

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and
Additional Provision 2 Environmental Statement

Volume 1 | Introduction and methodology

July 2015

SES and AP2 ES 3.1.1



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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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1 Introduction

1.1 Background to High Speed Two Phase One

1.1.1 The hybrid Bill for High Speed Rail between London and the West Midlands ('the Bill') was submitted to Parliament together with an Environmental Statement (ES) in November 2013 ('the main ES'). If enacted by Parliament, the Bill will provide the powers to construct, operate and maintain Phase One of High Speed Two (HS2). This phase of HS2 will provide a new north to south railway between London, Birmingham and the West Midlands. Phase Two of HS2 will comprise new lines between the West Midlands, Leeds and Manchester, completing what is known as the 'Y network'. Phase Two is not the subject of this document.

1.1.2 Since the deposit of the Bill for Phase One of HS2, a number of amendments to the scheme were identified as a result of further discussions with landowners and occupiers, design refinements, and the requirements of utility undertakers. These amendments were assessed and any new or different likely significant environmental effects were reported in the Additional Provision Environmental Statement ('the AP1 ES'), published in September 2014. The AP1 ES was deposited in Parliament at the same time as the amendments to the Bill (known as 'AP1'). There was a formal public consultation on the AP1 ES, and a period for those directly and specially affected by the amendments to lodge petitions with the High Speed Rail (London - West Midlands) Select Committee ('the Select Committee') in Parliament. Both the consultation and petitioning periods have now closed. Once the petitions on these amendments have been heard by the Select Committee, the Select Committee will decide whether they should be incorporated into the Bill.

1.1.3 Since deposit of AP1 in September 2014, the need for further design changes and amendments has arisen following ongoing discussions with petitioners, key stakeholders, and as a result of design refinements. 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. Any new or different significant effects that are likely to result from changes to the design within the existing Bill powers and limits, changes to scheme assumptions, and as a result of the further environmental information and corrections are reported in the Supplementary Environmental Statement (SES). The AP2 ES reports on the likely significant environmental effects of the latest additional provisions to the Bill. The SES and the AP2 ES are therefore separate environmental statements, but have been produced as combined volumes (see Section 1.4 of this document for further details).

1.1.4 The SES and the AP2 ES will each be the subject of a public consultation. There will also be a petitioning period for those directly and specially affected by the changes reported in the SES and amendments proposed in AP2 to put their objections to these to the Select Committee. Any petitions against these changes will be heard by the Select Committee in due course.

1.2 Terminology used to describe the scheme

1.2.1 In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes, the following terms are used throughout the SES and the AP2 ES:

- 'the original scheme' - the Bill scheme submitted to Parliament in November 2013, which was assessed in the main ES;
- 'the AP1 revised scheme' - the original scheme as amended by the AP1 (i.e. the amendments assessed within the AP1 ES) submitted in September 2014;
- 'the SES scheme' - the original scheme with the design changes described in the SES that are within the existing powers of the Bill; and
- 'the AP2 revised scheme' - the original scheme as amended by the SES design changes and AP2 amendments.

1.2.2 The following terms are also used to differentiate between design changes included in the SES and those included in the AP2 ES:

- 'SES design changes' - changes to the scheme reported in the SES that do not require additional powers; and
- 'AP2 amendments' - changes to the scheme reported in the AP2 ES that include requirements for additional powers in the Bill.

1.3 The SES and the AP2 ES Supplementary Environmental Statement

1.3.1 The SES reports any new or different likely significant environmental effects resulting from:

- updated and new environmental baseline information
 - the SES considers information that has become available due to surveys undertaken in late 2013 to early 2015 and additional environmental information arising from desk based research. This includes additional information concerning the environmental conditions for the following environmental topics: cultural heritage; ecology, and water resources and flood risk assessment (the latter focusing specifically on Water Framework Directive (WFD) surveys); and
 - the SES also reports traffic and transport updates to the traffic baseline in the London area (CFA4 (Kilburn (Brent) to Old Oak Common) to CFA6 (South Ruislip to Ickenham)). These updates are a consequence of new traffic modelling undertaken in this area to assess revised construction assumptions; and
- changes to the design of the scheme that do not require amendments to the Bill powers (generally because the changes would be carried out on land within the existing Bill limits) and changes to construction assumptions¹. The SES design changes include:

¹ Other than as a result of removal of the HS1-HS2 link, there will be no changes to the train service operating characteristics of the scheme. Figure 11 of Volume 1 of the main ES showed a peak of three trains per hour in each direction on the HS1-HS2 link and reported that these would "substitute for services out of London Euston". Since the main ES evaluated the effects of these train movements on both the HS1-HS2 link and the route between Old Oak Common and London Euston, then removal of the HS1-HS2 link does not affect the findings of the main ES that relate directly to train movements. The effects that relate to passenger numbers and movements will be reported in a future ES.

