



High Speed Rail (West Midlands - Crewe)

Supplementary Environmental Statement and
Additional Provision Environmental Statement

Volume 1

Introduction and methodology



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Department for Transport

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

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Preface

The Environmental Statement

This document is Volume 1 of the Supplementary Environmental Statement (SES) and Additional Provision Environmental Statement (AP ES) for Phase 2a of High Speed Two (HS2). Phase 2a is the western section of Phase Two between the West Midlands and Crewe. Since deposit of the Bill in July 2017, the need for changes to the design and construction assumptions has been identified. New environmental baseline information has also become available since the production of the main ES and the need for a number of corrections to the main ES has been identified. An Additional Provision to the Bill is required for amendments to the scheme as proposed at Bill deposit.

The ES sets out the new or different significant effects that are likely to result from changes to the design and construction assumptions within the existing Bill powers and limits, and as a result of the new environmental baseline information and corrections (reported in the SES). It also reports any new or different significant effects likely to result from amendments to the Bill (reported in the AP ES).

This supplementary environmental information is being deposited as supplementary information under Private Business Standing Order 224A of the House of Commons and Standing Order 83A of the House of Lords (Comments on environmental statement).

The SES and AP ES has been prepared by persons who have sufficient expertise to ensure the completeness and technical quality of the statement.

Consultation on the Environmental Statement

The SES and the AP ES will each be the subject of a public consultation in accordance with Parliamentary procedure. Members of the public will have a period of at least 42 days within which to make representations following the deposit of the SES and AP ES in Parliament and the first publication of the necessary newspaper notices that follows.

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

This report is part of the suite of documents that make up the Supplementary Environmental Statement (SES) and Additional Provision Environmental Statement (AP ES) for Phase 2a of the High Speed Two (HS2) rail network between the West Midlands and Crewe. The SES and the AP ES are separate documents, however, they are bound together and presented in a number of volumes as described below. The structure of the SES and AP ES is shown in Figure 1.

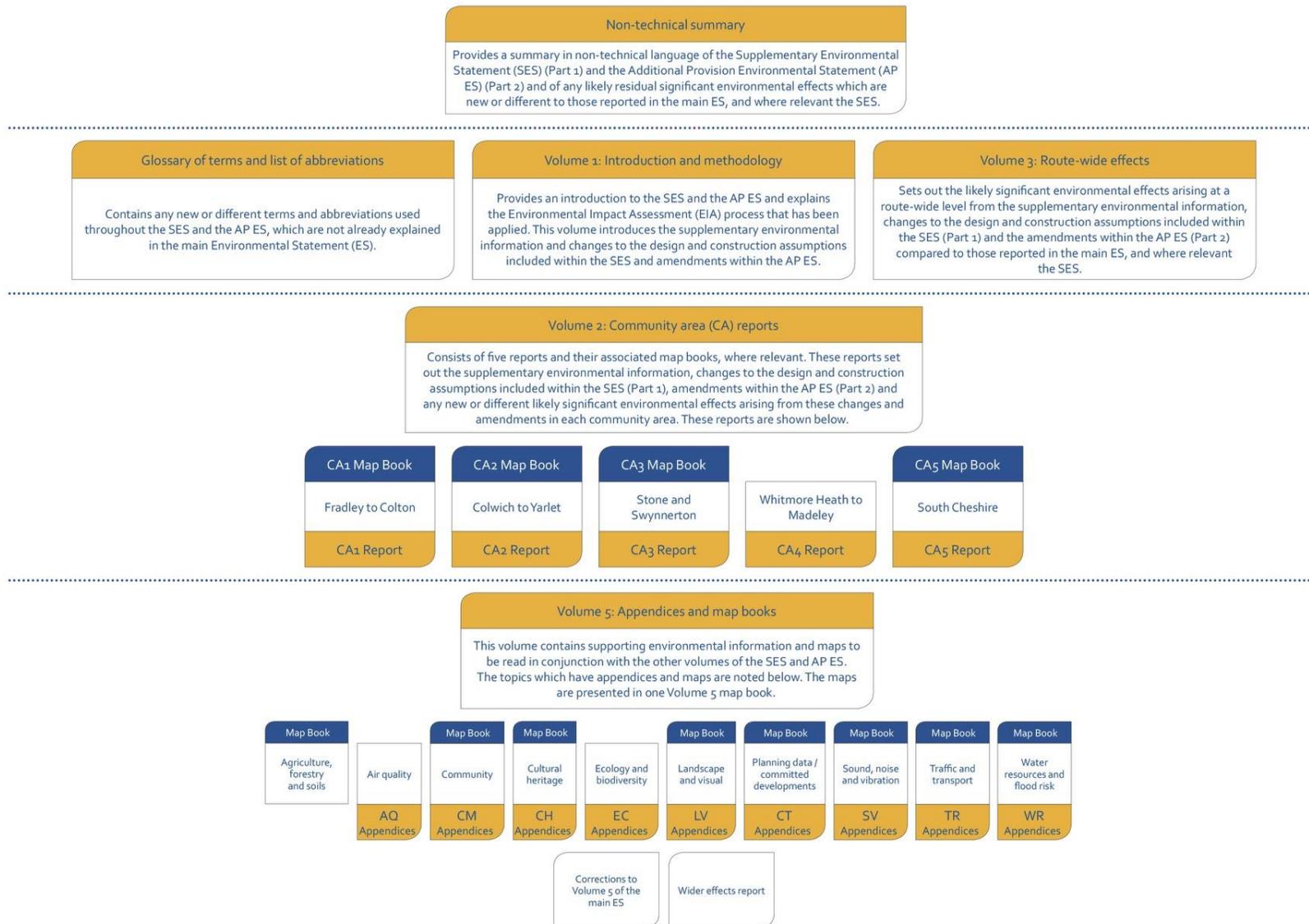
- Non-technical summary (NTS). This provides a summary in non-technical language of the SES (Part 1) and the AP ES (Part 2). It presents a summary of any likely residual significant environmental effects (i.e. effects which are likely to remain after mitigation measures are put in place), both beneficial and adverse, which are new or different to those reported in the Environmental Statement (ES) submitted to Parliament in July 2017 in support of the hybrid Bill for Phase 2a of HS2 ('the main ES'), and where relevant the SES;
- Glossary of terms and list of abbreviations. This contains any new or different terms and abbreviations used throughout the SES and the AP ES which are not already explained in the main ES;
- Volume 1: Introduction to the SES and the AP ES. This introduces the supplementary environmental information and changes to the design and construction assumptions included within the SES and amendments within the AP 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 construction assumptions included within the SES (Part 1), amendments within the AP ES (Part 2) and any new or different likely significant environmental effects arising from these changes and amendments in each community area. These effects are compared to those reported in the main ES, and where relevant, the SES. 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 or different 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 SES (Part 1) and the amendments within the AP ES (Part 2) compared to those reported in the main ES, and where relevant the SES; and
- Volume 5: Appendices and map book. These contain supporting environmental information and associated maps.

