



High Speed Rail (West Midlands - Crewe)

Supplementary Environmental Statement and
Additional Provision Environmental Statement

Volume 2: Community Area report

CA3: Stone and Swynnerton



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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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Structure of the HS2 Supplementary Environmental Statement and 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, changes to the design and construction assumptions included within the SES and amendments within the AP ES. The report explains the environmental impact assessment (EIA) process which has been applied;
- Volume 2: Community area reports and map books. These report the supplementary environmental information and changes to the design and 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.

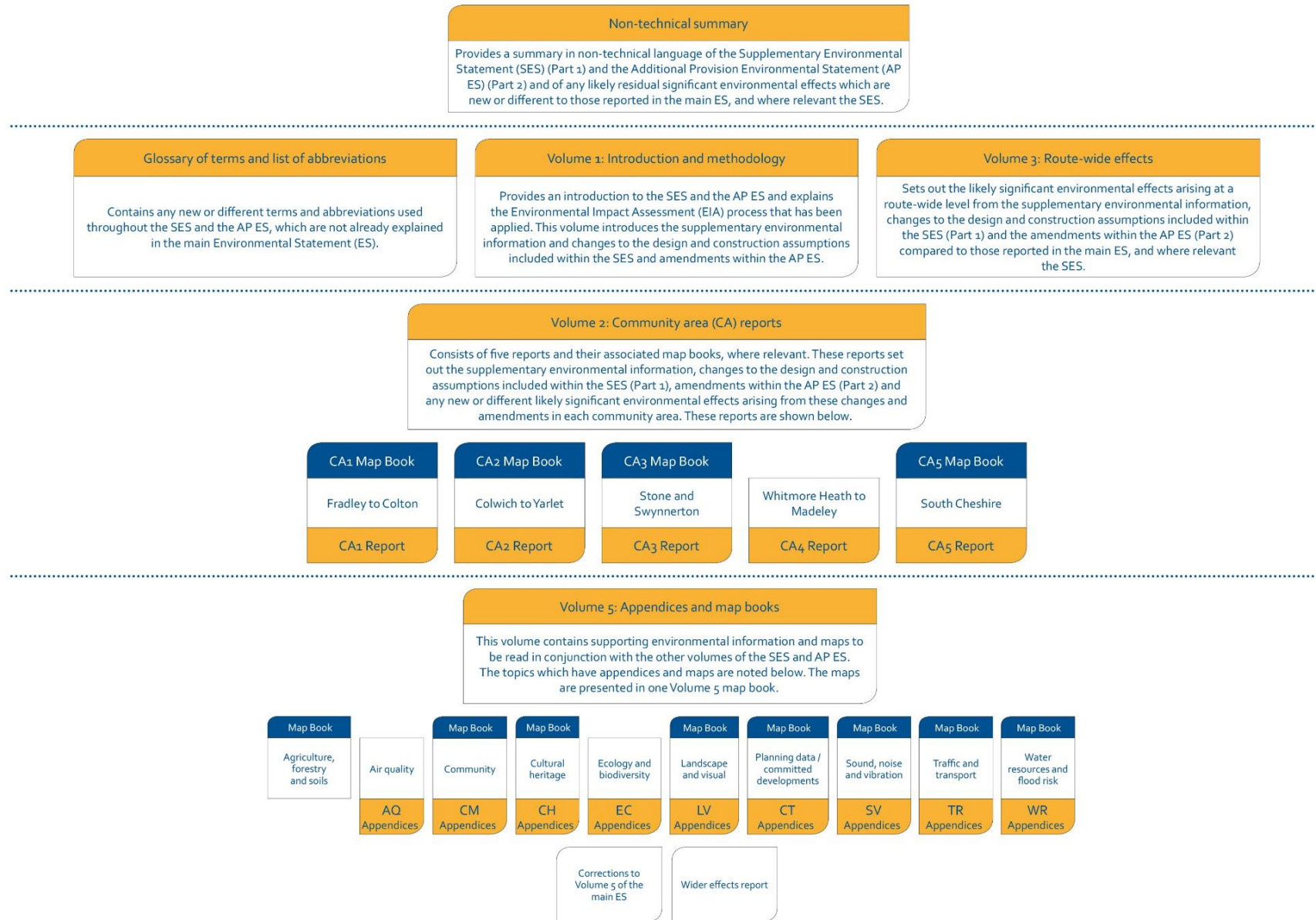
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A Volume 4: Off-route effects report was produced as part of the main ES. A separate Volume 4 has not been produced as part of the SES and AP ES as off-route effects are very limited in number and are reported in the most relevant Volume 2 community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

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Figure 1: Structure of the SES and AP ES



Structure of this report

This volume of the SES and AP ES is divided into five community area (CA) reports, which are in turn divided into two parts, except CA₄ which has no proposed amendments to the design and therefore has no Part 2.

Part 1 for each community area provides supplementary environmental information, where relevant, relating to:

- new baseline information with respect to environmental surveys completed and additional information received since the production of the main ES;
- changes to the design and construction assumptions which do not require changes to the Bill; and
- corrections to the main ES.

Part 2 for CAs 1, 2, 3 and 5 provides environmental assessment information relating to proposed amendments to the design, which have resulted in the need to alter the powers conferred by the Bill.

Parts 1 and 2 include, where relevant:

- a description of the SES changes (Part 1) or the proposed amendments (Part 2) within the community area that have triggered the need for reassessment;
- an assessment of the environmental effects of the SES changes (Part 1) or the proposed amendments (Part 2) for relevant environmental topics considering the:
 - scope, assumptions and limitations of the assessment;
 - environmental baseline;
 - effects arising during construction;
 - effects arising from operation; and
 - mitigation and residual effects; and
- a summary of any new or different likely residual significant effects as a result of the SES changes (Part 1) and the proposed amendments (Part 2).

1 Introduction

- 1.1.1 The High Speed Rail (West Midlands - Crewe) Bill was submitted to Parliament together with an Environmental Statement (ES) in July 2017 ('the main ES'). If enacted by Parliament, the Bill will provide the powers to construct, operate and maintain Phase 2a of HS2.
- 1.1.2 Since the deposit of the Bill, a number of updates or changes to environmental information, the design and construction assumptions have occurred, which may lead to new or different significant effects. These effects, depending on the type of change, are reported in the SES or the AP ES, which form Part 1 and Part 2 of this document respectively.
- 1.1.3 The SES contains updated environmental baseline information and scheme information relating to changes within the current limits and powers of the Bill, and therefore, which do not require an Additional Provision to the Bill. The SES changes within the Stone and Swynnerton area include:
- additional environmental baseline information for ecology and biodiversity;
 - changes to the construction assumptions which do not require changes to the Bill; and
 - corrections to the main ES.
- 1.1.4 These changes are described in Part 1 and are assessed on a topic by topic basis where relevant using the same approach adopted in the main ES.
- 1.1.5 The purpose of the SES is to provide an assessment of any new or different likely significant environmental effects arising from the changes described.
- 1.1.6 The AP ES describes the likely significant effects of amendments to the design of the scheme, which require the use of land outside the original limits of the Bill, additional access rights, or other extensions to the powers conferred by the Bill, making it necessary to submit an Additional Provision to the Bill.
- 1.1.7 The amendments within the Stone and Swynnerton area assessed within the AP ES include:
- 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;
 - additional land permanently required for the Infrastructure Maintenance Base-Rail (IMB-R)/Norton Bridge to Stone Railway flood mitigation measures;
 - additional land permanently required for a new junction of the A51 Bury Bank and Stone Rural Byway Open to All Traffic (BOAT) 34;
 - additional land permanently required to widen the highway verge along the A51 Stone Road;
 - additional land permanently required for the alignment of the Swynnerton Estate North green overbridge;

- additional land permanently required for the provision of a roundabout at the junction of the re-aligned Dog Lane, the A51 The Rowe, Bent Lane and the A51 through Stableford;
- additional land required and change to Bill powers for works associated with new and existing minor utilities; and
- other changes to Bill powers to enable permanent access for maintenance over certain areas of land.

1.1.8 The AP ES reports the assessment of each amendment separately for all relevant topics. The purpose of the AP ES is to provide an assessment of any new or different likely significant environmental effects arising from the amendments.

1.1.9 The standard 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, Volume 1, Section 9 and the draft Code of Construction Practice (CoCP)¹ submitted in support of the Bill. Implementation of these measures has been assumed in this SES and AP ES.

1.1.10 The following terms are 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. This 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.

1.1.11 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 HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, draft Code of Construction Practice (CT-003-000). Available online at <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2a>

Part 1: Supplementary Environmental Statement

2 Summary of changes in the Stone and Swynnerton area

2.1 New environmental baseline information

Ecology and biodiversity

- 2.1.1 Since the production of the main ES ecological surveys for Phase 1 habitat, hedgerow, wintering birds, bats, great crested newt, badger, otter and water vole have been completed in the Stone and Swynnerton area.
- 2.1.2 Details of additional ecological surveys completed in the Stone and Swynnerton area are provided in Background Information and Data (BID) documents² (BID-EC-004-000 and Map Series EC-02, EC-04, EC-05, EC-10 and EC-12), which accompany the SES and AP ES.
- 2.1.3 SES and AP ES Volume 5: Appendix EC-002-000 provides a summary of additional ecological survey data, which has resulted in no change to the conclusions of the main ES. SES and AP ES Volume 5: Appendix EC-003-000 identifies additional local/parish level effects that are likely to occur as a consequence of SES changes and AP amendments but which will not be significant.
- 2.1.4 Detail of supplementary ecological information that is relevant to the SES assessment is provided in Section 3.

2.2 Changes to the construction assumptions not requiring a change to the Bill

- 2.2.1 Since submission of the Bill the need to make changes to construction assumptions has been identified. These changes relate to railway systems compounds and are detailed further below. These do not require a change to the Bill.

Railway systems compounds

- 2.2.2 The Bill provides for land to be acquired for establishment and operation of a number of railway systems compounds from which railway installation works will be managed. These works include: installation of the hydraulically bound layer³ and pre-cast slab, rails (including crossovers) and overhead line equipment, installation of auto-transformer stations and changes to the existing rail network.
- 2.2.3 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 one railway systems compound in the Stone and

² HS2 Ltd (2018), High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data, Available online at www.gov.uk/hs2

³ Aggregate mixture incorporating cement, lime-based or other binders, which harden in-situ by a chemical/hydraulic reaction.

Swynnerton area. The change to this compound relates to a change in the number of railway system workers (peak and/or average) and a change in railway systems construction traffic numbers (heavy goods vehicle (HGV) and cars/light goods vehicles (LGV)).

- 2.2.4 Volume 1 of the SES and AP ES provides further detail on the approach taken to considering the potential for new or different significant effects from those reported in the main ES in relation to the changes to railway systems compounds. The change to the operational characteristics of an existing compound in this area does not require a change to the Bill and is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.
- 2.2.5 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 generally be relatively small in comparison to the peak level of traffic generated by the civil engineering works. As there will be no increase in peak traffic levels, it is not expected that there will be any new or different significant traffic effects on the road network to those reported in the main ES.
- 2.2.6 Table 1 provides details on the changes to the operational characteristics of the existing railway systems compound in this area.

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Table 1: Summary of changes to the construction assumptions within the existing powers of the Bill in the Stone and Swynnerton area

Details of changes to construction assumptions	Description of the original scheme	Description of the SES scheme	Change to significant effects
Change to the railway system worker numbers and railway systems HGV trips for the Stone railhead main compound	<p>This railway systems compound would support an average of 225 railway systems workers per day (370 workers at peak times).</p> <p>This railway systems compound would generate 39-135 railway systems HGV trips per day during busy periods⁴ and within the peak month of activity.</p> <p>(Map CT-05-223, J9 to C7 in the main ES, Volume 2, CA3 Map Book)</p>	<p>There will be a change in the number of railway systems workers supported by this compound. The average number of railway system workers per day will increase to 255. The peak number of railway system workers will decrease to 335.</p> <p>There will be an increase in the number of railway systems HGV trips generated by this compound with 178-244 trips per day during the busy periods and within the peak month of activity.</p>	<p>No change.</p> <p>The increase in railway systems worker numbers at the compound is small in comparison to the overall construction phase employment. The consequential increase in traffic associated with the increased worker numbers is also small in relation to the peak traffic volumes in the area which will occur during the construction phase.</p> <p>The increase in railways systems HGV movements will not result in total daily HGV movements that will be greater than those assessed for the peak of civil engineering works in the original scheme.</p> <p>Therefore, the level of significance reported in the main ES with regard to worker numbers and traffic will not change.</p>

2.3 Corrections to the main ES

- 2.3.1 Since submission of the Bill, the need for a number of corrections to the contents of the main ES has been identified. Table 2 provides a list of those instances where there has been a need to correct the Volume 2 community area report for the Stone and Swynnerton area because of the potential to alter the significant environmental effects reported in the main ES or a factual inaccuracy relating to a significant effect that has been identified. Table 2 also clarifies elements of the scheme description reported in the main ES. The table gives the location of the text that is subject to the correction in the main ES, the reason for the correction, replicates the text from the main ES, where applicable provides revised text, and identifies whether the correction changes a significant effect reported in the main ES.

⁴ The busy period is the period during which HGV traffic serving that compound will be greater than 50% of the HGV traffic in the peak month. The average daily combined two-way vehicle trips for the busy period is the lower end of the range and for the peak month is the upper end of the range.

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Table 2: Summary of corrections to the main ES in the Stone and Swynnerton area

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Overview of the area and description of the Proposed Scheme Paragraph 2.2.56, Volume 2, CA3 of the main ES	The scheme description stated that there would be 18 commercial and business properties demolished in the Stone and Swynnerton area. The correct number is 19, as listed in the Tables 1 and 2, Volume 2 of the main ES for CA3.	Paragraph 2.2.56: Demolition of five residential properties, 18 commercial and business properties (including farm outbuildings)	Paragraph 2.2.56: Demolition of five residential properties, 19 commercial and business properties (including farm outbuildings)	No change. The assessment was based on the correct number of demolitions.
Overview of the area and description of the Proposed Scheme Paragraphs 2.3.30 and Figure 8, Volume 2, CA3 of the main ES	The operational duration of the railways systems work managed from the Yarlet embankment satellite compound was incorrectly described in the scheme description. This should have been reported as commencing in 2026 and operational for six months.	Paragraph 2.3.30, first bullet: <ul style="list-style-type: none"> ... Civil engineering works will be managed from this compound for a period of three years and six months, followed by railway systems works for a period of two years; Figure 8 shows that railways systems work managed from the Yarlet embankment satellite compound would be for one year and six months, commencing 2025.	Paragraph 2.3.30, first bullet: <ul style="list-style-type: none"> ... Civil engineering works will be managed from this compound for a period of three years and six months, followed by railway systems works for a period of <i>six months</i>; Figure 8 should show that railways systems work managed from the Yarlet embankment satellite compound would be for six months, commencing 2026.	No change. The assessment was based on the correct duration.
Traffic and transport Paragraph 14.4.11 (Table 28), Volume 2, CA3 of the main ES		Paragraph 14.4.11 - Table 28, first entry: Estimated duration of use (years) – Rail systems – 1 year and 6 months	Paragraph 14.4.11 - Table 28, first entry: Estimated duration of use (years) – Rail systems – 6 months	
Overview of the area and description of the Proposed Scheme Paragraph 2.3.68, Volume 2, CA3 of the main ES	The scheme description for Yarnfield North embankment satellite compound states that the Stone Rural Footpath 33 will be subject to a temporary diversion for up to three years during construction of the scheme but that it will be reinstated on its existing alignment once construction is complete. This should have been reported that the footpath will be partly	Paragraph 2.3.68: ... On completion of construction, the footpath will be reinstated on its existing alignment.	Paragraph 2.3.68: ... On completion of construction, the footpath will be reinstated on its existing alignment <i>for 400m and then permanently diverted by 800m to the north-west of its existing alignment, running adjacent to the northern side of the route of the Proposed Scheme and crossing under the M6 Meaford viaduct, increasing journey length by 710m.</i>	No change. Elsewhere in the scheme description, the correct information was provided (for example Paragraphs 2.2.30 - bullet point seven and paragraph 2.3.80). The assessment was