- removal of the proposed section of the HS1-HS2 link in CFA 4;
- removal of the proposed Heathrow Express (HEX) depot in North Pole (East) in CFA4 (as part of the AP2 revised scheme the depot will be relocated to Langley in Slough);
- provision of pedestrian access along a closed section of Old Oak Common Lane in CFA4 throughout the construction period;
- removal of a proposed sustainable placement area and the provision of permanent earthworks at Hunt's Green Farm in CFA10 (Dunsmore, Wendover and Halton) instead;
- regrading landscape mitigation earthworks at Lower Boddington in CFA15 (Greatworth to Lower Boddington) to a shallower gradient than in the original scheme;
- increasing the height of earthworks to provide greater mitigation of visual effects in the vicinity of Ladbroke and Wormleighton in CFA16 (Ladbroke and Southam);
- a revised location for the reprovision of the Burton Green Village Hall in CFA18 (Stoneleigh, Kenilworth and Burton Green);
- the provision of replacement public open space, adjacent to Coleshill Heath Road in CFA24 (Birmingham Interchange and Chelmsley Wood);
- removing some of the changes to the road network proposed within the main ES in the vicinity of the National Motorcycle Museum in CFA24; and
- increasing the width of existing roads within the Network Park Industrial Estate in CFA26 (Washwood Heath to Curzon Street) to enable the movement of HS2 construction vehicles; and

The changes to construction assumptions include:

- changes to the material import and construction programme in CFA6: the construction programme has been amended to reduce the peak numbers of construction vehicles using Harvil Road and Swakeleys Road;
- use of Euro VI heavy goods vehicles (HGV) in CFAs 4, 5 and 6: the main ES assumed that HGVs with any Euro standard engine could be used to transport excavated material. However, HGVs entering designated low emission zones during construction to transport excavated material will now be powered by Euro VI (or lower emission) engines; and
- updated construction assumptions for the A446 traffic assessments within CFA19 (Coleshill Junction) and CFA20 (Curdworth to Middleton) with a more refined assessment of the single carriage-way section; and

- corrections to information in the main ES.

1.3.2

The SES also reports the following, that may not result in any new or different likely significant environmental effects:

- certain design changes in order to adequately describe features of the scheme.

These include the provision of additional drainage areas for the proposed infrastructure maintenance depot (IMD) at Calvert in CFA13 (Calvert, Steeple Claydon, Twyford and Chetwode);

- the full set of ecology survey results to fulfil a commitment made to the Select Committee to publish all ecology surveys undertaken up to the end of 2014; and
- corrections to factual inaccuracies identified in the main ES and AP1 ES where they relate to a significant environmental effect.

Additional Provision 2 Environmental Statement

1.3.3

The AP2 ES reports any new or different likely significant environmental effects due to the amendments proposed in AP2. The AP2 amendments include:

- changes to the alignment of the HS2 route at the A38 and the Trent and Mersey Canal near Lichfield in CFA22 (Whittington to Handsacre);
- relocation of the HEx depot to Langley in Slough;
- provision of three sidings for Crossrail services and a flyover at Old Oak Common on the Great Western Main Line in CFA4;
- other changes to permanent scheme infrastructure including: lowering the alignment of the HS2 route between Middleton and Hints in CFA20 (Curdworth to Middleton) and CFA21 (Drayton Bassett, Hints and Weeford);
- access arrangements: changes to the locations, alignments or width of some access tracks proposed as part of the original scheme, or provision of additional access tracks from those proposed as part of the original scheme; additional access rights to allow vehicles to use private roads and tracks required for construction and maintenance. For example, additional access rights to use privately owned roads during construction within the Network Park Industrial Estate within CFA26 (Washwood Heath to Curzon Street);
- roads and public rights of way (PRoW): changes to the locations of temporary diversions or permanent realignments of both roads and PRoW and increasing the width of some PRoW. For example, providing a different route for the permanent diversion of Footpaths LMI/21 and GMI/23 in CFA9 (Central Chilterns) than was proposed in the original scheme, to avoid diversion along Hyde Heath Road;
- utilities: amendments to the amount of land required temporarily for works to pylons and overhead power lines; rights to allow these power lines to be suspended above private properties; and land for a sewer diversion. For example, air rights to permit cranes to pass above Lower Lodge to enable utility works in CFA7 (Colne Valley);
- existing businesses: the provision of additional land to allow businesses to remain operational. For example, the provision of additional land in CFA5 (Northolt Corridor) to allow the proposed express feeder auto-transformer station at Greenpark Way to be located in a different area to that proposed in

