supply to ensure a validated connection design at: <ul style="list-style-type: none"> • Peacock Lane auto-transformer feeder station (which will be removed and will no longer act as an intake point); and • the A556 Shurlach Road auto-transformer station. |
| Additional land temporarily required for modifications to the A559 Manchester Road and Stubbs Lane junction AP2-002-005 | The main ES did not propose any mitigation works in this location for road users. | The junction of A559 Manchester Road/Stubbs Lane will be temporarily widened to improve capacity. The amendment will introduce a left turn lane on Stubbs Lane. |

Figure 9: Locations of the AP2 amendments within the Wimboldsley to Lostock Gramam area



13.2 Assessment of amendments in the Wimboldsley to Lostock Gramam area (MA02) in the AP2 ES

Community

Effects arising during construction

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

This amendment will result in a new major temporary adverse in-combination effect on amenity for residents of approximately five residential properties on the A559 Manchester Road, at the corner of Station Road, Lostock Gramam. This is due to new noise and new visual effects.

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

This amendment will result in new moderate temporary adverse significant effects on:

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

Ecology and biodiversity

Effects arising during construction

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

On a precautionary basis, it is assumed in the SES1 that there will be a net loss in hedgerows of 54.6km in the Wimboldsley to Lostock Gralam area. This amendment will result in a further loss of 545m of hedgerow. This will remain a permanent adverse effect that is significant at the county/metropolitan level.

Health

Effects arising during construction

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

This amendment will result in a new adverse neighbourhood quality effect for residents of properties on the A559 Manchester Road, at the corner of Station Road, in Lostock Gralam. This is due to the combination of new construction noise and new visual effects.

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

This amendment will result in a new adverse neighbourhood quality effect for residents on the A559 Manchester Road, between Lodge Lane and Stubbs Lane, in Lostock Gralam due to new noise and new visual effects.

The amendment will also result in a new adverse effect on Lostock Gralam Community Centre in Lostock Gralam. This is due to construction new noise and new visual effects. This may adversely impact the beneficial wellbeing effects associated with participation in community events and social networks.

Landscape and visual

Effects arising during construction

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

This amendment will give rise to a new moderate adverse construction effect at view north-west from the junction of the A559 Manchester Road, Station Road and A559 Hall Lane.

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

This amendment will give rise to a new moderate adverse construction effect at view east from the A559 Manchester Road.

Socio-economics

Effects arising during construction

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

This amendment will result in a new temporary adverse significant in-combination effect on Middlewich Physiotherapy and Sports Injury Clinic located in Middlewich as a result of new significant noise effects. This effect is in addition to the significant effects from HGV construction traffic reported in the main ES and the SES1 and AP1 ES. Customers may be sensitive to impacts on the local environment and setting and the construction works may discourage them from using this business.

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

This amendment will result in new significant noise effects and new significant visual effects. On a precautionary basis, this will result in a new temporary adverse significant in-combination effect on The Slow and Easy, a public house located in Lostock Gralam which may discourage customers from using the business.

Sound, noise and vibration

Effects arising during construction

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

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

The amendment will also give rise to a new temporary adverse significant construction noise effects at the following non-residential buildings:

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

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

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

The amendment will also give rise to a new temporary adverse significant construction noise effect at the following non-residential buildings:

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

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

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

The amendment will also give rise to a new temporary adverse significant construction noise effect at the following non-residential buildings:

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

13.3 Assessment of combined effects of changes and amendments in the Wimboldsley to Lostock Gralam area due to changes in traffic flows

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.

The assessment has also considered any impacts in the Wimboldsley to Lostock Gralam area associated with SES2 changes and AP2 amendments in other community areas.

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;
- sound, noise and vibration; and
- water resources and flood risk.

Traffic and transport

Effects arising during construction

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

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

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

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

Effects arising during operation

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

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

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

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

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

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

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

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

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

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

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

Community

Effects arising during construction

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

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

Ecology and biodiversity

Effects arising during construction

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

- Oakhanger Moss SSSI component of the Midland Meres and Mosses Phase 2 Ramsar Site. On a precautionary basis, this will result in an adverse effect on the Midland Meres and Mosses Phase 2 Ramsar site that is significant at the international level. This will be a new significant effect compared to that reported in the SES1 and AP1 ES;
- Wettenhall and Darnell Woods SSSI. On a precautionary basis, this will result in an adverse effect on the SSSI that is significant at the national level. This will be a new significant effect compared to that reported in the SES1 and AP1 ES; and
- Tabley Mere SSSI. On a precautionary basis, this will result in an adverse effect on the SSSI that is significant at the national level. This will be a new significant effect compared to that reported in the SES1 and AP1 ES.

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.

Ongoing work

The designated site assessment reports (SES2 and AP2 ES Volume 5, Appendices: EC-016) include the emerging results of an assessment of air quality impacts on designated sites during construction and operation of the AP2 revised scheme in-combination with other schemes. At this stage, it is identified that there are potentially significant effects at the Midlands Meres and Mosses Phase 2 Ramsar site during construction as a result of the AP2 revised scheme in combination with other schemes.

Further assessment of these potential effects will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Health

Effects arising during construction

The main ES reported an adverse neighbourhood quality effect for residents in Clive Green. Changes to construction traffic flows will result in the removal of HGV traffic effects. Noise and visual effects reported in the main ES will remain the same. This will result in a different neighbourhood quality effect for residents in Clive Green.

Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents in the vicinity of the A54 St Michael's Way and the A530 Newton Bank, Middlewich due to new traffic noise effects. 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.

Socio-economics

Effects arising during construction

The changes in traffic flows will result in different temporary adverse significant in-combination effects on The Golden Lion Hotel, The Slow and Easy public house, and the Crossways Care Home, due to new HGV construction traffic effects combining with the significant noise and visual effects reported in the SES1 and AP1 ES.

Sound, noise and vibration

Effects arising during construction

As a result of the AP2 revised scheme, construction traffic in this area will give rise to a new temporary adverse significant noise effect on dwellings which are adjacent to the A530 Newton Bank and A530 St Michael's Way and the A54 Holmes Chapel Road.

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

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

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

Water resources and flood risk

Effects arising during construction

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

14 Pickmere to Agden and Hulseheath community area (MA03)



14.1 Summary of amendments in the Pickmere to Agden and Hulseheath area (MA03) within the AP2 ES

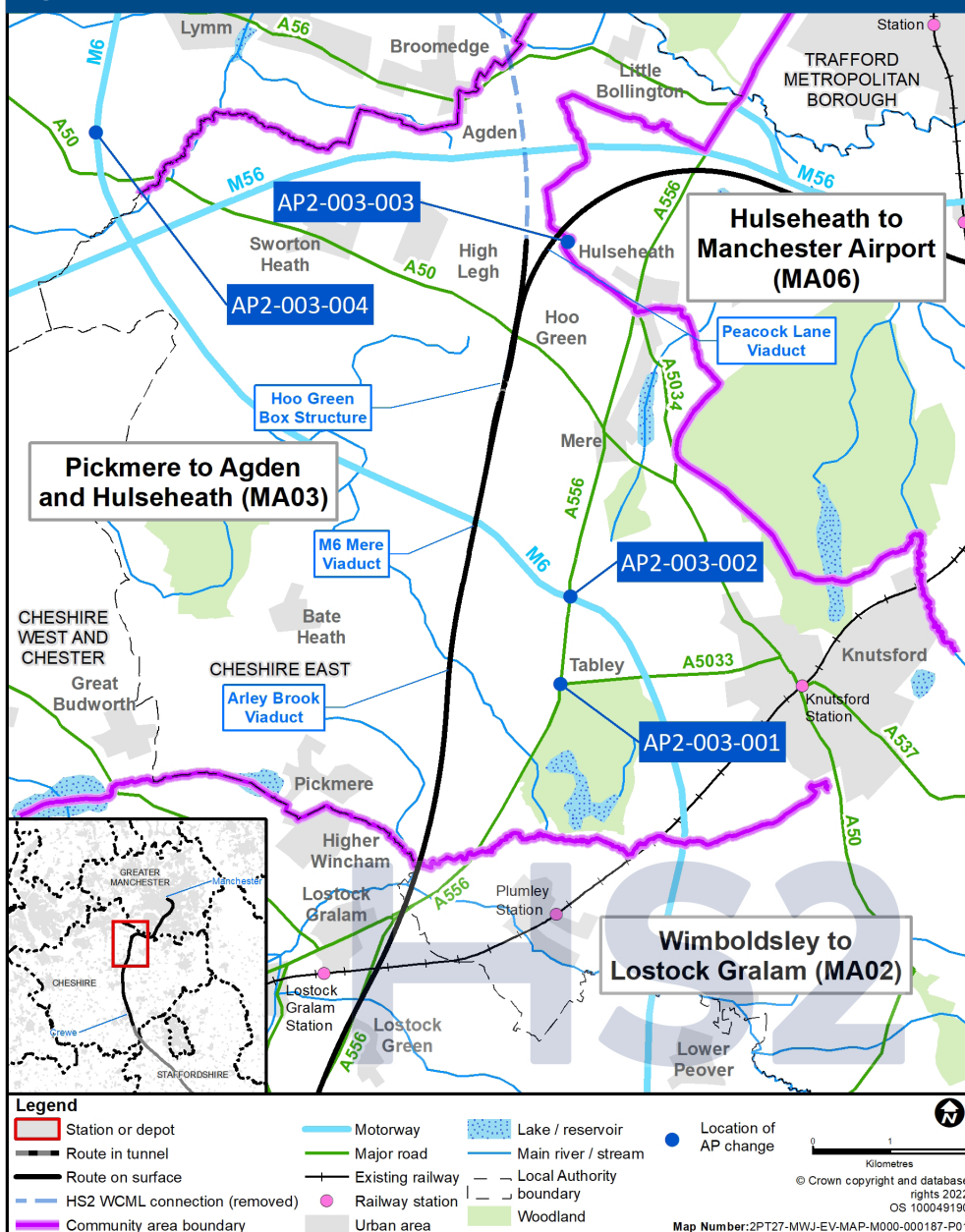
Table 8 provides a summary of each engineering amendment reported within the AP2 ES, along with a description of the original scheme, which is used as the baseline for the comparison of new and different significant environmental effects.

Figure 10 shows the approximate location of each AP2 amendment within the Pickmere to Agden and Hulseheath area.

Table 8: Summary of the AP2 amendments requiring changes to the Bill powers in the Pickmere to Agden and Hulseheath area

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|--|--|
| Additional land temporarily required for modifications to the A556 Chester Road and A5033 Northwich Road junction. AP2-003-001 | The main ES did not propose any mitigation works in this location for road users. | The junction of the A556 Chester Road and the A5033 Northwich Road will be temporarily modified to include lengthening of the dedicated left-turn lane on the A5033 Northwich Road westbound approach to the junction and creation of a dedicated left-turn lane on the A556 Chester Road southbound approach to the junction. |
| Additional land permanently required for modifications to M6 junction 19. AP2-003-002 | The main ES did not propose any mitigation works in this location for road users. | M6 junction 19 will be permanently modified to include carriageway widening to enable an additional lane on the northbound through-about (i.e. the circular road junction bisected by traffic lanes) and changes to the northbound M6 junction 19 off-slip road. |
| Additional land permanently required for the diversion of three high pressure gas pipelines near Millington Clough Ancient Woodland. AP2-003-003 | The diversion of three underground gas pipelines HP45, TX43 and TX44 would be required, resulting in the removal of 0.2ha of Millington Clough Ancient Woodland Inventory (AWI) site | Engagement with utility providers has resulted in realignment of the proposed diversions. The new alignment of the diversions will take the three gas pipelines to the west of Millington Clough AWI site, avoiding the loss of woodland within the AWI site. |
| Additional land permanently required for modifications to M6 junction 20a. AP2-003-004 | The main ES did not propose any mitigation works in this location for road users. | M6 junction 20a will be permanently modified to include carriageway widening to enable an additional northbound lane for merging traffic. |

Figure 10: Locations of the AP2 amendments within the Pickmere to Agden and Hulseheath area



14.2 Assessment of amendments in the Pickmere to Agden and Hulseheath area (MA03) in the AP2 ES

Agriculture, forestry and soils

Effects arising during construction

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

This amendment will:

- remove a temporary moderate adverse significant effect at Hulse Heath Farm;
- remove a temporary moderate adverse significant effect at Agden Brook Farm; and
- introduce a new temporary moderate adverse significant effect for Land at Thowler Lane.

Ecology and biodiversity

Effects arising during construction

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

On a precautionary basis, it is assumed that there will be a net loss in hedgerows of 39.2km at SES2 in the Pickmere to Agden and Hulseheath area. This amendment will result in a further loss of 232m of hedgerow. This will result in a different permanent adverse effect that will remain significant at the county/metropolitan level.

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

This amendment will result in a further loss of 450m of hedgerow. This will result in a different permanent adverse effect that will remain significant at the county/metropolitan level.

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

This amendment will result in a further loss of 500m of hedgerow. This will result in a different permanent adverse effect that will remain significant at the county/metropolitan level.

Landscape and visual

Effects arising during construction

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

This amendment will give rise to a new moderate adverse significant construction effect at view north from Tabley Hill Lane.

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

This amendment will give rise to a new significant construction effect at the view north-east from Howshoots Farm, the A50 Cliff Lane. The effect will be moderate adverse.

Socio-economics

Effects arising during construction

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

This amendment will result in a new temporary adverse significant in-combination effect on The Windmill public house. This is due to a new significant visual effect in addition to the significant effects from HGV construction traffic reported in the main ES. This may discourage customers from using the business.

14.3 Assessment of combined effects of changes and amendments in the Pickmere to Agden and Hulseheath area due to changes in traffic flows

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.

The assessment has also considered any impacts in the Pickmere to Agden and Hulseheath area associated with SES2 changes and AP2 amendments in other community areas.

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;
- sound, noise and vibration; and
- water resources and flood risk.

Traffic and transport

Effects arising during construction

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

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

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

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

Effects arising during operation

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

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

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

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

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

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

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

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

Community

Effects arising during construction

Changes to traffic flows will result in new major adverse effects on residents of approximately 50 residential properties on the A50 Chester Road, Mere, due to new noise and HGV traffic effects.

Changes to traffic flows will result in new moderate adverse effects on residents of approximately 20 residential properties on Pickmere Lane, Pickmere, due to new noise and HGV traffic effects.

Changes to traffic flows will result in a different major adverse significant effect on residents of approximately five residential properties on Budworth Road in Tabley Superior due to a different noise effect and the removal of HGV traffic effects and an indirect noise effect. Visual effects reported in the main ES will remain the same.

Ecology and biodiversity

Effects arising during construction

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

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

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.

Ongoing work

The designated site assessment reports (SES2 and AP2 ES Volume 5, Appendices: EC-016) include the emerging results of an assessment of air quality impacts on designated sites during construction and operation of the AP2 revised scheme in-combination with other schemes. At this stage, it is identified that there are potentially significant effects at the Midland Meres and Mosses Phase 1 Ramsar site during construction and operation as a result of the AP2 revised scheme in combination with other schemes.

Further assessment of these potential effects will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Health

Effects arising during construction

The main ES reported an adverse neighbourhood quality effect in the vicinity of Budworth Road, Tabley Superior. Changes to construction traffic flows and changes to the sound, noise and vibration assessment will result in the removal of HGV traffic effects and a different noise effect. The traffic noise effect will be removed, and the duration of the construction noise effect will reduce. Visual effects reported in the main ES will remain the same. This will result in a different adverse neighbourhood quality effect in the vicinity of Budworth Road, Tabley Superior.

Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents of the A50 Chester Road, Mere. The A50 Chester Road is a construction traffic route and will experience a significant increase in HGV traffic. In addition, traffic noise will be noticeable for residents on the A50 Chester Road in Mere during peak months of construction.

Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents in the vicinity of Pickmere Lane, Pickmere. Part of this area was identified in the SES1 and AP1 ES as having a neighbourhood quality effect as a result of noise and HGV traffic effects. Pickmere Lane is a construction traffic route and will experience a significant increase in HGV traffic as a result of the AP2 revised scheme. In addition, traffic noise will be noticeable in the vicinity of Pickmere Lane, Pickmere, during peak months of construction.

Socio-economics

Effects arising during construction

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

Effects arising during operation

The changes in traffic flows will result in a new permanent adverse significant isolation effect on The Mere, a golf club and spa. This is related to an increase in traffic associated with the operation of the AP2 revised scheme with both primary access points to The Mere from B5569 Chester Road affected by adverse traffic effects.

Sound, noise and vibration

Effects arising during construction

As a result of the AP2 revised scheme, construction traffic in this area will give rise to a new temporary adverse significant noise effect on adjacent residential properties in the vicinity B5391 Pickmere Lane between the A556 and School Lane including several dwellings on Budworth Road, the rear of which face the B5391 Pickmere Lane.

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

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

Water resources and flood risk

Effects arising during construction

The changes in construction traffic, due to the AP2 revised scheme has led to the removal of the moderate adverse significant effects on the glacial till aquifer at Chapel Lane reported in SES1 and AP1 ES.

15 Hulseheath to Manchester Airport community area (MA06)



15.1 Summary of amendments in the Hulseheath to Manchester Airport area (MA06) within the AP2 ES

Table 9 provides a summary of each engineering amendment reported within the AP2 ES, along with a description of the original scheme, which is used as the baseline for the comparison of new and different significant environmental effects.

Figure 11 shows the approximate location of each AP2 amendment within the Hulseheath to Manchester Airport area.

A Volume 2 report for the Hulseheath to Manchester Airport area (MA06) was not produced as part of the SES1 and AP1 ES. Therefore, all new, different or removed effects reported in the AP2 ES for the MA06 community area are compared to the main ES.