A Volume 4: Off-route effects report was produced as part of the main ES. A separate Volume 4 has not been produced as part of the SES and AP ES as off-route effects are very limited in number and are reported in the most relevant Volume 2 community area report.

Certain reports and maps containing background information and data (BID) have been produced, which do not form part of the SES and AP ES. These documents are available on the HS2 website. The BID documents and maps present background survey information and other relevant background material.

SES and AP ES - Volume 1: Introduction and methodology

Figure 1: Structure of the SES and AP ES



1 Introduction

1.1 Background to High Speed Two Phase 2a and the need for the SES and AP ES

- 1.1.1 The High Speed Rail (West Midlands - Crewe) Bill ('the Bill') was submitted to Parliament together with an Environmental Statement (ES) ('the main ES') in July 2017. If enacted by Parliament, the Bill will provide the powers to construct, operate and maintain Phase 2a of HS2.
- 1.1.2 This phase of HS2 will provide the western section of Phase Two between the West Midlands and Crewe, comprising approximately 36 miles (58km) of HS2 route (including the section which would connect with and form the first part of Phase 2b) and two spurs (approximately 4 miles (6km)) south of Crewe that will allow trains to transfer between the HS2 route and the existing West Coast Main Line (WCML). The remainder of Phase Two, between Crewe (where it would connect with Phase 2a) and Manchester, and between the West Midlands and Leeds will be the subject of a separate hybrid Bill.
- 1.1.3 Since the deposit of the Bill in July 2017, the need for certain changes to the design and construction assumptions has been identified. Environmental information not previously available for the assessment has also become available and the need for a number of corrections to the main ES has been identified.
- 1.1.4 Any new or different significant effects that are likely to result from changes to the design and construction assumptions within the existing powers and limits of the Bill, and as a result of the further environmental information and corrections, are reported in the Supplementary Environmental Statement (SES). In a number of other cases, changes to the Bill are needed in order to make amendments to the original proposals and these require the submission of an Additional Provision ('the AP'). The Additional Provision Environmental Statement (AP ES) reports on the likely significant environmental effects of these amendments, having taken into account the environmental information in the SES.
- 1.1.5 The SES and the AP ES are separate environmental statements, but have been produced as combined volumes. Both the SES and AP ES provide an update to the main ES and should be read in conjunction with it. The SES is presented first, and the AP ES follows and bases its comparison upon effects reported in the main ES, as amended by the SES.