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Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
	reinstated along its existing alignment and also subject to a permanent diversion to accommodate the Stone Infrastructure Maintenance Base - Rail.			based on the correct information. This footpath is further discussed in Section 5 of this report under AP-003-001.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.92, Volume 2, CA3 of the main ES	The number of railway installation workers supported by the Swynnerton embankment satellite compound was reported as 25 workers per day in the scheme description. This should have been reported as 30 workers per day.	Paragraph 2.3.92, second bullet: • ...support 25 railway installation workers per day...;	Paragraph 2.3.92, second bullet: • ...support 30 railway installation workers per day...;	No change. The assessment was based on the correct number of workers.
Overview of the area and description of the Proposed Scheme Figure 8, Volume 2, CA3 of the main ES	The operational duration of the railways systems work managed from the Stone connection satellite compound was reported as commencing in 2021 and would be operational for six months in Figure 8 of the scheme description and the traffic and transport assessment.	Figure 8 shows that railways systems work managed from the Stone connection satellite compound would be operational for six months, commencing 2021.	Figure 8 shows that railways systems work managed from the Stone connection satellite compound would be operational for <i>nine</i> months, commencing 2021.	No change. The assessment was based on the correct duration.
Traffic and transport Paragraph 14.4.11 (Table 28), Volume 2, CA3 of the main ES	This should have been reported as commencing in 2021 and would be operational for nine months. It was correctly reported in paragraph 2.3.53 in Volume 2, CA3 of the main ES.	Paragraph 14.4.11 - Table 28, third entry: Estimated duration of use (years) – 6 months	Paragraph 14.4.11 - Table 28, third entry: Estimated duration of use (years) – 9 months	
Ecology and biodiversity Paragraph 8.4.52, 8.4.58 and 8.4.60, Volume 2, CA3 of the main ES	Areas of woodland, grassland and hedgerow habitat creation were incorrectly reported in the ecology assessment, but were shown correctly on the Volume 2: Maps CT-06 of the main ES for CA3.	Paragraph 8.4.52: Within the Stone and Swynnerton area, approximately 22.9ha of further woodland habitat creation will be undertaken to compensate primarily for adverse effects upon non-ancient woodland at locations including the following:	Paragraph 8.4.52: Within the Stone and Swynnerton area, approximately 30.2ha of further woodland habitat creation will be undertaken to compensate primarily for adverse effects upon non-ancient woodland at locations including the following:	No change. The assessment was based on the correct areas and therefore this correction will not change the level

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Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
	<p>There is no requirement for additional land as a result of this correction.</p>	<p>Second bullet:</p> <ul style="list-style-type: none"> • approximately 3.5ha of woodland will be planted to be contiguous with new grassland and hedgerow planting, which in combination will improve habitat connectivity with a currently isolated block of woodland to the north of Pool House Wood...; <p>Fourth bullet:</p> <ul style="list-style-type: none"> • approximately 5.9ha of woodland will be planted in proximity to the woodland lost at Stabhill Plantation and Cash's Pit These new woodland blocks will include approximately 4.8ha either side of the Swynnerton North cutting contiguous with Cash's Pit...; <p>Seventh bullet:</p> <ul style="list-style-type: none"> • Woodland planting of approximately 1.3ha will connect Swynnerton Old Park to the overbridge, on the eastern side of Hatton South cutting. Woodland planting of approximately 0.2ha will connect Hatton Common LWS to the overbridge, on the western side of Hatton South cutting. <p>Paragraph 8.4.58 - third bullet:</p> <ul style="list-style-type: none"> • approximately 2.8ha of native species-rich marshy grassland will be created within the floodplain directly adjacent to the south of Highlow Meadows LWS...; <p>Paragraph 8.4.58 - fourth bullet:</p> <ul style="list-style-type: none"> • approximately 8.8ha of native species-rich grassland will be created to the north-west of Clifford's Wood.... 	<p>Second bullet:</p> <ul style="list-style-type: none"> • approximately 3.9ha of woodland will be planted to be contiguous with new grassland and hedgerow planting, which in combination will improve habitat connectivity with a currently isolated block of woodland to the north of Pool House Wood...; <p>Fourth bullet:</p> <ul style="list-style-type: none"> • approximately 6.3ha of woodland will be planted in proximity to the woodland lost at Stabhill Plantation and Cash's Pit.... These new woodland blocks will include approximately 5.2ha either side of the Swynnerton North cutting contiguous with Cash's Pit...; <p>Seventh bullet:</p> <ul style="list-style-type: none"> • Woodland planting of approximately 1.2ha will connect Swynnerton Old Park to the overbridge, on the eastern side of Hatton South cutting. Woodland planting of approximately 0.1ha will connect Hatton Common LWS to the overbridge, on the western side of Hatton South cutting. <p>Paragraph 8.4.58 – third bullet:</p> <ul style="list-style-type: none"> • approximately 2.7ha of native species-rich marshy grassland will be created within the floodplain directly adjacent to the south of Highlow Meadows LWS...; <p>Paragraph 8.4.58 - fourth bullet:</p> <ul style="list-style-type: none"> • approximately 10ha of native species-rich grassland will be created to the north-west of Clifford's Wood.... 	<p>of significance of the effect reported in the main ES.</p>

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Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
		<p>Paragraph 8.4.6o: ...Approximately 34.1km of new hedgerows will be planted and the species composition will be characteristic of the surrounding area. This represents a net loss in hedgerow of approximately 11.6km after mitigation, which represents a residual adverse effect that is significant at the district/borough level....</p> <p>Paragraph 8.4.8o: On a precautionary basis, it is assumed that there will be a net loss in hedgerow of approximately 11.6km, which will result in a permanent adverse residual effect that is significant at the district/borough level. However, restoration of land required only for the construction of the Proposed Scheme to its current use, offers potential for reinstatement of a further 19.6km of existing hedgerow. The provision of the majority of this reinstated hedgerow would reduce the residual effect to a level that is not significant.</p>	<p>Paragraph 8.4.6o: ...Approximately 27.5km of new hedgerows will be planted and the species composition will be characteristic of the surrounding area. This represents a net loss in hedgerow of approximately 18.2km after mitigation, which represents a residual adverse effect that is significant at the district/borough level....</p> <p>Paragraph 8.4.8o: On a precautionary basis, it is assumed that there will be a net loss in hedgerow of approximately 18.2km, which will result in a permanent adverse residual effect that is significant at the district/borough level. However, restoration of land required only for the construction of the Proposed Scheme to its current use, offers potential for reinstatement of a further 19.6km of existing hedgerow. The provision of the majority of this reinstated hedgerow would reduce the residual effect to a level that is not significant.</p>	

3 Assessment of changes in the Stone and Swynnerton area

3.1 Introduction

3.1.1 Section 3 reports the assessment for ecology and biodiversity as a result of the SES changes.

3.2 Ecology and biodiversity

Introduction

3.2.1 The environmental baseline relevant to the ecology and biodiversity assessment is described below. Any new or different likely significant environmental effects as a result of the changes introduced in Section 2 are then identified, compared to the original scheme. Consideration is given to the potential for impacts on habitats, species and sites designated on the basis of their importance for nature conservation.

Scope, assumptions and limitations

3.2.2 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1, the Scope and Methodology Report (SMR)⁵ and the SMR Addendum⁶ of the main ES.

3.2.3 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported within the SMR and SMR Addendum. This constitutes a 'reasonable worst-case' basis for the subsequent assessment.

SES changes of relevance to this assessment

3.2.4 New baseline information on great crested newt resulting from additional ecological surveys in the Stone and Swynnerton area is relevant to the assessment.

Environmental baseline

Existing baseline

3.2.5 The baseline ecology and biodiversity information for the Stone and Swynnerton area is as described in Volume 2, CA3, Section 8 of the main ES. A summary of the baseline information relevant to the assessment of the SES change is provided below.

3.2.6 Details of surveys completed since the production of the main ES are provided in the BID documents (BID-EC-004-000 and Map Series EC-02, EC-04, EC-05, EC-10 and EC-12), which accompany the SES and AP ES.

⁵HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report (Appendix CT-001-001). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

⁶HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report Addendum (Appendix CT-001-002). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

Species

- 3.2.7 The outcomes of additional ecological surveys undertaken for great crested newt have formed the basis of a review of the composition of metapopulations⁷ across the Stone and Swynnerton area. This review has included a consideration of the quality and connectivity of terrestrial habitat between ponds in order to determine the location of distinct clusters of ponds that are likely to support metapopulations of great crested newt. This review has resulted in changes to the composition of all metapopulations reported within the main ES, and in the addition of new metapopulations. Each metapopulation includes one or more ponds where the presence of great crested newt has been confirmed by survey, in addition to any ponds that are considered likely to support this species (on the basis of their habitat quality and quantity) and that are connected to the confirmed population (or populations) by suitable terrestrial habitat.
- 3.2.8 Many ponds described within the main ES as supporting assumed populations of great crested newt were not allocated to metapopulations due to their limited proximity to confirmed populations of great crested newt. For some of these ponds the additional surveys have confirmed the presence of great crested newt either within these ponds, or within nearby ponds connected by suitable terrestrial habitat, which has resulted in them being added to a new or revised metapopulation. Overall this means that the number of ponds associated with metapopulations, either new or revised, has increased and the number of individual assumed populations outside of metapopulations has decreased. The details of the revised composition of each metapopulation are provided within BID-EC-004-000, which accompanies the SES and AP ES. The changes to metapopulations from those described within the main ES are summarised below.
- 3.2.9 The main ES reported a great crested newt metapopulation in 60 ponds between Yarnfield and Swynnerton (assumed metapopulation (AMP) 3.1). Field surveys recorded great crested newt presence within five ponds, with the largest population being of medium size class. On a precautionary basis, the presence of medium size populations of great crested newt was assumed in 55 further ponds. This metapopulation is valued at county level in the main ES.
- 3.2.10 Additional surveys have confirmed:
- absence of great crested newt within 29 ponds where great crested newt populations were previously assumed to be present and form part of this metapopulation. These ponds no longer form part of the metapopulation;
 - presence of great crested newt within five ponds where great crested newt populations were previously assumed to be present and form part of this metapopulation. These ponds still form part of the metapopulation; and
 - presence of great crested newt within seven ponds that were not previously included within this metapopulation. These ponds are now included in this metapopulation.

⁷ A metapopulation is a group of spatially separated populations that interact.

- 3.2.11 In addition to the confirmed great crested newt populations within this metapopulation reported in the main ES (five ponds) and the confirmed populations within this metapopulation identified from additional surveys (12 ponds), there are 25 further ponds with known or assumed populations that are considered to form part of AMP 3.1. The revised metapopulation, therefore, includes 42 ponds with confirmed or assumed populations of great crested newt, with the largest population being of medium class size. This metapopulation occurs partially within the land required for the original scheme. The reduction in the number of ponds with confirmed or assumed populations of great crested newt does not change the value of AMP 3.1, as reported in the main ES.
- 3.2.12 The main ES reported a great crested newt metapopulation in four ponds to the south-west of the A519 Newcastle Road and west of the A51 Stone Road (AMP 3.3). Field surveys recorded great crested newt presence within one pond, with the largest population being of small size class. On a precautionary basis, the presence of medium size populations of great crested newt was assumed in three further ponds. This metapopulation is valued at up to county level in the main ES.
- 3.2.13 Additional surveys have confirmed the absence of great crested newt within two ponds where great crested newt populations were previously assumed to be present and form part of this metapopulation. These ponds no longer form part of the metapopulation. Furthermore, there are no other assumed populations that are considered to be associated with the confirmed population. As such metapopulation AMP 3.3 is no longer considered to exist. A single isolated population of small class size is located approximately 280m south-west of the land required for the original scheme and is valued at district/borough level.
- 3.2.14 Additional surveys have identified a new great crested newt metapopulation in 27 ponds located to the north-west of the A34 Stafford Road (AMP 3.4), not previously reported in the main ES. Additional surveys recorded great crested newt presence within 13 ponds, with the largest population being of medium size class. On a precautionary basis the presence of great crested newt is assumed to occur in 14 further ponds. This metapopulation occurs partially within the land required for the original scheme and is valued at a county level.
- 3.2.15 In addition to the known and assumed great crested newt populations that are considered to form metapopulations and the confirmed isolated population, there are eight additional ponds that occur within the land required for the original scheme in this area where the presence or absence of great crested newt has not been confirmed. On a precautionary basis, each of these ponds is assumed to support a medium size breeding population of great crested newt of up to county value.

Future baseline

Construction (2020) and operation (2027)

- 3.2.16 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2020 and 2027 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).
- 3.2.17 None of the identified developments affect the assessment of the SES scheme's likely construction and operational impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

- 3.2.18 No further measures are applicable to this assessment, above those stated in the draft Code of Construction Practice (CoCP)⁸.

Assessment of impacts and effects

Species

- 3.2.19 The main ES reported the loss of 11 ponds associated with the great crested newt metapopulation between Yarnfield and Swynnerton (AMP 3.1), comprising two ponds with a confirmed population of great crested newt and nine ponds assumed to support great crested newt. The main ES also reported the loss of great crested newt terrestrial habitat associated with construction. This would result in a permanent adverse effect on the great crested newt metapopulation that is significant at a county level, as reported in the main ES. Following additional surveys being undertaken, the number of ponds associated with this metapopulation that will be lost as a result of the construction of the original scheme will increase to 12. The increase in the number of great crested newt populations to be impacted by the original scheme will result in a different significant effect to that reported in the main ES, however, this will not change the level of significance of the effect reported in the main ES.
- 3.2.20 The main ES reported the loss of great crested newt terrestrial habitat during construction associated with the metapopulation on the land south-west of the A519 Newcastle Road and west of the A51 Stone Road (AMP 3.3). This would result in a permanent adverse effect on the great crested newt metapopulation that is significant at a county level, as reported in the main ES. Following additional surveys being undertaken, the metapopulation has been reclassified as an isolated population centred on a single pond supporting a population of great crested newt of small class size. This pond is located approximately 280m south-west from the land required for the original scheme and the habitats lost are unlikely to be used by this isolated population. The original scheme will not have a significant effect on this population. The significant effect on AMP 3.3 reported in the main ES will no longer occur.
- 3.2.21 The presence of the great crested newt metapopulation to the north-west of the A34 Stafford Road (AMP 3.4) was not reported within the main ES. Construction of the original scheme will result in the loss of six ponds associated with this metapopulation. This will result in a new permanent adverse effect on this metapopulation that will be significant at a county level.
- 3.2.22 In summary, taking account of the baseline information from the additional surveys undertaken, there is a reduction in the number of known or assumed great crested newt ponds to be lost across the Stone and Swynnerton area as a result of construction of the original scheme. The number of great crested newt ponds that will be lost will reduce from up to 40, as reported in the main ES, to up to 27.

⁸ HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, draft Code of Construction Practice (CT-003-000). Available online at <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2a>

Other mitigation measures

Species

- 3.2.23 The main ES reported that significant effects to the great crested newt metapopulations within the Stone and Swynnerton area would be addressed by provision of measures within the ecological habitat creation areas at Walton Heath, Micklow, off Yarnfield Lane, Swynnerton, Highlow Meadows, Pire Hill, south of Lodge Covert, west of Clifford's Wood, off Bent Lane and at Closepit Plantation. These measures would comprise provision of ponds, species-rich neutral grassland and broadleaved woodland that would be designed to compensate for the loss of breeding sites, foraging habitat and places of shelter used by great crested newt and other amphibian species. Provision of these habitats will also contribute to compensation for route-wide losses of ponds, grassland and woodland. Following implementation, the adverse effects on the amphibian populations in the Stone and Swynnerton area would be reduced to a level that is not significant.
- 3.2.24 The assessment undertaken, following the consideration of additional baseline information, has concluded that the impacts of the original scheme on great crested newt will be reduced from those reported in the main ES. The provision of compensatory habitats as reported in the main ES, once established, will reduce the adverse effects on amphibian populations to a level that is not significant.

Summary of likely residual significant effects

- 3.2.25 There are no changes to the likely residual significant construction ecology and biodiversity effects identified in the main ES as a result of the new baseline information.

Cumulative effects

- 3.2.26 There are no new or different likely significant cumulative effects for ecology and biodiversity as a result of the new baseline information acting in combination with any other SES changes.

Effects arising from operation

- 3.2.27 There are no new or different significant operational effects for ecology and biodiversity as a result of the new baseline information, in comparison with the main ES.

Part 2: Additional Provision Environmental Statement

4 Summary of amendments in the Stone and Swynnerton area

4.1 Introduction

4.1.1 In the Stone and Swynnerton area, the following types of amendments are proposed in the AP revised scheme:

- engineering amendments;
- minor utility amendments; and
- other amendments requiring changes to Bill powers.

4.2 Engineering amendments

4.2.1 Engineering amendments will be required in the Stone and Swynnerton area that will result in changes to the land or Bill powers required for the original scheme. Table 3 provides a summary of the engineering amendments. Figure 2 shows the locations of the engineering amendments.

Table 3: Summary of engineering amendments in the Stone and Swynnerton area

Name of amendment	Description of the original scheme	Description of the AP revised scheme
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 AP-003-001	See Part 1 to Part 3 in subsequent rows	See Part 1 to Part 3 in subsequent rows

Due to the complexity of change associated with this amendment it has been sub-divided into the following three distinct elements for ease of understanding. The AP is however assessed as one amendment to the original scheme.

A change in the powers of the Bill for the raising of the alignment of the HS2 main line from the B5026 Eccleshall Road to Meaford cutting Part 1 of AP-003-001 Map CT-06-222, F5 to D5 and D5 to A5; and Map CT-06-223, J7 to H7 in the SES and AP ES, Volume 2, CA3 Map Book	Permanent acquisition of land for the HS2 route over a distance of approximately 2km from the B5026 Eccleshall Road to Meaford cutting. The HS2 main line would cross over the Norton Bridge to Stone Railway and Filly Brook on viaduct and over Yarnfield Lane via the Yarnfield Lane underbridge. This section of the HS2 main line would allow for the provision of track crossovers ⁹ and trackside storage areas	A change in the powers of the Bill will be required to raise the HS2 main line alignment along this section by up to 0.9m. There has been a redesign of the trackside storage areas and a track crossover along the HS2 main line. Yarnfield Lane auto-transformer station will be moved approximately 5m to the south-west.
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⁹ A track crossover is a pair of switches connecting two parallel rail tracks, allowing a train on one track to cross over to the other.