Table 9: Summary of the AP2 amendments requiring changes to the Bill powers in the Hulseheath to Manchester Airport area

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|--|--|
| Additional land temporarily required for construction access from Chapel Lane and the A556 temporary slip roads AP2-006-001 | Temporary slip roads leading from the A556 onto Chapel Lane providing construction access to satellite compounds within the area. | Redesign of the temporary northbound and southbound slip roads between the A556 Chester Road and Chapel Lane and tie-in to Peacock Lane. |
| Additional land temporarily required for the provision of a maintenance access road to the Chester Road satellite compound from the A556 AP2-006-002 | Direct access to the A556 Chester Road satellite compound from the temporary realignment of the A556. | The relocation of the temporary access road to the A556 Chester Road satellite compound to 685m south of the original scheme design with a left-in/left-out junction arrangement off the A556. The access road will be 10m wide with 2.5m grass verges on each side. The access road will require the temporary diversion of Footpath Millington 14/1 and diversion of minor utility assets on A556 northbound footpath and the new attenuation pond access road. |
| Additional land permanently required to relocate Rostherne Mere groundwater recharge trenches north of Cherry Tree Lane AP2-006-003 | Rostherne Mere groundwater recharge trenches, 1m in width, south of the HS2 Route near Cherry Tree Lane to help maintain groundwater and surface water levels in Rostherne Mere. This would result in the permanent loss of 0.5ha (0.3%) of Rostherne Mere Site of Special Scientific Interest (SSSI) and National Nature Reserve (NNR). | The groundwater recharge trenches will now be constructed on the north side of Cherry Tree Lane and the trenches will be culverted beneath Tom Lane using the same dimensions as required in the original scheme, to avoid constructing within the boundaries of Rostherne Mere SSSI. The amendment interacts with the AP2-006-005 amendment that will require the pipeline from the pumping station to the recharge trenches to be realigned to reflect the revised earthworks associated with the changes to the Yarwood Heath accommodation overbridge. |
| Additional land temporarily required for the installation of a temporary vehicle restraint system at M56 junction 8 AP2-006-004 | The Bill provides passive provision for highway improvements under the National Highways future proofing programme. The land identified for construction of the original scheme included some of the carriageway at M56 junction 8 slip road and verge | Improvements to the M56 junction 8 slip road. The amendment will temporarily require an additional area of the carriageway at M56 junction 8 during construction to facilitate the works proposed in the original scheme. |
| Additional land permanently required for modifications to the Yarwood Heath Farm accommodation overbridge AP2-006-005 | The realignment of the existing access for Yarwood Heath Farm, 277m in length, crossing the HS2 route on the Yarwood Heath Farm accommodation overbridge, 12m above track level. | The gradient of the Yarwood Heath Farm accommodation overbridge ramps will be reduced and the height above track level reduced to 7.4m. The realigned access to Yarwood Heath Farm will be extended to 324m in length, south of the HS2 route. The amendment requires the pipeline from the pumping station to the Rostherne Mere recharge trenches (AP2-006-003) to be realigned with the revised earthworks. There would be no changes to the amendment if introduced without AP2-006-003. |

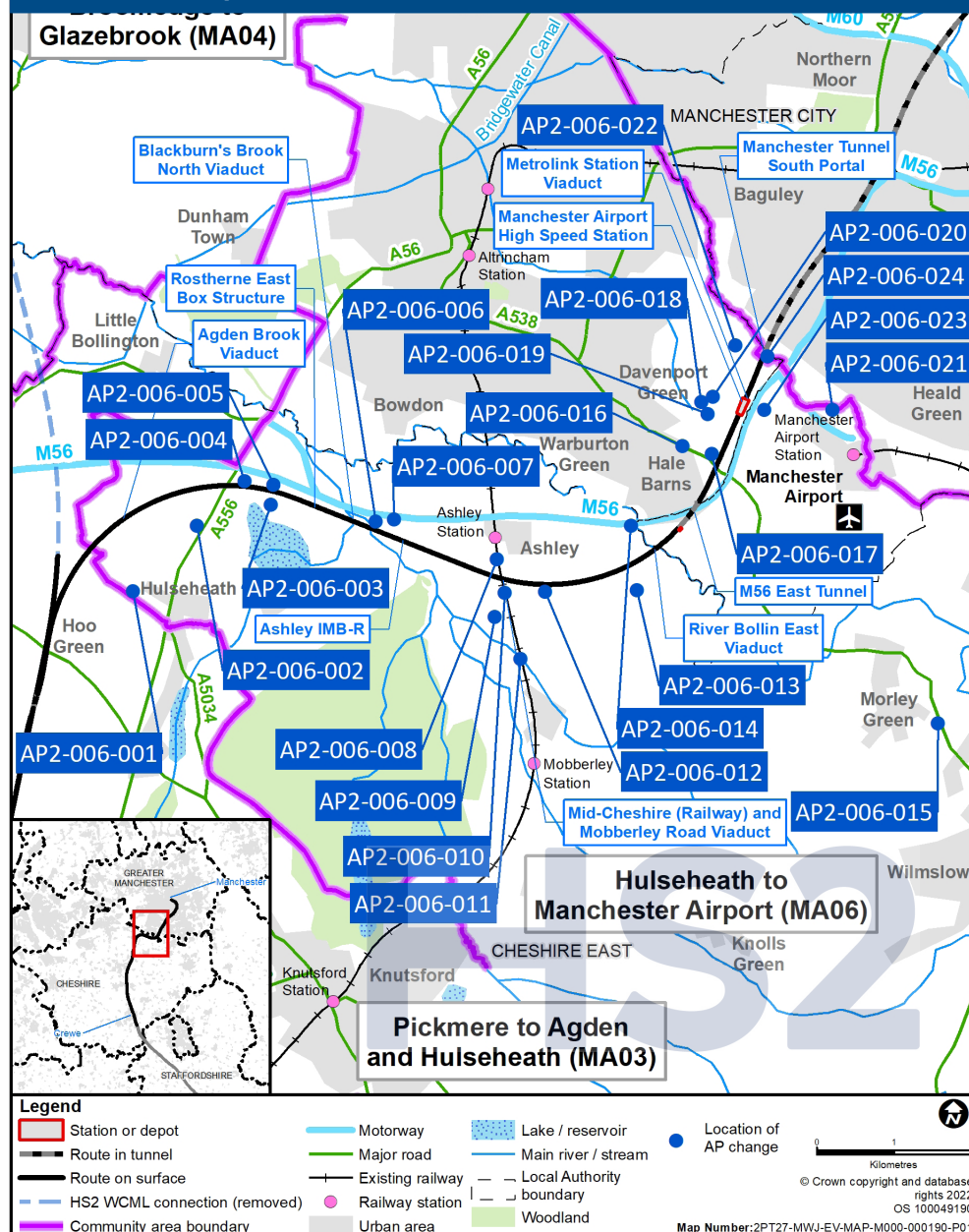
| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|---|--|
| <p>Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site</p> <p>AP2-006-006</p> | <p>The diversion of an existing National Grid 400kV overhead power line, 1.9km in length, to cross Birkin Brook embankment 470m north-west of Birkin Farm. The diversion would result in the permanent loss of 0.4ha of woodland from Ryecroft Covert Local Wildlife Site (LWS) of which 0.2ha is Ryecroft Covert Ancient Woodland Inventory (AWI).</p> | <p>The National Grid 400kV overhead power line has been redesigned and a new 3.2km route has been identified which will reduce impact on Ryecroft Covert LWS and AWI site. The change will reroute the start of the National Grid 400kV overhead powerline diversion to the north of M56 junction 7, approximately 1.3km further north of the location identified in the original scheme.</p> |
| <p>Change in Bill powers for the retention and realignment of Footpath Ashley 3/1</p> <p>AP2-006-007</p> | <p>Footpath Ashley 3/1 would be diverted up to 365m south-east of its current alignment. The footpath would connect with the diverted Footpath Rostherne 5/1, crossing the HS2 route under Blackburn's Brook North viaduct.</p> | <p>A section of the existing Footpath Ashley 3/1 between the junction with Footpath Ashley 2/1 and Footpath Ashley 2/3 will remain open. The retained footpath will connect with a separate section of Footpath Ashley 3/1 that will also be diverted to the north of Birkin Brook embankment and connect to the existing Ashley Road, on the northern side of the HS2 route.</p> |
| <p>Additional land permanently required for the realignment of a maintenance access road from Ashley Road</p> <p>AP2-006-008</p> | <p>A new public right of way (PRoW) between the existing Ashley Road and the diverted Ashley Road and a maintenance access road from the diverted Ashley Road to the Ashley Road auto-transformer station.</p> | <p>A cycle route will be incorporated into the new ProW provided for in the original scheme and combined with the maintenance access road between the existing and diverted sections of Ashley Road. The amendment will result in the diverted road providing access to the western abutment of the Mid-Cheshire (Railway) and Mobberley Road viaduct from the Ashley Road auto-transformer station; and a maintenance access strip and drainage ditch north of the HS2 route.</p> |
| <p>Additional land temporarily required for the provision of surface water drainage at Mobberley Road South satellite compound</p> <p>AP2-006-009</p> | <p>Land would be required for Mobberley Road South satellite compound.</p> | <p>Extension of surface water drainage outfall from the Mobberley Road South satellite compound to the outfall at Sugar Brook to allow for a gravity surface water drainage outfall to Sugar Brook watercourse during construction.</p> |
| <p>Additional land permanently required for watercourse diversions at Mobberley Road</p> <p>AP2-006-010</p> | <p>Permanent watercourse diversions to accommodate the realignment of Mobberley Road, including the diversion of a section of Tributary of Birkin Brook 1 and Ashley Road offline east culvert.</p> | <p>Modifications to permanent watercourse diversions at Mobberley Road. This includes: the replacement of two culverts under the Mid-Cheshire (Railway); the excavation of an open channel; installation of new culverts under Mobberley Road and the realigned Ashley Road; construction of a weir on the Tributary of Birkin Brook 1; construction of a culverted access bridge crossing the Tributary of Birkin Brook 1; and a new drainage ditch between the Tributary of Birkin Brook 1 and the Mid-Cheshire (Railway). An attenuation pond south of the HS2 route and its discharge drain will be moved 4m west and the outfall will be moved to the realigned Tributary of Birkin Brook 1 open channel.</p> |

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|--|--|---|
| Additional land temporarily required for the operation of Ashley railhead near Sugar Brook Ancient Woodland AP2-006-011 | The Bill provides for Ashley Railhead, located 300m south of Ashley. The temporary railhead would be used to receive and stockpile materials by rail, required for the construction of the original scheme. | A reduction in land required for the operation of the temporary railhead by 0.24ha to reduce the amount of land required within the boundary of Sugar Brook Ancient Woodland. There will also be the separate introduction of a 5m by 250m strip of land required for the operation of the railhead. |
| Additional land permanently required for the revised realignment of Tributary of Birkin Brook 2 south of Thorns Green embankment AP2-006-012 | Realignment of Tributary of Birkin Brook 2 for 30m to the south of Thorns Green embankment. Diversion of Tributary of Birkin Brook 2 for 20m to the south of the realigned Mobberley Road. | An additional 220m permanent realignment of Tributary of Birkin Brook 2 is required to the south of Thorns Green embankment. |
| Additional land required for the revised diversion of a Scottish Power 11kV overhead line, north of Brickhill Wood Ancient Woodland AP2-006-013 | The permanent diversion of an existing Scottish Power 11kV overhead power line, 201m in length, located approximately 340m south of the HS2 route. | The length of the Scottish Power 11kV overhead power line diversion will be extended approximately 60m further west of the location identified in the original scheme to avoid Brickhill Wood Ancient Woodland Inventory (AWI) site. |
| Additional land permanently required to reconfigure M56 Junction 6 AP2-006-014 | The Bill provides for the HS2 route between the River Bollin East viaduct and the Manchester Airport High Speed station. The HS2 route would be located close to the M56. However, with the exception of realignment works to the slip roads at junction 6, there would be no permanent impact on the layout of the motorway. Mitigation would be provided in the form of replacement floodplain storage areas, ecological mitigation ponds, grassland habitat creation, woodland habitat creation and landscape mitigation planting. | The M56 will be realigned up to 30m to the south of the current alignment for a length of 2.5km and junction 6 will be reconfigured with the introduction of a new grade-separated, six-arm gyratory located 600m to the south-west of the existing junction 6. Related works will include the introduction of a direct, grade-separated link to the Manchester Airport High Speed Station, a direct link to the A538 Hale Road and the A538 Wilmslow Road, and the construction of overbridges to accommodate the reconfigured junction. The amendment will result in areas of additional mitigation, including landscape mitigation planting, flood compensation areas, ecological mitigation ponds, and areas of woodland and grassland habitat creation. |
| Additional land permanently required for modifications to the A538 Altrincham Road and Mobberley Road junction AP2-006-015 | The main ES reported significant delays (a major adverse effect) due to construction traffic. The main ES did not propose any mitigation works in this location for road users. | Removal of the existing A538 Altrincham Road and Mobberley road junction and implementation of a series of permanent modifications to a new junction in order to mitigate the impacts of HS2 construction workforce traffic on existing road users. |

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|--|--|
| Additional land permanently required for the realignment of an 11kv underground power line diversion along Shay Lane AP2-006-016 | The permanent diversion of a Scottish Power transmission 11kV overhead power line, for 461m in length, following the realigned A538 Hale Road. | The Scottish Power transmission 11kV overhead power line diversion will be re-routed to avoid use of a private road. The new diversion route will be located within the highway boundary of the A538 Hale Road and Shay Lane. |
| Additional land permanently required for the provision of access to land parcels in the Manchester Airport High Speed station area AP2-006-017 | The closure of Hasty Lane to provide access to Manchester Airport High Speed station. The A538 Hale Road service road (north) would be provided to maintain access to residential properties. | The amended design will no longer require the closure of Hasty Lane. Access will be provided to two areas of land severed by the AP2 revised scheme by extending Hasty Lane by 147m. |
| Additional land permanently required for modifications to mitigation for Timperley Brook AP2-006-018 | The permanent realignment of Timperley Brook for 330m, replacement habitat and a replacement floodplain storage area, located partially within the Ringway Golf Club golf course. | Additional land permanently required and a change in Bill powers for modifications to mitigation for Timperley Brook. The additional Water Framework Directive (WFD) mitigation will be implemented at Flaxhigh Covert, Brooks Drive and Shay Lane. This includes modification to culvert headwalls and the re-meandering of channels. |
| Change in Bill powers for the retention of Footpath Hale 16 from Brooks Drive to the Manchester Airport High Speed station AP2-006-019 | The permanent closure of Footpath Hale 16 where it crosses the HS2 route. Users would be diverted via Brooks Drive, the realigned Thorley Lane, and the realigned A538 Hale Road, increasing journey length by 676m. | Footpath Hale 16 will remain open from Brooks Drive to the Manchester Airport High Speed Station. From here, Footpath Hale 16 will be diverted up to 375m south of its current alignment for 300m. The footpath will cross the earthworks for the Manchester Airport High Speed station and includes the widening of earthworks by 1.5m to provide a ramp with stairs, approximately 150m in length. |
| Additional land permanently required for the provision of a replacement culvert at Brooks Drive AP2-006-020 | The upgrading or replacement of the culvert at Brooks Drive. | Additional land is required for the construction and maintenance of the culvert at Brooks Drive. |
| Change to Bill powers for construction traffic route along Enterprise Way AP2-006-021 | Land identified as a construction traffic route but outside the limits of the Bill. | Additional land temporarily required to include Enterprise Way within the limits of the Bill. |

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|---|---|
| <p>Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station</p> <p>AP2-006-022</p> | <p>Construction of a viaduct, 216m in length, and up to 15m above existing ground level, to enable future provision of a Metrolink station. The section of viaduct will be constructed as part of the original scheme. The approaches to the viaduct from the west and east would not be constructed as part of the original scheme.</p> <p>The Manchester Airport High Speed station building would have forecourts to the east and west leading to a central concourse area. The central concourse would have a Metrolink level that would provide access to future Metrolink services.</p> | <p>Construction of the Metrolink stop viaduct, 130m in length and 15m above ground level. The AP2 amendment also seeks powers for the future construction of the west and east approaches. This includes Roaring Gate Lane embankment, a 330m section of embankment and retaining wall, Thorley Lane west approach viaduct, a 325m section of viaduct and Metrolink station viaduct.</p> |
| <p>Additional land permanently required for the modification of the Thorley Lane and Runger Lane junction</p> <p>AP2-006-023</p> | <p>It is assumed for the main ES that the modifications of the Thorley Lane and Runger Lane junction would be delivered by Manchester Airport Group before the start of construction of the original scheme.</p> | <p>The existing Thorley Lane and Runger Lane junction will be widened to accommodate dedicated right turn lanes and additional through lanes. Additional signalised crossing facilities for non-motorised users will be provided. The amendment will require the diversion of ten existing utilities on Thorley Lane and Runger Lane, including 11kV cables, water main, telecom cables and a mobile phone mast and associated equipment.</p> |
| <p>Additional land temporarily required at Manchester tunnel south portal main compound for provision of drainage outfall</p> <p>AP2-006-024</p> | <p>Land would be required for Manchester tunnel south portal main compound.</p> | <p>Extension of surface water drainage outfall from the Manchester tunnel south portal main compound to the outfall at Fairywell Brook to allow for a gravity surface water drainage outfall to Fairywell Brook watercourse during construction. It will be 22m in length.</p> |

Figure 11: Locations of the AP2 amendments within the Hulseheath to Manchester Airport area



15.2 Assessment of amendments in the Hulseheath to Manchester Airport area (MA06) in the AP2 ES

Agriculture, forestry and soils

Effects arising during construction

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

This amendment will result in new temporary moderate adverse significant effects at Birtles Farm, Stamford Farm and Land at Park Lane.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will result in the following new or different temporary significant effects:

- a different major/moderate adverse effect for Ryecroft Farm from moderate adverse as reported in the main ES;
- a new moderate adverse effect for Lower Thorns Green Farm;
- a new major/moderate adverse effect at Tanyards Farm;
- a new moderate adverse effect at Land at Mill Lane; and
- a new moderate adverse effect at Land at Sunbank Lane.

The following new or different permanent significant effects will also arise as a result of the amendment:

- a new moderate adverse effect for Lower Thorns Green Farm;
- a new moderate adverse effect for Higher Doles Farm;
- a new moderate adverse effect at Tanyards Farm;
- a new moderate adverse effect at Land at Mill Lane; and
- a new moderate adverse effect at Land at Sunbank Lane.

Additional land permanently required for modifications to A538 Altrincham Road and Mobberley Road junction (AP2-006-015)

This amendment will result in a new temporary moderate adverse significant effect at Land at Altrincham Road.

Additional land permanently required for modifications to mitigation for Timperley Brook (AP2-006-018)

This amendment will result in:

- a new temporary moderate adverse significant effect at Land at Ash Farm, changed from minor adverse; and
- new temporary and permanent moderate adverse significant effects at Land at Brooks Drive.

Community

Effects arising during construction

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

This amendment will result in a new moderate adverse significant community effect upon Into the Wild Bushcraft activity centre due to the temporary closure of Footpath Ashley RB21/1. The footpath closure will affect the ability of staff and customers to access the premises, therefore affecting its ability to operate.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will result in different major adverse in-combination significant effects on residents of:

- approximately 85 residential properties in Warburton Green due to different noise and visual effects; and
- approximately 30 residential properties in Hale Barns due to different noise and visual effects and new HGV traffic effects.

Additional land permanently required for modifications to mitigation for Timperley Brook (AP2-006-018)

This amendment will result in a new moderate adverse significant in-combination effect on amenity for residents of approximately 15 residential properties on Brooks Drive, Hale Barns. This is due to new noise and new visual effects.

Ecology and biodiversity

Effects arising during construction

Designated sites

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

The main ES reported the modification of a high-pressure gas pipeline would result in the permanent loss of 0.2ha of Millington Clough AWI site, resulting in a permanent adverse effect on the structure and function of irreplaceable ancient woodland which was significant at the national level. This amendment avoids the loss of ancient woodland at this site and therefore removes the nationally significant adverse effect on Millington Clough AWI site.

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

Ancient woodland is an irreplaceable habitat. As a result of this amendment there will be:

- a new loss of 233m² at Hancocks Bank North AWI site. This will result in a new permanent residual effect which is significant at the national level;
- an additional area of 159m² at Hancocks Bank South AWI within the land required for the construction of the amendment, but which will be retained as it is within the utility corridor of an overhead power line modification and there will be no impacts on the AWI site. This will not change the level of significance reported in the main ES;
- a removal of the loss of 0.2ha at Ryecroft Covert AWI site. This will result in the removal of a permanent significant effect at the national level; and

- the removal of an area of 0.1ha was included within the land required for the construction of the original scheme at Birkin Bridge Lodge AWI site. This will not change level of significance reported in the main ES.