the original scheme to enable an existing business park to continue operating;

- community facilities: such as additional land required for the provision of a replacement cricket ground and pavilion for Wendover Cricket Club in CFA10 (Dunsmore, Wendover and Halton);
- mitigation provision: including the provision of additional mitigation and the relocation of proposed mitigation. For example, the original scheme included an area of ecological mitigation on farmland within Moat Farm in Godington in CFA13 (Calvert, Steeple Claydon,, Twyford and Chetwode). However, a suitable alternative location for the ecological mitigation that is not on farmland has been identified between the HS2 route and the disused Great Central Main Line; and
- construction compounds: changing the locations and/or modifying some of the construction compounds proposed as part of the original scheme. For example, Featherbed Lane overbridge satellite construction compound in CFA14 (Newton Purcell to Brackley), will be located in a different area from that outlined as part of the original scheme.

1.4 Structure of the SES and the AP2 ES

1.4.1 The SES and the AP2 ES are separate documents. However, they are bound together and presented in a number of volumes as described in paragraph 1.4.2. Each volume generally contains an introduction and separate SES and AP2 ES sections, presented as Part 1 and Part 2 respectively. The introductory sections in each volume apply to both the SES (Part 1) and the AP2 ES (Part 2) sections.

1.4.2 The SES and the AP2 ES comprise:

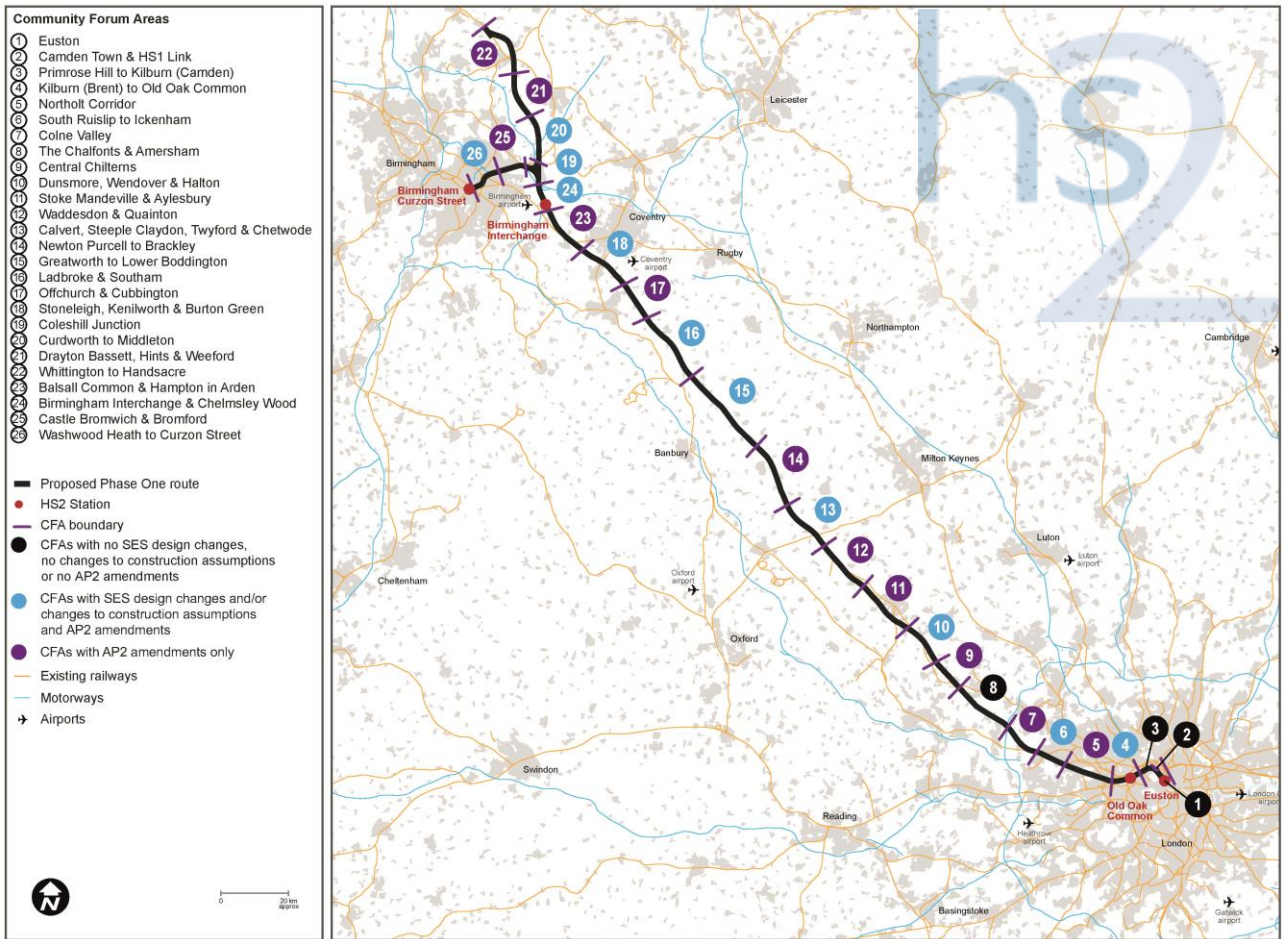
- the non-technical summary (NTS). This provides a summary in non-technical language of the SES (Part 1) and the AP2 ES (Part 2) and of any likely significant residual environmental effects, both beneficial and adverse, which are new or different to those reported in the main ES and, where relevant, the AP1 ES;
- Volume 1: introduction to the SES and the AP2 ES. This introduces the supplementary environmental information and design changes included within the SES and amendments which have resulted in the need to amend the Bill within the AP2 ES. It also explains any changes to the scope, methodology, assumptions and limitations required for the environmental impact assessment. As Volume 1 presents a general introduction to both the SES and the AP2 ES scheme and associated methodologies, it has not been split into Part 1 (SES) and Part 2 (AP2 ES);