1.2 Terminology used to describe the scheme

- 1.2.1 The following terms are also used to differentiate between changes included in the SES and those included in the AP ES:
- 'SES design changes' - changes to the scheme design reported in the SES that do not require additional powers;
 - 'SES changes' – all changes reported in the SES that do not require additional powers. These may include new baseline information, changes to the design and construction assumptions and corrections; and

- 'AP amendments' - changes to the scheme reported in the AP ES that include requirements for additional powers in the Bill.

1.2.2 In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes and amendments, the following terms are used to define the scheme as it relates to the HS2 Phase 2a project:

- 'the original scheme' - the Bill scheme submitted to Parliament in July 2017, which was assessed in the main ES;
- 'the SES scheme' - the original scheme with any changes described in the SES that are within the existing powers of the Bill; and
- 'the AP revised scheme' - the original scheme as amended by the SES changes and AP amendments.

1.3 The SES and the AP ES

Supplementary Environmental Statement

1.3.1 The SES reports any new or different likely significant environmental effects arising from SES changes compared to the main ES. The SES changes include:

- updated and new environmental baseline information that has become available from surveys completed and desk based research undertaken since production of the main ES. This includes additional information concerning the environmental conditions for the following environmental topics:
 - agriculture, forestry and soils;
 - community;
 - ecology and biodiversity; and
 - water resources and flood risk.
- changes to design or construction assumptions that do not require changes to the Bill, including those resulting from further information on the construction methodology for the implementation of slab track as the track form; and
- corrections to the main ES.

Additional Provision Environmental Statement

1.3.2 The AP ES reports any new or different likely significant environmental effects due to the amendments proposed in the AP. The AP amendments include engineering and minor utility amendments that require a change to Bill powers and other changes to Bill powers to enable permanent access for maintenance over certain areas of land. The AP ES bases its comparison upon effects reported in the main ES, as amended by the SES. The AP ES reports the reasonable alternatives that have been considered, where relevant.

1.3.3 The amendments proposed are in community areas 1, 2, 3 and 5. There are no amendments proposed in community area 4. The amendments that require additional land and/or changes to Bill powers include:

- temporary laydown works, diversion works and other works to utilities such as gas mains, water mains, overhead electricity lines and telecommunications cables;
- relocation of balancing ponds;
- construction traffic routes, maintenance access routes and a Network Rail access road;
- highway improvements, including: improving visibility at highway junctions; widening of highway verges; highway realignments; and a roundabout at the junction of the re-aligned Dog Lane, the A51 The Rowe, Bent Lane and the A51 through Stableford;
- the viaduct crossing of the Norton Bridge to Stone Railway and track crossovers along the HS2 route. This includes: the raising of the alignment of the HS2 main line from the B5026 Eccleshall Road to the northern extent of Yarnfield North embankment; amendments to the viaduct crossing of the Norton Bridge to Stone Railway and Filly Brook; and, the horizontal realignment of the HS2 main line from the northern extent of Yarnfield North embankment to Tittensor Road overbridge;
- revised flood mitigation measures around the Stone Infrastructure Maintenance Base – Rail (IMB-R) and Norton Bridge to Stone Railway;
- a new junction of the A51 Bury Bank and Stone Rural Byway Open to All Traffic (BOAT) 34; and
- a change to the earthworks on the northern and southern approaches of the Swynnerton Estate North green overbridge.