Additional land permanently required for watercourse diversions at Mobberley Road (AP2-006-010)

The main ES reported a loss of 0.1ha of the Arden House Wood AWI site. This amendment will result in the additional loss of 105m² of ancient woodland habitat at Arden House Wood AWI site and therefore result in a different significant effect at the national level.

Additional land temporarily required for the operation of Ashley railhead near Sugar Brook Ancient Woodland (AP2-006-011)

The main ES reported a loss of 0.1ha of the Sugar Brook AWI site. This amendment will result in a reduction in the loss of ancient woodland at the Sugar Brook AWI site to 450m² and therefore result in a different significant effect at the national level.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

As a result of this amendment there will be the following effects on the following AWI sites that will be significant at the national level in each case:

- an additional loss of 0.3ha at Hennesley Bank AWI site, an increase from 700m², resulting in a total loss of 0.37ha;
- an additional loss of 450m² at Bollin Bank AWI site, an increase from 0.1ha, resulting in a total loss of 0.14ha; and
- a new loss of 800m² at Sunbank Wood AWI site.

Habitats

On a precautionary basis, it is assumed in the SES2 that there will be a net loss in hedgerows of 44.9km in the Hulseheath to Manchester Airport area. The amendments listed in Table 10 will result in the further losses of hedgerow indicated. In each case, this will remain a permanent adverse effect that is significant at the county/metropolitan level, with the level of effect unchanged from that reported in the main ES.

Table 10: Summary of amendments resulting in further losses of hedgerow in the Hulseheath to Manchester Airport Area

| Amendment number | Amendment name | Further loss of hedgerow (m) |
|------------------|---|------------------------------|
| AP2-003-003 | Additional land permanently required for the diversion of three high pressure gas pipelines near Millington Clough Ancient Woodland | 542 |
| AP2-006-003 | Additional land permanently required to relocate Rostherne Mere groundwater recharge trenches north of Cherry Tree Lane | 475 |
| AP2-006-006 | Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site | 2,860 |
| AP2-006-014 | Additional land permanently required to reconfigure M56 junction 6 | 5,200 |
| AP2-006-015 | Additional land permanently required for modifications to A538 Altrincham Road and Mobberley Road junction | 400 |
| AP2-006-018 | Additional land permanently required for modifications to mitigation for Timperley Brook | 441 |
| AP2-006-022 | Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station | 358 |

Health

Effects arising during construction

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

This amendment will result in the temporary closure of Footpath Ashley RB21/1 and will therefore affect the ability of Into the Wild Bushcraft outdoor activity centre to operate. The loss of this facility will reduce the opportunity for beneficial health outcomes achieved through outdoor educational activities and is therefore considered to result in an adverse health effect.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will result in different adverse neighbourhood quality effect for residents on the eastern side of Warburton Green. This is due to an increase in the duration of noise effect and an increase in the number of residents affected.

The amendment will also result in a different adverse neighbourhood quality effect for residents in Hale Barns (in the vicinity of the A538 Hale Road and Hasty Lane). This is due to an increase in the duration of noise effect, increase in HGV traffic and a different significant visual effect to that reported in the main ES.

Additional land permanently required for modifications to mitigation for Timperley Brook (AP2-006-018)

This amendment will result in a new adverse neighbourhood quality effect for residents of Brooks Drive, Hale Barns. This is due to an in-combination effect of construction noise and visual effects. 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.

Historic environment

Effects arising during construction

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

This amendment will result in a new permanent moderate adverse significant effect on Tatton Park, Grade II* Registered park and garden, on a precautionary basis. This is due to a new block of tree planting designed to compensate for the loss of Ancient Woodland at Birkin Bridge Lodge. This will alter the character of the designed landscape of the registered park and garden in this location. HS2 Ltd will give further consideration to the design of the ancient woodland compensation planting for the loss of Ancient Woodland at Birkin Bridge Lodge as part of the ongoing design process.

This amendment will also give rise to a new residual permanent moderate adverse significant effect on the Cropmarks at Ryecroft Farm, Ashley, a non-designated heritage asset.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will give rise to a different adverse impact on the heritage value of Yewtree House, Sunbank Lane, Grade II listed building. This is due to additional changes to the setting of the asset due to the presence of machinery. This will not change the level of the permanent moderate adverse significant effect reported in the main ES.

The amendment will also give rise to new permanent moderate adverse significant effects on Pigleystair Bridge across River Bollin (site of) and Keeper's Cottage, Sunbank Lane, all non-designated heritage assets. At Pigleystair Bridge the archaeological remains will be removed. Keeper's Cottage will be demolished.

The amendment will give rise to a different medium adverse impact on the heritage value of Ringway historic landscape character area (HLCA) due to removing additional elements of its historic field systems and the demolition of Keeper's Cottage. However, this will not change the level of permanent moderate adverse significant effect reported in the main ES.

Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022)

This amendment will result in the permanent presence of the Metrolink track on a viaduct which will alter the setting of Barn, Roaring Gate Lane (also known as Davenportgreen Barn), Davenportgreen Farmhouse and Paddy's Hut, Roaring Gate Lane, all Grade II listed buildings. This will give rise to a new permanent moderate adverse significant effect on each of these heritage assets.

Landscape and visual

Effects arising during construction

Additional land temporarily required for the provision of a maintenance access road to the Chester Road satellite compound from the A556 (AP2-006-002)

This amendment will give rise to a different significant construction effect at view north from Footpath Millington 6/2. The effect will remain major adverse, with the level of effect unchanged from that reported in the main ES.

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

This amendment will give rise to a new significant construction effect at view south-west from Ryecroft Farm and Footpath Ashley 6/1. The effect will be moderate adverse.

The amendment will also give rise to a different significant construction effect at the following viewpoints; however, in each case the level of effect will remain major adverse as reported in the main ES:

- view north from Footpath Rostherne 5/1;
- view south-west from Footpath Rostherne 5/1;
- view north from Ashley Road at Birkin Farm; and
- view south-east from Ashley Road at Stock Farm.

Change in Bill powers for the retention and realignment of Footpath Ashley 3/1 (AP2-006-007)

This amendment will give rise to a different significant construction effect at view south-east from Ashley Road at Stock Farm. The level of effect will remain major adverse, with the level of effect unchanged from that reported in the main ES.

Additional land permanently required for the realignment of a maintenance access road from Ashley Road (AP2-006-008)

This amendment will give rise to a different significant construction effect at view south from Ashley Road bridge over the Mid-Cheshire Line, with the level of effect unchanged from that reported in the main ES. The effect will remain major adverse.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will give rise to different significant construction effects for the following LCA; however, the level of effect will be unchanged from that reported in the main ES:

- Ringway Lower Wooded Farmland LCA. The effect will remain major adverse; and
- Altrincham and Hale Urban Fringe Farmland LCA. The effect will remain major adverse.

The amendment will give rise to a new significant construction effect for the River Bollin Broad Urban Fringe Valley LCA. The effect will increase from minor adverse to moderate adverse.

The amendment will also give rise to different significant construction effects at the following viewpoints; however, the level of effect will be unchanged from that reported in the main ES:

- view south from Tanyard Lane. The effect will remain moderate adverse;
- view north from Castle Mill Lane. The effect will remain major adverse;
- view north-west from Footpath Ringway 13, near Pigleystair Bridge. The effect will remain major adverse;
- view west by Yew Tree House on Sunbank Lane. The effect will remain major adverse;
- view east from Burnside, Warburton Green. The effect will remain major adverse;
- view east from the A538 Hale Road. The effect will remain major adverse; and
- view south-east from Brooks Drive. The effect will remain major adverse.

The amendment will give rise to new significant construction effects at the following new viewpoints:

- view north from Castle Mill Lane, west of Thorns Green. The effect will be major adverse;
- view south from Footpath Hale 10. The effect will be major adverse;
- view north-east from Footpath Hale 10. The effect will be major adverse;
- view south from Chapel Lane. The effect will be major adverse; and
- view south-east from Bankside. The effect will be major adverse.

The amendment will give rise to different significant construction night-time effects at the following viewpoints; however, the level of effect will be unchanged from that reported in the main ES:

- view west by Yew Tree House on Sunbank Lane. The effect will remain major adverse;

- view east from the A538 Hale Road. The effect will remain moderate adverse; and
- view south-east from Brooks Drive. The effect will remain moderate adverse.

The amendment will give rise to new significant construction night-time effects at the following new viewpoint: view north from Castle Mill Lane, west of Thorns Green. The effect will be moderate adverse.

Additional land permanently required for modifications to A538 Altrincham Road and Mobberley Road junction (AP2-006-015)

This amendment will give rise to a new significant construction effect at the following new viewpoint: view south-east from Mobberley Road. The effect will be major adverse.

Additional land permanently required for modifications to mitigation for Timperley Brook (AP2-006-018)

This amendment will give rise to a new significant construction effect at the following new viewpoint: view from Shay Lane and Davenport Green. The effect will be moderate adverse.

Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022)

This amendment will give rise to a different significant construction effect at view east from Davenport Green Hall on Brooks Drive. The effect will remain major adverse, with the level of effect unchanged from that reported in the main ES.

The amendment will give rise to a new significant construction effect at view south-east from Footpath Hale 26. The effect will increase to moderate adverse.

The amendment will give rise to a different significant construction effect at view south from Davenport Green. The effect will remain major adverse, with the level of effect unchanged from that reported in the main ES.

The amendment will give rise to a new significant construction effect at the following new viewpoint: view north-west from Keepers Cottage, Runger Lane. The effect will be major adverse.

The amendment will give rise to a different significant construction night-time effect at view east from Davenport Green Hall on Brooks Drive. However, the level of effect will be unchanged from that reported in the main ES. The effect will remain moderate adverse.

The amendment will give rise to a new significant construction night-time effect at the following viewpoints:

- view south-east from Footpath Hale 26 (high sensitivity receptor). The effect will increase from minor adverse to moderate adverse; and
- view north-west from Keepers Cottage, Runger Lane. The effect will be moderate adverse.

Additional land permanently required for the modification of the Thorley Lane and Runger Lane junction (AP2-006-023)

This amendment will give rise to a new significant construction effect at the following new viewpoint: view north-west from Keepers Cottage, Runger Lane. The effect will be moderate adverse.

The amendment will give rise to a new significant construction night-time effect at the following new viewpoint: view north-west from Keepers Cottage, Runger Lane. The effect will be moderate adverse.

Effects arising during operation

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

This amendment will give rise to a new significant operation effect at Tatton and Rostherne Wooded Estates and Meres LCA. The effect will be moderate adverse.

The amendment will also give rise to a different significant operation effect at the following viewpoints; however, the level of effect will be unchanged from that reported in the main ES:

- view north from Footpath Rostherne 5/1. The effect will remain moderate adverse;
- view south-west from Footpath Rostherne 5/1. The effect will remain moderate adverse;
- view north from Ashley Road at Birkin Farm. The effect will remain moderate adverse; and
- view south-east from Ashley Road at Stock Farm. The effect will remain major adverse.

Change in Bill powers for the retention and realignment of Footpath Ashley 3/1 (AP2-006-007)

This amendment will give rise to a different significant operation effect, at view south-east from Ashley Road at Stock Farm. The effect will remain major adverse, with the level of effect unchanged from that reported in the main ES.

Additional land permanently required for the realignment of a maintenance access road from Ashley Road (AP2-006-008)

This amendment will give rise to a different significant operation effect at view south from Ashley Road bridge over the Mid-Cheshire Line; however, the level of effect will be unchanged from that reported in the main ES. The effect will remain moderate adverse.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will give rise to different significant operation effects for the following LCAs; however, the level of effect will be unchanged from that reported in the main ES:

- Ringway Lower Wooded Farmland LCA. The effect will be major adverse; and
- Altrincham and Hale Urban Fringe Farmland LCA. The effect will be moderate adverse.

The amendment will give rise to a new significant operation effect, for the River Bollin Broad Urban Fringe Valley LCA. The effect will increase to moderate adverse (significant) from a minor adverse (non-significant) effect reported in the main ES.

The amendment will give rise to different significant operation effects at the following viewpoints; however, the level of effect will be unchanged from that reported in the main ES:

- view north from Castle Mill Lane. The effect will remain moderate adverse;
- view west by Yew Tree House on Sunbank Lane. The effect will remain moderate adverse; and
- view east from Burnside, Warburton Green. The effect will remain moderate adverse.

The amendment will give rise to different significant operation effects at view south-east from Brooks Drive; however, the level of effect will be unchanged from that reported in SES2. The effect will remain moderate adverse.

The amendment will give rise to different significant operation effects at view east from the A538 Hale Road. The effect will reduce to moderate adverse.

The amendment will give rise to a new significant operation effect, at the following new viewpoints:

- view south from Footpath Hale 10. The effect will be moderate adverse;
- view north-east from Footpath Hale 10. The effect will be moderate adverse; and
- view south from Chapel Lane). The effect will be moderate adverse.

The amendment will give rise to a new significant operation night-time effect at new viewpoint: view south from Chapel Lane. The effect will be moderate adverse.

Change in Bill powers for the retention of Footpath Hale 16 from Brooks Drive to the Manchester Airport High Speed station (AP2-006-019)

This amendment will give rise to different significant operation effects, at view south-east from Brooks Drive. The level of effect will remain moderate adverse, which is unchanged from that reported in SES2.

Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022)

This amendment will give rise to a new significant operation effect at the following viewpoints:

- view east from Davenport Green Hall on Brooks Drive. The effect will increase to moderate adverse; and
- view south-east from Footpath Hale 26. The effect will increase to moderate adverse.

The amendment will also give rise to a new significant operation effect at new viewpoint: view north-west from Keepers Cottage, Runger Lane. The effect will be moderate adverse.

Additional land permanently required for the modification of the Thorley Lane and Runger Lane junction (AP2-006-023)

The amendment will give rise to new likely residual significant operation effects, at new viewpoint: view north-west from Keepers Cottage, Runger Lane. The effect will be moderate adverse.

Socio-economics

Effects arising during construction

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

This amendment will give rise to a new likely temporary adverse residual significant isolation effect on Into the Wild Bushcraft as a result of the temporary closure of Restricted Byway Ashley 21/1.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will require land resulting in loss of parking at a committed development for The Hut Group and the existing Amazon Fulfilment Centre on Sunbank Lane. Therefore, both these receptors will be subject to new major adverse residual effects, which are significant.

Sound, noise and vibration

Effects arising during construction

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will give rise to a different temporary adverse significant construction noise effect on the residential community on Sunbank Lane, Ringway due to an increased impact duration.

The amendment will give rise to a different temporary adverse significant construction noise and vibration effect on the residential communities at Warburton Green due to an increased number of properties affected at this community.

The amendment will give rise to a different temporary adverse significant construction noise effect on the residential community in Hale Barns, in the vicinity of the A538 Hale Road and Hasty Lane. This is due to an increased duration of impact at several of the impacted dwellings within the community.

The amendment will give rise to a different temporary adverse significant construction vibration effect on the residential community in Hale Barns, in the vicinity of the A538 Hale Road and Hasty Lane. This is due to an increased number of properties affected at this community.

The amendment will give rise to a new temporary adverse significant construction noise effect on the residential community on Castle Mill Lane, Ashley, in the vicinity of Castle Mill Lane and Tanyard Lane junction.

The amendment will give rise to a different temporary adverse significant construction noise effect at the Holiday Inn Express Manchester Airport hotel and committed development located on Runger Lane in Manchester. This is due to an increased impact duration.

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

- Premier Inn Manchester Airport (M56/J6) North (hotel), Runger Lane;
- Premier Inn Manchester Airport (M56/J6) South (hotel), Runger Lane; and
- World Cargo Centre and Freight Terminal (lower sensitivity offices), Runger Lane.

Additional land permanently required for modifications to mitigation for Timperley Brook (AP2-006-018)

This amendment will give rise to a new temporary adverse significant construction noise effect on the residential community on Brooks Drive in Hale Barns in the vicinity of Timperley Brook.

Traffic and transport

Effects arising during construction

Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert Local Wildlife Site (AP2-006-006)

This amendment will give rise to a different significant effect for non-motorised users of Footpath Ashley 1/2, which will increase from a minor adverse effect, as reported in SES2, to a moderate adverse effect.

The amendment will also give rise to a new temporary moderate adverse significant effect on non-traffic related severance for users of Footpath Ashley 2/4. This is due to an increase in journey length of up to 3.7km.

The amendment will give rise to a new temporary moderate adverse significant effect on non-traffic related severance for users of Restricted Byway Ashley 21/1. This is due to an increase in journey length of up to 1.7km.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will give rise to the following new temporary significant effects:

- major adverse effect to non-traffic related severance for users of Footpath Hale 10 as a result of there being no viable alternative route during the temporary closure;
- major adverse effect to non-traffic related severance for users of Footpath Ringway 10 as a result of there being no viable alternative route during the temporary closure;

- major adverse effect to parking and loading at Amazon Services Ltd due to the temporary loss of 44 off-street HGV parking spaces;
- major adverse effect to parking and loading at ANA Aviation due to the temporary loss of seven off-street parking spaces;
- moderate adverse effect on journey length for vehicle occupants at the M56 junction 6 westbound off-slip due to the increase in journey length of up to 1.9km;
- moderate adverse effect to non-traffic related severance for users of Footpath Hale 13 and Footpath Ringway 9 due to the increase in journey length of up to 840m;
- minor adverse effect to non-traffic related severance for users of Footpath Ringway 8 due to the increase in journey length of up to 232m; and
- minor adverse effect to non-traffic related severance for users of Footpath Ringway 13 due to the increase in journey length of up to 197m.

The amendment will also give rise to the following different temporary significant effects:

- major adverse effect (increased) on non-traffic related severance for non-motorised users due to the increase in duration of the Footpath Ringway 11 closure, from three years and three months, as reported in the main ES, to five years and five months;
- moderate adverse effect (decreased) on non-traffic related severance for non-motorised users due to the reduction in duration of the Sunbank Lane closure, from six years and three months, as reported in the main ES, to two years; and
- major adverse effect (decreased) on parking and loading at Holiday Inn Express Manchester Airport due to the reduction in the number of parking spaces temporarily lost from 79, as reported in the main ES, to 46.

Effects arising during operation

Change in Bill powers for the retention and realignment of Footpath Ashley 3/1 (AP2-006-007)

This amendment will give rise to a new minor beneficial significant effect on non-traffic related severance for users travelling between Footpath Ashley 3/1 and Ashley Road north of the HS2 route. This is due to a decrease in journey length of up to 153m.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

This amendment will give rise to the following new permanent significant effects:

- minor adverse effect on journey length for vehicle occupants on Sunbank Lane due to an increase in journey length of up to 3.3km;
- moderate adverse effect on non-traffic related severance for users of Footpath Ringway 10 due to an increase in journey length of up to 801m;
- minor adverse effect on non-traffic related severance for non-motorised users on Sunbank Lane/Chapel Lane due to an increase in journey length of up to 220m;
- moderate adverse effect on parking and loading at Amazon Services Ltd due to the permanent loss of 15 off-street parking spaces; and
- major adverse effect on parking and loading at The Hut Group (THG) overspill (committed development) car park due to the prevention of 163 off-street parking spaces being implemented.

The amendment will also give rise to a different permanent effect on non-traffic related severance for users of Footpath Ringway 11. The effect will increase from a minor adverse significant effect to moderate adverse significant effect.

Additional land permanently required for modifications to A538 Altrincham Road and Mobberley Road junction (AP2-006-015)

This amendment will give rise to a new permanent minor adverse significant effect on non-traffic related severance as a result of the relocated bus stop on Mobberley Road, resulting in an increase in journey length for users of up to 176m.