- Volume 2: community forum area (CFA) reports and map books. These describe the supplementary environmental information and design changes included within the SES (Part 1), amendments within the AP2 ES (Part 2) and any new or different likely significant environmental effects arising from these design changes and amendments in each CFA compared to those reported in the main ES and, where relevant, the AP1 ES. Unlike the other CFAs, the

amendments within CFA22 are extensive and therefore the CFA22 report provides a new assessment of the entire area and the structure more closely follows the CFA report structure from the main ES. The reports also explain, where relevant, the design and mitigation or compensation measures included in order to avoid, reduce or manage any adverse environmental effects and main local alternatives that have been considered. As with the approach adopted in the main ES, the carbon and waste and material resources assessments are reported within Volume 3 on a route-wide level. Figure 1 shows the CFAs along the Phase One route, highlighting which have SES changes and AP2 ES amendments;

- Volume 3: route-wide effects. This describes new or different likely significant route-wide effects arising from the supplementary environmental information and design changes included within the SES (Part 1) and amendments within the AP2 ES (Part 2) compared to those reported in the main ES and, where relevant, the AP1 ES;
- Volume 4: off-route effects. This describes new or different likely significant off-route effects arising from amendments within the AP2 ES, such as the relocation of the HEx depot to Langley in Slough, compared to those reported in the main ES and, where relevant, the AP1 ES;
- Volume 5: appendices and map books. This contains supporting environmental information and associated maps; and
- glossary of terms and list of abbreviations. This contains any new or different terms and abbreviations used throughout the SES and the AP2 ES which are not already explained in the main ES or the AP1 ES.