1.4 Structure of this report

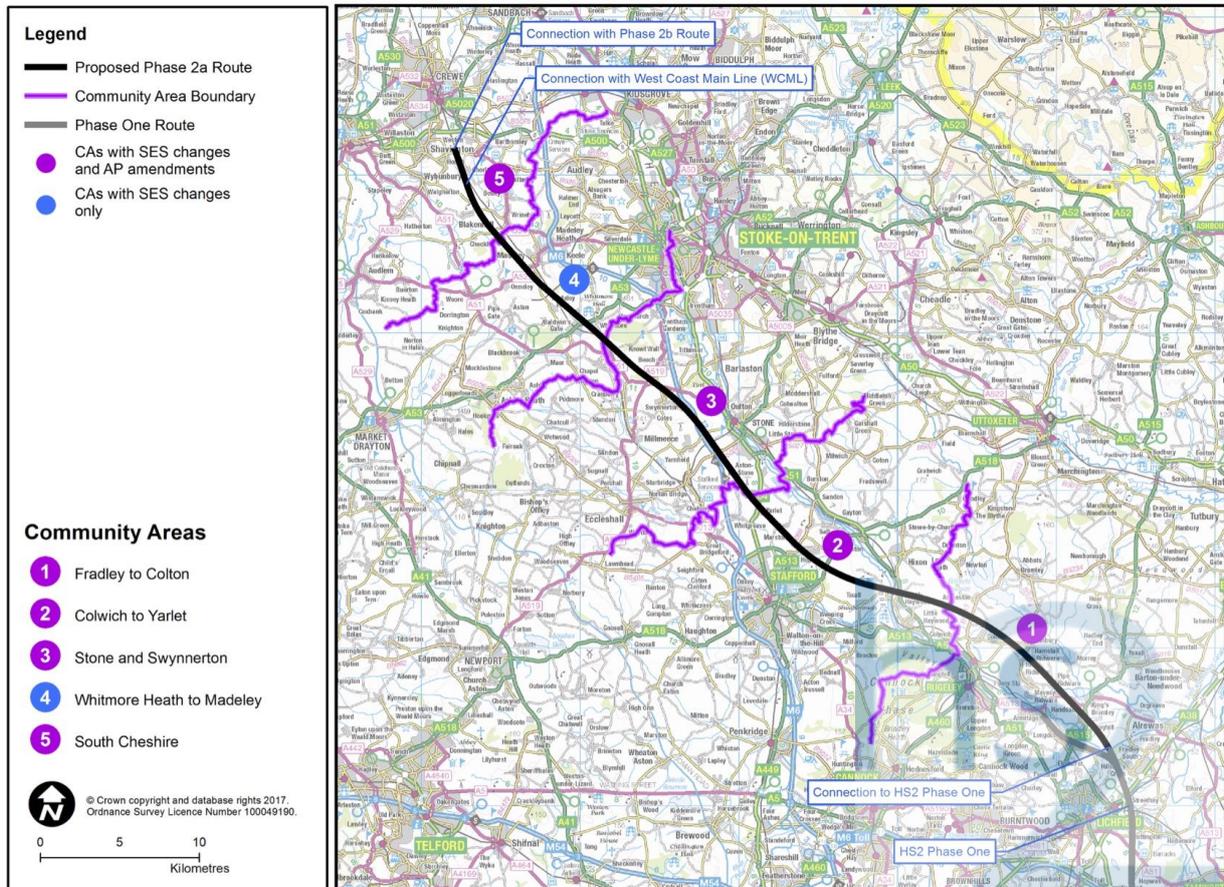
1.4.1 The remainder of this report is structured as follows:

- Section 2: introduction to the SES, outlining the approach to:
 - updated/new environmental baseline information;
 - changes to the design and construction assumptions within the existing powers of the Bill; and
 - corrections to the main ES.
- Section 3: introduction to the AP amendments and the AP ES;
- Section 4: scope and methodology of the SES and the AP ES. The section outlines the approach applied to the environmental assessment of the design changes and amendments contained within the SES and the AP ES, including the scope, methodology, assumptions and limitations to the assessment of environmental effects;
- Section 5: approach to the appendices within the SES and the AP ES;
- Section 6: approach to mapping within the SES and the AP ES;

- Section 7: changes to construction programme and construction methods. This section outlines the approach to reporting changes to the construction programme and construction methods;
- Section 8: approach to mitigation associated with the SES and the AP ES;
- Section 9: approach to monitoring associated with the SES and the AP ES; and
- Section 10: consultation on the SES and the AP ES.

1.4.2 Figure 2 shows the community areas along the route, highlighting the locations of SES changes and AP amendments.

Figure 2: Phase 2a route showing community areas with SES changes and/or AP amendments



2 Introduction to the SES

2.1 Introduction

2.1.1 The SES presents an assessment of any new or different likely significant environmental effects, compared to the original scheme, that result from:

- updated and new environmental baseline information;
- changes to the design and construction assumptions of the scheme that do not require amendments to the Bill; and
- corrections relating to information within the main ES.