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Name of amendment	Description of the original scheme	Description of the AP revised scheme
	<p>for the maintenance of the HS2 route, as well as areas of landscape mitigation planting and landscape mitigation earthworks.</p>	
<p>A change in the powers of the Bill for amendments to the viaduct crossing of the Norton Bridge to Stone Railway and Filly Brook</p> <p>Part 2 of AP-003-001</p> <p>Map CT-06-222, F5 to D5 and D5 to A5; and Map CT-06-223, J7 to H7 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent acquisition of land for the HS2 main line to cross the Norton Bridge to Stone Railway and the Filly Brook on viaduct.</p> <p>This section of the HS2 route would allow for the provision of Stone retaining wall 2, areas of grassland habitat creation, two replacement flood storage areas and the realignment of Filly Brook via open channel.</p>	<p>A change in the powers of the Bill consequent on the shortening of the viaduct crossing the Norton Bridge to Stone Railway and Filly Brook and associated extension of the Yarnfield North embankment and Yarnfield South embankment. The viaduct has been renamed the Norton Bridge to Stone Railway viaduct, as it will no longer cross the Filly Brook. The track crossovers located on the viaduct in the original scheme will be moved further north-west along the HS2 main line.</p> <p>A section of Filly Brook will be culverted with the HS2 main line and the Stone Infrastructure Maintenance Base-Rail (IMB-R) reception tracks crossing above. Filly Brook West underbridge (on the IMB-R reception tracks) will not be provided.</p> <p>Embankments will be extended on both sides of the new viaduct and on the embankment associated with the Stone IMB-R reception tracks where the Filly Brook West underbridge will not be provided. Stone retaining wall 2 will also not be provided.</p> <p>The replacement floodplain storage area included in the original scheme will be replaced with revised proposals (see AP-003-002). Associated landscape, ecological and flood mitigation in the original scheme will be redesigned.</p>
<p>Additional land and a change in the powers of the Bill for horizontal realignment of the HS2 main line from the northern extent of Yarnfield North embankment to Tittensor Road overbridge</p> <p>Part 3 of AP-003-001</p> <p>Map CT-06-223, H6 to B7; CT-06-224, I5 to F5, I4 to H4, E5 to B5 and B4; and Map CT-06-225, I4, I5 to G5 and F5 to E5 in the SES and AP ES Volume 2, CA3 Map Book</p>	<p>Permanent acquisition of land for the HS2 main line over a distance of approximately 3km from the northern extent of Yarnfield North embankment to Tittensor Road overbridge.</p> <p>This section of the HS2 route would include the provision for the Stone Rural Footpath 33 realignment, landscape mitigation planting and landscape mitigation earthworks, balancing ponds, Swynnerton Footpath 17 diversion, Swynnerton Estate South underbridge, Swynnerton New Bridleway, and noise barriers adjacent to the Swynnerton embankment.</p>	<p>Additional land and a change in other powers of the Bill are required for the horizontal realignment of the HS2 main line along this section to be moved in a north-easterly direction by up to 15.5m.</p> <p>There are associated design changes to a number of features, including the Stone Rural Footpath 33 realignment and Swynnerton Footpath 17 diversion, landscape mitigation planting and landscape mitigation earthworks, hedgerow and woodland habitat creation, access tracks and a turning head.</p>
<p>Additional land permanently required for the IMB-R/Norton Bridge to Stone Railway flood mitigation measures</p> <p>AP-003-002</p> <p>Map CT-06-222, B8 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent acquisition of land for provision of flood mitigation measures comprising a 430m flood mitigation bund and replacement floodplain storage area, west of the M6 and north of the realigned Yarnfield Lane.</p>	<p>Additional land for the permanent provision of flood mitigation measures. A new smaller flood storage area will replace the flood storage area west of the M6 and its associated flood mitigation bund, which were included in the original scheme. Two additional flood storage areas are proposed and two flood mitigation bunds will be required. New culverts will also be required and the culverts included in the original scheme will be amended.</p>

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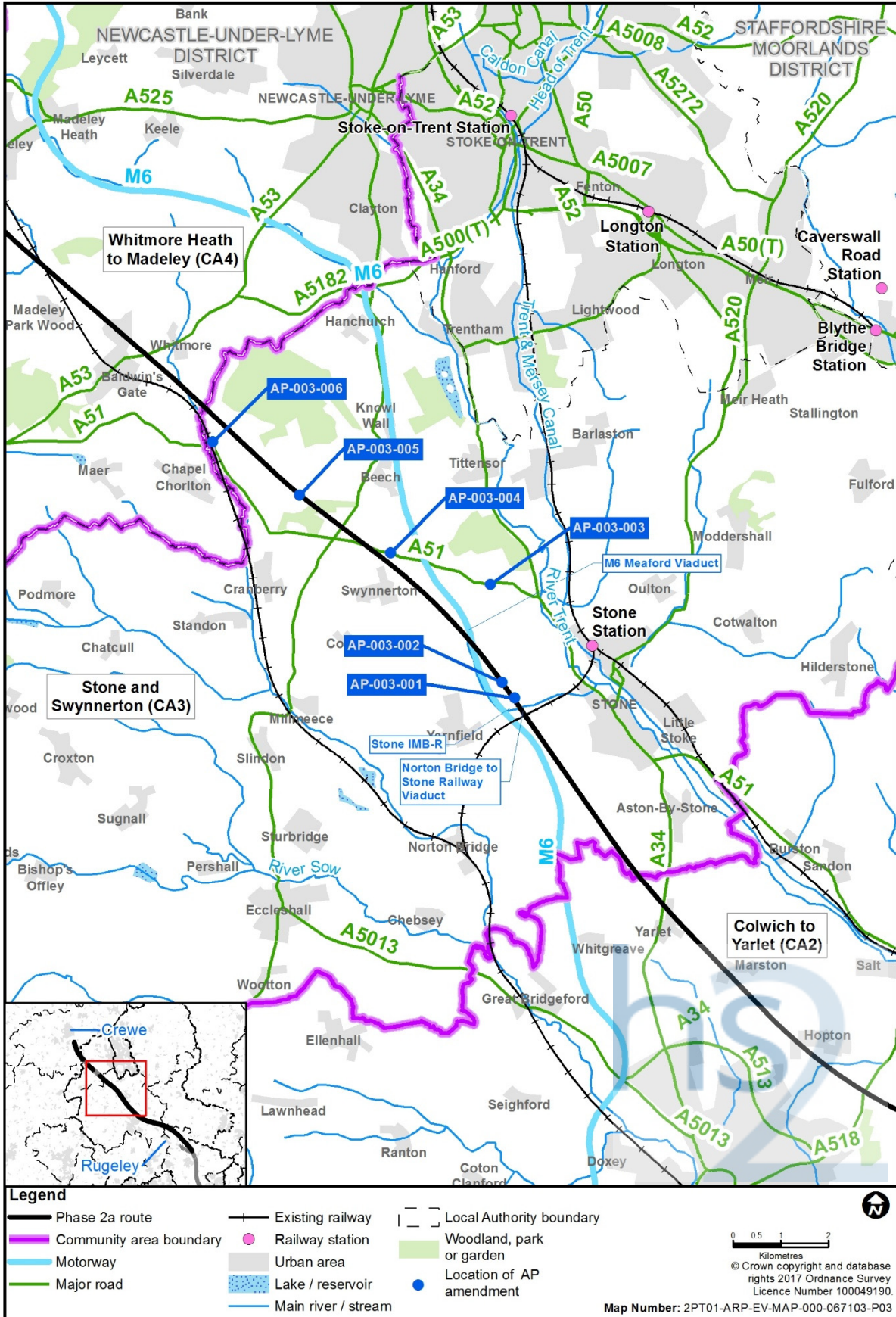
Name of amendment	Description of the original scheme	Description of the AP revised scheme
<p>Additional land permanently required for a new junction of the A51 Bury Bank and Stone Rural BOAT 34</p> <p>AP-003-003</p> <p>Map CT-06-224-R1, G5 to F7 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent acquisition of land for Stone Byway Open to All Traffic (BOAT) 34 to be widened with passing bays to provide HS2 maintenance access to the HS2 route, between the existing junction of the A51 Bury Bank and Swynnerton Footpath 27.</p>	<p>Additional land for a permanent new junction of the A51 Bury Bank and Stone Rural BOAT 34, approximately 180m to the east of the existing junction.</p>
<p>Additional land permanently required to widen the highway verge along the A51 Stone Road</p> <p>AP-003-004</p> <p>Map CT-06-225, E3 to D4 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent acquisition of land for the diverted Tittensor Road to connect to the diverted A51 Stone Road, approximately 100m west of Long Compton Farm. Landscape mitigation planting, grassland habitat creation and hedgerow habitat creation would be provided east of the diverted A51 Stone Road/diverted Tittensor Road junction.</p>	<p>Additional land for the permanent widening of the highway verge along the south edge of the A51 Stone Road to improve visibility at the junction between the diverted Tittensor Road and the A51 Stone Road.</p> <p>There will be a reduction in the landscape mitigation planting and grassland habitat creation included in the original scheme, as well as removal of a section of hedgerow habitat creation.</p>
<p>Additional land permanently required for the alignment of the Swynnerton Estate North green overbridge</p> <p>AP-003-005</p> <p>Map CT-06-227, H5 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent acquisition of land for the Swynnerton Estate North green overbridge, which would provide vehicle access to the Swynnerton Estate across the HS2 main line. There would be landscape mitigation planting on both sides and planting across the overbridge to facilitate ecological connectivity across the route.</p>	<p>Additional land for a change to the earthworks on the north side of the Swynnerton Estate North green overbridge required to raise the height of the overbridge by 1m.</p> <p>As a result of the increased area of earthworks, landscape mitigation planting will be adjusted on the southern approach, however, the overall area of landscape mitigation planting will be unchanged from the original scheme.</p>
<p>Additional land permanently required for the provision of a roundabout at the junction of the realigned Dog Lane, the A51 The Rowe, Bent Lane and the A51 through Stableford</p> <p>AP-003-006</p> <p>Map CT-06-228a, F10 to D7, F8 to E8 and C8 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent acquisition of land for the realignment of Dog Lane to pass over the HS2 main line via an overbridge and continue south to a four-arm staggered junction¹⁰ with the A51 The Rowe, Bent Lane and the A51 through Stableford.</p> <p>Permanent acquisition of land for landscape mitigation planting south of the Dog Lane overbridge, and woodland habitat creation and hedgerow habitat creation along both sides of the realigned Dog Lane.</p>	<p>Additional land permanently required for a four-armed roundabout in place of the four-arm staggered junction. There will be modifications to the alignments of the realigned Dog Lane, realigned Bent Lane (South), and the A51 The Rowe, to tie in to the roundabout. An additional junction bell-mouth¹¹ for access to and from a residential property on the A51 The Rowe will also be provided.</p> <p>There will be a slight reduction in the area of woodland habitat creation on the south-east side of the new roundabout but a net gain in hedgerow habitat creation, mainly along both sides of the Bent Lane realignment.</p>

¹⁰ An at-grade junction of three roads, at which the major road is continuous through the junction, and the minor roads connect with the major road so as to form two opposed T-junctions.

¹¹ A term used to refer to a new access junction with the highway or another access. The new carriageway for the access is shaped like a bell.

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Figure 2: Locations of engineering amendments in the Stone and Swynnerton area



4.3 Minor utility amendments

4.3.1 Amendments to minor utilities will be required in the Stone and Swynnerton area to provide connections to construction compounds and to maintain continuity of supply in the area. This will result in changes to the land or Bill powers required for the original scheme. Typically, works associated with minor utility amendments will be small in scale and similar to the types of works undertaken routinely by utility providers in the normal course of their activities. The duration of minor utility works will generally be short term in nature. Provision of access to adjacent properties will usually be maintained during the works with alternative access arrangements being made where necessary. The implementation of the works will be subject to the appropriate traffic management measures to ensure that disruption to non-motorised users and vehicular traffic is reduced insofar as reasonably practicable. Table 4 provides a summary of the minor utility amendments and the changes to land or Bill powers required. Figure 3 shows the general location of the minor utility amendments.

Table 4: Summary of minor utility amendments in the Stone and Swynnerton area

Utility	Description of the activities	Change to Bill powers
BT Openreach overhead telecommunications cable AP-003-101 Map CT-06-221, H5 to H4 in the SES and AP ES, Volume 2, CA3 Map Book -	Permanent diversion of utility, 440m in length, along Stone Rural Bridleway 0.1135 and crossing the HS2 route within the Stone Rural Bridleway 0.1135 accommodation overbridge.	Additional land permanently required.
BT Openreach underground fibre optic and telecommunications cables and Zayo underground fibre optic telecommunications cable AP-003-102 Map CT-06-222, H3 to H1 in the SES and AP ES, Volume 2, CA3 Map Book	Permanent diversion of three utilities, 880m in length, to follow the B5026 Eccleshall Road realignment.	Additional land permanently required
BT Openreach overhead telecommunications cable AP-003-103 Map CT-06-222, H2 and G4 in the SES and AP ES, Volume 2, CA3 Map Book	Permanent diversion of utility, 170m in length, along the B5026 Eccleshall Road realignment.	Additional land permanently required
Western Power Distribution 11kV overhead lines AP-003-104 Map CT-06-222, H5 and G5 to G4 in the SES and AP ES, Volume 2, CA3 Map Book	Permanent diversion of two utilities, 660m in length, to the east of the HS2 route along the B5026 Eccleshall Road and parallel to the HS2 main line.	Additional land permanently required
Zayo underground fibre optic telecommunications cable AP-003-105 Map CT-05-222, D4 to B5 in the SES and AP ES, Volume 2, CA3 Map Book	Removal of 600m section of utility north of the HS2 route near Yarnfield Lane	Additional land temporarily required

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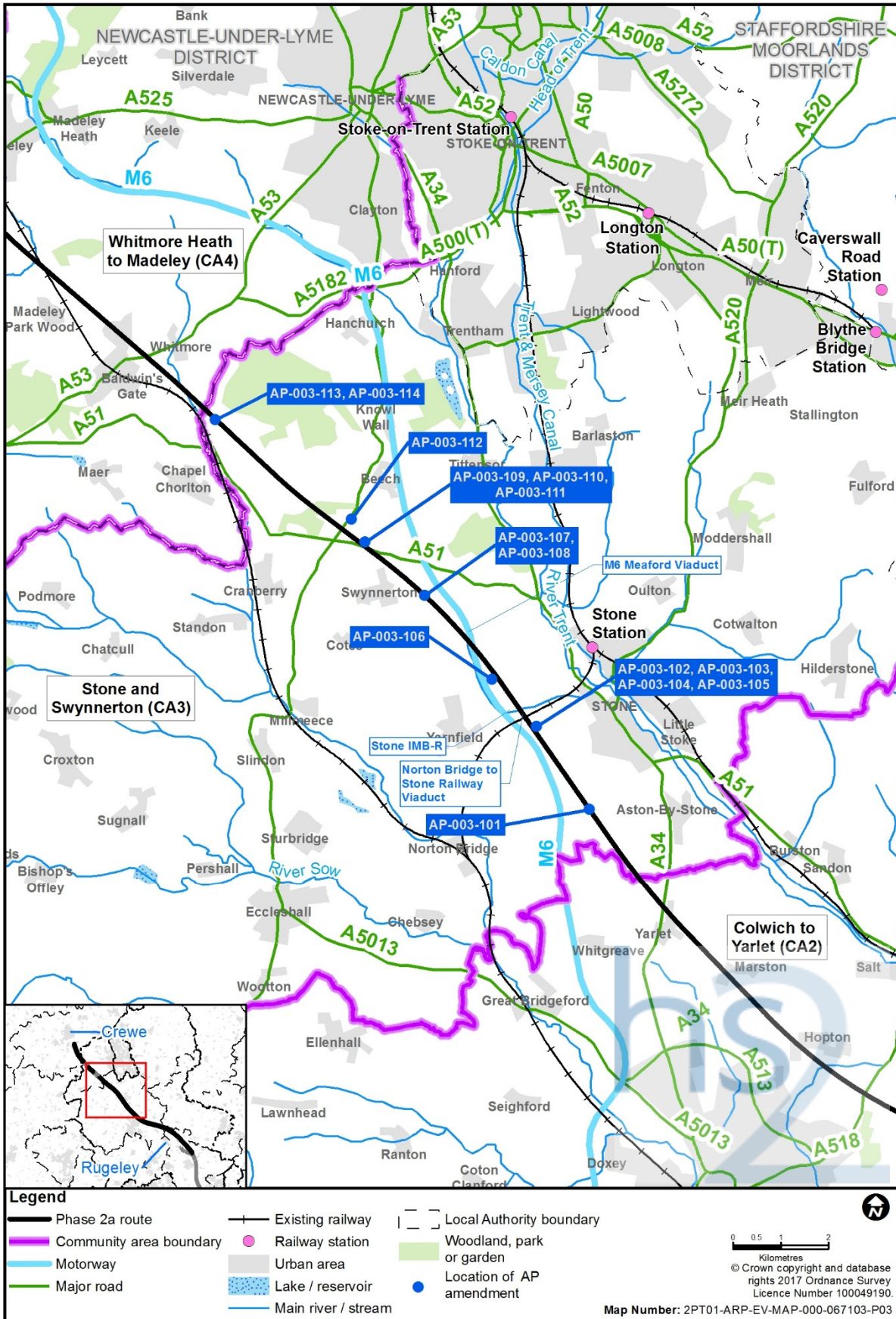
Utility	Description of the activities	Change to Bill powers
<p>Zayo underground fibre optic telecommunications cable</p> <p>AP-003-106</p> <p>Map CT-05-223, C10 to A8; Map CT-05-223-L1, I4 to G5, G5 to E2, E2 to C1 and C1 to A1; Map CT-05-224, J9 to H6 and E2 to D1; and Map CT-05-224-R1, E10 to C8 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Removal of 4.6km section of utility between Yarnfield Lane and the A51 Bury Bank</p>	<p>Additional land temporarily required and change in Bill powers at one plot of land from temporary to permanent.</p>
<p>BT Openreach underground telecommunications cable</p> <p>AP-003-107</p> <p>Map CT-06-224, E5 to E3 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent diversion of utility, 550m in length, along Swynnerton Footpath 27 accommodation underbridge</p>	<p>Additional land permanently required</p>
<p>Two Severn Trent Water 10-inch water mains and one Severn Trent Water 400mm water main</p> <p>AP-003-108</p> <p>Map CT-06-224, C6 to B7 and C5 to B4; in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent diversion of three utilities, 375m in length, crossing the HS2 route to the south of the M6 and south-west of the Swynnerton Estate South underbridge.</p>	<p>Additional land permanently required</p>
<p>Western Power Distribution 11kV overhead line</p> <p>AP-003-109</p> <p>Map CT-06-225, F4 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent diversion of utility, 250m in length, to the south of Sandyford Farm, near the Swynnerton New Bridleway accommodation underbridge.</p>	<p>Additional land permanently required</p>
<p>BT Openreach underground fibre optic telecommunications cables</p> <p>AP-003-110</p> <p>Map CT-06-225, F10 to F9 and F2 to D4 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent diversion of utility, 1.3km in length, to follow the Tittensor Road diversion.</p>	<p>Additional land permanently required</p>
<p>Severn Trent Water water mains, one 400mm main, two 10-inch mains and one 9-inch main</p> <p>AP-003-111</p> <p>Map CT-06-225, E8 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Vertical realignment of utilities, up to 1m lower than current depth, between the retained Tittensor Road and the diverted Tittensor Road.</p>	<p>Additional land permanently required</p>
<p>BT Openreach overhead telecommunications cable</p> <p>AP-003-112</p> <p>Map CT-06-226, F8 to F7 and F3 to F1 in the SES and AP ES, Volume 2, CA3 Map Book</p>	<p>Permanent diversion of utility, 840m in length, along the realigned A519 Newcastle Road.</p>	<p>Additional land permanently required</p>