Change in Bill powers for the retention of Footpath Hale 16 from Brooks Drive to the Manchester Airport High Speed station (AP2-006-019)

This amendment will give rise to a different significant effect for non-motorised users of Footpath Hale 16 and Footpath Ringway 7, which will reduce from a moderate adverse effect, as reported in the main ES, to a minor adverse effect.

Water resources and flood risk

Effects arising during construction

Additional land permanently required for watercourse diversions at Mobberley Road (AP2-006-010)

This amendment will lead to the removal of one permanent major adverse effect on flood risk to the Mid-Cheshire Line and one permanent moderate adverse effect on flood risk to agricultural land to the east reported in the main ES.

The amendment will result in local changes in groundwater flow leading to a potential new permanent moderate adverse effect on the potential 'Abstraction at Lower House Farm', which is significant.

Additional land permanently required to reconfigure M56 junction 6 (AP2-006-014)

As a result of this amendment, on a precautionary basis, until mitigation has been identified and included within the design, it is anticipated that the following significant effects will remain:

- a permanent moderate adverse effect on shading and hydromorphology of the River Bollin due to the widening of the M56 River Bollin underbridge;
- a permanent moderate adverse effect on flow and hydromorphology of Tributary of River Bollin 3, due to the culverting of this watercourse beneath the M56;
- a permanent moderate adverse effect on the River Bollin catchment due to the combined loss of open channel from culverting of numerous tributaries;
- a permanent major adverse effect from the loss of 'Spring at Keepers Cottage Sunbank Lane (south)'; and
- a permanent moderate adverse effect on flows in the 'Potential spring 120m east of Keepers Cottage, Sunbank Lane' and the 'Potential spring 127m south-east of Keepers Cottage, Sunbank Lane', due to the M56 Junction 6 Wilmslow Road link road attenuation tank retaining wall.

Additional land permanently required for modifications to mitigation for Timperley Brook (AP2-006-018)

In the SES2, a moderate adverse significant effect was reported on Timperley Brook due to the loss of open channel from the presence of HS2 Manchester Airport Station. This amendment will provide mitigation for the loss of open channel and will lead to the removal of this permanent significant effect on Timperley Brook.

15.3 Combined effects of AP amendments in the Hulseheath to Manchester Airport area

This section identifies combined effects arising from two or more amendments and whether these result in the potential for new or different effects compared to those reported for each amendment individually. These have been reported below where the combined effect changes the scale of the effect reported for each individual amendment and it is a significant residual effect.

Agriculture, forestry and soil

This section identifies the combined effect on each holding as a result of the AP2 revised scheme. The holdings in Table 11 will be significantly affected by two or more AP2 amendments.

Table 11: Combined effects of AP2 amendments on holdings in the Hulseheath to Manchester Airport area

| Holding reference/ name | AP2 amendments that affect this holding | Effect of the individual amendment | Combined effect |
|---|---|--|--|
| Millington Hall Farm | <p>Additional land permanently required for the diversion of three high pressure gas pipelines near Millington Clough Ancient Woodland (AP2-003-003)</p> <p>Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert LWS (AP2-006-006)</p> <p>Additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014)</p> | <p>Temporary and permanent moderate adverse</p> <p>Temporary and permanent moderate adverse</p> <p>Temporary and permanent moderate adverse</p> | <p>Should all the amendments be adopted the total area of land required from this holding for the AP2 revised scheme will be 54.7ha (18%) (temporary) and 19.3ha (6%) (permanent).</p> <ul style="list-style-type: none"> • Land required: Medium • Severance: Medium • Disruption: Negligible • Infrastructure: Negligible <p>The overall combined temporary and permanent effect is Moderate adverse and does not change the scale of effect reported for each individual amendment.</p> |
| Yarwood Heath Farm including Cherry Tree Farm | <p>Additional land permanently required to relocate Rostherne Mere groundwater recharge trenches north of Cherry Tree Lane (AP2-006-003)</p> <p>Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert LWS (AP2-006-006)</p> <p>Additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014)</p> | <p>No significant temporary or permanent effects</p> <p>Temporary and permanent major/moderate adverse</p> <p>Temporary and permanent major/moderate adverse</p> | <p>Should all these amendments be adopted the total area of land required from this holding for the AP2 revised scheme will be 85.5ha; 29% (temporary) and 31.1ha; 10% (permanent).</p> <ul style="list-style-type: none"> • Land required: Medium • Severance: Low • Disruption: Low • Infrastructure: High <p>The overall combined temporary and permanent effect is Major/moderate adverse and does not change the scale of effect reported for each individual amendment.</p> |
| Ryecroft Farm | <p>Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert LWS (AP2-006-006)</p> <p>Additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014)</p> | <p>Temporary moderate adverse, no permanent effect</p> <p>Temporary major/moderate adverse, no permanent effect</p> | <p>Should both these amendments be adopted the total area of land required from this holding for the AP2 revised scheme will be 25.2ha (47%) (temporary).</p> <ul style="list-style-type: none"> • Land required: High • Severance: Low • Disruption: Low • Infrastructure: Negligible <p>The overall combined temporary effect is Major/moderate adverse which increases the scale of effect reported for AP2-006-006 alone.</p> |

| Holding reference/ name | AP2 amendments that affect this holding | Effect of the individual amendment | Combined effect |
|--------------------------------------|--|--|--|
| Higher Thorns Green Farm | <p>Additional land required for the revised diversion of a Scottish Power 11kV overhead line, north of Brickhill Wood Ancient Woodland (AP2-006-006)</p> <p>Additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014)</p> | <p>Temporary and permanent major/moderate adverse</p> <p>Temporary and permanent major/moderate adverse</p> | <p>Should both these amendments be adopted the total area of land required from this holding for the AP2 revised scheme will be 21.2ha (48%) (temporary) and 14.9 (34%) (permanent).</p> <ul style="list-style-type: none"> • Land required: High • Severance: Medium • Disruption: Low • Infrastructure: High <p>The overall combined temporary and permanent effect is Major/moderate adverse and does not change the scale of effect reported for each individual amendment.</p> |
| Land east of A538 Hale Road, Hale | <p>Additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014)</p> <p>Additional land permanently required for modifications to Water Framework Directive (WFD) mitigation for Timperley Brook (AP2-006-018)</p> | <p>Temporary and permanent moderate adverse</p> <p>Temporary and permanent moderate adverse</p> | <p>Should both these amendments be adopted the total area of land required from this holding for the AP2 revised scheme will be 7.7ha (96%) (temporary) and 7.4ha (93%) (permanent).</p> <ul style="list-style-type: none"> • Land required: High • Severance: Negligible • Disruption: Negligible • Infrastructure: Negligible <p>The overall combined temporary and permanent effect is Moderate adverse and does not change the scale of effect reported for each individual amendment.</p> |
| Land at Ash Farm | <p>Additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014)</p> <p>Additional land permanently required for modifications to Water Framework Directive (WFD) mitigation for Timperley Brook (AP2-006-018)</p> <p>Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022)</p> | <p>No significant temporary or permanent effects</p> <p>Temporary Moderate adverse, no significant permanent effect</p> <p>No significant temporary or permanent effects</p> | <p>Should all of these amendments be adopted the total area of land required from this holding for the AP2 revised scheme will be 12.1ha (11%) (temporary) and 10.5ha (8%) (permanent).</p> <ul style="list-style-type: none"> • Land required: Medium • Severance: Negligible • Disruption: Negligible • Infrastructure: Negligible <p>The overall temporary effect is Moderate adverse and changes the scale of effect reported for AP2-006-014 alone and AP2-006-022 alone.</p> |

Ecology and biodiversity

This section identifies the combined effect on designated sites and species as a result of the AP2 revised scheme. The sites in Table 12 will be significantly affected by two or more AP2 amendments.

Table 12: Combined effects of AP2 amendments on ecological receptors in the Hulseheath to Manchester Airport area

| Site/ species reference | AP2 amendments that affect this site/species | Effect of the individual amendment | Combined effect |
|---|--|--|--|
| Davenport Green Wood SBI | <p>Additional land permanently required for the provision of a replacement culvert at Brooks Drive (AP2-006-020)</p> <p>Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022)</p> | <p>County/metropolitan level significant effect</p> <p>County/metropolitan level significant effect</p> | <p>Should all the amendments be adopted the total area of land required from this site will increase by 370m² to a total area of 1.74ha (48%) required for the AP2 revised scheme – a combined county/metropolitan level significant effect.</p> <p>The overall combined effect does not change the scale of effect reported for each individual amendment.</p> |
| Great crested newt metapopulation GCNMP1.6.27 | <p>Additional land permanently required for changes to Water Framework Directive (WFD) mitigation at Timperley Brook (AP2-006-018)</p> <p>Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022)</p> | <p>County/metropolitan level significant effect</p> <p>County/metropolitan level significant effect</p> | <p>Should all the amendments be adopted there will be a combined loss of foraging habitat and one breeding pond – a combined county/metropolitan level significant effect.</p> <p>The overall combined effect does not change the scale of effect reported for each individual amendment.</p> <p>After mitigation, the combined effect will be reduced to a level that is not significant.</p> |
| Bat Assemblage between the A556 and Junction 6 of the M56 | <p>Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert LWS (AP2-006-006)</p> <p>Additional land permanently required for the revised realignment of Tributary of Birkin Brook 2 south of Thorns Green embankment (AP2-006-012)</p> <p>Additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014)</p> | <p>Regional level significant effect</p> <p>Regional level significant effect</p> <p>Regional level significant effect</p> | <p>Should all the amendments be adopted there will be a combined loss of roosting and foraging habitat – a combined regional level significant effect</p> <p>The overall combined effect does not change the scale of effect reported for each individual amendment.</p> <p>After mitigation, the combined effect will be reduced to a level that is not significant.</p> |

| Site/ species reference | AP2 amendments that affect this site/species | Effect of the individual amendment | Combined effect |
|--|--|---|--|
| Bat assemblage between the M56 junction 6 and Manchester Airport | <p>Additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014)</p> <p>Additional land permanently required for modifications to Water Framework Directive (WFD) mitigation for Timperley Brook (AP2-006-018)</p> <p>Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022)</p> <p>Additional land permanently required for the modification of the Thorley Lane and Runger Lane junction (AP2-006-023)</p> | <p>Regional level significant effect</p> <p>Regional level significant effect</p> <p>Regional level significant effect</p> <p>Regional level significant effect</p> | <p>Should all the amendments be adopted there will be a combined loss of roosting and foraging habitat – a combined regional level significant effect.</p> <p>The overall combined effect does not change the scale of effect reported for each individual amendment.</p> <p>After mitigation, the combined effect will be reduced to a level that is not significant.</p> |

Landscape and visual

Visual assessment – construction

The viewpoints in Table 13 will be affected by two or more AP2 amendments. This section identifies the combined effect on each viewpoint as a result of the AP2 revised scheme.

Table 13: Combined effects of AP2 amendments on viewpoints in the Hulseheath to Manchester Airport area - construction

| Viewpoint | AP2 amendments that affect this viewpoint | Effect of the individual amendment | Combined effect |
|---|---|-------------------------------------|--|
| View south-east from Ashley Road at Stock Farm | Change in Bill powers for the retention and realignment of Footpath Ashley 3/1 (AP2-006-007) | Major adverse significant effect | Should all the amendments be adopted the combined effect on this viewpoint as a result of the AP2 revised scheme would be major adverse significant. |
| | Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Ryecroft Covert LWS (AP2-006-006) | Major adverse significant effect | The overall combined effect does not change the scale of effect reported for each individual amendment. |
| View from Shay Lane and Davenport Green | Additional land permanently required for the provision of a replacement culvert at Brooks Drive (AP2-006-020) | Negligible (non-significant) effect | Should all the amendments be adopted the combined effect on this viewpoint as a result of the AP2 revised scheme would be moderate adverse significant. |
| | Additional land permanently required for modifications to mitigation for Timperley Brook (AP2-006-018) | Moderate adverse significant effect | The overall combined effect would increase the scale of effect reported at this viewpoint reported for amendment AP2-006-020 alone. |
| View north-west from Keepers Cottage, Runger Lane (day-time effects) | Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022) | Major adverse significant effect | Should all the amendments be adopted the combined effect on this viewpoint as a result of the AP2 revised scheme would be major adverse significant. |
| | Additional land permanently required for the modification of the Thorley Lane and Runger Lane junction (AP2-006-023) | Moderate adverse significant effect | The overall combined effect would increase the scale of effect reported at this viewpoint reported for amendment AP2-006-023 alone. |
| View north-west from Keepers Cottage, Runger Lane (night-time effects) | Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022) | Moderate adverse significant effect | Should all the amendments be adopted the combined night-time effect on this viewpoint as a result of the AP2 revised scheme would be moderate adverse significant. |
| | Additional land permanently required for the modification of the Thorley Lane and Runger Lane junction (AP2-006-023) | Moderate adverse significant effect | The overall combined effect does not change the scale of night-time effect reported for each individual amendment. |

Visual assessment - operation

The viewpoints in Table 14 will be affected by two or more AP2 amendments. This section identifies the combined effect on each viewpoint as a result of the AP2 revised scheme.

Table 14: Combined effects of AP2 amendments on viewpoints in the Hulseheath to Manchester Airport area – operation

| Viewpoint | AP2 amendments that affect this viewpoint | Effect of the individual amendment (year 15 residual effect) | Combined effect |
|---|---|--|---|
| View south-east from Ashley Road at Stock Farm | Change in Bill powers for the retention and realignment of Footpath Ashley 3/1 (AP2-006-007) Additional land permanently required for a revised National Grid 400kV overhead power line diversion near Rycroft Covert LWS (AP2-006-006) – major adverse (significant) effect | Major adverse (significant) effect Major adverse (significant) effect | Should all the amendments be adopted the combined effect on this viewpoint as a result of the AP2 revised scheme would be major adverse significant. The overall combined effect does not change the scale of effect reported for each individual amendment. |
| View from Shay Lane and Davenport Green | Additional land permanently required for the provision of a replacement culvert at Brooks Drive (AP2-006-020) Additional land permanently required for modifications to Water Framework Directive (WFD) mitigation for Timperley Brook (AP2-006-018) | Negligible (non-significant) effect Minor adverse (non-significant) effect | Should all the amendments be adopted the combined effect on this viewpoint as a result of the AP2 revised scheme would be minor adverse (non-significant). The overall combined effect would increase the scale of effect reported at this viewpoint reported for amendment AP2-006-020 alone; however, it would remain non-significant. |
| View north-west from Keepers Cottage, Runger Lane (day time) | Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022) Additional land permanently required for the modification of the Thorley Lane and Runger Lane junction (AP2-006-023) | Moderate adverse (significant) effect Moderate adverse (significant) effect. | Should all the amendments be adopted the combined effect on this viewpoint as a result of the AP2 revised scheme would be moderate adverse significant. The overall combined effect does not change the scale of effect reported for each individual amendment. |
| View north-west from Keepers Cottage, Runger Lane (night-time) | Additional land permanently required for the extension of Metrolink provisions at Manchester Airport High Speed station (AP2-006-022). Additional land permanently required for the modification of the Thorley Lane and Runger Lane junction (AP2-006-023) | Minor adverse (non-significant) effect Minor adverse (non-significant) effect | Should all the amendments be adopted the combined effect on this viewpoint as a result of the AP2 revised scheme would be minor adverse night-time effects (non-significant). The overall combined effect does not change the scale of night-time effect reported for each individual amendment. |

15.4 Assessment of combined effects of changes and amendments in the Hulseheath to Manchester Airport area due to changes in traffic flows

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.

The assessment has also considered any impacts in the Hulseheath to Manchester Airport area associated with SES2 changes and AP2 amendments in other community areas.

The SES1 and AP1 ES reported that the SES1 design change to remove the HS2 WCML connection (SES1-004-001) would remove the requirement for all civil engineering and railway system compounds associated with construction activities, along with all changes to the highway network reported in the main ES in the Broomedge to Glazebrook (MA04) and Risley to Bamfurlong (MA05) areas. There are no SES2 changes or AP2 amendments in the Broomedge to Glazebrook and Risley to Bamfurlong areas. As a result, changes to the traffic and transport impacts in these areas will be caused by changes to construction traffic to and from other community areas. These effects are reported below.

Traffic and transport effects are reported first, since the effects arise from changes in traffic flows. Other topics where a significant effect has been identified, are then reported in the following sequence:

- air quality;
- community;

- ecology and biodiversity;
- health;
- socio-economics;
- sound, noise and vibration; and
- water resource flood risk.

Traffic and transport

Effects arising during construction

Broomedge to Glazebrook (MA04)

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

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

The AP2 revised scheme will result in the following change to the traffic-related severance effects for non-motorised users in the Broomedge to Glazebrook area reported in the SES1 and AP1 ES: change (decrease) from major adverse effect to moderate adverse effect on one road.

The AP2 revised scheme will result in the removal of significant adverse congestion and delay effects for vehicle occupants in the Broomedge to Glazebrook area reported in the SES1 and AP1 ES at three junctions (one major and two minor).

The AP2 revised scheme will result in the removal of significant traffic-related severance effects for non-motorised users in the Broome Edge to Glazebrook area reported in the SES1 and AP1 ES on nine roads (six major and three moderate).

Risley to Bamfurlong (MA05)

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

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

The AP2 revised scheme will result in the removal of significant congestion and delay effects for vehicle occupants in the Risley to Bamfurlong area reported in the SES1 and AP1 ES at six junctions (four major and two moderate).

The AP2 revised scheme will result in the removal of significant traffic-related severance effects for non-motorised users in the Risley to Bamfurlong area reported in the SES1 and AP1 ES on two roads (both moderate).

Hulseheath to Manchester Airport area (MA06)

The AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants in the Hulseheath to Manchester Airport area reported in the 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 two junctions;
- change (increase) from minor adverse effect to moderate adverse effect at three junctions;
- change (decrease) from major adverse effect to moderate beneficial effect at one junction;
- change (increase) from moderate beneficial effect to major adverse effect at one junction;
- new major adverse effect at eight junctions;
- new moderate adverse effect at two junctions;
- new minor adverse effect at three junctions; and
- new major beneficial effect at one junction.

The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users in the Hulseheath to Manchester Airport area reported in the main ES:

- change (decrease) from major adverse effect to moderate adverse effect on six roads;
- change (increase) from moderate adverse effect to major adverse effect on five roads;
- new major adverse effect on 13 roads;
- new moderate adverse effect on 10 roads;
- new minor adverse effect on three roads;
- new moderate beneficial effect on six roads;
- new minor beneficial effect on one road; and
- different (decreased) major adverse significant effects on three roads.

The AP2 revised scheme will result in the removal of significant congestion and delay effects for vehicle occupants in the Hulseheath to Manchester Airport area reported in the main ES at 10 junctions (one major, three moderate, six minor).

The AP2 revised scheme will result in the removal of significant traffic-related severance effects for non-motorised users in the Hulseheath to Manchester Airport area reported in the main ES on 10 roads (three major, seven moderate).