2.2 Updated/new environmental baseline information

2.2.1 Since the production of the main ES updated and new environmental baseline information has become available from surveys and desk based research. This includes additional information concerning the environmental conditions for the following environmental topics:

- agriculture, forestry and soils (farm impact assessments in CA5);
- community (additional baseline information for four promoted walks around Kings Bromley in CA1);
- ecology and biodiversity (additional surveys within all community areas, including Phase One habitat surveys, and surveys for badger, bats, birds, great crested newt, otter, water vole and hedgerow); and
- water resources and flood risk (additional information for a spring in CA1).

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

2.3.1 Some of the changes to the design and construction assumptions can be made within the existing powers of the Bill, and therefore, no amendments to the powers conferred by the Bill are required. These are reported within the SES, where they result in new or different likely significant environmental effects from those reported in the main ES.

2.3.2 The SES changes occur within community areas 1 to 5. There are no design changes or changes in construction assumptions in community area 4. SES changes in community area 4 relate to corrections only.

2.3.3 For the purpose of the assessment, the main ES reported the assumption that slab track would be the track form used for the original scheme. Since the submission of the Bill further information relating to the construction methodology for the installation of a slab track formation has required a change to the operational characteristics of a number of railway systems compounds. These changes to the railway systems compounds relate to the following characteristics: change to the operational period (duration and start/end date); change in the number of railway

system workers (peak and/or average); and change in railway systems construction traffic numbers (heavy goods vehicles (HGV) and cars/light goods vehicles (LGV)).

- 2.3.4 In addition, in the Fradley to Colton area, there is a need for a new railway systems compound which will be located within land included in the Bill for the provision of a civil engineering compound. Further information on the changes to the design and construction assumptions related to the installation of slab track is provided in Section 2 of each SES and AP ES Volume 2 community area report.
- 2.3.5 Section 7 of this report describes the proposed changes to railway systems construction compounds, plant and the construction programme associated with the installation of slab track. Consideration is given to the potential for new or different significant effects compared with those reported in the main ES, as a result of these changes.

2.4 Corrections to the main ES

- 2.4.1 Since submission of the Bill, the need for a number of corrections to the contents of the main ES has been identified. These are set out in Section 2 of each community area report of the SES where there has been a need to correct the Volume 2 CA report; in Volume 3 where the corrections relate to route wide matters reported in Volume 3 of the main ES; and in Volume 5: Appendix CT-006-000 where corrections relate to Volume 5 of the main ES.
- 2.4.2 Corrections have been made where it was identified that they had the potential to alter a significant effect reported in the main ES, or where a factual inaccuracy relating to a significant effect was identified. The community area reports also clarify elements of the scheme description reported in the main ES. The information provided within each community area report identifies the location of the text that is subject to the correction in the main ES, the reason for the correction, the text from the main ES, and identifies whether the correction changes a significant effect reported in the main ES. Where relevant, these corrections have been taken into account in the technical assessments contained within the SES.

3 Introduction to the AP ES

- 3.1.1 Since the publication of the main ES, a number of amendments to the original scheme have been identified. These amendments include requirements for the use of land outside the existing powers of the Bill, additional access rights, or other extensions of the powers conferred by the Bill. The AP seeks powers to make these amendments. The AP ES presents the assessment of environmental effects of the amendments sought under the AP.
- 3.1.2 The AP ES reports the assessment of amendments taking account of the main ES and the SES changes that are relevant to that amendment. It reports likely significant environmental effects that would be a consequence of engineering amendments and those that would be a consequence of utility amendments. The assessment takes account of any SES changes which may have an impact on the amendment.
- 3.1.3 The need for other amendments to the Bill plans and to Schedule 8 of the Bill ('Lands where powers of acquisition are limited to acquisition of rights or impositions of restrictive covenants') has also been identified since submission of the Bill. These amendments enable permanent access for maintenance over certain areas of land, for example, to habitat creation areas; line-side equipment; railway drainage system and utilities.
- 3.1.4 The amendments are described in Part 2 of each Volume 2 community area report and, where relevant, are shown in the Volume 2 map books.

4 Scope and methodology of the SES and the AP ES

4.1 Scope and methodology for the main ES

4.1.1 The HS2 Phase 2a Scope and Methodology Report (SMR) (main ES, Volume 5: Appendix CT- 001-001) was first published for consultation in March 2016 and the final version published in September 2016. It sets out the proposed scope and methodology for the environmental impact assessment (EIA) of the scheme.

4.1.2 An SMR Addendum (main ES, Volume 5: Appendix CT-001-002) was published in July 2017 and set out where the methodology presented within the SMR had been amended or advanced as a result of:

- changes to legislation or industry best practice guidance;
- the methodology undergoing refinement as a result of its application within the EIA; and
- further feedback on the outlined methodology received from stakeholders including statutory bodies following the ongoing application of that methodology.