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Utility	Description of the activities	Change to Bill powers
Severn Trent Water 400mm water main AP-003-113 Map CT-06-228a, E9 to C8 in the SES and AP ES, Volume 2, CA3 Map Book	Permanent diversion of utility, 400m in length, on the eastern side of the West Coast Main Line (WCML) and west of the realigned Bent Lane (South).	Additional land permanently required
Two Severn Trent Water 400mm water mains AP-003-114 Map CT-06-228a, C7 to B6 in the SES and AP ES, Volume 2, CA3 Map Book	Permanent diversion of two utilities, 350m in length, crossing the HS2 route along the alignment of the Swynnerton Footpath 10 accommodation underbridge.	Additional land permanently required

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Figure 3: Locations of minor utility amendments in the Stone and Swynnerton area



4.4 Other amendments requiring changes to Bill powers

- 4.4.1 Since submission of the Bill, the need for amendments to the Bill plans and Schedule 8 of the Bill ('Lands where powers of acquisition are limited to acquisition of rights or impositions of restrictive covenants') have been identified.
- 4.4.2 The amendments relate to the rights for use of certain plots of land, which have been identified on the Bill plans and in Schedule 8 of the Bill as only being required for access during the construction phase of the original scheme. However, it has been ascertained that these land plots will also be required by the nominated undertaker, Network Rail and third party utility providers during the operational phase for access for inspection and maintenance purposes.
- 4.4.3 Regular inspection and maintenance access will be required to assets such as the following:
- habitat creation areas;
 - line-side equipment;
 - railway drainage system; and
 - utilities.
- 4.4.4 During operation vehicular access will be required and the frequency will vary depending on the asset and maintenance activities. Typically, access will be required 2-4 times per year by two light goods vehicles (LGV) (e.g. long wheel-base pick-up vehicles).
- 4.4.5 The use of these land plots for maintenance and operation access was considered in the preparation of the main ES. Given the limited frequency of this access, it was concluded that this would not result in any significant effects. As this access was considered in the main ES, these amendments are not considered to require further assessment of the environmental effects or mitigation additional to that set out in the main ES with respect to any environmental topics.
- 4.4.6 Table 5 provides a list of those instances where there has been a need to amend the Bill plans and Schedule 8 of the Bill for the Stone and Swynnerton area.

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Table 5: Summary of other amendments requiring changes to Bill powers in the Stone and Swynnerton area

Name of amendment	Description of the original scheme (Schedule 8 of the Bill)	Description of the AP revised scheme
<p>Additional access rights to land plots AP1-6; AP1-9; AP1-11; AP1-24; AP1-27; AP1-29; AP1-30; AP1-40; AP1-41; AP1-54; AP1-57; AP1-59; AP1-64; AP1-65; AP1-66; and AP1-60 in the parish of Swynnerton</p> <p>AP-003-201</p> <p>Bill plan replacement sheets 1-40; 1-41; 1-43; 1-44 and 1-45</p>	<p>Provision of access for construction</p>	<p>Provision of access for construction and maintenance</p>
<p>Additional access rights to land plot AP1-1 in the parish of Stone Rural</p> <p>AP-003-202</p> <p>Bill plan replacement sheet 1-35</p>		

5 Assessment of engineering amendments in the Stone and Swynnerton area

5.1 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 (AP-003-001)

- 5.1.1 The Bill provides for the HS2 route to continue from the B5026 Eccleshall Road overbridge in the Yarlet North cutting, passing to the south-west of Stone and east of Yarnfield, remaining on the east side of the M6. The HS2 route would then cross over the Norton Bridge to Stone Railway and Filly Brook on the Filly Brook viaduct and proceed onto the Yarnfield North embankment before crossing over the realigned Yarnfield Lane. The HS2 route would cross over the M6 on the M6 Meaford viaduct, heading in a north-west direction, passing Blakelow Farm approximately 100m to the north-east. The HS2 main line would continue past Swynnerton, which would be approximately 550m to the south-west, before continuing onto the Swynnerton embankment and into the Swynnerton North cutting to the Tittensor Road overbridge. See Map CT-06-222, H6 to Map CT-06-225, D5 in the main ES, Volume 2, CA3 Map Book.
- 5.1.2 This section of the HS2 route would be approximately 7km in length, extending from the B5026 Eccleshall Road to Tittensor Road overbridge approximately 650m north of Swynnerton.
- 5.1.3 Since the submission of the Bill, further consideration has been given to the design to enable track crossovers¹² to be relocated off the Filly Brook viaduct and away from the crossing over the Norton Bridge to Stone Railway, to optimise the design and improve the future maintenance requirements of the HS2 railway. This has resulted in the shortening of the viaduct and a change in the vertical and horizontal alignment of the HS2 main line to enable the relocation of the crossovers further north-west along the route.
- 5.1.4 Due to the complexity of change in the Stone and Swynnerton area resulting from the relocation of the track crossovers, this amendment is described in the following three parts:
- Part 1 - raising of the alignment of the HS2 main line from the B5026 Eccleshall Road to Meaford cutting;
 - Part 2- amendments to the viaduct crossing of the Norton Bridge to Stone Railway and Filly Brook;
 - Part 3 - horizontal realignment of the HS2 main line from the northern extent of Yarnfield North embankment to Tittensor Road overbridge.

¹² A track crossover is a pair of switches connecting two parallel rail tracks, allowing a train on one track to cross over to the other.

- 5.1.5 The raising of the alignment of the HS2 main line from the B5026 Eccleshall Road to Meaford cutting and the amendments to the viaduct crossing of the Norton Bridge to Stone Railway and Filly Brook will require a change in Bill powers to alter the limits of deviation¹³ as set out in the Bill.
- 5.1.6 The horizontal realignment of the HS2 main line from the northern extent of Yarnfield North embankment to Tittensor Road overbridge is outside the limits of the Bill and will result in the permanent requirement for approximately 0.7ha of additional land. This element will also require a change in Bill powers to alter to the limits of deviation as set out in the Bill.

- 5.1.7 The three parts that comprise this amendment are described in further detail below.

Part 1: Raising of the alignment of the HS2 main line from the B5026 Eccleshall Road to Meaford cutting

- 5.1.8 In this location, the Bill provides for the HS2 mainline within the Yarlet North cutting, up to 17m in depth, passing under the B5026 Eccleshall Road overbridge, and continuing onto the Yarnfield South embankment, at a height of up to 6m above existing ground level, running adjacent to Micklow House Farm. The HS2 main line would then cross the Norton Bridge to Stone Railway and the Filly Brook on the Filly Brook viaduct, at a height of up to 15m above existing ground level. The route would continue onto Yarnfield North embankment, approximately 760m in length and up to 12m in height, passing over Yarnfield Lane before entering Meaford cutting.
- 5.1.9 The Bill provides for the following:
- a track crossover, approximately 400m in length, between Stone Rural Bridleway 0.1135 accommodation overbridge and Stone Rural Footpath 32 accommodation overbridge along the HS2 route. A trackside storage area¹⁴, approximately 240m in length, would be located adjacent to the crossover at this location on the south-west side of the HS2 route. Associated access tracks from the Stone Infrastructure Maintenance Base-Rail (IMB-R) would be provided for access to the track side storage area and a balancing pond adjacent to the east of Stone Rural Footpath 0.1135, on the south-west side of the HS2 route from the Stone IMB-R. See Map CT-06-221, H5 to E6 in the main ES Volume 2, CA3 Map Book;
 - track crossovers, approximately 400m in length, to the north-west of Stone Rural Footpath 32 accommodation overbridge adjacent to Walton House Farm and Walton Heath Farm, along the HS2 route. A trackside storage area, approximately 240m in length, would be located adjacent to the crossover in this location on the north-east side of the HS2 route. An associated access road from the Stone IMB-R would be provided for access to the track side storage area, crossing over the HS2 main line via the Stone Rural Footpath 32

¹³ The design shown on the Bill drawings is a preliminary design. The powers within the Bill must therefore be sufficiently flexible to allow adjustments once detailed design has been carried out. This is achieved by including powers to deviate from the position of the works shown on the Parliamentary plans by a small amount; this deviation is restricted by the limits of deviation marked on the plans.

¹⁴ Trackside storage areas are provided alongside track crossovers for the storage of equipment and parts to be used in future maintenance and replacement of the crossovers.

accommodation overbridge. See Map CT-06-221, E5 to B6 in the main ES Volume 2, CA3 Map Book;

- a trackside storage area, approximately 240m in length, adjacent to Yarnfield South embankment on the north-east side of the HS2 route. An associated access road would be provided for access to the track side storage area, from the realigned B5026 Eccleshall Road. See Map CT-06-222, H4 to D5 in the main ES Volume 2, CA3 Map Book; and
- a trackside storage area, approximately 120m in length, to the south side of Yarnfield Lane on the north-east side of the HS2 main line. An associated access road would be provided from the realigned Yarnfield Lane for access to the track side storage area and the balancing ponds to the north and east of the track side storage area. See Map CT-06-223, J6 to H7 in the main ES Volume 2, CA3 Map Book.

5.1.10 Areas of landscape mitigation planting would be provided between Stone Rural Footpath 32 and the B5026 Eccleshall Road, on the north-east side of the HS2 main line at the northernmost extent of Yarnfield South embankment. See maps CT-06-221, E5 to B5 to CT-06-222, I5 to H5 in the main ES Volume 2, CA3 Map Book.

5.1.11 An area of landscape earthworks and landscape mitigation planting would be located adjacent to the Yarnfield North embankment, on the north-east side of the HS2 main line, between the Norton Bridge to Stone Railway and Yarnfield Lane. See maps CT-06-221, B5 to CT-06-223, I6 in the main ES Volume 3, CA3 Map Book.

5.1.12 Since the submission of the Bill, a requirement has been identified to increase the vertical alignment of the Hs2 route between the B5026 Eccleshall Road overbridge and Meaford cutting. The change in vertical alignment is required to enable the horizontal alignment change (as described in 'horizontal realignment of the HS2 main line from the northern extent of Yarnfield North embankment to Tittensor Road overbridge') and to allow the relocation of crossovers away from the Filly Brook viaduct. The AP revised scheme will include:

- an increase in height of Yarnfield South embankment by up to 0.6m along its full length (approximately 300m); and
- an increase in height of Yarnfield North embankment by up to 0.9m along its full length (approximately 1km).

5.1.13 The following amendments will be required as part of increasing the vertical alignment:

- the track crossover between Stone Rural Bridleway 0.1135 accommodation overbridge and Stone Rural Footpath 32 accommodation overbridge will be increased in length by approximately 50m, to a total length of 450m, to allow for an increase in speed through the track crossovers from 200 kilometres per hour (kph) to 230kph. The associated trackside storage area will be increased in length by approximately 25m, to a total length of approximately 265m. See Map CT-06-221, H5 to E6 in the SES and AP ES Volume 2, CA3 Map Book;

- the removal of a track crossover and trackside storage area located to the north-west of Stone Rural Footpath 32, adjacent to Walton House Farm and Walton Heath Farm. The earthworks associated with Yarlet North cutting will be reduced and an additional 0.3ha of landscape mitigation planting will be provided on the north-east side of the HS2 main line. See Map CT-06-221, E5 to C5 in the SES and AP ES Volume 2, CA3 Map Book;
- a replacement trackside storage area, approximately 125m in length, will be located on the south-west side of the HS2 main line, adjacent to the Stone headshunt¹⁵. The reception tracks for the Stone IMB-R/railhead will be reduced in length by approximately 200m at this location. See Map CT-06-221, D6 to B6 in the SES and AP ES Volume 2, CA3 Map Book;
- the removal of a trackside storage area, approximately 240m in length, located adjacent to the south end of the Yarnfield South embankment on the north-east side of the HS2 main line (see Map CT-06-222, F5 to E5 in the main ES Volume 2, CA3 Map Book). The associated access track will be amended to maintain access to the balancing ponds and maintenance access point, included in the original scheme, and will be realigned to provide a more direct route. Landscape mitigation planting on the north-east side of the HS2 main line, at the northern most extent of Yarnfield South embankment, will be re-orientated and will increase in size by approximately 0.1ha. See Map CT-06-222, H5 to D6 in the SES and AP ES Volume 2, CA3 Map Book;
- a replacement trackside storage area, approximately 125m in length, will be provided adjacent to the south end of the Yarnfield North embankment on the south-west side of the HS2 main line. See Map CT-06-222, C6 to B6 in the SES and AP ES Volume 2, CA3 Map Book;
- the relocation of the trackside storage area approximately 200m south of Yarnfield Lane, moving it 150m closer to Yarnfield Lane. The access track will be realigned to maintain access to the balancing ponds and a maintenance access point, included in the original scheme, whilst retaining access to the relocated trackside storage area. There will be an increase in landscape earthworks by approximately 90m in length, to a total of 350m. The maximum height of the earthworks will reduce by approximately 2m to a total of approximately 11m above existing ground level. See Map CT-06-222, C5 to A6 and Map CT-06-223 J6 to H7 in the SES and AP ES Volume 2, CA3 Map Book; and
- the relocation of Yarnfield Lane auto-transformer station by approximately 5m to the south-west. See Map CT-06-223, H7 in the SES and AP ES Volume 2, CA3 Map Book.

5.1.14 The activities described in this part of the amendment will be constructed within the period set out in the main ES.

¹⁵ A headshunt is a length of track provided to release trains in the direction in which they originated, as well as allowing trains to change tracks and direction.

- 5.1.15 The raising of the alignment of the HS2 main line from the B5026 Eccleshall Road to Meaford cutting will require a change to the limits of deviation as set out in the Bill. See Map CT-06-222, F5 to D5 and D5 to A5; and Map CT-06-223, J7 to H7 in the SES and AP ES Volume 2, CA3 Map Book.