Effects arising during operation

The AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants in 2039 in the Hulseheath to Manchester Airport area reported in the main ES:

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

The AP2 revised scheme will result in the following changes to the congestion and delay effects for vehicle occupants in 2051 in the Hulseheath to Manchester Airport area reported in the main ES:

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

The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users in 2039 in the Hulseheath to Manchester Airport area 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 five roads;
- change (decrease) from major adverse effect to major beneficial effect on two roads;
- change (decrease) from moderate adverse effect to moderate beneficial effect on one road;
- change (increase) from moderate beneficial effect to major beneficial effect on one road;
- change (decrease) from moderate beneficial effect to minor beneficial effect on one road;
- new major adverse effect on 11 roads;
- new moderate adverse effect on 13 roads;
- new minor adverse effect on one road;
- new major beneficial effect on three roads; and
- new moderate beneficial effect on three roads.

The AP2 revised scheme will result in the following changes to the traffic-related severance effects for non-motorised users in 2051 in the Hulseheath to Manchester Airport area reported in the main ES:

- change (decrease) from major adverse effect to moderate adverse effect on one road;
- change (increase) from moderate adverse effect to major adverse effect on five roads;
- change (increase) from minor adverse effect to major adverse effect on one road;
- change (increase) from minor adverse effect to moderate adverse effect on one road;
- change (decrease) from major adverse effect to major beneficial effect on two roads;
- change (decrease) from moderate adverse effect to major beneficial effect on one road;
- change (decrease) from major adverse effect to moderate beneficial effect on one road;
- change (decrease) from moderate adverse effect to moderate beneficial effect on one road;
- change (decrease) from moderate adverse effect to minor beneficial effect on one road;
- change (increase) from moderate beneficial effect to major beneficial effect on one road;
- change (increase) from major beneficial effect to major adverse effect on two roads;

- change (increase) from moderate beneficial effect to major adverse effect on two roads;
- change (increase) from moderate beneficial effect to moderate adverse effect on two roads;
- new major adverse effect on 14 roads;
- new moderate adverse effect on 24 roads;
- new minor adverse effect on one road;
- new major beneficial effect on one road;
- new moderate beneficial effect on eight roads; and
- new minor beneficial effect on two roads.

The AP2 revised scheme will result in the following changes to public transport delay in 2039 and 2051 in the Hulseheath to Manchester Airport area:

- a change (decrease) from moderate adverse effect to a minor adverse effect on one bus corridor; and
- a change (decrease) from moderate adverse effect to moderate beneficial effect on one bus corridor.

The AP2 revised scheme will result in the removal of the following congestion and delay effects for vehicle occupants in 2039 in the Hulseheath to Manchester Airport area reported in the main ES:

- significant adverse effects removed at 11 junctions (one major, four moderate and six minor); and
- significant beneficial effects removed at one junction (one moderate).

The AP2 revised scheme will result in the removal of significant congestion and delay effects for vehicle occupants in 2051 in the Hulseheath to Manchester Airport area reported in the main ES at 10 junctions (four major, two moderate and four minor).

The AP2 revised scheme will result in the removal of the following traffic-related severance effects for non-motorised users in 2039 in the Hulseheath to Manchester Airport area reported in the main ES:

- significant adverse effects removed on 14 roads (three major, eight moderate and three minor); and
- significant beneficial effects removed on four roads (three moderate, one major).

The AP2 revised scheme will result in the removal of the following traffic-related severance effects for non-motorised users in 2051 in the Hulseheath to Manchester Airport area reported in the main ES:

- significant adverse effects removed on 17 roads (seven major, nine moderate and one minor); and
- significant beneficial effects removed on two roads (one moderate, one major).

Air quality

Effects arising during construction

There will be a significant adverse effect in relation to NO₂ concentrations at one modelled residential receptor (Downhall Green Road, Ashton-in-Makerfield).

Community

Effects arising during construction

Changes to traffic flows and to the sound, noise and vibration assessment will result in new significant effects on:

- residents of approximately 260 residential properties on Arthog Road, Bankhall Lane, Hawley Lane, Broad Lane, Chapel Lane, High Elm Road and Elmridge Drive due to new noise and HGV traffic effects; and
- residents of Bucklow Manor Care Home due to new HGV traffic effects and existing noise effects.

Changes to traffic flows and to the sound, noise and vibration assessment will result in a different significant effect on residents of approximately ten residential properties on Sunbank Lane, Ringway. This is due to different noise, new HGV traffic and existing visual effects.

Changes to traffic flows and to the sound, noise and vibration assessment will remove the significant effect on residents of approximately 20 residential properties on Chapel Lane (between Hulseheath Lane and the A5034 Chester Road). This is due to the removal of the significant noise effect.

Effects arising during operation

Changes to the sound, noise and vibration assessment as a result of new operational traffic data, and new and different visual effects as a result of the AP2 revised scheme, will result in a new major adverse in-combination effect on approximately 25 residential properties in Davenport Green as a result of noise and visual effects.

Ecology and biodiversity

Effects arising during construction

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

- The Mere, Mere SSSI component of the Midland Meres and Mosses Phase 1 Ramsar Site. On a precautionary basis, this will result in an adverse effect on the Midland Meres and Mosses Phase 1 Ramsar site that is significant at the international level. This will be a new significant effect compared to that reported in the SES1 and AP1 ES;
- Rostherne Mere Ramsar site. On a precautionary basis, this will result in an adverse effect on the Rostherne Mere Ramsar site that is significant at the international level. It will also result in an adverse effect on the Rostherne Mere SSSI and NNR that is significant at the national level. These are new significant effects compared to those reported in the main ES;
- Holcroft Moss SSSI component of the Manchester Mosses SAC. On a precautionary basis, this will result in an adverse effect on the Holcroft Moss SSSI component of the Manchester Mosses SAC that is significant at the international level. This will be a new significant effect compared to that reported in the main ES; and

- Cotteril Clough SSSI. On a precautionary basis, this will result in an adverse effect on the SSSI that is significant at the national level. This will be a new significant effect compared to that reported in the main ES.

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.

Effects arising during operation

At this stage, without any mitigation taken into account, the operation of the AP2 revised scheme will result in significant adverse effects on Cotteril Clough SSSI. On a precautionary basis, this will result in an adverse effect on the SSSI that is significant at the national level. This will be a new significant effect compared to that reported in the main ES.

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.

Ongoing work

The designated site assessment reports (SES2 and AP2 ES Volume 5, Appendices: EC-016) include the emerging results of an assessment of air quality impacts on designated sites during construction and operation of the AP2 revised scheme in-combination with other schemes. At this stage, it is identified that there are potentially significant effects at the following sites as a result of the AP2 revised scheme in combination with other schemes:

- Midland Meres and Mosses Phase 1 Ramsar site (during construction and operation);
- Rostherne Mere Ramsar site (during construction and operation);

- Rixton Clay Pits SAC (during construction); and
- Holcroft Moss SSSI component of the Manchester Mosses SAC (during construction and operation).

Further assessment of these potential effects will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Health

Effects arising during construction

The main ES reported an adverse neighbourhood quality effect for residents on Chapel Lane (between Hulseheath Lane and the A5034 Chester Road). 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 adverse neighbourhood quality effect along Chapel Lane (between Hulseheath Lane and the A5034 Chester Road).

Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents of Arthog Road, Bankhall Lane, Hawley Lane, Broad Lane, Chapel Lane, High Elm Road and Elmridge Drive. As a result of the changes in construction traffic and changes to the sound, noise and vibration assessment, there will be a new adverse neighbourhood quality effect for residents at these properties along these roads.

The main ES reported an adverse neighbourhood quality effect for residents of Sunbank Lane, Ringway. Changes to the sound, noise and vibration assessment as a result of AP2-006-014 will result in an increase in duration of significant noise effects for residents of Sunbank Lane. This effect will combine with a new HGV traffic effect, as well as an existing visual effect. This will result in a different adverse neighbourhood quality effect for residents of Sunbank Lane, Ringway.

Bucklow Manor Care Home is located on the A5034 Chester Road. The A5034 Chester Road (between A556 southbound off-slip and Millington Lane) is a designated route for construction traffic and will experience a significant increase in HGV traffic. Construction noise will be noticeable for residents of Bucklow Manor Care Home. This different noise effect will combine with the new HGV traffic effect. Temporary changes to the care home's environment may be noticeable for some residents and will lead to a reduction in the wellbeing benefits associated with the care home environment.

Effects arising during operation

Changes to the sound, noise and vibration assessment as a result of new operational traffic data will result in a new adverse neighbourhood quality effect on approximately 25 residential properties in the vicinity of Shay Lane and Roaring Gate Lane in Davenport Green. This is due to new and different significant visual effects which will combine with this new traffic noise effect. Visual effects will reduce to minor adverse (not significant) at as reported for Year 30 of the landscape and visual assessment. 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 area.

Socio-economics

Effects arising during construction

The changes in traffic flows will result in new temporary adverse significant in-combination effects on Birkin Lodge Holiday Let and The Greyhound public house. This is due to new significant effects from HGV construction traffic in addition to the existing significant visual effects that were reported in the main ES.

The changes in traffic flows will result in new temporary adverse significant in-combination effect on and Premier Inn Manchester Airport (M56/J6) Runger Lane North Hotel. This is due to new significant effects from HGV construction traffic in addition to new significant noise effects.

The changes in traffic flows will result in new temporary adverse significant in-combination effect on Bucklow Manor Care Home due to new significant effects from HGV construction traffic and different significant noise effects.

The changes in traffic flows will result in different temporary adverse significant in-combination effects on a management company operating from Cherry Tree Farm; Birkin Farm Holiday Let, run by Tatton Stays; and South Arden Lodge and Little Lodge Holiday Lets, both run by Tatton Stays.

Sound, noise and vibration

Effects arising during construction

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

- Arthog Road between the B5162 Park Road and Bankhall Lane;
- Bankhall Lane between Arthog Road and Hill Top;
- Bankhall Lane between Hill Top and Broad Lane;
- Broad Lane between Hale Road and Bankhall Lane;
- Broad Lane/Hawley Lane between Bankhall Lane and Chapel Lane;
- Chapel Lane between Hawley Lane and High Elm Road;
- High Elm Road/Elmridge Drive between Chapel Lane and the A538 Hale Road; and
- High Elm Road between Greengate and the A538 Hale Road.

As a result of the AP2 revised scheme, construction traffic in this area will give rise to new temporary adverse significant noise effect at 2 Dairy Farm (Holiday let), Ashley Road.

As a result of the AP2 revised scheme, construction traffic in this area will give rise to a different temporary adverse significant noise effect at Bucklow Manor Care Home, Chester Road.

The AP2 revised scheme will remove the temporary indirect significant effect from construction traffic noise reported in the main ES on residential properties along Rostherne Lane between Marsh Lane and Chester Road.

The AP2 revised scheme will remove the temporary indirect significant effect from construction traffic noise reported in the main ES on:

- Tatton Stays Holiday Lets (Virginia Cottage and Rose Cottage), Rostherne Lane; and
- Egerton Hall, Rostherne Lane.

Effects arising during operation

Changes in road traffic flows will give rise to a new significant adverse noise effect from operation of the AP2 revised scheme on residential communities in Davenport Green.

Water resources and flood risk

Effects arising during operation

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

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16 Davenport Green to Ardwick community area (MA07)



16.1 Summary of amendments in the Davenport Green to Ardwick area (MA07) within the AP2 ES

Table 15 provides a summary of each engineering amendment reported within the AP2 ES, along with a description of the original scheme, which is used as the baseline for the comparison of new and different significant environmental effects.

Figure 12 shows the approximate location of each AP2 amendment within the Davenport Green to Ardwick area.

A Volume 2 report for the Davenport Green to Ardwick area (MA07) was not produced as part of the SES1 and AP1 ES. Therefore, all new, different or removed effects reported in the AP2 ES for the MA07 community area are compared to the main ES.

Table 15: Summary of the AP2 amendments requiring changes to the Bill powers in the Davenport Green to Ardwick area

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|---|---|
| <p>Additional land temporarily required for changes to permanent sewer connection from Manchester tunnel south portal</p> <p>AP2-007-001</p> | <p>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.</p> <p>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.</p> | <p>The wastewater utility connection will be realigned to avoid the Saint Paul's Catholic High School playing fields.</p> <p>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.</p> <p>Additional land is required on Hucklow Avenue to provide less constrained access to the site through the construction of two new manhole chambers.</p> |
| <p>Change to Bill powers required for modifications to Manchester tunnel Altrincham Road vent shaft</p> <p>AP2-007-002</p> | <p>The Altrincham Road headhouse included three vertical fans within the vent shaft.</p> | <p>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.</p> |
| <p>Change to Bill powers required for relocation of vent shaft and headhouse from the B5167 Palatine Road to The Hollies</p> <p>AP2-007-003</p> | <p>The Palatine Road vent shaft was located on the Withington Golf Course and accessed off the B5167 Palatine Road.</p> <p>The Palatine Road headhouse included three horizontal fans within the vent shaft.</p> | <p>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.</p> <p>The Hollies headhouse will include two horizontal fans within the vent shaft.</p> |
| <p>Change to Bill powers required for the modifications to the Wilmslow Road vent shaft headhouse</p> <p>AP2-007-004</p> | <p>The Wilmslow Road headhouse included three vertical fans within the vent shaft.</p> | <p>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.</p> |
| <p>Change to Bill powers required for modifications to the Birchfield Road vent shaft headhouse</p> <p>AP2-007-005</p> | <p>The Birchfield Road headhouse included three vertical fans within the vent shaft.</p> | <p>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.</p> |

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|--|--|--|
| Additional land permanently required for the diversion of Blackbrook Culvert AP2-007-006 | 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 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 | 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: <ul style="list-style-type: none"> • 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 | 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. |

16.2 Assessment of amendments in the Davenport Green to Ardwick area (MA07) in the AP2 ES

Community

Effects arising during construction

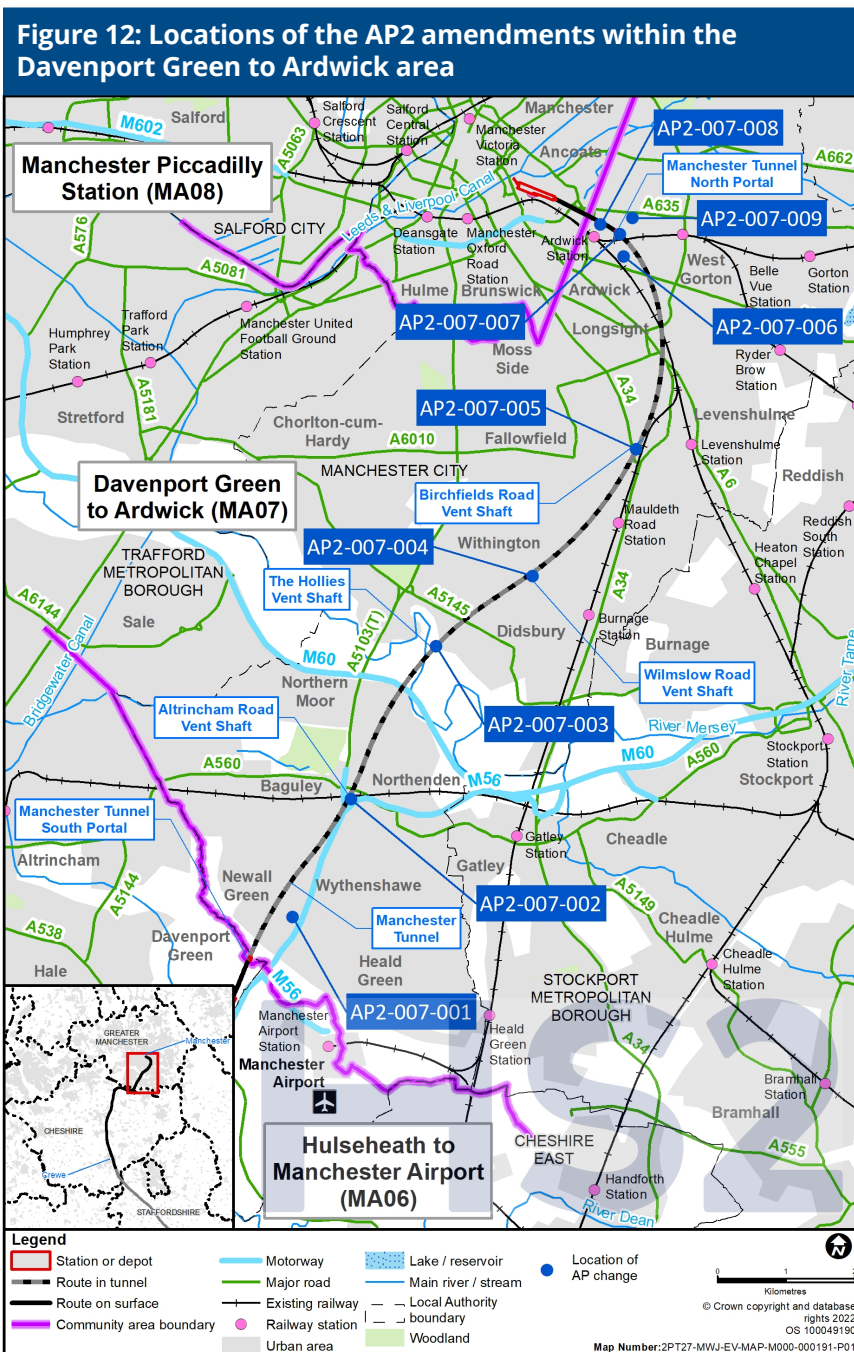
Change to Bill powers required for the relocation of vent shaft and headhouse from Palatine Road to The Hollies (AP2-007-003)

This amendment will result in new major adverse significant effects on:

- users of 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. HS2 Ltd is continuing to engage with Manchester Islamic Educational Trust to identify reasonably practicable measures to help mitigate the likely significant effects identified; and
- residents of approximately 190 residential properties on Mersey Road, West Didsbury due to new noise and visual effects.

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

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



Additional land permanently required and change to Bill powers required for the diversion of Blackbrook Culvert (AP2-007-006)

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

Health

Effects arising during construction

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

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 and will require land that covers all of the parking spaces from the car park located to the rear of the building. On a precautionary basis, the amendment 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. HS2 Ltd is continuing to engage with Manchester Islamic Educational Trust to identify reasonably practicable measures to help mitigate the likely significant effects identified.

The amendment will result in a new adverse neighbourhood quality effect for residents of Mersey Road and Mersey Meadows, West Didsbury due to construction noise effects and visual effects. 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.

Additional land permanently required and change to Bill powers required for the diversion of Blackbrook Culvert (AP2-007-006)

This amendment will result in a new adverse neighbourhood quality effect for residents of Anthony Close, Ardwick. This is due to new construction noise and new visual effects. 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.

Historic environment

Effects arising during construction

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

This amendment will give rise to a new permanent moderate adverse significant effect on the non-designated asset of the site of a Brick Kiln off Gorton Road.

Landscape and visual

Effects arising during construction

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

This amendment will give rise to a different significant construction effect for the Mersey Valley Open Space LCA. The effect will remain moderate adverse.

The amendment will give rise to new significant construction effects at the following new viewpoints:

- view west from Mersey Meadows. The effect will be moderate adverse;
- view south-east from Footpath Manchester 235. The effect will be moderate adverse;
- view south-east from the Trans Pennine Trail, the Mersey Path and Footpath Manchester 139. The effect will be moderate adverse;
- view south-east from Barlow Moor Road. The effect will be major adverse; and
- view west from Barlow Moor Road. The effect will be moderate adverse.