SES and AP2 ES Volume 1

Figure 1: Phase One route showing the community forum areas with and without AP2 amendments and SES design changes and changes to construction assumptions



1.5 Structure of this report

1.5.1 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; and
- Section 3: Introduction to the AP2 ES, which provides an introduction to the AP2 amendments and the AP2 ES;
- Section 4: scope and methodology of the SES and the AP2 ES. The section outlines any changes that have been applied to the environmental assessment of the design changes and amendments contained within the SES and the AP2 ES, including changes to the scope, assumptions and limitations to the assessment of environmental effects;
- Section 5: approach to the appendices within the SES and the AP2 ES;
- Section 6: approach to mapping within the SES and the AP2 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 AP2 ES;
- Section 9: consultation on the SES and the AP2 ES; and
- Section 10: references.

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 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 and factual inaccuracies relating to information within the main ES.
- 2.1.2 The SES considers whether there are new or different likely significant environmental effects compared to both the original scheme and, separately, the original scheme as amended by AP1.
- 2.1.3 The SES also presents some SES changes that do not result in new or different likely significant environmental effects. Further detail is provided within paragraph 1.3.2 above.

2.2 Updated/new environmental baseline information

- 2.2.1 Environmental baseline surveys for the scheme continued to be undertaken from late 2013 to early 2015. Despite the efforts of HS2 Ltd to undertake comprehensive surveys on the land in advance of Bill deposit in 2013, access to some sites was denied or became available too late to be incorporated into the main ES. A precautionary assessment was therefore undertaken for the main ES, based on environmental information gathered from desk-based research, information provided by third parties and professional judgement.
- 2.2.2 Since the production of the main ES, additional access has been granted and further surveys have been undertaken. New areas of land have also been identified and surveyed and additional desk based baseline information has become available for some environmental topics, including potential changes to designations, such as ancient woodland. These surveys and additional desk-based information address the following environmental topics:
- cultural heritage (e.g. geophysical surveys and review of available historic data sources relating to ancient woodland);
 - ecology (European protected species surveys for great crested newt, bats, otter and hazel dormouse; habitat surveys for some woodlands; and potential changes to Natural England's ancient woodland inventory); and
 - water resources and flood risk assessment (specifically WFD surveys focused on ecology, groundwater, surface water and hydromorphology).
- 2.2.3 The SES also includes updates to the traffic baseline, primarily in the outer London areas as a consequence of undertaking further modelling to assess revised construction assumptions.

- 2.2.4 The SES only reports new baseline information where it is relevant to the assessment of a new or different likely significant environmental effect. The exception is for ecology where, to fulfil a commitment made to the Select Committee, the full set of ecology survey results up to the end of 2014 has been published. The relevant additional cultural heritage, ecology and WFD survey findings are incorporated into new environmental baseline reports, which are presented within Volume 5 of the SES and the AP2 ES. This updated/new environmental baseline information, where required, has been used in the SES and the AP2 ES assessments.

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 and/or the AP1 ES; or
 - are required in order adequately to describe features of the scheme.
- 2.3.2 The SES design changes and changes to construction assumptions are found within the following CFAs: 4, 5, 6, 10, 13, 15, 16, 18, 19, 20, 24 and 26.

2.4 Corrections to the main ES

- 2.4.1 Since the publication of the main ES, the need for a number of corrections has been identified. Any such corrections, which do not require amendments to the powers conferred by the Bill, are set out in Section 2 within each CFA report of the SES. Each correction has been reviewed to determine whether it will potentially lead to new or different likely significant environmental effects from those described in the main ES and the AP1 ES.
- 2.4.2 A complete list of the corrections to the main ES are provided in Appendix CT-006-000, Volume 5 of the SES and the AP2 ES.

3 Introduction to the AP2 ES

- 3.1.1 Since September 2014, a number of amendments to the scheme have been identified. These amendments each 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. Therefore, a second Additional Provision (AP2) to the Bill has been submitted in conjunction with the AP2 ES.
- 3.1.2 The amendments are described in Part 2 of each Volume 2 CFA report and are indicated in the Volume 2 map books by a red 'cloud'. Those amendments that are in locations away from the HS2 route (i.e. off-route) are described in Part 2 of Volume 4. AP2 amendments are located within CFAs 4 to 7 and CFAs 9 to 26.
- 3.1.3 The assessment of AP2 amendments takes account of the additional baseline information and those SES design changes on which the amendments may have an impact. As the AP1 amendments have not yet been approved by Parliament, where relevant the AP2 ES reports on the assessment of amendments compared to both the original scheme as updated by the SES, and the AP1 scheme separately.