Part 2: Amendments to the viaduct crossing of the Norton Bridge to Stone Railway and Filly Brook

- 5.1.16 The Bill provides for the HS2 main line to cross the Norton Bridge to Stone Railway and the Filly Brook on the Filly Brook viaduct, approximately 450m in length and up to 15m in height. Track crossovers, 150m in length, would be located on the viaduct. Stone retaining wall 2, approximately 170m in length and up to 5m in height, would be required to retain a section of the Stone IMB-R, adjacent to the Filly Brook viaduct on the south side of the HS2 main line. See Map CT-06-222, E5 to B6 in the main ES Volume 2, CA3 Map Book.
- 5.1.17 Adjacent to the Filly Brook viaduct, on the north side of the HS2 main line, an area of grassland habitat creation approximately 1ha in size, would be provided. To the south-west of the Filly Brook viaduct there would be two replacement floodplain storage areas, totalling approximately 1.7ha, adjacent to the Norton Bridge to Stone Railway. See Map CT-06-222, D4 to C8 in the main ES Volume 2, CA3 Map Book.
- 5.1.18 Reception tracks within the Stone IMB-R would cross over Filly Brook on the Filly Brook West underbridge, approximately 30m in length and up to 11m in height. See Map CT-06-222, D6 to C7 in the main ES Volume 2, CA3 Map Book.
- 5.1.19 Filly Brook would be realigned underneath the Filly Brook West underbridge and the Filly Brook viaduct via an open channel watercourse diversion to re-join the existing watercourse on the north side of the route. See Map CT-06-222, D5 to A9 in the main ES Volume 2, CA3 Map Book.
- 5.1.20 Since the submission of the Bill, it has been proposed to relocate the track crossovers 150m north-west along the route so that they are no longer on the viaduct, to optimise the design and improve the future maintenance requirements of the HS2 railway. The crossovers will remain 150m in length as per the original scheme. The following amendments to the crossing of the Filly Brook and the Norton Bridge to Stone Railway will be required:
- the Filly Brook viaduct will be shortened in length by approximately 370m and renamed the Norton Bridge to Stone Railway viaduct. The new viaduct will be approximately 80m in length and up to 15m in height. The viaduct has been renamed to reflect that the AP revised scheme will cross the railway but will no longer cross Filly Brook. The extension of Yarnfield South embankment and Yarnfield North embankment by 85m and 300m respectively will be required. Stone retaining wall 2 will be removed following the extension of the embankments. Filly Brook will pass through Yarnfield North embankment via the new Filly Brook culvert, which will be approximately 95m in length. See Map CT-06-222, E5 to C6 in the SES and AP ES Volume 2, CA3 Map Book; and
 - the Filly Brook West underbridge will be removed, with the embankments associated with this feature extended by 29m, reducing the floodplain storage area by approximately 0.3ha. Filly Brook will be diverted via the new Filly

Brook West culvert, approximately 80m in length, at the same location as the proposed watercourse channel in the original scheme. See Map CT-06-222, D6 to C7 in the SES and AP ES Volume 2, CA3 Map Book.

- 5.1.21 The following landscape, ecological and flood risk mitigation, included in the original scheme, will be amended accordingly:
- a reduction of replacement woodland habitat creation by 0.6ha on the north-east side of the HS2 main line, north-west of the Norton Bridge to Stone Railway. See Map CT-06-222, C5 to B5 in the SES and AP ES Volume 2, CA3 Map Book;
 - a reduction in grassland habitat creation by 0.2ha on the north-east side of the HS2 main line, adjacent to the north-west of the Norton Bridge to Stone Railway. See Map CT-06-222, D4 to C5 in the SES and AP ES Volume 2, CA3 Map Book; and
 - a reduction in floodplain storage area by 0.3ha, equivalent to approximately 5,000m³ of floodwater during the peak of a 1 in 100 year plus climate change event, to accommodate new earthworks on land between the HS2 main line and the M6, adjacent to the north-west side of the Norton Bridge to Stone Railway (see Map CT-06-222, D6 to C8 in the SES and AP ES Volume 2, CA3 Map Book). The proposals presented in AP-003-002 (Additional land permanently required for the IMB-R/Norton Bridge to Stone Railway flood mitigation measures) are specifically designed to ensure that any effects related to this loss of floodplain storage are mitigated.
- 5.1.22 There will be an increase in heavy goods vehicle (HGV) traffic movements resulting from the increased earthworks movements for the extension of Yarnfield South embankment and Yarnfield North embankment, and the extension of the embankment within the Stone IMB-R to support the reception track from the Stone headshunt. The increased HGV traffic movements will be via the M6.
- 5.1.23 Due to the extension of Yarnfield North embankment, one additional year will be required for the construction of this element compared to that set out in the main ES. The construction programme for the Yarnfield North embankment has been amended to start one year earlier than stated in the main ES. The Yarnfield North embankment is expected to take approximately two years to complete and will commence in 2023, with the completion date as stated in the main ES.
- 5.1.24 The replacement Norton Bridge to Stone Railway viaduct will require a reduction in the construction programme by one year and three months to that reported in the main ES due to the shortening in length of the viaduct proposed. The Norton Bridge to Stone Railway viaduct will take approximately one year and nine months to complete and will be constructed between 2022 and 2023.
- 5.1.25 The construction of Yarnfield North embankment and the Norton Bridge to Stone Railway viaduct will be managed from the Yarnfield North embankment satellite compound.

- 5.1.26 The land required for the amendments to the viaduct crossing of the Norton Bridge to Stone Railway and Filly Brook will require a change to the limits of deviation as set out in the Bill. See Map CT-06-222, F5 to D5 and D5 to A5; and Map CT-06-223, J7 to H7 in the SES and AP ES Volume 2, CA3 Map Book.

Part 3: Horizontal realignment of the HS2 main line from the northern extent of Yarnfield North embankment to Tittensor Road overbridge

- 5.1.27 The Bill provides for the HS2 main line to continue from the northern extent of Yarnfield North embankment through Meaford cutting, at a depth of up to 3m. The HS2 main line would continue on Meaford South embankment, at a height of up to 9m, before passing over the M6 on the M6 Meaford viaduct. The HS2 main line would continue in a north-west direction on Meaford North embankment passing Blakelow Farm 100m to the north-east and into the Swynnerton South cutting. The route would continue onto the Swynnerton embankment and Swynnerton North cutting for approximately 175m to the Tittensor Road overbridge.

- 5.1.28 The Bill provides for the following:

- the realignment of Stone Rural Footpath 33 by 800m to the north-west of its existing alignment, running adjacent to the northern side of the HS2 main line, and crossing under the M6 Meaford viaduct. See Map CT-06-223, G7 to D8 in the main ES Volume 2, CA3 Map Book;
- Meaford South embankment, 343m in length and up to 9m in height, with landscape earthworks and landscape mitigation planting on the north side of the HS2 main line to integrate the scheme into the surrounding landscape. See Map CT-06-223, D7 to B7 in the main ES Volume 2, CA3 Map Book;
- M6 Meaford viaduct, 175m in length and up to 16m in height. See Map CT-06-223, B7 to A7 in the main ES Volume 2, CA3 Map Book;
- Meaford North embankment, 930m in length and up to 18m in height, with associated landscape earthworks and landscape mitigation planting to integrate the scheme into the surrounding landscape. See Map CT-06-224, I6 to E5 in the main ES Volume 2, CA3 Map Book;
- diversion of Swynnerton Footpath 17 for 400m in length, 400m south-east of its existing alignment, joining Swynnerton Footpath 27 on the south side of the HS2 main line. See Map CT-06-224, E4 to C6 in the main ES Volume 2, CA3 Map Book; and
- Swynnerton embankment, 1km in length and up to 7m in height, with associated landscape earthworks to integrate the scheme into the surrounding landscape. A noise fence barrier, 3m in height and approximately 1km in length, would run along the south side of the HS2 main line to provide acoustic screening for the residents of Swynnerton. See Map CT-06-224, C5 to A5, and Map CT-06-225, J5 to E5, in the main ES Volume 2, CA3 Map Book.

- 5.1.29 Since submission of the Bill, a need has been identified to amend the horizontal alignment of the HS2 main line by up to 15.5m in a north-easterly direction between the northern extent of Yarnfield North embankment and Tittensor Road overbridge.

The maximum alignment change will be around Swynnerton Footpath 27 accommodation underbridge to the south-west of Blakelow Farm. The amended alignment will provide a longer straight section of track to the north of Filly Brook to enable the relocation of crossovers away from the Filly Brook viaduct. As a result of this change, the following amendments will be required:

- lengthening of Stone Rural Footpath 33 by a further 60m to extend around the revised earthworks at the M6 Meaford viaduct, a diversion of 860m in total. See Map CT-06-223, C7 to B7 in the SES and AP ES Volume 2, CA3 Map Book;
- a reduction in landscape mitigation planting by 0.2ha to accommodate the change in horizontal alignment to the north-east of the Meaford South embankment. A realignment of hedgerow habitat creation will also be required around the revised earthworks. See Map CT-06-223, D7 to B7 in the SES and AP ES Volume 2, CA3 Map Book;
- reshaping of the landscape earthworks and a balancing pond on the north-east side of the Meaford North embankment from Meaford Viaduct to Swynnerton Footpath 27 accommodation underbridge. As a result, approximately 1ha of woodland habitat creation and landscape mitigation planting included in the original scheme will no longer be implemented. See Map CT-06-224, H5 to F4 in the SES and AP ES Volume 2, CA3 Map Book;
- to the south-west of the Meaford North embankment from Meaford viaduct to approximately 200m north of Swynnerton Footpath 27 accommodation underbridge an additional 1.3ha of woodland habitat creation will be implemented as a result of the alignment moving north-west. See Map CT-06-224, I6 to D5 in the SES and AP ES Volume 2, CA3 Map Book;
- a reduction by 0.3ha of the landscape mitigation planting and landscape mitigation earthworks immediately north-west of Swynnerton Footpath 27 underbridge, on the north side of the Meaford North embankment and to the south-west of Blakelow Farm. This will avoid the requirement for additional land at Blakelow Farm as a result of the change in horizontal alignment. See Map CT-06-224, E5 to D5 in the SES and AP ES Volume 2, CA3 Map Book;
- an amendment to Swynnerton Footpath 17 diversion adjacent to the south side of the HS2 main line. The diversion of Swynnerton Footpath 17 will be slightly relocated and shortened by 10m in length to a total diversion of 390m. See Map CT-06-224, E4 to D6 in the SES and AP ES Volume 2, CA3 Map Book;
- landscape earthworks and landscape woodland mitigation planting from the southern end of Swynnerton embankment to Swynnerton new bridleway accommodation underbridge will move in a north-east direction in line with the alignment change. There will be an increase in woodland habitat creation by 0.4ha as a result. See Map CT-06-225, J5 to G5 in the SES and AP ES Volume 2, CA3 Map Book;
- the access track between Swynnerton Estate south underbridge and Swynnerton new bridleway accommodation underbridge will be relocated. The turning head, used for accessing the balancing pond adjacent to the

Swynnerton Estate South underbridge, will be relocated 37m north-east. See Map CT-06-224, B5 to A5 and Map CT-06-225, J4 to G5 in the SES and AP ES Volume 2, CA3 Map Book;

- noise barriers will be retained adjacent to the HS2 main line on the Swynnerton embankment, but will move with the main line horizontal realignment. See Map CT-06-225, I5 to D5 in the SES and AP ES Volume 2, CA3 Map Book; and
- landscape earthworks between the Swynnerton new bridleway accommodation underbridge and the existing Tittensor Road will be steepened in gradient from a 1:8 slope to a 1:4 slope on the north-east side of the HS2 main line to avoid the requirement for additional land at Sandyford Farm. See Map CT-06-225, G5 to F5 in the SES and AP ES Volume 2, CA3 Map Book.

5.1.30 The activities described in this part of the amendment will be constructed within the period set out in the main ES.

5.1.31 The change to the horizontal alignment of the HS2 main line is outside the limits of the Bill. The amendment will result in the permanent requirement for approximately 0.7ha of additional land. The amendment will also require a change to the limits of deviation as set out in the Bill. See Map CT-06-223, H6 to B7; Map CT-06-224, I5 to F5, I4 to H4, E5 to B5 and B4; and Map CT-06-225, I4, I5 to G5 and F5 to E5 in the SES and AP ES Volume 2, CA3 Map Book.

Local alternatives

5.1.32 Additional land and a change in powers of the Bill will be required for the revised alignment of the HS2 main line in the Stone and Swynnerton area. This amendment has been identified to optimise the design and improve the future maintenance requirements of the HS2 railway. Four options were considered for this amendment as follows.

5.1.33 Option B: a lowering of the alignment of the HS2 main line and adjacent reception track for the connection to the Stone IMB-R by up to 4.9m between the Stone Rural Bridleway 0.1135 and the B5026 Eccleshall Road. A raising of the alignment of the HS2 main line by up to 0.9m, from the B5026 Eccleshall Road to Meaford cutting, would be required and there would be a need to change the horizontal alignment of the HS2 main line by up to 15.5m, from the northern extent of Yarnfield North embankment to Tittensor Road overbridge. The Stone Rural Bridleway 0.1135 and Stone Rural Footpath 32 accommodation overbridges would be combined into one crossing of the HS2 main line. This option would enable the removal of the Filly Brook viaduct and Stone retaining wall 2, and would introduce a shorter viaduct to cross the Norton Bridge to Stone Railway, at a length of 93m. Filly Brook would be culverted beneath the embankment associated with the Stone IMB-R reception tracks and the extended Yarnfield North embankment associated with the shorter viaduct. This option would enable the relocation of track crossovers along the HS2 main line and the removal of a track crossover adjacent to Walton House Farm.

5.1.34 Option C: a change in the horizontal alignment of the reception track connecting the HS2 main line to the Stone IMB-R by up to 5m, and a lowering of the alignment of the

reception track by up to 2.3m. This would require a retaining wall, 870m in length and up to 2m in height, between the HS2 main line and the reception track. The Stone Rural Bridleway 0.1135 and Stone Rural Footpath 32 accommodation overbridges would be combined into one crossing over the HS2 main line. This option would allow for the removal of the Filly Brook viaduct and Stone retaining wall 2, and would introduce a shorter viaduct to cross the Norton Bridge to Stone Railway, at a length of 174m. Filly Brook would be culverted beneath the embankment associated with the Stone IMB-R reception tracks and the extended Yarnfield North embankment associated with the shorter viaduct. This option would enable the relocation of track crossovers along the HS2 main line and the removal of a track crossover adjacent to Walton House Farm.

- 5.1.35 Option D: a raising of the alignment of the HS2 main line, by up to 1.2m, from the B5026 Eccleshall Road to Meaford cutting. A change in the horizontal alignment of the HS2 main line, by up to 20.5m, would also be required from the northern extent of Yarnfield North embankment to the Tittensor Road overbridge. The alignment of the reception track connecting the HS2 main line to the Stone IMB-R would also require a change in the horizontal alignment by up to 5m. The alignment of the reception track would need to be lowered by up to 1.5m south of the B5026 Eccleshall Road and then raised by up to 1.1m from north of the B5026 Eccleshall Road. This would require a retaining wall, 910m in length and up to 1.2m in height, between the HS2 main line and the reception track connecting the HS2 mainline to the IMB-R. The Stone Rural Bridleway 0.1135 and Stone Rural Footpath 32 accommodation overbridges would be combined into one crossing over the HS2 main line. This option would enable the removal of the Filly Brook viaduct and Stone retaining wall 2, and would introduce a shorter viaduct to cross the Norton Bridge to Stone Railway, at a length of 99m. Filly Brook would be culverted beneath the embankment associated with the Stone IMB-R reception tracks and the extended Yarnfield North embankment associated with the shorter viaduct. This option would enable the relocation of track crossovers along the HS2 main line and the removal of a track crossover adjacent to Walton House Farm.
- 5.1.36 Option D1-R (AP revised scheme): a raising of the alignment of the HS2 main line, by up to 0.9m, from the B5026 Eccleshall Road to Meaford cutting. A change in the horizontal alignment in the HS2 main line, by up to 15.5m, would also be required from the northern extent of Yarnfield North embankment to the Tittensor Road overbridge. This option would enable the removal of the Filly Brook viaduct and Stone retaining wall 2, and would introduce a shorter viaduct to cross the Norton Bridge to Stone Railway, at a length of 81m. Filly Brook would be culverted beneath the embankment associated with the Stone IMB-R reception tracks and the extended Yarnfield North embankment associated with the shorter viaduct. This option would enable the relocation of track crossovers along the HS2 main line and the removal of a track crossover adjacent to Walton House Farm.
- 5.1.37 Option D1-R was identified as the preferred option, as on balance it is the most technically preferable option from a maintenance, cost and construction perspective, whilst only being a slight increase in the environmental impact in comparison to the original scheme. In comparison to option D1-R, Option B would present a significant increase in earthworks and costs, whilst also incurring likely delays in the construction of the HS2 main line. Option C would present an increase in operational complexities due to a track crossover remaining on the proposed Norton Bridge to Stone Railway

viaduct and would require the construction of a retaining wall, incurring increased costs. Option D would also require the construction of a retaining wall with the associated increased costs. Option B and Option C would require an increase in the construction programme, whilst Option B, C and D would require an increase in HGV traffic movements for earthworks. All options considered were deemed to have a slight increase in environmental impact in comparison to the original scheme. Option D1-R was, therefore, taken forward as the preferred option from a maintenance, cost and construction perspective.

- 5.1.38 The analysis of engineering, cost and potential environmental impacts associated with the options is set out below, with the impacts of the preferred option presented first.

Option D1-R

- 5.1.39 When compared to the original scheme, Option D1-R would represent a slight increase in visual impacts during both construction and operation on nearby receptors at Blakelow Farm and Sandyford Farm as a result of the change in the horizontal alignment of the HS2 main line. The culverting of Filly Brook would increase the impact on the existing natural vegetated ecological corridor along the brook, reducing the permeability of the scheme for wildlife dispersal. This would also result in impacts on surface water and flood risk during construction. The impact on Highlow Meadows Local Wildlife Site (LWS) and associated protected species and habitats would, however, be reduced.

- 5.1.40 Option D1-R does not introduce any technical or construction complexities, risk of safety hazards, or overall lengthening of the construction programme as set out in the main ES.