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

- view north-east from the B5167 Palatine Road, the Mersey Path and Footpath Manchester 139;
- view north-west from Footpath Manchester 139, Footpath Manchester 212 and the River Mersey;
- view south from the B5167 Palatine Road and Footpath Manchester 211;
- view west from Footpath Manchester 211 and Withington Golf Course, (high sensitivity receptors); and
- view south-west from the B5167 Palatine Road.

The amendment will also remove significant night-time construction effects at the following viewpoints:

- view south from the B5167 Palatine Road and Footpath Manchester 211; and
- view south-west from the B5167 Palatine Road.

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

This amendment will give rise to a different significant construction effect at the view east from Footpath Manchester 156 and the A34 Birchfields. The effect will remain moderate adverse.

Additional land permanently required and change to Bill powers required for the diversion of Blackbrook Culvert (AP2-007-006)

This amendment will give rise to a new significant construction effect at view north from Anthony Close. The effect will increase from minor adverse (non-significant) to moderate adverse.

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

This amendment will give rise to a new significant construction effect at the view south-west from Wren Way which will be moderate adverse.

Effects arising during operation

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

This amendment will remove the significant operation effects at view south from the B5167 Palatine Road and Footpath Manchester 211.

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

This amendment will give rise to new significant operation effects at the following viewpoints:

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



View north-east from the B5093 Wilmslow Road (operational phase - Winter Year 1)

Socio-economics

Effects arising during construction

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

This 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 (on a precautionary basis for the traffic and transport assessment, it is assumed that Manchester Islamic Educational Trust Campus will continue to operate). This receptor will be subject to a new permanent adverse direct effect, which is significant. HS2 Ltd is continuing to engage with Manchester Islamic Educational Trust to identify reasonably practicable measures to help mitigate the likely significant effects identified.

Additional land permanently required and change to Bill powers required for the diversion of Blackbrook Culvert (AP2-007-006)

This amendment will result in loss of parking for Universal Square resulting in a direct temporary major adverse significant effect.

Sound, noise and vibration

Effects arising during construction

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

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

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

This amendment will give rise to a new temporary 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.

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

The amendment will also give rise to a new temporary adverse significant construction noise effect at the following non-residential buildings:

- Britannia Country House Hotel, Palatine Road, Manchester;
- Manchester Islamic Educational Trust Campus, Barlow Moor Road, Manchester (on a precautionary basis for the sound, noise and vibration assessment, it is assumed that Manchester Islamic Educational Trust Campus will continue to operate);
- The Bright Horizons Day Nursery, Barlow Moor Road, Manchester; and
- Didsbury Central Mosque, Burton Road, Manchester.

Additional land permanently required and change to Bill powers required for the diversion of Blackbrook Culvert (AP2-007-006)

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

Traffic and transport

Effects arising during construction

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

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

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

This amendment will give rise to the following new 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 Manchester Islamic Educational Trust Campus.

Additional land permanently required and change to Bill powers required for the diversion of Blackbrook Culvert (AP2-007-006)

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

Effects arising during operation

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

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

Water resources and flood risk

Effects arising during construction

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

On a precautionary basis, effects will remain on the following receptors:

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

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.

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

16.3 Assessment of combined effects of changes and amendments in the Davenport Green to Ardwick area due to changes in traffic flows

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.

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.

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.

Traffic and transport

Effects arising during construction

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.

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.

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.

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).

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).

Effects arising during operation

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 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.

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.

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.

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.

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.

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).

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).

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).

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).

Community

Effects arising during construction

Changes to traffic flows will result in a different moderate adverse significant effect on residents of approximately 20 residential properties at the south of the A34 Birchfields Road due to the removal of HGV traffic effects.

Changes to traffic flows will result in a different major adverse significant effect on Birchfields Primary School due to the removal of HGV traffic effects.

Changes to traffic flows and to the sound, noise and vibration assessment will result in new major adverse significant effects on:

- residents of 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.

Changes to traffic flows and to the sound, noise and vibration assessment will result in a new moderate adverse significant effect on residents of 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.

Changes to traffic flows and to the sound, noise and vibration assessment will result in the removal of the significant in-combination effect on residents of approximately 45 residential properties on the A34 Kingsway between Talbot Road and Mauldeth Road.

Ecology and biodiversity

Effects arising during construction

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.

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.

Ongoing work

The designated site assessment reports (SES2 and AP2 ES Volume 5, Appendices: EC-016) include the emerging results of an assessment of air quality impacts on designated sites during construction and operation of the AP2 revised scheme in-combination with other schemes. At this stage, it is identified that there are potentially significant effects at the Rochdale Canal SAC during construction and operation as a result of the AP2 revised scheme in combination with other schemes.

Further assessment of these potential effects will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Health

Effects arising during construction

The main ES reported an adverse neighbourhood quality effect for residents along the A34 Kingsway (between Talbot Road and Mauldeth Road). 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 adverse neighbourhood quality effect along the A34 Kingsway.

The main ES reported an adverse neighbourhood quality effect for residents at the south of the A34 Birchfields Road. 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.

The main ES reported an adverse health effect at Birchfields Primary School on Lytham Road. 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.

Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents on Firbank Road, Baguley as well as a new adverse health effect at Noddy's Day Nursery on Firbank Road. Firbank Road will experience a significant increase in HGV traffic. New traffic noise effects are expected to be noticeable along Firbank Road. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, diminishing the amenity of the settlement. In addition, activities affecting the nursery may combine to reduce the beneficial wellbeing effects associated with educational settings and attainment.

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.

Socio-economics

Effects arising during construction

The changes in traffic flows will result in a new temporary adverse significant in-combination effect on Noddy's Day Nursery due to new significant noise effects and new significant effects from HGV construction traffic. The construction works may discourage parents and carers from choosing this business.

Sound, noise and vibration

Effects arising during construction

As a result of the AP2 revised scheme, construction traffic in this area will give rise to a new temporary 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.

As a result of the AP2 revised scheme, changes in traffic in this area are likely to result in new 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.

The reduction in construction traffic noise levels on Kingsway, Manchester, will remove the indirect significant effect reported in the main ES on dwellings along this road.

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17 Manchester Piccadilly Station community area (MA08)



17.1 Summary of amendments in the Manchester Piccadilly Station area (MA08) within the AP2 ES

Table 16 provides a summary of each engineering amendment reported within the AP2 ES, along with a description of the original scheme, which is used as the baseline for the comparison of new and different significant environmental effects.

Figure 13 shows the approximate location of each AP2 amendment within the Manchester Piccadilly Station area.

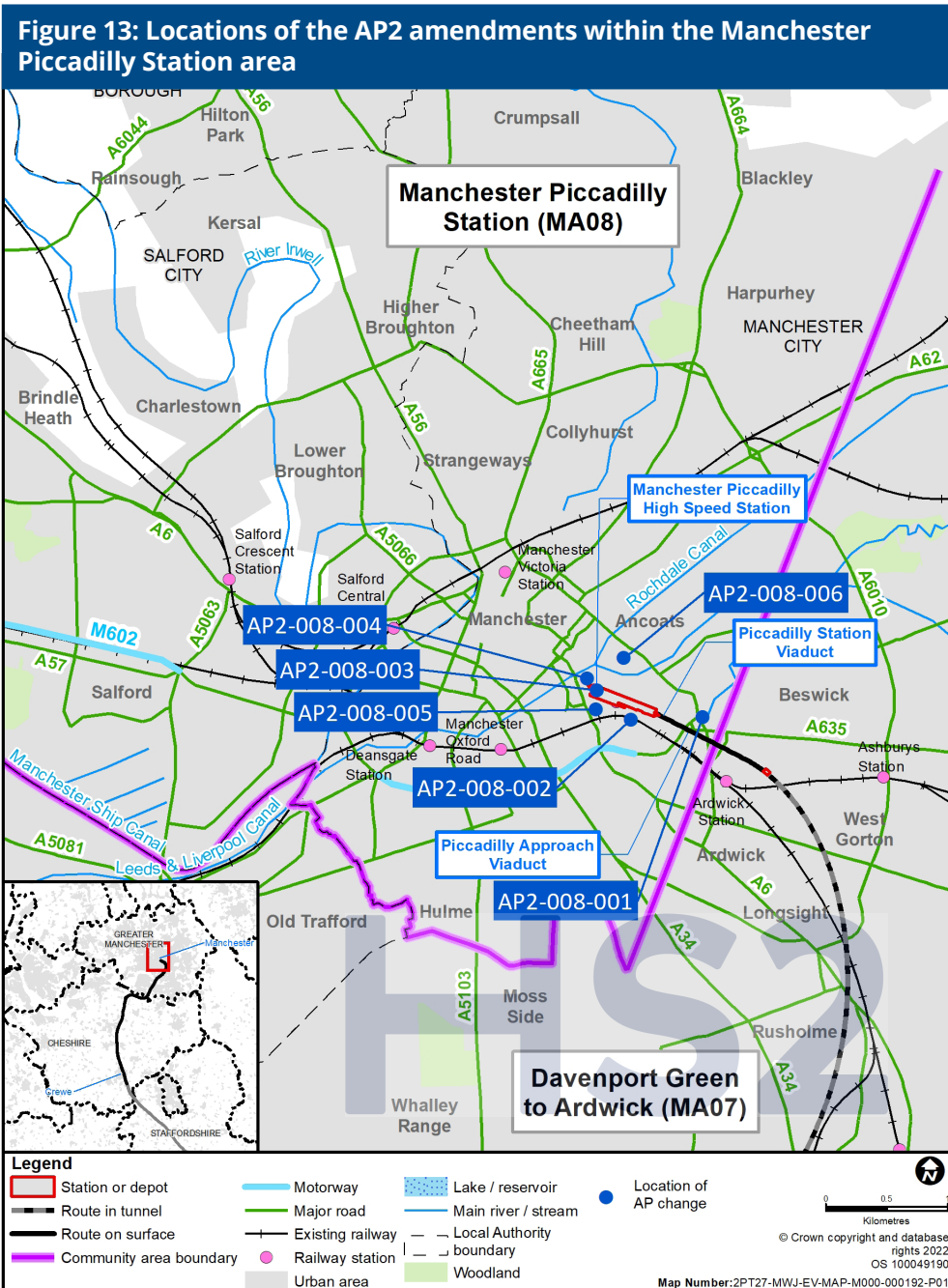
A Volume 2 report for the Manchester Piccadilly Station area (MA08) was not produced as part of the SES1 and AP1 ES. Therefore, all new, different or removed effects reported in the AP2 ES for the MA08 community area are compared to the main ES.

Table 16: Summary of the AP2 amendments requiring changes to the Bill powers in the Manchester Piccadilly Station area

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|--|---|
| Additional land permanently required for modifications to the A635/A665 Pin Mill Brow gyratory AP2-008-001 | Provision of the A635/A665 Pin Mill Brow gyratory between the A635 Mancunian Way, the A635 Fairfield Street, the A665 Pin Mill Brow and the A665 Chancellor Lane. | Additional land will be permanently required to enable the extension of the existing cycle lane along the A635 Ashton Old Road and the A635/A665 Pin Mill Brow gyratory area and for the extension to a footway, providing an opportunity for an additional crossing between the A635 Ashton Old Road and the A635/A665 Pin Mill Brow gyratory. Additional land to the east and west of the A635 Mancunian Way will be required temporarily during construction for working space for plant and movement of operatives, storage of plant and materials and provision of health and welfare facilities. |
| Additional land permanently required for provision of an access ramp from the realigned B6469 Fairfield Street to the Network Rail upper viaduct deck at Manchester Piccadilly Station AP2-008-002 | A new Network Rail access ramp to the existing Manchester Piccadilly Station which would be accessed from Hoyle Street and Chapelfield Street. The access ramp would be required as the existing vehicular access to the Network Rail Viaduct would be severed by the proposed Manchester Piccadilly High Speed station. | Hoyle Street and Chapelfield Street are to be pedestrianised as part of the Mayfield Partnership's plan to develop the area. The ramp will be accessed via a dedicated right-turn lane at junction of the A635 Mancunian Way and realigned B6469 Fairfield Street, with egress via Temperance Street and a retained section of Hoyle Street before connecting to the realigned B6469 Fairfield Street. |
| Change to Bill powers for modifications to the multi-modal transport hub AP2-008-003 | Two multi-storey car parks will be provided on New Sheffield Street. Car park 1 located west of Adair Street and car park 2 located east of Adair Street; and taxi drop off/pick up facilities between Manchester Piccadilly High Speed station and the Network Rail Viaduct. | Car park 2 will be relocated from the north side of New Sheffield Street to between the Manchester Piccadilly High Speed station and the Network Rail Viaduct and to reconfigure the multi-modal transport hub. The layout of the realigned New Sheffield Street will also be reconfigured. |
| Additional land permanently required for a new loading/unloading bay to provide access to the catering areas within the Network Rail facilities building at Manchester Piccadilly High Speed station AP2-008-004 | Retention of the Network Rail train catering facility in its existing location that would be incorporated into the new North Block building. Access to the building would be via a ramp accessed via the Network Rail maintenance depot to the rear of Gateway House, off Ducie Street. | Additional land will be required for a temporary catering storage and loading facility whilst the new catering facilities are constructed within the relocated North Block (SES2-008-003). New loading facilities will be located in the existing arches at ground level beneath the Network Rail Viaduct. |

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|--|--|---|
| <p>Additional land permanently required for the re-provision of Blue Badge parking off the B6469 Fairfield Street</p> <p>AP2-008-005</p> | <p>Conversion of the existing car parking spaces located at the southern entrance to the Manchester Piccadilly station to 37 Blue Badge bays, including the three existing Blue Badge spaces at this location.</p> | <p>Additional land will be required to widen and realign the car park bell-mouth entrance³ to accommodate the car park junction.</p> <p>The existing short stay car park, off Fairfield Street, will be converted into two ranks of Blue Badge parking spaces, comprising 49 spaces.</p> |
| <p>Change to Bill powers for the diversion of Travis Street sewer via Ducie Street with a new compound within Ducie Street and the A665 Great Ancoats Street junction</p> <p>AP2-008-006</p> | <p>Underground diversion of a combined sewer for 1.3km. The diversion would start at the Ducie Street and A665 Great Ancoats Street junction and would continue south-west along Ducie Street and partially beneath Piccadilly Station approach. The diversion would continue along the A6 London Road and Downing Street before terminating 40m east of the Grosvenor Street and Downing Street junction.</p> | <p>The sewer diversion will be moved to the centre of Ducie Street and the work area will be moved from the customer car park of a furniture store to the junction of Ducie Street and the A665 Great Ancoats Street.</p> |

³ Bell-mouth refers to the shape of the car park entrance, the entrance is wide to allow safe access for vehicles turning into or out of the car park.



17.2 Assessment of amendments in the Manchester Piccadilly Station area (MA08) in the AP2 ES

Historic environment

Effects arising during construction

Change to Bill powers for modifications to the multi-modal transport hub (AP2-008-003)

This amendment will result in a different permanent major adverse significant effect on St Andrew's Church and disused graveyard (site of), a non-designated heritage asset. This is due to the removal of: the below ground archaeological remains of the church; and human burials.

Landscape and visual

Effects arising during construction

Additional land permanently required for modifications to the A635/A665 Pin Mill Brow gyratory (AP2-008-001)

This amendment will give rise to a different significant construction effect at viewpoint: View south-west from Ancoats Bridge on the A665 Pin Mill Brow. The level of effect will be unchanged to that reported in the main ES and remain moderate adverse.

Socio-economics

Effects arising during construction

Change to Bill powers for the diversion of Travis Street sewer via Ducie Street with a new compound within Ducie Street and the A665 Great Ancoats Street junction (AP2-008-006)

This amendment will remove the moderate temporary adverse significant effect on a furniture store on the A665 Great Ancoats Street reported in the main ES.

Sound, noise and vibration

Effects arising during construction

Change to Bill powers for the diversion of Travis Street sewer via Ducie Street with a new compound within Ducie Street and the A665 Great Ancoats Street junction (AP2-008-006)

This amendment will give rise to a different temporary adverse significant construction noise effect on the non-residential building at the Northern Quarters Serviced Apartments. This is due to a reduction in duration and being impacted in a different direction.

The amendment will give rise to a new temporary adverse significant construction noise effect on the Eternal Life Sanctuary Church, Great Ancoats Street, Manchester.

The amendment will also remove the significant adverse construction noise effects at the residential communities of Piccadilly in the vicinity of Millbank Street and Store Street.

Traffic and transport

Effects arising during construction

Change to Bill powers for modifications to the multi-modal transport hub (AP2-008-003)

This amendment removes the temporary moderate adverse effect to journey lengths for vehicle occupants on Chapeltown Street reported in the main ES, which is replaced by the permanent effect reported in the operational assessment.

Change to Bill powers for the diversion of Travis Street sewer via Ducie Street with a new compound within Ducie Street and the A665 Great Ancoats Street junction (AP2-008-006)

This amendment will give rise to the following new temporary significant effects:

- major adverse significant effect on parking and loading, due to the loss of 13 on-street parking spaces on Ducie Street;
- major adverse significant effect on parking and loading, due to the loss of four on-street parking spaces on Peak Street; and
- moderate adverse significant effect on journey length for vehicle occupants on Jutland Street, due to an increase in journey length of up to 1.1km.

The amendment will remove the temporary major adverse significant effect on loading and parking, including the temporary loss of two blue badge bays, at the furniture store on the A665 Great Ancoats Street.

Effects arising during operation

Change to Bill powers for modifications to the multi-modal transport hub (AP2-008-003)

This amendment will give rise to the following new permanent significant effects:

- moderate adverse effect on journey length for vehicle occupants on Store Street due to an increase in journey length of up to 1.9km;
- moderate adverse effect on journey length for vehicle occupants on Travis Street due to an increase in journey length of up to 1.2km; and
- minor adverse effect journey length for vehicle occupants on Chapeltown Street due to an increase in journey length of up to 1.7km.

Additional land permanently required for the reprovision of Blue Badge parking off the B6469 Fairfield Street (AP2-008-005)

This amendment will give rise to a new permanent major adverse effect on parking at the short-stay parking area off Fairfield Street. This is due to the removal of standard parking spaces.

The amendment will also give rise to a different (decreased) permanent major adverse effect on parking at the Network Rail Ramp. This is due to the relocation of blue badge parking to the short-stay parking area off Fairfield Street.

17.3 Assessment of combined effects of changes and amendments in the Manchester Piccadilly Station area due to changes in traffic flows

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.

The assessment has also considered any impacts in the Manchester Piccadilly Station area associated with SES2 changes and AP2 amendments in other community areas.

Traffic and transport effects are reported first, since the effects arise from changes in traffic flows. Other topics where a significant effect has been identified, are then reported in the following sequence:

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

Traffic and transport

Effects arising during construction

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 three junctions;
- 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 one junction;
- change (decrease) from major adverse effect to minor adverse effect at four junctions;
- change (decrease) from moderate adverse effect to moderate beneficial effect at one junction;
- change (decrease) from major adverse effect to minor beneficial effect at one junction;
- change (decrease) from minor adverse effect to minor beneficial effect at one junction;
- change (decrease) from moderate beneficial 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 19 junctions;

- new moderate adverse effect at six junctions;
- new minor adverse effect at 11 junctions;
- new minor beneficial effect at five junctions;
- different (increased) major adverse significant effects at four junctions; and
- different (decreased) major adverse significant effects at one junction.