4 Scope and methodology of the SES and the AP2 ES

4.1 Scope and methodology for the main ES

4.1.1 The HS2 Scope and Methodology Report (SMR) (main ES, Volume 5: Appendix CT-001-000/1) was published in September 2012 and set 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-001-000/2) was published in November 2013 and outlined 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 AP1 ES

4.2.1 Assessment of the impacts and effects for AP1 was undertaken in accordance with the methodology outlined for each environmental topic in the SMR and SMR Addendum.

4.2.2 A number of changes to this methodology were required for ecology and landscape and visual assessment and are described in Section 3 of Volume 1 of the AP1 ES (paragraphs 3.1.23 - 3.13.4).

4.3 Scope and methodology for the SES and the AP2 ES

4.3.1 Prior to assessing the environmental effects of each SES design change and AP2 amendments, a scoping exercise was undertaken based on a precautionary approach.

4.3.2 The scoping exercise was used to determine whether the SES changes and the AP2 amendments had the potential to result in any new or different likely significant environmental effects. Any SES changes and AP2 amendments identified as having such potential were then subject to further assessment, following the methodology outlined for each environmental topic in the SMR and SMR Addendum and updates to the methodology for ecology and landscape and visual assessment, as outlined in Volume 1 of the AP1 ES. There have also been some refinements to the scope and methodology for air quality and ecology which have been applied within the SES and the AP2 ES. Updates to the landscape and visual assessment and the climate change adaptation and resilience assessments are also presented within this section, but the methodologies for these environmental topics remain as reported in the main ES and AP1 ES.

4.3.3 The changes to the air quality methodology are described in this section. As a result of these changes to methodology, a second SMR Addendum has been produced (Volume 5 of the SES and the AP2 ES: Appendix CT-001-000/3).

Air quality

- 4.3.4 Since submission of the Bill, the Institute of Air Quality Management has issued new guidance on assessing the impact of construction dust emissions. As a result, the air quality assessment methodology has been updated and a second SMR Addendum has been produced. The updated methodology has been used to assess the impact of dust emissions from constructing the amendments.
- 4.3.5 This second SMR Addendum should be read in conjunction with the SMR and the first SMR Addendum. The second SMR Addendum makes reference to relevant paragraph numbers from the SMR and the first SMR Addendum, and notes what parts of these paragraphs are to be updated or replaced.
- 4.3.6 Since the deposit of AP1, HS2 Ltd has decided that any HS2 HGVs entering low emission zones, such as the London Low Emission Zone, during construction for the purposes of the movement of excavated material will be powered by Euro VI (or lower emission) engines. The air quality assessments for the SES and the AP2 ES have therefore taken this requirement into consideration when calculating construction vehicle emissions.

Ecology

- 4.3.7 Since submission of the main ES, a number of additional woodlands have been added to the ancient woodland inventory. The Woodland Trust has also put forward to HS2 Ltd and Natural England a list of sites in the vicinity of the scheme which they believe are of potential ancient origin, and which are not currently listed on the ancient woodland inventory. Natural England is currently considering the status of these sites, and whether they should be added to the ancient woodland inventory.
- 4.3.8 HS2 Ltd has undertaken a further review of historic mapping and other available historic data sources to verify the status of these potential ancient woodland sites. At some sites further habitat surveys have also been undertaken. The additional cultural heritage and ecological data collected is included within the relevant SES and AP2 ES Volume 5 appendices. This data has been shared with Natural England to inform their consideration of the list of potential ancient woodland sites provided by the Woodland Trust.
- 4.3.9 Where HS2 Ltd and Natural England are in agreement that sites put forward by the Woodland Trust represent ancient woodland, and they are likely to be added to the ancient woodland inventory, the SES and the AP2 ES assess these areas as ancient woodland. Changes in ancient woodland status in close proximity to the scheme are reported in the SES and the AP2 ES even where this does not generate a new or different likely significant environmental effect from those reported within the main ES and the AP1 ES. In addition, where appropriate the SES and the AP2 ES identify where additional ecological compensation is required as a consequence of these changes in ancient woodland status.

Landscape and visual assessment

- 4.3.10 Photomontages prepared for the main ES have been adjusted and included in the SES and the AP2 ES only in cases where a design change has resulted in a new or different significant environmental effect and/or is noticeable in the view. Where changes are

barely perceptible in the background of photomontages from the main ES, they have not been updated on the basis that these changes are not significant.