4.2 Scope and methodology for the SES and the AP ES

4.2.1 Assessment of the impacts and effects of the SES changes and AP amendments was undertaken in accordance with the methodology outlined for each environmental topic in the SMR and SMR Addendum. No changes to this methodology were required for the SES and AP ES.

4.2.2 Prior to assessing the environmental effects of each SES change and AP amendment, a scoping exercise was undertaken. The scoping exercise was used to determine whether the SES changes and the AP amendments had the potential to result in any likely new or different significant environmental effects compared with those reported in the main ES. Any SES changes and AP amendments identified as having such potential were then subject to further assessment, following the methodology outlined for each relevant environmental topic in the SMR and SMR Addendum and are reported in Volume 2 of the SES and AP ES, for the relevant community areas.

4.2.3 Each SES change and AP amendment has also been considered to determine its potential to give rise to any new or different significant route-wide environmental effects. Where such potential effects have been identified, they are reported in Volume 3 of the SES and AP ES. The climate, major accidents and natural disasters, and waste and material resources assessments are reported at a route-wide level rather than within Volume 2, community area reports of the SES and AP ES. This follows the approach taken in the main ES.

General assumptions and limitations

- 4.2.4 During the preparation of an ES, there are sometimes circumstances in which the information available to inform the assessment process is limited. For example, there is inevitably some uncertainty in predicting future baseline conditions, impacts and effects, especially given that this phase of the railway is not due to begin operating until 2027.
- 4.2.5 In addition, while it has been possible to access more land since the main ES was prepared, it has not been possible to carry out surveys on all of the land affected. Nevertheless, it is considered that the baseline is sufficiently robust to allow the assessment of the likely significant environmental effects of the SES scheme and AP revised scheme on the basis of a precautionary approach.
- 4.2.6 Where relevant for each environmental topic, key assumptions made in undertaking the assessment have been explained, and their consequences on the completeness or potential accuracy of the conclusions have been identified. Section 7.5 in Volume 1 of the main ES provides a description of general assumptions and limitations for each environmental topic. Local assumptions and limitations for the SES changes and AP amendments are described within the SES and the AP ES Volume 2 CA reports.

5 Approach to appendices in the SES and the AP ES

- 5.1.1 As with Volume 5 of the main ES, Volume 5 of the SES and the AP ES contains supporting environmental information in the form of appendices.
- 5.1.2 Generally, the SES and the AP ES appendices update the corresponding appendices within the main ES and should, therefore, be read in conjunction with them. The SES and the AP ES appendices do not repeat information contained within the relevant main ES appendix if that information does not require updating as a result of the changes within the SES and the AP ES (e.g. policy framework, information on methodologies etc.).
- 5.1.3 Where only minor updates to a Volume 5 appendix from the main ES are required, the SES and AP ES appendix material is included within the relevant Volume 2 report.

6 Approach to mapping in the SES and the AP ES

- 6.1.1 Construction (CT-05) and operation (CT-06) mapping has been produced to indicate SES changes and AP amendments. In each case, the relevant map from the main ES has been reproduced showing the original scheme and a second map produced showing the SES changes and the AP amendments. On these maps, a colour coded 'cloud' system is used, where:
- a dark blue 'cloud' indicates the location of the SES change; and
 - a red 'cloud' indicates the location of AP amendments.
- 6.1.2 For AP amendments, the cloud indicates the extent of the amendment that requires additional land or other changes to the Bill powers. In a small number of instances, the cloud has been extended around the full extent of the amendment as a residual significant effect has been identified.
- 6.1.3 For amendment AP-003-001 (Additional land permanently required and a change in the powers of the Bill for the viaduct crossing of the Norton Bridge to Stone railway and track crossovers along the Hs2 route), the full extent of the amendment has also been indicated by a cloud. While the amendment will not result in a new or different residual significant effect compared to the main ES, the amendment has several parts and the cloud has been extended to enable an understanding of the overall amendment.
- 6.1.4 Certain AP amendments may have more than one cloud where there may be additional land or other changes to Bill powers required at more than one location.
- 6.1.5 Other design changes that are within the existing powers of the Bill and do not result in any likely new or different residual significant environmental effects are also shown on the maps, but are not indicated by a cloud.
- 6.1.6 Where the SES changes or AP amendments are temporary and only relevant to the construction phase, the clouds are shown on the CT-05 maps only. The corresponding CT-06 map is included.
- 6.1.7 Where corrections to the main ES have resulted in an updated map (e.g. a correction to a traffic route shown), both the original map and the corrected map are included in the relevant map book.
- 6.1.8 The updated Volume 4 CT-05 and CT-06 maps are included in the most relevant Volume 2 Map Book.
- 6.1.9 The relevant environmental maps in the Volume 2 and 5 map books have been produced where a new or different likely residual significant environmental effect from those reported in the main ES is predicted to occur. Maps have also been produced when features, resources, receptors, or viewpoints have been added or removed compared to the main ES. On the maps:
- red labels are used to show where there is a new residual significant effect;
 - green labels are used to show when a residual effect, reported in the main ES, no longer occurs, and