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 three roads;
- change (increase) from moderate adverse effect to major adverse effect on five roads;
- change (increase) from minor adverse effect to moderate adverse effect on one road;
- change (decrease) from major adverse effect to moderate beneficial effect on one road;
- change (decrease) from major adverse effect to minor beneficial effect on one road;
- change (decrease) from moderate adverse effect to minor beneficial effect on two roads;
- change (decrease) from minor adverse effect to minor beneficial effect on one road;
- change (decrease) from major beneficial effect to moderate beneficial effect on two roads;

- change (increase) from minor beneficial effect to moderate beneficial effect on one road;
- change (increase) from moderate beneficial effect to major adverse effect on one road;
- change (increase) from minor beneficial effect to major adverse effect on two roads;
- change (increase) from moderate beneficial effect to moderate adverse effect on two roads;
- new major adverse effect on eight roads;
- new moderate adverse effect on 11 roads;
- new minor adverse effect on three roads;
- new moderate beneficial effect on 20 roads;
- new minor beneficial effect on one road;
- different (increased) major adverse significant effects on one road; and
- different (decreased) major adverse significant effects on one road.

The AP2 revised scheme will remove the following effects on congestion and delay for vehicle occupants reported in the main ES:

- significant adverse effects removed at 29 junctions (nine major, five moderate, 15 minor); and
- significant beneficial effects removed at one junction (one minor).

The AP2 revised scheme will remove the following effects on traffic-related severance for non-motorised users reported in the main ES:

- significant adverse effects removed on 17 roads (four major, 11 moderate and two minor); and
- significant beneficial effects removed on 11 roads (three minor, eight moderate).

Effects arising during operation

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 minor adverse effect to moderate adverse effect at one junction;
- change (decrease) from major adverse effect to minor adverse effect at one junction;
- change (decrease) from moderate adverse effect to minor adverse effect at one junction;
- change (decrease) from moderate adverse effect to moderate beneficial effect at one junction;
- change (decrease) from moderate adverse effect to minor beneficial effect at two junctions;
- new major adverse effect at 13 junctions;
- new moderate adverse effect at three junctions;
- new minor adverse effect at nine junctions;
- new moderate beneficial effect at two junctions;
- new minor beneficial effect at six junctions; and
- different (increased) major adverse significant effect at one junction.

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 (decrease) from major adverse effect to moderate adverse effect at two junctions;
- 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 four junctions;
- change (decrease) from major adverse effect to moderate beneficial effect at one junction;
- change (decrease) from minor adverse effect to moderate beneficial effect at one junction;
- change (decrease) from moderate adverse effect to minor beneficial effect at one junction;
- change (increase) from minor beneficial effect to moderate beneficial effect at one junction;
- change (decrease) from moderate beneficial effect to minor beneficial effect at one junction;
- change (increase) from major beneficial effect to minor adverse effect at one junction;
- new major adverse effect at 11 junctions;
- new moderate adverse effect at nine junctions;
- new minor adverse effect at nine junctions;

- new moderate beneficial effect at eight junctions;
- new minor beneficial effect at 12 junctions; and
- different (increased) major adverse significant effects at one junction.

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 for 2038:

- change (decrease) from major adverse effect to moderate adverse effect on two roads;
- change (increase) from moderate adverse effect to major adverse effect on 11 roads;
- change (increase) from minor adverse effect to major adverse effect on one road;
- change (increase) from minor adverse effect to moderate adverse effect on three roads;
- change (decrease) from major adverse effect to major beneficial effect on one road;
- change (decrease) from moderate adverse effect to major beneficial effect on six roads;
- change (decrease) from major adverse effect to moderate beneficial effect on seven roads;
- change (decrease) from moderate adverse effect to moderate beneficial effect on one road;
- change (decrease) from minor adverse effect to moderate beneficial effect on one road;
- change (decrease) from moderate adverse effect to minor beneficial effect on one road;

-
- change (decrease) from major beneficial effect to moderate beneficial effect on three roads;
 - change (increase) from minor beneficial effect to moderate beneficial effect on two roads;
 - change (increase) from moderate beneficial effect to major beneficial effect on 16 roads;
 - change (increase) from major beneficial effect to major adverse effect on four roads;
 - change (increase) from moderate beneficial effect to major adverse effect on one road;
 - change (increase) from moderate beneficial effect to moderate adverse effect on four roads;
 - new major adverse effect on 23 roads;
 - new moderate adverse effect on 41 roads;
 - new minor adverse effect on three roads;
 - new major beneficial effect on 10 roads;
 - new moderate beneficial effect on 29 roads; and
 - different (increased) major adverse significant effects on one road.
- 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 six roads;
 - change (increase) from minor adverse effect to major adverse effect on three roads;
 - change (increase) from minor adverse effect to moderate adverse effect on five 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 three roads;
 - change (decrease) from moderate adverse effect to major beneficial effect on one road;
 - change (decrease) from major adverse effect to moderate beneficial effect on eight roads;
 - change (decrease) from moderate adverse effect to moderate beneficial effect on two roads;
 - change (decrease) from minor adverse effect to moderate beneficial effect on one road;
 - change (decrease) from major beneficial effect to moderate beneficial effect on five roads;
 - change (increase) from moderate beneficial effect to major beneficial effect on 15 roads;
 - change (increase) from major beneficial effect to major adverse effect on one road;
 - change (increase) from moderate beneficial effect to major adverse effect on five roads;
 - change (increase) from moderate beneficial effect to moderate adverse effect on two roads;

- change (increase) from minor beneficial effect to minor adverse effect on two roads;
- new major adverse effect on 21 roads;
- new moderate adverse effect on 46 roads;
- new minor adverse effect on nine roads;
- new major beneficial effect on 16 roads; and
- new moderate beneficial effect on 28 roads.

The AP2 revised scheme will remove significant adverse effects on congestion and delay for vehicle occupants in 2039 reported in the main ES at 18 junctions (seven major, five moderate and six minor).

The AP2 revised scheme will remove the following effects on congestion and delay for vehicle occupants in 2051 reported in the main ES:

- significant adverse effects removed at 14 junctions (six major, two moderate, six minor); and
- significant beneficial effects removed at two junctions (two minor).

The AP2 revised scheme will remove the following effects on traffic-related severance for non-motorised users in 2039 reported in the main ES for 2038:

- significant adverse effects removed on 20 roads (seven major, 12 moderate, one minor); and
- significant beneficial effects removed on eight roads (three moderate, five major).

The AP2 revised scheme will remove the following effects on traffic-related severance for non-motorised users in 2051 reported in the main ES:

- significant adverse effects removed on 16 roads (eight major, seven moderate, one minor); and
- significant beneficial effects removed on seven roads (five moderate, two major).

Air quality

Effects arising during construction

There will be a significant adverse effect in relation to NO₂ concentrations at one modelled residential receptor (Downing Street, Manchester).

The AP2 revised scheme will remove two significant adverse effects (Farm Lane, Worsley and Chapel Town Street, Manchester) and one significant beneficial effect (Chester Street, Manchester) for annual mean NO₂ concentrations from those reported in the main ES.

Community

Effects arising during construction

Changes to traffic flows and to the sound, noise and vibration assessment will result in new major adverse effect on residents of approximately 160 residential properties on Newton Street due to new noise and new HGV traffic effects.

Changes to traffic flows and to the sound, noise and vibration assessment will result in new moderate adverse effect on users of St Anne's Roman Catholic Primary School due to new HGV traffic effects and existing noise effects.

Changes to traffic flows will result in different major adverse effects on residents of:

- approximately 390 residential properties in the vicinity of Chapeltown Street due to removed HGV traffic effects; and
- approximately 215 residential properties in the vicinity of Ducie Street due to removed HGV traffic effects.

Ecology and biodiversity

Effects arising during construction

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.

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.

Ongoing work

The designated site assessment reports (SES2 and AP2 ES Volume 5, Appendices: EC-016) include the emerging results of an assessment of air quality impacts on designated sites during construction and operation of the AP2 revised scheme in-combination with other schemes. At this stage, it is identified that there are potentially significant effects at the Rochdale Canal SAC during construction and operation as a result of the AP2 revised scheme in combination with other schemes.

Further assessment of these potential effects will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Health

Effects arising during construction

The main ES reported an adverse neighbourhood quality effect in the vicinity of Chapeltown Street, Manchester. Changes to construction traffic flows will remove the significant HGV traffic effect. Noise and visual effects reported in the main ES will remain the same. This will result in a different adverse neighbourhood quality effect in the vicinity of Chapeltown Street, Manchester.

The main ES reported an adverse neighbourhood quality effect in the vicinity of Ducie Street, Manchester. Changes to construction traffic flows will remove the significant HGV traffic effect. Noise and visual effects reported in the main ES will remain the same. This will result in a different adverse neighbourhood quality effect in the vicinity of Ducie Street, Manchester.

Changes to construction traffic flows will result in a new adverse neighbourhood quality effect for residents on Newton Street, Manchester due to new traffic noise effects from a significant increase in HGV traffic. People in this community are likely to experience these effects as changing the quality of their neighbourhood and to regard that change as adverse, diminishing the amenity of the settlement.

Changes to construction traffic flows will result in a new adverse health effect at St Anne's Roman Catholic Primary School on Carruthers Street, Manchester. Carruthers Street will experience a significant increase in HGV traffic, resulting in a new HGV traffic effect. As reported in the main ES construction noise will be noticeable at the school. These activities affecting the school may combine to reduce the beneficial wellbeing effects associated with educational attainment.

Socio-economics

Effects arising during construction

The changes in traffic flows will result in three new temporary adverse significant in-combination effects on The Cow Hollow Hotel, Hatters Manchester and easyHotel.

The changes in traffic flows will result in a different temporary adverse significant in-combination effect on Premier Inn and The Reach at Piccadilly.

The changes in traffic flows will result in a new permanent adverse significant isolation effect on a car park managed by NCP.

Sound, noise and vibration

Effects arising during construction

As a result of the AP2 revised scheme, construction traffic in this area will give rise to a new temporary adverse significant noise effect on approximately 15 dwellings in the vicinity of Gurney Street and approximately 160 adjacent dwellings in the vicinity of Newton Street.

As a result of the AP2 revised scheme, construction traffic in this area will give rise to new temporary adverse significant noise effects at the following non-residential properties:

- easyHotel, Dale Street, Manchester;
- Hatters Hostel, Newton Street, Manchester;
- The Cow Hollow Hotel, Newton Street, Manchester;
- The Greater Manchester Police Museum and Archives, Newton Street Manchester; and
- Grayscanlanhill (offices), Newton Street, Manchester.

As a result of the AP2 revised scheme, changes in traffic in this area are likely to result in the removal of temporary adverse significant noise effects at the non-residential property of Aeroworks (offices).

Effects arising during operation

Changes in road traffic flows will give rise to different significant beneficial airborne noise effects from operation of the AP2 revised scheme on residential communities in Store Street and Jutland Street due to a decrease in the number of dwellings beneficially affected.

The significant adverse effect identified in the vicinity of Chapeltown Street in the main ES is removed.

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18 Volume 3, Route-wide effects



18.1 Introduction

Volume 3 presents a summary of the new, different or removed likely residual environmental effects that have been identified on a route-wide basis as a result of the AP2 revised scheme. Further information is provided in Volume 3, Route-wide effects of the SES2 and AP2 ES.

Changes as a result of the AP2 scheme are reported in this section for: agriculture, forestry and soils; air quality; climate change; ecology and biodiversity; traffic and transport; waste and material resources; and water resources and flood risk.

Agriculture, forestry and soils

Temporary effects

The total area of land required temporarily for the construction of the AP2 revised scheme is 1644ha, with 1520ha in England and 124ha in Scotland. In England 471ha is BMV land and in Scotland 22ha is prime agricultural land.

The area of agricultural land required temporarily for the construction of the AP2 scheme has increased by 112ha in England and 11ha in Scotland compared to the SES2 scheme.

The total area of land to be restored from the construction of the AP2 scheme is 880ha with 818ha in England and 62ha in Scotland. The area of agricultural land to be restored for the construction of the AP2 scheme has increased by 84ha in England and decreased by 14ha in Scotland compared to the SES2 scheme.

The AP2 revised scheme does not result in any new, removed or different temporary significant route-wide effects on agriculture, forestry or soils to those reported in the SES2.

Permanent effects

The total area of land required permanently for the construction of the AP2 scheme is 764ha with 702ha in England and 62ha in Scotland. In England 178ha is BMV land and in Scotland 8ha is prime agricultural land.

The area of agricultural land required permanently for the construction of the AP2 scheme has increased by 28ha in England and 25ha in Scotland compared to the SES2 scheme.

The total area of agricultural land to be used for newly planted woodland, trees, visual screening, habitat creation or floodplain storage of the AP2 scheme is 107ha in England which has increased by 11ha compared to the SES2 scheme. In Scotland there is no agricultural land to be used for newly planted woodland, trees, visual screening, habitat creation or floodplain storage. This remains unchanged from the main ES.

The AP2 revised scheme does not result in any new, removed or different permanent significant route-wide effects on agriculture, forestry or soils to those reported in the SES2. No changes in the assessment of impacts on forestry land have been made as a result of the AP2 revised scheme.

Air quality

Benefits beyond the project boundary

An air quality assessment of the AP1 revised scheme and AP2 revised scheme combined, based on updated baseline and future baseline traffic models for the SES2 scheme and AP2 revised scheme, has been undertaken for the modal shift assessment. This assessment calculates the change in emissions for nitrogen oxides (NO_x) and particulate matter (PM₁₀ and PM_{2.5}).

As a result of the AP1 and AP2 revised schemes combined, it is anticipated that the modal shift to rail will result in a reduction of over 235 million vehicle kilometres travelled compared to a reduction of over 310 million vehicle kilometres travelled reported in the main ES.

The AP1 revised scheme and AP2 revised scheme combined is predicted to bring a reduction in air pollutant emissions in 2039 of 19.9 tonnes of NO_x, 4.5 tonnes of PM₁₀ and 2.7 tonnes of PM_{2.5}.

Climate change

Greenhouse gas (GHG) implications of SES2 changes and AP2 amendments

The SES2 changes have been assessed together with AP2 amendments since all GHG emissions, irrespective of their source, contribute to climate change. The GHG assessment is based on the combined AP1 and AP2 revised schemes, assuming that all AP1 and AP2 amendments will be implemented.

The AP2 revised scheme changes the GHG emissions reported in the SES1 and AP1 ES. Construction emissions have increased by 20%, operational emissions have decreased by 55% and emissions savings through modal shift have reduced by 87% over the 120-design life. However, this does not alter the conclusions presented in the SES1 and AP1 ES.

In-combination climate change impacts assessment

As a result of the AP2 revised scheme the significant in-combination climate change effect reported in Volume 3 of the main ES has been removed at Annandale depot. This change is as a result of the AP2 amendment for additional land permanently required for modifications to wastewater drainage at Annandale depot (AP2-ORW-001), which provides an alternative means of wastewater drainage.

Ecology and biodiversity

Designated sites

Statutory designations

There are 13 statutory designated nature conservation sites where it has not been possible to rule out significant effects as a result of the AP2 revised scheme at this stage of the assessment. These effects arise as a result of construction and/or operational traffic emissions effects.

The international value sites are:

- Manchester Mosses SAC;
- Rostherne Mere Ramsar site;
- Midland Meres and Mosses Ramsar Site Phase 1;
- Midland Meres and Mosses Ramsar Site Phase 2; and
- Rochdale Canal SAC.

The national value sites, five of which are component parts of the above international sites, are:

- Oakhanger Moss SSSI;
- Wettenhall and Darnhall Woods SSSI;

- The Mere, Mere SSSI;
- Tabley Mere SSSI;
- Holcroft Moss SSSI;
- Rostherne Mere SSSI;
- Cotterill Clough SSSI; and
- Rochdale Canal SSSI.

Further assessment of the potential effects on sites of international value will continue in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Non-statutory designations

The AP2 revised scheme will result in the loss of at least 24 veteran trees, which is the same as the number lost in the SES2 scheme.

The AP2 revised scheme will result in the loss of 4.9ha of ancient woodland, compared to 4.5ha reported in SES2. The AP2 revised scheme will remove the significant adverse effect at the national level on two AWI sites: Millington Clough AWI and Rye Covert AWI. However, the AP2 revised scheme will have a significant effect on two additional ancient woodlands: Hancock's Bank North AWI, and Sunbank Wood AWI. The number of AWIs where there will be a significant adverse effect at the national level therefore remains at 15.

Combined effects of AP1 revised scheme and AP2 revised scheme

This section considers the AP2 revised scheme in combination with all relevant AP1 amendments to identify the potential for new, removed or different route-wide level effects to those reported above.

An assessment was undertaken to determine if the AP2 revised scheme combined with AP1 amendments would be likely to result in any new, removed or different likely significant effects on ecology and biodiversity.

Table 17: Combined effects of AP2 amendments and AP1 amendments

| Type of receptor | AP1 revised scheme | AP2 revised scheme | Combined effect of AP1 and AP2 |
|------------------------|--|---|---|
| Statutory designations | <p>The AP1 revised scheme will (on a precautionary basis) result in significant effects on one additional statutory site compared to the main ES.</p> <p>No other, new, removed or different likely significant effects on statutory designated nature conservation sites.</p> | <p>It has not been possible to rule out significant effects of the AP2 revised scheme on the following statutory designated sites:</p> <ul style="list-style-type: none"> • Holcroft Moss SSSI; • Manchester Mosses SAC; • Rostherne Mere Ramsar Site; • Rostherne Mere SSSI • The Mere, Mere SSSI; • Rochdale Canal SAC; • Rochdale Canal SSSI; • Oakhanger Moss SSSI; • Midland Meres and Mosses Ramsar Site Phase 1; • Midland Meres and Mosses Ramsar Site Phase 2; • Wettenhall and Darnhall SSSI; • Tabley Mere SSSI; and • Cotterill Clough SSSI. <p>No other new, removed or different likely significant effects on statutory designated nature conservation sites.</p> | <p>It has not been possible to rule out significant effects of the AP2 revised scheme combined with AP1 amendments on the following statutory designated sites:</p> <ul style="list-style-type: none"> • Holcroft Moss SSSI; • Manchester Mosses SAC; • Rostherne Mere Ramsar Site; • Rostherne Mere SSSI; • The Mere, Mere SSSI; • Rochdale Canal SAC; • Rochdale Canal SSSI; • Oakhanger Moss SSSI; • Midland Meres and Mosses Ramsar Site Phase 1; • Midland Meres and Mosses Ramsar Site Phase 2; • Wettenhall and Darnhall SSSI; • Tabley Mere SSSI; and • Cotterill Clough SSSI. <p>The AP2 revised scheme combined with AP1 amendments will not result in any other new, removed or different likely significant route-wide effects compared to the AP2 revised scheme alone on statutory designated nature conservation sites.</p> |

| Type of receptor | AP1 revised scheme | AP2 revised scheme | Combined effect of AP1 and AP2 |
|----------------------------|--|---|---|
| Non statutory designations | No new, removed or different likely significant effects on non-statutory designated nature conservation sites. | The AP2 revised scheme will result in significant effects on two additional non statutory sites. No other new, removed or different likely significant effects on non-statutory designated nature conservation sites. | The AP2 revised scheme combined with AP1 amendments will result in significant effects on two additional non statutory sites. It will not result in any other new, removed or different likely significant route wide effects compared to the AP2 revised scheme alone on non-statutory designated nature conservation sites. |
| Ancient Woodlands | No new, removed or different likely significant effects on AWIs. | The AP2 revised scheme will remove significant adverse effects on two AWIs and result in significant effects on two additional AWIs. No other new, removed or different likely significant effects on AWIs. | The AP2 revised scheme combined with AP1 amendments will remove significant adverse effects on two AWIs and result in significant effects on two additional AWIs. It will not result in any other new, removed or different likely significant route wide effects compared to the AP2 revised scheme alone on AWI sites. |
| Species | No new, removed or different likely significant effects on species | No new, removed or different likely significant effects on species | The AP2 revised scheme combined with AP1 amendments will not result in any new, removed or different significant route-wide level effects compared to the AP2 revised scheme alone on species. |

| Type of receptor | AP1 revised scheme | AP2 revised scheme | Combined effect of AP1 and AP2 |
|------------------|---|---|--|
| Habitats | No new, removed or different likely significant effects on habitats | No new, removed or different likely significant effects on habitats | <p>There will be at least 24 veteran trees lost as a result of the AP2 revised scheme combined with AP1 amendments.</p> <p>The AP2 revised scheme combined with AP1 amendments will result in the following losses to the most notable habitats:</p> <ul style="list-style-type: none"> • ancient woodland – the AP2 revised scheme combined with AP1 amendments will result in the total loss of 5.4ha of ancient woodland; • semi-natural broadleaved woodland – the AP2 revised scheme combined with AP1 amendments will result in the total loss of 33ha of semi-natural broadleaved woodland; • grassland – the AP2 revised scheme combined with AP1 amendments will result in the total loss of 38.5ha of unimproved and semi-improved grassland likely to qualify as a habitat of principal importance; • hedgerow – the AP2 revised scheme combined with AP1 amendments will result in the total loss of 250.7km of hedgerows; and • ponds – the AP2 revised scheme combined with AP1 amendments will result in the total loss of 271 ponds. <p>The AP2 revised scheme combined with AP1 amendments will not result in any new, removed or different significant route-wide level effects on habitats compared to the AP2 revised scheme alone.</p> |

Traffic and transport

Assessment of the effects of construction

Impacts on the railway network during construction

As a result of the AP2 revised scheme, there will be 123 non-standard possessions and blockades affecting passengers and freight on the WCML. This is a reduction from the main ES which reported 153 possessions and blockades, but an increase from the SES1 and AP1 ES which reported 119.