- 4.3.11 A small number of additional viewpoints have been identified for the AP2 amendments. Photomontages have been prepared for a selection of these viewpoints in line with the first SMR Addendum Annex G (main ES, Volume 5: Appendix CT-001-000/2), where there is likely to be a significant environmental effect. Where more than one amendment is visible in a photomontage, all visible amendments, including AP1 amendments, are included whether they are likely to lead to a significant environmental effect or not.

Climate change adaptation and resilience

- 4.3.12 The main ES presented an assessment of the potential risks of climate change on the original scheme (Appendix CL-003-000, Volume 5 of the main ES) and the potential combined impact of the original scheme and climate change on the receiving environment and community (Appendix CT-009-000, Volume 5 of the main ES).
- 4.3.13 The potential risks of climate change on the AP2 revised scheme have not been assessed within the SES and the AP2 ES assessment process. The results of the climate change risk assessment reported in Volume 5 of the main ES are, however, still valid for the AP2 revised scheme. Climate risks on the AP2 revised scheme will be addressed through future design, during construction – via implementation of the draft Code of Construction Practice (CoCP) – and in future operation and maintenance plans.
- 4.3.14 Where design changes would alter the land requirement, this is considered small in the context of the climate change assessment relating to the following environmental topics: agriculture, forestry and soils; ecology; and landscape and visual assessment. Given this, and the application of the mitigation measures for these environmental topics outlined in the main ES, it has been assessed that the potential effects of the amendments in combination with climate change have a negligible impact on the environment and therefore do not warrant any further analysis.
- 4.3.15 No new or different significant effects related to climate change from those outlined within the main ES have been identified for water resources and flood risk assessment.

General assumptions and limitations

- 4.3.16 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 the scheme is not due to begin operating until 2026.
- 4.3.17 In addition, while it has been possible to access more land, it has not been possible to carry out surveys on all 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 AP2 revised scheme on the basis of a precautionary approach.
- 4.3.18 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 8 in Volume 1 of the main ES provides a description of general assumptions and limitations for each environmental topic. Local assumptions and limitations are described within the SES and the AP2 ES Volume 2 CFA reports.

5 Approach to appendices in the SES and the AP2 ES

- 5.1.1 As with Volume 5 of the main ES, Volume 5 of the SES and the AP2 ES contains supporting environmental information in the form of appendices.
- 5.1.2 Generally, the SES and the AP2 ES appendices update the corresponding appendices within the main ES and should therefore be read in conjunction with them. The SES and the AP2 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 AP2 ES (e.g. policy framework, information on methodologies etc.).
- 5.1.3 Where only minor updates are required to a Volume 5 appendix from the main ES, the SES and the AP2 ES appendix material is included within the relevant Volume 2, 3 or 4 reports.
- 5.1.4 Where a new environmental assessment is presented (e.g. the relocation of the HEx depot to Slough (AP2-000-001), presented in the Volume 4 off-route effects report) the full set of relevant appendices are presented. This is because they are not updates to appendices contained within the main ES.
- 5.1.5 The new survey data that has been collected since the publication of the main ES (e.g. European protected species, geophysical and WFD surveys) is also presented where relevant to the assessment within Volume 5 of the SES and the AP2 ES.
- 5.1.6 Volume 5 also presents an update of the electromagnetic interference assessment (Appendix EM-001-000 of the main ES) and the Wider Effects Report (Appendix CT-005-000) of the main ES. These updates consider whether the conclusion of the corresponding main ES appendices change as a result of the AP2 amendments.