- white labels are used to highlight different residual significant effects to those reported in the main ES.

- 6.1.10 The description on the labels indicates whether the change relates to a SES change or an AP amendment.
- 6.1.11 Additional relevant new survey data that has become available for agriculture, forestry and soils; and water resources and flood risk topics since the production of the main ES is also presented on the maps. Maps have also been produced to identify committed development.

7 Changes to construction programme and construction methods

7.1 Introduction

- 7.1.1 The SES and the AP ES describe a number of changes in the construction programme (e.g. increased/decreased construction durations) from those reported within the main ES for the original scheme. For such changes, any material difference in the construction programme is described and assessed in the relevant Volume 2 community area report.
- 7.1.2 Further detail on construction methods can be found in Section 6 of Volume 1 of the main ES. The construction methods described in the main ES (e.g. approach to constructing railheads, cuttings, embankments, tunnels, viaducts and bridges) have been used in the assessment of the SES changes and AP amendments.
- 7.1.3 Since the submission of the Bill, however, further information relating to changes in construction assumptions for the installation of a slab track formation has required a change to the construction methodology. The changes in construction assumptions relate to: the operational characteristics of a number of railway systems compounds; and plant, activities and the construction programme relating to the installation of the slab track. The need for a new railway systems compound in the Fradley to Colton area (within an existing civil engineering compound) was also identified.
- 7.1.4 These changes to the railway systems compounds and the consideration of the potential for significant environmental effects are described below. Further information on the changes to the design and construction assumptions for the railway systems compounds is reported in Section 2 of each SES and AP ES Volume 2 community area report.

7.2 Changes to railway systems compounds

- 7.2.1 The railway systems compounds required as part of the scheme for the installation of a slab track formation will facilitate installation, testing and commissioning of the railway systems, including slab track; overhead line, communication and signalling equipment; and traction power supply. There is a need to change the operational characteristics of six railway systems compounds reported in the main ES and a requirement to provide a new railway systems compound in the Fradley to Colton area.
- 7.2.2 Changes to the operational characteristics of the six compounds are as follows:
- change to the operational period (duration and start/end date);
 - change in the number of workers (peak and/or average); and
 - change in construction traffic numbers (heavy goods vehicles (HGV) and cars/light goods vehicles (LGV)).
- 7.2.3 None of the changes to these compounds require additional land or a change to powers included in the Bill.

- 7.2.4 Direct changes (changes to the operational period and worker numbers) and indirect changes (changes to construction traffic numbers on the local road network and site haul roads) to the compounds were considered.
- 7.2.5 It was concluded there would be no new or different significant effects to those reported in the main ES relating to direct changes to the compounds. Changes to the operational period are minor, extending the duration of the compounds by a maximum of three months, and the change to the worker numbers does not change the assessment undertaken at a route-wide level. The changes to the compounds were not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics, and were therefore scoped out from further consideration.
- 7.2.6 Further work was undertaken to identify specifically the local road network and site haul roads where there would be a change in construction traffic numbers. Revised traffic data was reviewed by the relevant environmental topics (air quality, community, health, socio-economics, sound, noise and vibration and traffic and transport). It was determined that the change in construction traffic numbers would not result in any new or different significant effects. While the changes to the construction methodology for the installation of a slab track formation will increase the number of railway systems HGV movements, these will be generally later in the construction programme than civil engineering HGV movements. Any increase in traffic due to these changes will be relatively small in comparison to the peak level of traffic generated by the civil engineering works. As there is no increase in peak traffic levels, or only a small increase for some compounds, it is not expected that there will be any increase in the magnitude of, or new, significant traffic effects on the road network to those reported in the main ES.
- 7.2.7 In addition to the changes to existing compounds, there will be a new rail systems compound, located within an existing civil engineering compound (Stockwell Heath cutting compound). The relevant powers are included in the Bill. A review of the direct and indirect changes arising from this new compound was undertaken and it was concluded that the introduction of this compound will not result in any new or different significant effects for the same reasons identified above.