At a route-wide level, the substantial number and extended duration of possessions and blockades will lead to a significant major adverse effect on WCML rail passengers and freight, which is unchanged from the conclusions in the main ES and the SES1 and AP1 ES.

Assessment of the effects of operation

Changes to train patterns and services during operation

The train service specification for the original scheme reported in the main ES, including Phase One and Phase 2a, comprised 11 services per hour per direction to and from London Euston and three services per hour per direction starting at Birmingham Curzon Street.

For the original scheme, the two trains per hour to Scotland from Euston split at Carlisle to serve Glasgow and Edinburgh. For the AP2 revised scheme this reduces to one service per hour between London and Glasgow, with no service to Edinburgh. In addition, the Birmingham to Scotland service is removed.

Impacts on journey times during operation

The removal of the HS2 WCML connection (SES1-004-001) at SES1 will result in changes to journey times to stations north of Manchester on the WCML. The removal of the HS2 WCML connection (SES1-004-001) at SES1 will result in the minor beneficial effects on journey time savings between London Euston and Preston and the major beneficial effects between Birmingham Curzon Street and Preston and Scotland reported in the main ES being removed.

Impacts on travel demand during operation

Compared with the forecasts for the original scheme as reported in the main ES, the forecasts for the AP2 revised scheme are lower, with an overall reduction in HS2 boarders and alighters of 19% for both 2039 and 2051. However, the reduction in HS2 boardings and alightings in 2051 for journeys to the two Manchester stations combined is 4%.

Impacts on long distance travel and modal share

The AP2 revised scheme in combination with Phase One and Phase 2a are shown to increase demand for rail travel and provide beneficial relief to the conventional rail network as well as beneficial reductions in long distance travel by car, both of which are substantial increases compared to Phase One and Phase 2a in combination. Whilst these impacts for the AP2 revised scheme in isolation are lower than for the original scheme as reported in Volume 3 of the main ES, they are considered to provide a major beneficial effect which is significant.

Waste and material resources

Assessment of the effects of construction

In the main ES and SES1 and AP1 ES, it was assumed as a reasonable worst case that all surplus excavated material would be sent to landfill. However, in the context of current industry practice, the previous assumption is no longer considered representative of the reasonable worst case with respect to landfill diversion performance likely to be achieved during construction. As a reasonable worst-case, it is assumed for the AP2 revised scheme that 35% of inert surplus excavated material will be diverted from landfill. The assumption that all non-hazardous and hazardous surplus excavated material will be sent to landfill remains unchanged.

The AP2 revised scheme will generate approximately 26 million tonnes of excavated material, demolition material and construction waste during the period 2025 to 2038, an 11% increase on the quantities reported for the AP1 revised scheme. Of this 26 million tonnes, approximately 84% will be diverted from landfill via on and off-site reuse, recycling and recovery. This represents an increase from approximately 75% reported in Volume 3 of the SES1 and AP1 ES.

The AP2 revised scheme is forecast to generate approximately 621 tonnes of worker accommodation site waste during the construction period of 2025 to 2038, arising from the construction compounds proposed with temporary worker accommodation, a decrease of 356 tonnes compared to that reported for the AP1 revised scheme.

The quantity of inert waste arising from the construction of the AP2 revised scheme that will require off-site disposal to landfill during the period 2025 to 2038 is approximately 3.8 million tonnes, a decrease of 1,610,839 tonnes over the quantity reported for the AP1 revised scheme, and a decrease of 771,464 tonnes over the quantity reported for the original scheme. The effect will remain minor adverse as reported in the main ES and SES1 and AP1 ES, which is not considered a significant effect.

The total quantity of non-hazardous waste arising from the construction of the AP2 revised scheme that will require off-site disposal to landfill during the period 2025 to 2038 is approximately 381,508 tonnes. This represents an increase of 14,002 tonnes over the quantity reported for the AP1 revised scheme, and a decrease of 35,540 tonnes over the quantity reported for the original scheme. The effect will remain moderate as reported in the main ES and SES1 and AP1 ES, which is significant.

The total quantity of hazardous waste arising from the construction of the AP2 revised scheme requiring off-site disposal to landfill during the period 2025 to 2038 will be approximately 20,952 tonnes. This represents an increase of 1,902 tonnes over the quantity reported for the SES1 and AP1 revised scheme, and a decrease of 1,656 tonnes over the quantity reported for the original scheme. The effect will remain minor as reported in the main ES and SES1 and AP1 ES, which is not considered a significant effect.

It is considered that for inert, non-hazardous and hazardous landfill that there will be sufficient capacity available in the North West region to accept the forecast combined quantity of waste from both the route-wide and off-route works associated with the AP2 revised scheme.

The combined effects and the degree of significance on the available inert, non-hazardous and hazardous waste landfill capacities are considered to be as identified for the main assessment:

- minor adverse in relation to inert waste landfill capacity;
- moderate adverse in relation to non-hazardous waste landfill capacity which is considered to constitute a significant effect; and
- minor adverse in relation to hazardous waste landfill capacity.

Water resources and flood risk

Water Framework Directive compliance

The AP2 revised scheme will remove the two potential adverse (amber) effects on the Timperley Brook surface water body reported at SES2. However, the amendments will introduce a new adverse effect on the Bollin (River Dean to Ashley Mill) surface water body associated with the additional land permanently required to reconfigure M56 Junction 6 (AP2-006-014). These adverse effects may give rise to the potential risk of the AP2 revised scheme being noncompliant with the statutory objectives of the WFD.

A WFD Regulation 19 exemption is a legal instrument seeking to proceed with the AP2 revised scheme despite the potential for deterioration of water bodies. In order to avoid the necessity of seeking an exemption under the WFD Regulations, additional mitigation measures are still required to manage the risk of status deterioration within these two water bodies. A range of mitigation measure options have been identified in consultation with the Environment Agency with the aim to ensure no residual risks of status deterioration will remain.

Every effort will be made to identify sufficient mitigation to ensure that there is no residual risk of deterioration in status for the water body. However, a Regulation 19 exemption assessment will also be prepared for the water body in parallel on a precautionary basis, in consultation with the Environment Agency (as the competent regulatory authority), and reported to Parliament during the passage of the Bill if required.

Flood risk

The SES2 identifies the potential for significant adverse effects related to flood risk at two locations along the HS2 route, requiring development of additional mitigation.

The diversion of Birkin Brook under the Ashley Railhead will remove the potential for a significant adverse effect on flood risk at the Mid-Cheshire railway line.

The relocation of the Palatine Road vent shaft (renamed The Hollies vent shaft in AP2-007-003) will remove the majority of the permanent adverse significant flood risk effects associated with the original scheme during the 1 in 100 year plus allowance for climate change flood event.

There are however residual permanent adverse flood risk effects on two residential receptors on Palatine Road (the western two blocks of Riverside Court) as a result of changes to flood conveyance around the operational site for The Hollies vent shaft. Assessment work carried out to date has identified the potential for flood water displaced by The Hollies vent shaft site to cause an increase in flood flows downstream (west) of Princess Road. It has been concluded that this could lead to minor increases in peak flood levels in the River Mersey and potentially increased spill of flood water into areas already affected by flooding; potentially resulting in new adverse flood risk effects.

A residual adverse significant effect has also been identified at one commercial property (Northenden Golf Course club house) during a 1 in 100 year flood event; as a result of earlier overtopping of River Mersey flood defences and different adverse significant effects have been identified during the 1 in 100 year flood event at the two residential blocks at Riverside Court.

Additional modelling is underway, and will continue during the passage of the Bill, to identify and test the effectiveness of a range of avoidance and mitigation measures to reduce the residual impacts of the AP2 revised scheme.

19 Volume 4, Off-route effects



19.1 Introduction

Engineering amendments will be required in off-route areas that will result in changes to the land required or Bill powers required for the original scheme.

19.2 Summary of amendments in off-route areas within the AP2 ES

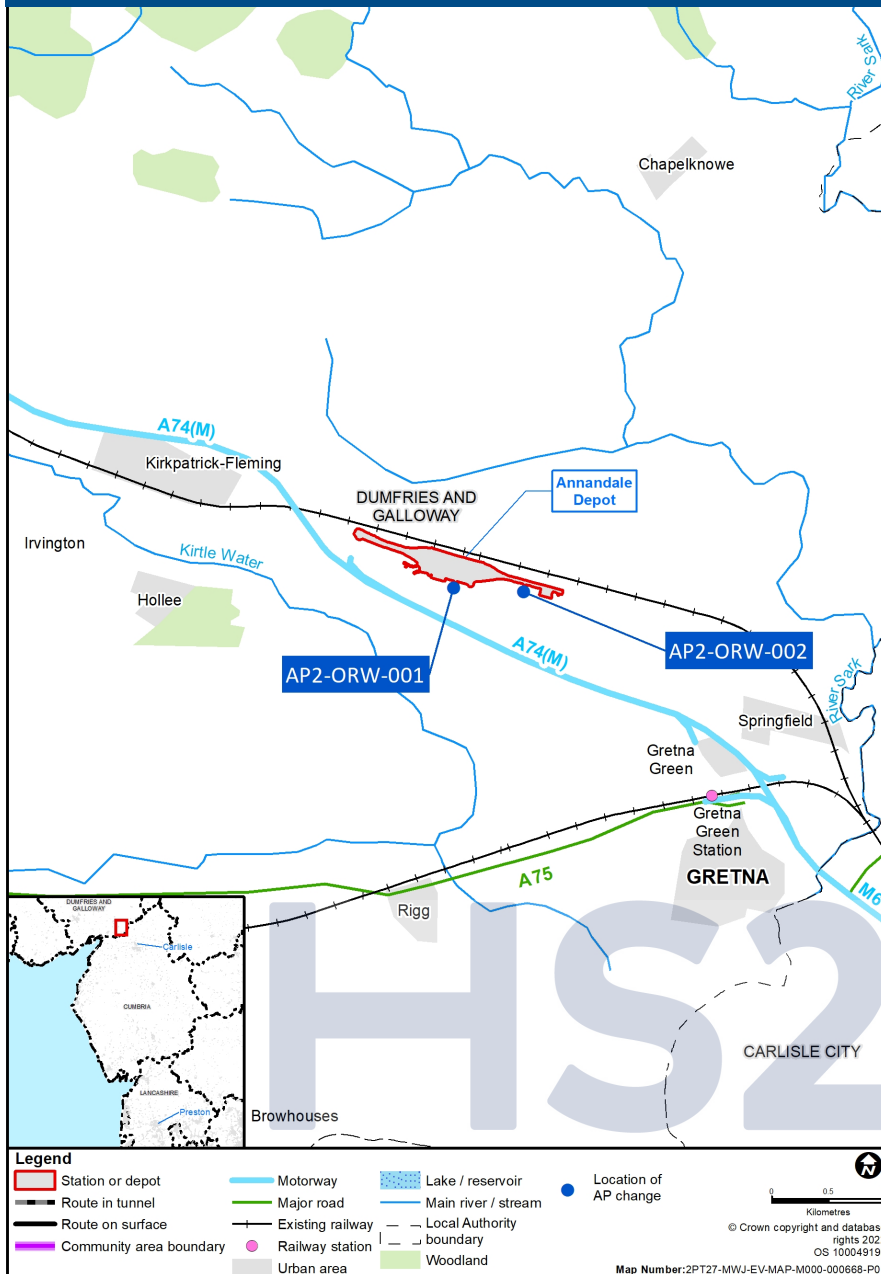
Table 18 provides a summary of each engineering amendment reported within the AP2 ES, along with a description of the original scheme, which is used as the baseline for the comparison of new and different significant environmental effects.

Figure 14 shows the approximate location of each AP2 amendment in off-route areas.

Table 18: Summary of the AP2 amendments requiring changes to the Bill powers in off-route areas

| Name of amendment | Description of the original scheme | Description of the AP2 revised scheme |
|---|---|--|
| Additional land permanently required for modifications to wastewater drainage at Annandale depot AP2-ORW-001 | The Bill provides for the Annandale depot, which would include an on-site wastewater treatment plant at Annandale depot and a pumping station, 200m west of the Annandale depot traction sub-station. | An update to the drainage design to provide an alternative means of wastewater drainage. Wastewater disposal will be diverted to discharge into the Scottish Water wastewater treatment works, 40m to the south of the Gretna motorway services. |
| Additional land permanently required for utility diversions and modifications at Annandale depot AP2-ORW-002 | <p>The Bill provides for the Annandale depot. To facilitate the construction of the Annandale depot, diversion of the following utilities would be included in the original scheme:</p> <ul style="list-style-type: none"> • a Scottish Power 132kV overhead power line; • diversion of a Scottish Power 11kV underground cable diversion; and • permanent diversion of a Scottish Water potable water main. | Modifications to utility connections (including cabling and water supplies) and the installation of a new 132kV to 25kV transformer sub-station following consultation with utility providers. |

Figure 14: Locations of the AP2 amendments within the off-route areas



19.3 Assessment of amendments in off-route areas in the AP2 ES

Agriculture, forestry and soils

Effects arising during construction

Additional land permanently required for modifications to wastewater drainage at Annandale depot (AP2-ORW-001)

This amendment will result in a new permanent moderate adverse (significant) effect for Land at Gretna. This is due to the proportion of land required for construction of the AP2 revised scheme.

Additional land permanently required for utility diversions and modifications at Annandale depot (AP2-ORW-002)

This amendment will result in:

- a different temporary significant effect (from moderate adverse to major/moderate adverse) for Nouthill Farm including Williamsfield Farm due to the proportion of land required and severance; and
- a new permanent moderate adverse significant effect for Cranberry Farm.

Water resources and flood risk

Effects arising during operation

Additional land permanently required for modifications to wastewater drainage at Annandale depot (AP2-ORW-001)

This amendment will result in the removal of discharge into Tributary of Ewes Burn 1 and therefore the removal of the permanent moderate adverse significant effect reported in the main ES on Tributary of Ewes Burn 1.

19.4 Combined effects of AP2 amendments in the Annandale area

Agriculture, forestry and soils

Cranberry Farm will be significantly affected by two AP2 amendments, AP2-ORW-001 and AP2-ORW-002. Should both the amendments be adopted the total area required from this holding for the AP2 revised scheme will be 32.8ha (temporary) and 10.6ha (permanent). The overall combined temporary and permanent effect is major/moderate adverse and increases the scale of effect reported for AP2-ORW-001 alone from minor to major/moderate.

19.5 Combined effects of changes and amendments in the Annandale depot area due to changes in traffic flows

This section identifies the effects of the changes to traffic flows associated with the updated baseline and future baseline models in combination with all SES2 changes and AP2 amendments in Annandale. Of the SES2 changes and AP2 amendments, the following make a particular contribution to the changes in traffic flows in the Annandale depot area:

- changes in construction traffic related to the changes to the movement of excavated material, construction programme and construction assumptions; and
- additional land permanently required for modifications to wastewater drainage at Annandale depot (AP2-ORW-001).

In addition, updates to the future baseline will lead to changes to the future baseline traffic forecasts reported in the main ES. These baseline changes give rise to new or different effects compared with the main ES. The combined assessment of changes to traffic flows takes into account the revised future baseline traffic forecasts alongside the changes in traffic flows associated with the AP2 revised scheme.

Traffic and transport

Effects arising during construction

The AP2 revised scheme will result in a change to the traffic-related severance effects for non-motorised users on the B7076 (between Annandale depot site access and A74(M) junction 21 south-facing slip roads) previously reported as moderate adverse significant (HGV) which changes to major adverse significant (HGV).

19.6 Off-route railway stations in operation

The assessment of off-route operation of stations and depots is reported in Section 5, Volume 4, Off-route effects of the main ES. This section reports new or different significant effects from the design changes associated with the AP2 revised scheme and an update to the Planet Framework Model.

Milton Keynes Central Station

The main ES reported minor adverse significant effects at Milton Keynes Central Station for car parking, cycle parking provision and traffic-related severance for vulnerable road users. Compared to the main ES, the lower growth in passenger numbers means that these significant effects are now removed.

Crewe Station

The main ES reported minor adverse significant effects at Crewe Station for car parking and cycle parking provision. Compared to the main ES, the lower growth in passenger numbers associated with the removal of the HS2 WCML connection means that these significant effects are now removed.

Preston Station

The main ES reported a moderate adverse significant effect at Preston Station for car parking and a minor adverse significant effect for cycle parking provision. The removal of the HS2 WCML connection reduces the growth in both passenger numbers and the requirement for daily operation staff. As a result, the moderate adverse significant effect on car parking is predicted to change to a minor adverse significant effect. The minor adverse significant effect reported on cycle parking provision remains unchanged.

Carlisle Station

The main ES reported a moderate adverse significant effect at Carlisle Station for car parking and minor adverse significant effects on cycle parking provision and traffic-related severance. The removal of the HS2 WCML connection reduces the growth in passenger numbers and removes the requirement for daily operation staff at Carlisle station. As a result, the moderate adverse significant effect on car parking is predicted to change to a minor adverse significant effect. The minor adverse significant effect on cycle parking provision will be removed.

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