Option B

- 5.1.41 In comparison to Option D1-R, Option B would result in a substantial increase in HGV traffic movements due to the increase in earthworks required for lowering of the alignment of the HS2 main line and associated reception track. This option would also provide a single overbridge for both the Stone Rural Bridleway 0.1135 and Stone Rural Footpath 32, which would result in increased journey lengths for non-motorised users.
- 5.1.42 Option B would lengthen the construction programme and increase the costs in comparison to Option D1-R, due to the increase in earthworks.

Option C

- 5.1.43 In comparison to Option D1-R, Option C would result in an increased impact on habitats and protected species due to the increased loss of woodland at Highlow Meadow LWS. Option C would result in an increase in HGV traffic movements due to the increase in earthworks required for the change in the horizontal alignment and lowering of the vertical alignment of the reception track that connects the HS2 main line with the Stone IMB-R. This option would also provide a single overbridge for both the Stone Rural Bridleway 0.1135 and Stone Rural Footpath 32, which would result in increased journey lengths for users.

- 5.1.44 An element of the track crossover on the proposed Norton Bridge to Stone Railway viaduct would be retained, and therefore, the maintenance and operational

complexities currently present within the original scheme would remain. This would present an increase in operational complexities in comparison to Option D1-R.

- 5.1.45 Option C would also lengthen the construction programme in comparison to Option D1-R due to the increase in earthworks.

Option D

- 5.1.46 In comparison to Option D1-R, Option D would result in an increase in HGV traffic movements due to the increase in earthworks required for the change in horizontal alignment and raising of the HS2 main line and the changes in horizontal and vertical alignment of the reception track that connects the HS2 main line with the Stone IMB-R. This option would also provide a single overbridge for both the Stone Rural Bridleway 0.1135 and Stone Rural Footpath 32, which would result in increased journey lengths for users
- 5.1.47 In comparison to Option D1-R, Option D would result in increased costs due to the construction of a retaining wall.

Topics included in the AP assessment

- 5.1.48 The amendment is considered to only require reassessment of the environmental effects and mitigation in the main ES for the following topics: air quality; ecology and biodiversity; landscape and visual; sound, noise and vibration and water resources and flood risk.
- 5.1.49 The amendment will result in small changes in HGV traffic movements. However, the increased HGV movements will primarily be via the M6 and will not lead to any new or different traffic and transport significant effects.

Air quality

Scope, assumptions and limitations

- 5.1.50 The assessment scope, key assumptions and limitations for air quality are as set out in Volume 1, the Scope and Methodology Report (SMR)¹⁶, and the SMR Addendum¹⁷ of the main ES.

Existing environmental baseline

- 5.1.51 The baseline air quality information for the Stone and Swynnerton area is as described in Volume 2, CA3, Section 5 of the main ES.
- 5.1.52 The main sources of air pollution in the Stone and Swynnerton area are emissions from road vehicles and agricultural activities. The main roads within the vicinity of the amendment are the M6, the A34 Stafford Road/The Fillybrooks, the A51 Stone Road, the A519 Newcastle Road and local roads.

¹⁶HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report (Appendix CT-001-001). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

¹⁷ HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report Addendum (Appendix CT-001-002). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

Future environmental baseline

Construction (2020) and operation (2027)

- 5.1.53 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2020 and 2027 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).
- 5.1.54 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on air quality.

Effects arising during construction

Avoidance and mitigation measures

- 5.1.55 Emissions to the atmosphere will be controlled and managed during construction through the route-wide implementation of the Code of Construction Practice (CoCP).
- 5.1.56 No further measures are applicable to this assessment, above those stated in the draft CoCP¹⁸.

Assessment of impacts and effects

- 5.1.57 Changes in construction traffic flows associated with this amendment have been assessed for their potential to give rise to new significant air quality effects. Changes in traffic flows are anticipated on the A519 Newcastle Road and Yarnfield Lane.
- 5.1.58 The changes in traffic flows are not considered to give rise to any new significant effects at any receptor in relation to annual mean NO₂, PM₁₀ and PM_{2.5}¹⁹ concentrations, in comparison to the main ES. The assessment supporting these conclusions can be found in SES and AP ES Volume 5: Appendix AQ-001-000.

Mitigation and residual effects

Other mitigation measures

- 5.1.59 No other mitigation measures are required above the measures reported in the main ES.

Summary of likely residual significant effects

- 5.1.60 There are no changes to the likely residual significant construction air quality effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.1.61 There are no new or different likely significant cumulative effects for air quality as a result of the amendment acting in combination with any other amendments.

¹⁸ HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, draft Code of Construction Practice (CT-003-000). Available online at <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2a>

¹⁹ PM_{2.5} and PM₁₀ describe two size fractions of airborne particles that can be inhaled and therefore are of concern for human health. The designations refer to particles of size less than 2.5 and 10 microns in diameter.

Effects arising from operation

Avoidance and mitigation measures

- 5.1.62 No avoidance or mitigation measures, additional to those reported in the main ES, are required.

Assessment of impacts and effects

- 5.1.63 There are no new or different significant operational effects for air quality as a result of the amendment, in comparison with the main ES.

Mitigation and residual effects

Other mitigation measures

- 5.1.64 No other mitigation measures are required above the measures reported in the main ES.

Summary of likely residual significant effects

- 5.1.65 There are no changes to the likely residual significant operational air quality effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.1.66 There are no new or different likely significant cumulative effects for air quality as a result of the amendment acting in combination with any other amendments.

Monitoring

- 5.1.67 Volume 1, Section 9 of the main ES sets out the general approach to environmental monitoring during operation of the original scheme.
- 5.1.68 There are no changes to the monitoring requirements identified in the main ES for air quality as a result of the amendment.

Ecology and biodiversity

Scope, assumptions and limitations

- 5.1.69 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1, the SMR, and the SMR Addendum of the main ES.
- 5.1.70 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported within the SMR and the SMR Addendum. This constitutes a 'reasonable worst-case' basis for the subsequent assessment. The precautionary approach to the assessment that has been adopted identifies the likely significant ecological effects of the AP revised scheme.

Existing environmental baseline

- 5.1.71 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES, aerial photography, and relevant existing information from regional and local sources. In addition, the baseline has been informed by additional Phase 1 habitat, hedgerow, wintering birds, bats, badger,

great crested newt, water vole and otter surveys and updated information from national data sources held by Natural England.

- 5.1.72 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant new or updated baseline information provided in Background Information and Data (BID) documents²⁰ (BID-EC-004-000 and Map Series EC-02, EC-04, EC-05, EC-10 and EC-12), which accompany the SES and AP ES. For those receptors described in the main ES, further details are provided in Volume 2, CA3, Section 8 and in Volume 5, including Map Series EC-01 of the main ES. Baseline ecology reports that accompanied the main ES are provided in BID-EC-002-000 to BID-EC-014-000 and Map Series EC-02 to EC-12²¹.

Designated sites

- 5.1.73 There are five LWS of relevance to the assessment of the amendment, each of which is of county value. They are:

- Pool House Wood LWS is located to the east of the M6 and west of Stone, within the land required for the amendment;
- Filly Brook (west of Stone) LWS is located on the western edge of Stone, approximately 570m north-east of the land required for the amendment;
- Highlow Meadows LWS is located to the west of the M6 and east of Swynnerton Grange, partially within the land required for the amendment;
- Lodge Covert LWS is located east of the M6, south-east of Sandyford, approximately 120m north-east of the land required for the amendment; and
- Closepit Plantation LWS is located off the A51 Stone Road at Long Compton, partially within the land required for the amendment.

- 5.1.74 There is one woodland, Birchwood, of potential relevance to the assessment of the amendment that was added to the ancient woodland inventory (AWI) on the basis of the heritage review undertaken by HS2 Ltd to inform the main ES. Birchwood is located adjacent to the M6, to the south of Blakelow, within the land required for the amendment, and is of up to county value.

Habitats

- 5.1.75 Habitats within the land required for the amendment include arable and improved grassland, semi-improved grassland, species-poor and species-rich hedgerows, scrub, ponds, ditches, a veteran²² tree and mixed broadleaved woodland. The habitats of potential relevance to the assessment of the amendment are described in further detail below.

²⁰ HS2 Ltd (2018). High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data, Available online at: www.gov.uk/hs2

²¹ HS2 Ltd (2017), High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data, Available online at: www.gov.uk/hs2

²² Veteran trees are younger than ancient trees, but have features found on ancient trees such as decay in the trunk, branches and/or roots.

- 5.1.76 There are four woodlands of potential relevance to the assessment that qualify or are likely to qualify as mixed broadleaved woodland, which is a habitat of principal importance listed under the provisions of Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006)²³ and a conservation priority of the Staffordshire Biodiversity Action Plan (BAP)²⁴. These are:
- woodland at Pool House Wood LWS, within the land required for the amendment. The woodland is of county value;
 - a small unnamed woodland near Blakelow, partially within the land required for the amendment. The woodland is of local/parish value;
 - woodland at Lodge Covert, which is bisected by the M6, and partially within the land required for the amendment. The woodland is of up to county value; and
 - woodland at Closepit Plantation LWS, which is partially within the land required for the amendment. The woodland is of up to county value.
- 5.1.77 There is one area of semi-improved grassland of potential relevance to the assessment. Semi-improved grassland at Highlow Meadows LWS is partially within the land required for the amendment. This habitat qualifies as lowland meadow, which is a habitat of principal importance and a conservation priority of the Staffordshire BAP. The grassland is of county value.
- 5.1.78 Hedgerows within the area required for the amendment are predominantly species-rich and with good structure. The species-rich hedgerows qualify as a habitat of principal importance and a conservation priority of the Staffordshire BAP. Hedgerows within the land required for the amendment contribute towards a wider hedgerow network across the Stone and Swynnerton area that is of district/ borough value.
- 5.1.79 Filly Brook is a primary tributary of the River Trent that flows through the land required for the amendment. Filly Brook may qualify as a habitat of principal importance and as a conservation priority of the Staffordshire BAP. The watercourse is of up to county value.
- 5.1.80 A pedunculate oak, with features to indicate it may be of veteran status, is located within the land required for the amendment, to the west of the large pond south of Sandyford Farm. The tree is considered to be of up to district/borough value.

Species

- 5.1.81 Protected and notable species that are known or assumed to occur within the land required for the amendment include bats, great crested newt, barn owl, wintering and breeding birds, otter, white-letter hairstreak butterfly, badger, polecat, harvest mouse, European hedgehog, brown hare and common reptile species.
- 5.1.82 The main ES reported a bat assemblage associated with habitats present between Lodge Covert and Birchwood. Field surveys in this area recorded one tree roost supporting noctule bats and one building roost supporting an unidentified bat species.

²³ Natural Environment and Rural Communities Act 2006 (2006 CHAPTER 16). Her Majesty's Stationery Office, London.

²⁴ Staffordshire Biodiversity Partnership. *Staffordshire Biodiversity Action Plan* [online]. Available online at: <http://www.sbap.org.uk/>

Foraging and commuting activity was recorded by an assemblage including common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, Myotis species, brown long-eared, noctule and Nyctalus/Eptesicus species bats. The land required for the amendment contains potential bat roosting, foraging and commuting habitats that are likely to be used by this bat assemblage. The bat assemblage includes several species of principal importance and species that are conservation priorities of the Staffordshire BAP. The bat assemblage is of county value.

- 5.1.83 The main ES reported a bat assemblage associated with habitats at Closepit Plantation and Stabhill Plantation. Field surveys recorded five tree roosts, and two confirmed building roosts. Species present within the roosts include noctule bats and another unidentified bat species. The land required for the amendment contains potential bat roosting, foraging and commuting habitats that are likely to be used by this bat assemblage. The assemblage includes species of principal importance and species that are conservation priorities of the Staffordshire BAP. The bat assemblage is of county value.
- 5.1.84 The main ES reported a bat assemblage associated with habitats at Pire Hill. Field surveys identified a roost within a building. The species of bat roosting was not able to be confirmed, however, given the intensive agriculture and urbanised landscape associated with this area it is considered unlikely that this assemblage supports large numbers of rarer bat species. The land required for the amendment contains potential bat roosting, foraging and commuting habitats that are likely to be used by this bat assemblage. The bat assemblage potentially includes species of principal importance and species that are conservation priorities of the Staffordshire BAP. The bat assemblage is of up to county value.
- 5.1.85 The main ES reported a bat assemblage associated with habitats at Pool House Wood. Field surveys identified a series of trees with potential to support roosting bats. The land required for the amendment contains potential bat roosting, foraging and commuting habitats that are likely to be used by this bat assemblage. The bat assemblage potentially includes species of principal importance and species that are conservation priorities of the Staffordshire BAP. The bat assemblage is of up to county value.
- 5.1.86 The SES reports a metapopulation²⁵ of great crested newt that occurs between Yarnfield and Swynnerton (assumed metapopulation (AMP) 3.1), comprising known or assumed populations of great crested newt within a network of 42 ponds. The land required for the amendment contains habitats with potential for great crested newt breeding, foraging and shelter, which are likely to be used by this metapopulation. Great crested newt are an Annex 2²⁶ species, a species of principal importance, and a conservation priority of the Staffordshire BAP. The metapopulation is of county value.
- 5.1.87 The main ES reported populations of amphibian species including palmate newt, smooth newt, common toad and common frog, identified through field surveys, within ponds throughout the Stone and Swynnerton area. Amphibian species are assumed to be present in ponds that have not yet been surveyed. The land required

²⁵ A metapopulation is a group of spatially separated populations that interact. Metapopulations are described in BID-EC-007-000 (which accompanied the main ES) and BID-EC-004-000 (which accompanies the SES and AP ES).

²⁶ Annex 2 of the EU's Habitats Directive (1992) lists priority species whose conservation requires the designation of Special Areas of Conservation.

for the amendment includes ponds, grassland, hedgerow and woodland habitats that are likely to be used by these species. Common toad is a species of principal importance. The population of common amphibians throughout Stone and Swynnerton is of local/parish value.

- 5.1.88 The main ES reported populations of barn owls at Blakelow, Yarnfield and Pirehill, identified through field surveys and desk study records. The land required for the amendment includes grassland habitats that are likely to be used by foraging barn owls, and suitable trees and buildings, which may be used by nesting barn owls. Barn owls are a conservation priority of the Staffordshire BAP. The barn owl populations at Blakelow, Yarnfield and Pirehill are of county value.
- 5.1.89 The main ES reported wintering and breeding bird assemblages at Highlow Meadows, identified through field surveys. The land required for the amendment includes habitats that provide foraging and nesting opportunities for these bird assemblages. The assemblages are typical of the habitats present, but include species of principal importance and/or conservation priority species. The bird assemblages at Highlow Meadows are of local/parish value.
- 5.1.90 The main ES reported the presence of otters, identified by desk study records, in numerous locations on the River Trent and Filly Brook, which flows into the Trent. The land required for the amendment includes Filly Brook, its tributaries and nearby ponds, which provide suitable foraging, breeding and dispersal habitats for otters. Otters are an Annex 2 species, a species of principal importance and a conservation priority of the Staffordshire BAP. The otter population using the River Trent, Filly Brook, its tributaries and associated habitats is of district/borough value.
- 5.1.91 The main ES reported a population of white-letter hairstreak butterfly, identified through desk study records, at Pool House Wood. The land required for the amendment includes Pool House Wood and associated hedgerow habitats that may be used by foraging white-letter hairstreak. The white-letter hairstreak is a species of principal importance. The white-letter hairstreak population at Pool House Wood is of district/borough value.
- 5.1.92 The main ES reported an assemblage of terrestrial invertebrates, identified through field survey, at Highlow Meadows LWS. The land required for the amendment includes the habitats at Highlow Meadows LWS that support this assemblage. The terrestrial invertebrate assemblage at Highlow Meadows LWS is of local/parish value.
- 5.1.93 The main ES reported at least six social groups of badgers, identified through field surveys, throughout the Stone and Swynnerton area. The land required for the amendment includes suitable sett building and foraging habitats for badgers. The badger populations throughout the Stone and Swynnerton area are of local/parish value.
- 5.1.94 The main ES reported populations of other mammals including polecat, harvest mouse, European hedgehog, and brown hare, identified through desk study records, as being potentially present throughout the Stone and Swynnerton area. The land required for the amendment includes suitable habitats for these species. If present these species are of local/parish value.

- 5.1.95 The main ES reported populations of common reptile species such as grass snake, and slow worm, identified through desk study records, as being potentially present at low numbers throughout the Stone and Swynnerton area. Grass snake and slow-worm are both species of principal importance. Grass snake is also a conservation priority of the Staffordshire BAP. The land required for the amendment includes suitable habitats for these species. If present these species are of local/parish value.

Future environmental baseline

Construction (2020) and operation (2027)

- 5.1.96 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2020 and 2027 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).
- 5.1.97 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

- 5.1.98 No further measures are applicable to this assessment, above those stated in the draft CoCP.
- 5.1.99 The amendment will result in certain mitigation measures that were included within the original scheme not being provided. The main ES reported that provision of Filly Brook viaduct and the realignment of Filly Brook to flow within a naturalised open channel would reduce fragmentation and barrier effects upon wildlife associated with Filly Brook. The amendment will shorten the length of the viaduct by approximately 370m, which will prevent realignment of Filly Brook as an open naturalised channel to the same extent as was provided in the original scheme. However, 210m of deculverted open naturalised channel will still be provided between and adjacent to the additional culverts included within the AP revised scheme (Filly Brook culvert and Filly Brook West culvert).