7.3 Changes to plant, activities and construction programme

- 7.3.1 Changes to the plant, activities and construction programme required for the installation of slab track are as follows:
- specialist plant, potentially including gantry cranes and mobile crane/excavators (both of which could be used for installing the slab track panels); and
 - increased duration of construction, due to additional activities, such as the installation of a hydraulically bound layer¹ and a slower rate of laying of slab track.

¹ Aggregate mixture incorporating cement, lime-based or other binders, which harden in-situ by a chemical/hydraulic reaction.

- 7.3.2 A review of the information provided concluded that further consideration of the environmental effects and mitigation described in the main ES was required in respect of landscape and visual, sound, noise and vibration, and water resources and flood risk. Changes in construction traffic numbers associated with the changes to the construction methodology for the installation of a slab track formation were considered as part of the changes to the railway systems compounds described above. The outcome of this further consideration of the potential for environmental effects is reported below.

Landscape and visual

- 7.3.3 The presence of specialist additional plant, such as a gantry crane, required to install the sections of slab track, and the extended duration of works associated with the installation of slab track have been considered further. The presence of this additional plant will be noticeable to some receptors along the HS2 route, particularly where there is limited intervening vegetation. However, in the context of other tall plant, such as cranes, required to construct the scheme, the change in views would not be materially different and will not give rise to any new or different significant effects from those reported in the main ES, and therefore has been scoped out from requiring environmental assessment.

Sound, noise and vibration

- 7.3.4 The rate at which slab track is laid has been considered further. While the rate at which the track is laid is slower, and will therefore extend the duration of these works, this will not give rise to any new or different significant noise effects from those reported in the main ES.

Water resources and flood risk

- 7.3.5 The installation of the hydraulically bound layer has been considered further in terms of pollution risk. The measures detailed in the draft Code of Construction Practice (CoCP) are sufficient to ensure that construction of slab track will not give rise to any new or different significant effects relating to pollution risk from those reported in the main ES.

8 Approach to mitigation associated with the SES and the AP ES

- 8.1.1 The measures that will be used to mitigate likely significant adverse environmental effects during construction and operation of the scheme are described in the main ES, and the draft CoCP, which sets out measures to manage and control the effects of construction (see main ES Volume 5: Appendix CT-003-000). These were provided to Parliament at the same time as the Bill was deposited (July 2017). The same approach to mitigation measures described in the main ES still applies.
- 8.1.2 Any new or different site specific mitigation measures are described within Volume 2 of the SES and AP ES where required.

9 Approach to monitoring associated with the SES and the AP ES

- 9.1.1 The Secretary of State for Transport will establish a set of controls known as Environmental Minimum Requirements (EMRs). The EMRs will include the CoCP, which contains commitments to monitoring significant effects during construction. In addition, monitoring measures to be implemented during construction for each environmental topic are described in Volume 1, Section 9 of the main ES (e.g. monitoring dust and particulate matter in accordance with current best practice guidance and preparing groundwater and surface water monitoring plans where required). These were provided to Parliament at the same time as the Bill was deposited (July 2017). The same approach to monitoring measures described in the main ES still applies.
- 9.1.2 HS2 Ltd will carry out appropriate post-construction monitoring during the operational phase for both:
- 'general' monitoring, for example: mitigation provided for protected species; the progress of habitat creation works; the condition of restored agricultural land; and the establishment of landscape planting; and
 - 'specific' monitoring agreed for particular significant adverse effects that may include, for example, monitoring of a public water supply borehole.
- 9.1.3 Operational monitoring measures for each environmental topic are described in Volume 1, Section 9 of the main ES. The general operational monitoring measures described in the main ES still apply.
- 9.1.4 Operational monitoring specific to significant effects reported in a community area is presented within the main ES and updated in Volume 2 community area reports on a topic basis, and within Volume 3, where relevant.

10 Consultation on the SES and the AP ES

- 10.1.1 A formal public consultation is required by Parliament on both the SES and the AP ES. Consultees will have a period of at least 42 days within which to make representations following the deposit of the SES and AP ES in Parliament and the first publication of the necessary newspaper notices that follows. Parliamentary officials have appointed 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 SES and AP ES and details of how to respond to the consultation can be viewed at www.gov.uk/hs2.
- 10.1.2 There will also be a separate petitioning period in relation to the AP. 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 the AP have the right to petition against the AP.
- 10.1.3 More information on who may petition against the AP, and how to do so, is available on Parliament's website (www.parliament.uk).

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