6 Approach to mapping in the SES and the AP2 ES

- 6.1.1 Construction (CT-05) and operation (CT-06) mapping has been produced to indicate the SES design changes and the AP2 amendments. In each case, the relevant map from the main ES has been reproduced showing the original scheme and a second map showing the SES scheme and the AP2 revised scheme. On these maps a colour coded 'cloud' system is used, where:
- a grey 'cloud' indicates the location of AP1 amendments;
 - a red 'cloud' indicates the location of AP2 amendments; and
 - a blue 'cloud' indicates the location of SES design changes.
- 6.1.2 Other design changes which are within the existing powers of the Bill and do not result in new or different likely significant environmental effects are also shown on the maps, but are not indicated by a cloud. The CT-05 and CT-06 maps are included in the Volume 2 map book for each of the relevant CFAs.
- 6.1.3 The relevant environmental maps in the Volume 5 map books have been produced where a new or different likely significant environmental effect from those reported in the main ES or AP1 ES will occur. Maps have also been produced when features, resources, receptors, or viewpoints are added or removed from the main ES. On the maps:
- red labels are used to show an increase in the magnitude of a likely significant environmental effect; and
 - green labels are used to show a reduction.
- 6.1.4 The description on the labels indicates whether the change is from an SES design change or an amendment. Additional relevant new survey data that has become available for ecology, cultural heritage and water resources and flood risk assessment (specifically the WFD surveys) since the submission of the main ES is also presented on the maps. The same approach from the main ES is followed, with new surveys highlighted on each relevant map sheet. Maps have also been produced to highlight committed developments.
- 6.1.5 As the relocation of the HEx depot to Slough (AP2-000-001) was not included in the main ES, there was no environmental assessment undertaken for this area. As a result, a new set of maps has been prepared, with no comparison or updates to the main ES or AP1 ES maps.

7 Changes to construction programme and construction methods

- 7.1.1 The SES and the AP2 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. Whilst most minor design changes (e.g. altering the route of a PRow) are unlikely to generate a change in the construction programme a smaller number of more major design changes (e.g. changes to the vertical and horizontal alignment of the HS2 route within CFA22), may change the construction programme. The length of time that construction compounds will be required will also change in accordance with the changes to the construction programme. For such major changes any material difference in the construction programme is described and assessed in the relevant Volume 2 CFA report, or for off-route locations in the Volume 4 Off-route effects report.
- 7.1.2 The assessment was based on the construction methods described in the main ES (e.g. approach to constructing stations, depots, cuttings, embankments, tunnels, viaducts and bridges) and updated in the AP1 ES. Further detail on construction methods can be found within Section 6 of Volume 1 of the main ES and Section 2 of Volume 1 of the AP1 ES.

8 Approach to mitigation associated with the SES and the AP2 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. These were submitted as part of the Bill deposit. The same generic mitigation measures described in the main ES still apply. Site specific mitigation measures are described within Volumes 2, 3 and 4 of the SES and the AP2 ES, where required.
- 8.1.2 The ecology approach to mitigation for the scheme is documented in the ecological assessment method technical note which is included within the first SMR Addendum. Section 5.1 of the technical note sets out the terminology used in the ecology sections of the main ES in relation to mitigation, compensation and enhancement. In response to consultee comments, further clarification is provided in paragraphs 8.1.3 and 8.1.4 below on use of the term 'enhancement' within the ecological assessment methodology.
- 8.1.3 Where significant ecological effects occur that cannot be reduced to a level that is not significant through mitigation, then compensation or enhancement will be provided. The term 'compensation' describes measures that address specific residual impacts and are designed to provide, as far as possible, direct replacement of habitats lost or otherwise affected. The term enhancement is defined in the technical note as new measures of biodiversity benefit that are unrelated to any adverse effect of the scheme. This is in line with the definition of enhancement provided by the Chartered Institute of Ecology and Environmental Management (CIEEM).
- 8.1.4 The term 'enhancement' has been used within the Volume 2 CFA reports where the restoration of a habitat area which is not affected by the scheme, but is of similar type to one that is, is proposed in order to improve its condition. The use of the term within Volume 2 CFA reports is not intended to imply the provision of environmental benefits that would lead to a net positive effect on an ecological receptor affected by the scheme.

9 Consultation on the SES and the AP2 ES

- 9.1.1 A formal public consultation on both the SES and the AP2 ES is required by Parliament. Consultees will have 42 days to respond to the consultation following the deposit of the SES and the AP2 in Parliament and the first publication of the necessary newspaper notices that follows. Parliamentary officials have appointed an independent assessor who will summarise consultation responses and provide a report to Parliament before the Third Reading of the Bill.
- 9.1.2 There will also be a separate petitioning period. This period will provide an opportunity for individuals or organisations specially and directly affected by the changes in the SES and amendments in the AP2 ES to petition Parliament on the SES changes or amendments to the Bill.
- 9.1.3 More information on who may petition against the Bill, and how to do so, is available on Parliament's website.

10 References

Chartered Institute of Ecology and Environmental Management, (2006), Guidelines for ecological impact assessment in the United Kingdom, CIEEM, Winchester.

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