Assessment of impacts and effects

Designated sites

- 5.1.100 The amendment will not give rise to new or different significant effects on designated sites and will not change the level of significance of the effects reported in the main ES.

Habitats

- 5.1.101 The main ES reported the loss of 3.3ha of mixed broadleaved woodland at Pool House Wood LWS resulting in a permanent adverse effect that is significant at county level. The amendment will not alter the extent of woodland loss at Pool House Wood LWS. The amendment will not give rise to any new or different significant effect on woodland at Pool House Wood, and will not change the level of significance of the effects reported in the main ES.

- 5.1.102 The main ES reported the loss of 1.9ha of mixed broadleaved woodland at Lodge Covert (0.1ha of this loss is habitat within the LWS). The wider woodland has supporting value to the LWS. The overall woodland loss at Lodge Covert was reported in the main ES as a permanent adverse effect that is significant at county level. The amendment will result in the loss of an additional 0.1ha of non-LWS woodland at Lodge Covert. Due to the small extent of habitat loss, the amendment will not give rise to any new or different significant effect on woodland at Lodge Covert and will not change the level of significance of the effects reported in the main ES.
- 5.1.103 The main ES reported the loss of 1.2ha of lowland meadow at Highlow Meadows LWS resulting in a permanent adverse effect that is significant at county level. The amendment will not alter the extent of habitat loss at Highlow Meadows LWS. The amendment will not, therefore, give rise to any new or different significant effect on lowland meadow at Highlow Meadows LWS, and will not change the level of significance of the effects reported in the main ES.
- 5.1.104 On a precautionary basis, the main ES reported a loss of 45.7km of hedgerow habitat within the land required for construction of the original scheme within the Stone and Swynnerton area, which is a permanent adverse effect that is significant at district/borough level. The amendment will result in the loss of an additional 30m of species-poor hedgerow. This will not give rise to any new or different significant effect on hedgerow, and will not change the level of significance of the effects reported in the main ES.
- 5.1.105 The main ES reported the permanent realignment of Filly Brook for approximately 1.3km via an existing culvert under the M6 through the Stone railhead/Stone IMB-R site, via the Filly Brook viaduct and Filly Brook West underbridge. A 40m section of Filly Brook and approximately 660m of a connected watercourse would be permanently realigned to allow construction of the Norton Bridge to Stone sidings. While this would include the deculverting and restoration of approximately 300m of Filly Brook it would result in the loss of the stream corridor downstream of the Stone railhead/Stone IMB-R and was reported in the main ES as an adverse effect at county level. Filly Brook viaduct and Filly Brook West underbridge will not be provided as part of the amendment. The realigned watercourse will instead pass partly through two new culverts: Filly Brook West culvert through the extended embankment associated with the former Filly Brook West underbridge; and Filly Brook culvert through the extended Yarnfield North embankment. The culverting of Filly Brook through the two embankments (80m and 95m in length, respectively) will result in a shorter length of deculverted and open naturalised channel than was part of the original scheme, however, this still represents approximately 210m of restored deculverted watercourse in this location compared to the current environmental baseline. As a result, the amendment will give rise to a different significant effect upon Filly Brook. However, this will not change the level of significance of the effect reported in the main ES.
- 5.1.106 The main ES reported the loss of the veteran tree identified south of Sandyford Farm, resulting in a permanent adverse effect at up to district/borough level. The amendment will not give rise to a new or different significant effect on this veteran tree, and will not change the level of significance of the effects reported in the main ES.

- 5.1.107 It is not likely that any other effects on habitats of relevance at more than the local/parish level will occur as a result of the amendment. Additional local/parish level effects arising from the AP revised scheme are listed in the SES and AP ES Volume 5: Appendix EC-003-000.

Species

- 5.1.108 The main ES reported a direct loss of roosts and a loss and fragmentation of foraging and commuting habitat used by the assemblage of bats between Lodge Covert and Birchwood. In addition, the loss of woodland, scattered trees and the proximity of the original scheme to buildings was considered likely to reduce the roosting opportunities for bats within this location. In combination these effects represent a permanent adverse effect that is significant at county level. The amendment will result in loss of an additional 0.1ha of woodland at Lodge Covert, but none of the trees within this section have been identified as having bat roosting potential. The amendment will also result in the loss of 0.1ha of woodland at Blakelow, which is likely to be utilised as a foraging resource by the bat assemblage, and trees within this woodland have significant bat roosting potential. The assumed loss of additional roosts in woodland at Blakelow will result in a different significant effect on the bat assemblage between Lodge Covert and Birchwood. However, this will not change the level of significance of the effect reported in the main ES.
- 5.1.109 The main ES reported losses of bat roosting, foraging and commuting habitat used by the bat assemblages at Closepit Plantation and Stabhill Plantation, Pire Hill and Pool House Wood. A permanent adverse effect that is significant at up to county level was reported upon each of these bat assemblages. The amendment will not alter the extent of loss of habitat used by these bat assemblages. The amendment will not, therefore, give rise to new or different significant effects on the bat assemblages associated with Closepit Plantation and Stabhill Plantation, Pire Hill and Pool House Wood, and will not change the level of significance of the effects reported in the main ES.
- 5.1.110 The main ES, as updated in the SES, reports the loss of 12 ponds and associated terrestrial habitats that are known or assumed to be used by the great crested newt metapopulation between Yarnfield and Swynnerton (AMP_{3.1}). A permanent adverse effect that is significant at up to county level was reported upon this metapopulation as a result of the new baseline information. The amendment will not impact additional ponds or associated terrestrial habitat. The amendment will not give rise to a new or different significant effect on the great crested newt metapopulation between Yarnfield and Swynnerton, and will not change the level of significance of the effects reported in the SES.
- 5.1.111 The main ES reported the loss of barn owl foraging habitat and potential roosting sites within mature trees. A permanent adverse effect identified at Blakelow and Yarnfield that is significant at up to the county level was reported on the barn owl populations. The amendment will result in additional loss of potential foraging and tree roosts at Lodge Covert and Blakelow. The assumed loss of additional tree roosts will result in a different significant effect on the barn owl populations identified at Blakelow and Yarnfield. However, this will not change the level of significance of the effect reported in the main ES.

- 5.1.112 The main ES reported the loss of potential dispersal, foraging and breeding opportunities for otter from the realignment of Filly Brook and loss of marginal habitats along the realigned section. Embedded mitigation within the original scheme included provision of a deculverted section of open naturalised channel for the realigned Filly Brook, which would have partially mitigated the effect upon otter by providing replacement habitat suitable for this species. An adverse effect upon otter at local/parish level was reported, which is not significant. The culverting of the realigned sections of Filly Brook will result in a shorter length of deculverted and open naturalised channel than was part of the original scheme, however, this still represents approximately 210m of restored and deculverted watercourse in this location compared to the current environmental baseline. The amendment will result in a different effect upon otter, however, this will remain at the local/parish level as reported in the main ES.
- 5.1.113 The main ES reported the loss of habitats utilised by white-letter hairstreak butterfly at Pool House Wood. The amendment will not alter the extent of loss of habitats at Pool House Wood used by white-letter hairstreak butterfly. The amendment will, therefore, not give rise to a new or different significant effect on white-letter hairstreak butterfly, and will not change the level of significance of the effects reported in the main ES.
- 5.1.114 It is not likely that any other effects on species of relevance at more than the local/parish level will occur as a result of the amendment. Additional local/parish level effects arising from the AP revised scheme are listed in the SES and AP ES Volume 5: Appendix EC-003-000.

Mitigation and residual effects

Other mitigation measures

- 5.1.115 The main ES reported the creation of woodland habitat areas improving ecological connectivity to retained woodland parcels within the Lodge Covert area. The horizontal alignment shift associated with the amendment will result in an increase by approximately 0.4ha in the woodland habitat creation area to the south-west of the scheme at Lodge Covert.
- 5.1.116 The main ES reported woodland habitat creation on either side of Meaford North embankment to partially compensate for the loss of Birchwood ancient woodland as well as the loss of woodland across the Stone and Swynnerton area. The amendment will alter the distribution of woodland habitat creation. A 1.3ha reduction in woodland habitat creation on the northern side of the embankment will be offset by an increase by 1.3ha in woodland habitat creation on the southern side of the embankment.
- 5.1.117 A section of Filly Brook, approximately 250m in length, that runs parallel to and to the south of the Norton Bridge to Stone Railway, to the south-east of the IMB-R, will be subject to habitat enhancement measures. This section of Filly Brook is within a woodland creation area provided for landscape mitigation as part of the original scheme. The watercourse will be ecologically enhanced through appropriate river restoration techniques to include in-channel and bank vegetation management to target increased diversity and structural complexity of habitat. Enhancement of this section of Filly Brook will compensate for the loss and fragmentation of habitat and will reduce adverse effects upon Filly Brook to a level that is not significant.

- 5.1.118 The main ES reported habitat creation measures between Micklow and Sandyford (the area covered by the amendment) including the creation of species-rich grassland, ponds, and semi-natural woodland. This mitigation will compensate for the bat foraging habitats lost to the original scheme. Once established the increased area of woodland creation at Lodge Covert will compensate for the bat foraging habitats and tree roosting opportunities lost to the AP revised scheme.
- 5.1.119 The main ES reported habitat creation measures, such as grassland creation near Highlow Meadows, and woodland and hedgerow creation between Blakelow and Birchwood, as providing foraging and nesting opportunities for barn owl populations identified at Blakelow and Yarnfield. The additional woodland habitat creation associated with Lodge Covert as part of the amendment will also contribute to this provision. Once the habitats have become established, the adverse effect resulting from the loss of foraging habitat and potential nesting site associated with the AP revised scheme will be reduced to a level that is not significant.

Summary of likely residual significant effects

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

Cumulative effects

- 5.1.121 There are no new or different likely significant cumulative effects for ecology and biodiversity as a result of the amendment acting in combination with any other amendments.

Effects arising from operation

Avoidance and mitigation measures

- 5.1.122 The main ES reported that Filly Brook viaduct would provide ecological connectivity under the HS2 route, thereby reducing habitat fragmentation and allowing free passage of wildlife, such as otter. The amendment will shorten the length of Filly Brook viaduct by approximately 370m and introduce two additional culverts. Additional mitigation measures will be required to maintain a route for free passage of wildlife along the realigned section of Filly Brook through the additional culverted sections. These mitigation measures will comprise mammal ledges or adjacent dry underpasses to provide safe passage for mammals such as otter and water vole.

Assessment of impacts and effects

- 5.1.123 There are no new or different significant operational effects for ecology and biodiversity as a result of the amendment, in comparison with the main ES.

Mitigation and residual effects

Other mitigation measures

- 5.1.124 No other mitigation measures are required above the measures reported in the main ES.

Summary of likely residual significant effects

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

Cumulative effects

- 5.1.126 There are no new or different likely significant cumulative effects for ecology and biodiversity as a result of the amendment acting in combination with any other amendments.

Monitoring

- 5.1.127 Volume 1, Section 9 of the main ES sets out the general approach to environmental monitoring during operation of the original scheme.
- 5.1.128 There are no changes to the monitoring requirements identified in the main ES for ecology and biodiversity as a result of this amendment.

Landscape and visual

Scope, assumptions and limitations

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

Existing environmental baseline

- 5.1.130 The baseline landscape and visual information for the Stone and Swynnerton area is as described in Volume 2, CA3, Section 11 of the main ES.
- 5.1.131 The area of land required for this amendment is located partly within the Yarnfield Settled Farmlands landscape character area (LCA) and partly within the Swynnerton Park Sandstone Hills and Heaths LCA, as described in Volume 5: Appendix LV-001-003 of the main ES.
- 5.1.132 The amendment relates to a section of the original scheme approximately 7km in length and affects a number of viewpoints, which lie in proximity to the area, as described in Volume 5: Appendix LV-001-003 of the main ES. These are:
- view east from Eccleshall Road, adjacent to Stafford North Services (viewpoint 015.04.011);
 - view north-east from Chebsey Footpath 7 (viewpoint 015.03.012);
 - view north-west from Darlaston Grange, Yarnfield Lane (viewpoint 016.02.002);
 - view east from Swynnerton Footpath 42 (viewpoint 016.03.012);
 - view east from Beech House Stud, Moss Hall Lane (viewpoint 016.02.013);
 - view north-east from Moss Lane/ Yarnfield Lane (viewpoint 016.02.014);
 - view north-east from Swynnerton Footpath 38 (viewpoint 016.03.008);
 - view east from Grange Cottages, Hall Lane (viewpoint 017.02.003);

- view south-west from Swynnerton Footpath 27 at Blakelow (viewpoint 017.02.004);
- view south-west from Stone Rural Footpath 34 at the Marlings (viewpoint 017.02.005);
- view south-west from the A51 Stone Road lay-by (viewpoint 017.04.007);
- view north-east from Swynnerton Footpath 37 (viewpoint 017.03.001);
- view north-east from Hall Lane, Stone Circles Challenge (viewpoint 017.03.014);
- view west from properties at Cumberstone Wood Farm (viewpoint 017.02.011);
- view south-west from Swynnerton Footpath 49 (viewpoint 017.03.012);
- view north-east from track towards Lodge Covert Cottages (viewpoint 017.03.016);
- view north-east from Main Street (viewpoint 017.02.017);
- view south-west from properties on Chase Lane (viewpoint 017.02.010); and
- view south-west from Sandyford Cottage, A51 Stone Road (viewpoint 017.02.013).

Future environmental baseline

Construction (2020) and operation (2027)

- 5.1.133 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2020 and 2027 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).
- 5.1.134 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on landscape and visual.

Temporary effects arising during construction

Avoidance and mitigation measures

- 5.1.135 No further measures are applicable to this assessment, above those stated in the draft CoCP.

Assessment of impacts and effects

Landscape assessment

- 5.1.136 Yarnfield Settled Farmlands LCA was assessed as being affected by the original scheme, and will also be affected by the AP revised scheme. The undulating rural farmland of the Yarnfield Settled Farmlands LCA is considered to be of medium sensitivity to change due to the overall scenic and tranquil nature of the landscape, with the exception of the M6, which crosses the LCA and is a prominent and intrusive feature. The main ES reported a major adverse significant effect during construction. This was due to the construction works associated with the Filly Brook and M6

Meaford viaducts and the presence of the Stone railhead main compound and satellite compounds, which would cause substantial change to the rural landscape, and erode the scenic quality and perception of tranquillity.

- 5.1.137 The construction works associated with the section of the amendment within the Yarnfield Settled Farmlands LCA are similar in nature and scale to the works associated with the original scheme. The changes include the replacement of Filly Brook viaduct with the shorter Norton Bridge to Stone Railway viaduct, the removal of Filly Brook West underbridge and the resulting extension of the embankments associated with both features. The alignment of the HS2 main line will be raised which will increase the height of the Yarnfield North and Yarnfield South embankments by up to 0.9m near Filly Brook. The changes will increase the scale of the earthworks and reduce the scale of the viaduct construction works, which will mean fewer tower cranes on the skyline. One additional year will be required for construction of Yarnfield North embankment. However, overall, the construction activities will be broadly similar to those for the original scheme and the amendment will not, therefore, give rise to any new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.1.138 Swynnerton Park Sandstone Hills and Heaths LCA was assessed as being affected by the original scheme, and will also be affected by the AP revised scheme. This landscape is considered to be of high sensitivity to change due to the largely intact historic designed landscape associated with the 18th century parkland estate of Swynnerton Park. It is a scenic and mainly tranquil landscape, although the M6 corridor creates some local disturbance along its eastern side. The main ES reported a major adverse significant effect during construction. This was due to the impacts of constructing the M6 Meaford viaduct (including the presence of tower cranes), associated embankments and cuttings. This would alter the setting of this historic designed landscape and result in the partial removal of woodland within Lodge Covert. It would also substantially change the rural landscape and erode the scenic quality and perception of tranquillity.
- 5.1.139 The amendment as it passes through Swynnerton Park Sandstone Hills and Heaths LCA generally comprises horizontal realignment of the HS2 main line by up to 15.5m in a north-easterly direction, with consequent effects on footpath alignments, access tracks and earthworks. There will be a slight net increase (0.8ha) in the land required for construction immediately adjacent to the HS2 route. However, due to the small scale change and the similar nature of construction works this amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Visual assessment

Viewpoints 015.04.011 and 015.03.012

- 5.1.140 Construction activity associated with the amendment will be visible from viewpoints 015.04.011 and 015.03.012. These viewpoints were assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a moderate adverse significant effect for viewpoint 015.04.011 and a major adverse significant effect for viewpoint 015.03.012. This was due to the prominence of construction works associated with the B5026 Eccleshall Road overbridge, Filly Brook

viaduct (including the presence of tower cranes) and Yarnfield North embankment transfer node within these otherwise rural views.

- 5.1.141 The amendment will not significantly increase the land required for construction of the original scheme and the construction works will be broadly similar in scale and impact. The increase in the scale of the earthworks near Filly Brook to construct the raised and extended embankments will be offset by a reduction in scale of the viaduct construction works, which will mean fewer tower cranes on the skyline. Whilst the change in the type of construction activity, particularly around Filly Brook, will result in an alteration to the view, it will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Viewpoints 016.02.002, 016.03.012, 016.02.013 and 016.02.014

- 5.1.142 North of the Norton Bridge to Stone Railway viaduct, construction activity associated with the amendment will be visible from viewpoints 016.02.002, 016.03.012, 016.02.013 and 016.02.014. These viewpoints were assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a major adverse significant effect due to construction of the Filly Brook viaduct (including the presence of tower cranes), Yarnfield Lane realignment, Yarnfield Lane M6 overbridge replacement and Yarnfield Lane underbridge. These works would be extensive and prominent, and would introduce uncharacteristic features into the sloping rural farmland whilst interrupting long distance views towards a wooded ridgeline.

- 5.1.143 The amendment will not significantly increase the land required for construction of the original scheme and the works will be broadly similar in scale and impact. The increase in the scale of the earthworks near Filly Brook to construct the raised and extended embankments will be offset by a reduction in scale of the viaduct construction works, which will mean fewer tall cranes on the skyline. Whilst the change in the type of construction activity, particularly around Filly Brook, will result in an alteration to the view, it will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Viewpoints 016.03.008, 017.02.004 and 017.02.003, 017.02.005, 017.04.007 and 017.03.001

- 5.1.144 North of Yarnfield, construction activity associated with the amendment will be visible from viewpoints 016.03.008, 017.02.004 and 017.02.003. These viewpoints were assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a major adverse significant effect due to construction of the M6 Meaford viaduct (including the presence of tower cranes), a new accommodation underbridge and installation of equipment associated with underground power lines. The M6 Meaford viaduct satellite compound and Meaford North embankment satellite compound will also be apparent and the Stone railhead main compound will be visible from viewpoint 016.03.008. The construction activity would be extensive and prominent in views across the rural landscape and would interrupt views towards the woodland shelter belts at Swynnerton Old Park.

5.1.145 As a result of the amendment, the horizontal realignment of the HS2 main line along this section will be moved in a north-easterly direction by up to 15.5m and there will be a net increase by 0.8ha in the amount of land required. The construction works, including works to construct the Meaford North embankment will appear very similar to the original scheme other than they will be slightly displaced to the north-east. Near Blakelow Farm (viewpoint 017.02.004), the construction works will appear slightly closer and the effect will remain significant. Overall the amendment will not give rise to a new or different significant effect and will not change the level of significance reported in the main ES.

5.1.146 The construction activity associated with the horizontal realignment of the HS2 main line, including the works to construct the Meaford North embankment, will be visible in filtered medium range views from other viewpoints in the vicinity (viewpoints 017.02.005, 017.04.007 and 017.03.001). The main ES reported a moderate adverse significant effect. The horizontal alignment of the HS2 main line along this section will be moved in a north-easterly direction by up to 15.5m, which will move the construction works slightly to the north-east but will not increase the scale or type of works present in the views compared to the original scheme. The works will be seen in the context of the construction activity of the original scheme and will not give rise to a new or different significant effect, and will not change the level of significance reported in the main ES.

Viewpoint 017.02.013

5.1.147 East of Swynnerton, construction activity associated with the amendment will be visible from viewpoint 017.02.013. Residents at Sandyford Cottage are assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a major adverse significant effect due to the construction of the Swynnerton embankment, a new accommodation underbridge, Swynnerton embankment satellite compound and Swynnerton North cutting. This construction activity would result in new features that form prominent, incongruous elements in the views across the rolling rural landscape and would cause severance of views towards the parkland shelter belts associated with Swynnerton Park.

5.1.148 The horizontal realignment of the HS2 main line along this section will be moved in a north-easterly direction by up to 15.5m, which will move the construction works slightly to the north-east and closer to Sandyford Farm. This will increase the prominence of works in the view, but will be seen in the context of the construction activity of the original scheme. The amendment will, therefore, not give rise to a new or different significant effect and will not change the level of significance reported in the main ES.

Viewpoints 017.03.014, 017.02.010, 017.02.011, 017.03.012, 017.03.016 and 017.02.017

5.1.149 Construction of the amendment, specifically the horizontal realignment of the HS2 main line along this section will also be visible in filtered views from viewpoints 017.03.014, 017.02.010, 017.02.011, 017.03.012, 017.03.016 and 017.02.017. These viewpoints were assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a moderate adverse significant effect due to the scale of the construction works being undertaken.

- 5.1.150 When viewed in the context of the original scheme, the amendment represents a barely perceptible change in views from these locations, particularly since many of the views will be filtered by intervening vegetation. The amendment will, therefore, not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

Other mitigation measures

- 5.1.151 No other mitigation measures have been identified above the measures reported in the main ES.

Summary of likely residual significant effects

- 5.1.152 There are no changes to the likely residual significant construction landscape and visual effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.1.153 There are no new or different likely significant cumulative effects for landscape and visual as a result of the amendment acting in combination with any other amendments.

Permanent effects arising during operation

Avoidance and mitigation measures

- 5.1.154 No avoidance or mitigation measures, additional to those reported in the main ES, are required.

Assessment of impacts and effects

Landscape assessment

- 5.1.155 The Yarnfield Settled Farmlands LCA was assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a moderate adverse significant effect at year 1 and year 15 of operation, reducing to non-significant at year 60 due to the screening effect of the mitigation planting, which would also help integrate the original scheme into the wider landscape. This was due to the presence of a viaduct, overbridges, associated earthworks and overhead power lines. These structures would interrupt the rural skyline, reduce scenic quality and intensify the landscape severance currently experienced due to the M6 corridor.
- 5.1.156 The amendment within the Yarnfield Settled Farmlands LCA will result in the replacement of Filly Brook viaduct with the shorter Norton Bridge to Stone Railway viaduct and the removal of Filly Brook West underbridge and the resulting extension of the embankments associated with both features. The alignment of the HS2 main line will be raised which will increase the height of the Yarnfield North and Yarnfield South embankments by up to 0.9m near Filly Brook. This will slightly increase the sense of landscape severance within the open rural farmland and interrupt the views along the Filly Brook valley. Further north, the horizontal changes to the HS2 main line will be similar in nature and scale to the original scheme. Overall, the amendment

will not give rise to a new or different significant effect on the Yarnfield Settled Farmlands LCA and will not change the level of significance reported in the main ES.

5.1.157 Swynnerton Park Sandstone Hills and Heaths LCA was assessed as being affected by the original scheme, and will also be affected by the AP revised scheme. The main ES reported a major adverse significant effect during year 1 and year 15 of operation. The effect would reduce by year 60 of operation to a moderate adverse significant effect when the mitigation planting reached maturity. This is due to the presence of the M6 Meaford viaduct, overbridges, associated earthworks and overhead power lines. These structures would interrupt the rural skyline, reduce scenic quality and perception of tranquillity currently experienced in this location.

5.1.158 The amendment as it passes through Swynnerton Park Sandstone Hills and Heaths LCA generally comprises horizontal realignment of the HS2 main line by up to 15.5m in a north-easterly direction, which will move the scheme further from Swynnerton Hall. This will not give rise to a new or different significant effect and will not change the level of significance reported in the main ES.

Visual assessment

Viewpoint 015.03.012

5.1.159 The amendment will be visible in filtered views from viewpoint 015.03.012. This viewpoint was assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a major adverse significant effect at year 1 of operation, reducing to a moderate adverse significant effect at year 15 and year 60. This was due to the presence of a new overbridge, the Filly Brook viaduct, associated embankments, overhead power lines and more distant views of the Stone IMB-R. The new infrastructure would result in a substantial change to the views across the gently sloping arable farmland, interrupting the horizon and introducing elements that are out of scale with the landscape.

5.1.160 The amendment, specifically the raising and extending of the Yarnfield North embankment and Yarnfield South embankment, will increase the foreshortening of views and increase the sense of severance created by the M6 corridor, particularly in winter when views are more open. It will not, however, give rise to a new or different significant effect and will not change the level of significance reported in the main ES.

Viewpoint 015.04.011

5.1.161 Viewpoint 015.04.011 was assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a moderate adverse significant effect in year 1 of operation, reducing to non-significant at year 15 of operation as mitigation planting matures. This was due to the introduction of incongruous features that would be intermittently visible in the rural landscape, including a new overbridge, the Filly Brook viaduct, associated embankments, overhead power lines and more distant views of the Stone IMB-R.

5.1.162 By foreshortening views and increasing the sense of severance, the AP revised scheme, including the shorter Norton Bridge to Stone Railway viaduct and the raised and extended embankments, will slightly increase the magnitude of operational effects at this viewpoint, particularly in winter when views are more open. The

amendment will not, however, give rise to a new or different significant effect and will not change the level of significance reported in the main ES.

Viewpoints 016.02.002 and 016.02.013

- 5.1.163 Viewpoints 016.02.002 and 016.02.013 were assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a major adverse significant effect at year 1, reducing to a moderate adverse significant effect at year 15 and non-significant at year 60 as the mitigation planting matures. This was due to the loss of existing woodland along the M6 corridor, which would result in more open views of the various elements of the original scheme and the introduction of features, including the Stone IMB-R, embankments, Yarnfield Lane realignment and Yarnfield Lane M6 overbridge replacement, that are out of scale and incongruous within the landscape.
- 5.1.164 The amendment, specifically the raised and extended embankments will make the AP revised scheme slightly more visible from Darlaston Grange. The amendment will not, however, give rise to a new or different significant effect and will not change the level of significance reported in the main ES.

Viewpoints 016.03.012 and 016.02.014

- 5.1.165 Viewpoints 016.03.012 and 016.02.014 were assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a moderate adverse significant effect at year 1 of operation, reducing to non-significant at year 15 of operation as mitigation planting matures. This was due to the introduction of features which are out of scale and incongruous in the rural landscape, including the Filly Brook viaduct, Stone IMB-R, associated embankments, Yarnfield Lane realignment and Yarnfield Lane M6 overbridge replacement. In addition, for viewpoint 016.02.014, the main ES reported a major adverse significant effect at year 1 night time due to the lighting associated with the Stone IMB-R.
- 5.1.166 The amendment, specifically the raised and extended embankments and the replacement of Filly Brook viaduct with Norton Bridge to Stone Railway viaduct, will be visible from these viewpoints, particularly the extended embankments, which will foreshorten medium range views towards Filly Brook and interrupt longer views across the rural farmland towards a distant wooded ridgeline. When seen in the context of the original scheme and the M6 corridor, however, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Viewpoints 016.03.008, 017.02.004 and 017.02.003, 017.02.005, 017.04.007 and 017.03.001

- 5.1.167 North of Yarnfield, viewpoints 016.03.008, 017.02.004 and 017.02.003 were assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported a major adverse significant effect in year 1 of operation. This would reduce at year 15 and year 60 to moderate adverse significant at viewpoints 016.03.008 and 017.02.004 as mitigation planting matures. The effects at viewpoint 017.02.003 would remain major adverse significant at year 15, reducing to moderate adverse significant at year 60. This was due to the presence of the M6 Meaford viaduct, an accommodation underbridge and associated embankments and

cuttings. All these features would appear prominent and incongruous within the rural landscape and would interrupt views towards the shelterbelts at Swynnerton Old Park.

- 5.1.168 The amendment, specifically the horizontal realignment of the HS2 main line along this section, to be moved in a north-easterly direction by up to 15.5m and the reconfiguring of some of the earthworks, balancing pond and mitigation planting areas, will result in a slight change to the view at viewpoints 016.03.008 and 017.02.003. At Blakelow (viewpoint 017.02.004), the steepening of a section of the Meaford North embankment slope and consequent reduction in mitigation planting will mean that residents will have close range views of the embankment, overhead line equipment and passing trains. When seen in the context of the original scheme and the proximity of this viewpoint to the M6 corridor, however, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.1.169 The amendment, specifically the horizontal realignment of the HS2 main line along this section to be moved in a north-easterly direction by up to 15.5m and the reconfiguring of some of the earthworks, balancing pond and mitigation planting areas will also be visible in filtered medium range views from other viewpoints in the vicinity (viewpoints 017.02.005, 017.04.007 and 017.03.001). The main ES reported a moderate adverse significant effect at year 1 and year 15 of operation for all three viewpoints. This would reduce at year 60 to non-significant at viewpoints 017.02.005 and 017.04.007 as mitigation planting matures. The effects at viewpoint 017.03.001 would remain moderate adverse significant at year 60. Overall the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- Viewpoint 017.02.013
- 5.1.170 Viewpoint 017.02.013 was assessed as being affected by the original scheme and will also be affected by the AP revised scheme. The main ES reported that residents at Sandyford Cottage would experience a moderate adverse significant effect in summer year 1 through to year 15, which would increase to major adverse significant in winter when views are more open. This would reduce at year 60 to non-significant due to the growth of mitigation planting, which would filter and screen views, whilst helping to integrate the original scheme into its wider landscape setting. This is due to the presence of a new underbridge, the Swynnerton embankment and Swynnerton North cutting. These would be prominent, incongruous elements in views across the rolling rural landscape and will interrupt views towards the parkland shelter belts associated with Swynnerton Park.
- 5.1.171 The amendment, specifically the horizontal realignment of the HS2 main line along this section to be moved in a north-easterly direction by up to 15.5m and the reconfiguring of some of the earthworks, balancing pond and mitigation planting areas, will be marginally closer to Sandyford Cottage than the original scheme but the presence of intervening trees and the nearby farm complex on the unnamed road close to the A51 Stone Road will continue to filter and block views. Overall the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Viewpoints 017.02.010, 017.03.014, 017.03.012 and 017.03.016

- 5.1.172 East of Swynnerton, viewpoints 017.02.010, 017.03.014, 017.03.012 and 017.03.016 were assessed as being affected by the original scheme and will also be affected by the AP revised scheme. Despite views from these locations being filtered by intervening vegetation, the main ES reported a moderate adverse significant effect from year 1 through to year 15, for all the viewpoints except for viewpoint 017.03.014, (which would reduce to non-significant at year 15, due to the maturing and screening effect of mitigation planting). This was due to the presence of the Swynnerton embankment, Swynnerton auto-transformer station, noise barriers and overhead line equipment, all of which would appear as uncharacteristic features within the rural landscape and would interrupt the characteristic hedgerow field boundaries and mature parkland shelter belts associated with Swynnerton Park. Effects at viewpoints 017.02.010, 017.03.012 and 017.03.016 would reduce to non-significant by year 60 as the mitigation planting matures.
- 5.1.173 The amendment, specifically the horizontal realignment of the HS2 main line along this section to be moved in a north-easterly direction by up to 15.5m and the reconfiguring of some of the earthworks, balancing pond and mitigation planting areas, will result in a very slight change to the view at these viewpoints. Overall, therefore, the amendment will not give rise to a new or different significant effect and will not change the level of significance reported in the main ES.

Mitigation and residual effects

Other mitigation measures

- 5.1.174 The permanent effects of the original scheme on landscape and visual receptors would be substantially reduced through incorporation of the measures described in the main ES. Effects in year 1 of operation may be further reduced by establishing planting early in the construction programme. This will provide additional screening and greater integration of the original scheme into the landscape. However, no other mitigation measures are considered practicable due to the high visibility of elements of the original scheme and the AP revised scheme and the sensitivity of the surrounding receptors.

Summary of likely residual significant effects

- 5.1.175 There are no changes to the likely residual significant operational landscape and visual effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.1.176 There are no new or different likely significant cumulative effects for landscape and visual as a result of the amendment acting in combination with any other amendments.

Monitoring

- 5.1.177 Volume 1, Section 9 of the main ES sets out the general approach to environmental monitoring during operation of the original scheme.

- 5.1.178 There are no changes to the monitoring requirements identified in the main ES for landscape and visual as a result of the amendment.

Sound, noise and vibration

Scope, assumptions and limitations

- 5.1.179 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in Volume 1, the SMR, and the SMR Addendum of the main ES.

Existing environmental baseline

- 5.1.180 The baseline sound, noise and vibration information for the Stone and Swynnerton area is as described in Volume 2, CA3, Section 13 of the main ES.

- 5.1.181 Baseline sound levels representative of the assessment locations affected by the amendment have been used in the construction and operational assessments.

Future environmental baseline

Construction (2020) and operation (2027)

- 5.1.182 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2020 and 2027 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).

- 5.1.183 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on sound, noise, and vibration.

Effects arising during construction

Avoidance and mitigation measures

- 5.1.184 No further measures are applicable to this assessment, above those stated in the draft CoCP.

Assessment of impacts and effects

- 5.1.185 The main ES did not report any likely significant sound, noise or vibration effects in the vicinity of this amendment.

- 5.1.186 An assessment has been undertaken to determine whether construction noise and vibration associated with the amendment will result in a new or different likely significant effect at any properties, using the significance criteria detailed in the main ES Volume 5: Appendix SV-001-000. The construction noise results are presented in SES and AP ES Volume 5: Appendix SV-002-000.

- 5.1.187 Whilst some of the construction processes are modified by this amendment, when considered in conjunction with the unchanged works defined in the main ES they do not alter the overall construction noise levels. Therefore, no new or different significant construction noise or vibration effects have been identified as a result of the amendment.

Mitigation and residual effects

Other mitigation measures

- 5.1.188 No other mitigation measures have been identified above the measures reported in the main ES.

Summary of likely residual significant effects

- 5.1.189 There are no changes to the likely residual significant construction noise and vibration effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.1.190 There are no new or different likely significant cumulative effects for noise and vibration as a result of the amendment acting in combination with any other amendments.

Effects arising from operation

Avoidance and mitigation measures

- 5.1.191 No avoidance or mitigation measures, additional to those reported in the main ES, are required.

Assessment of impacts and effects

- 5.1.192 The main ES did not identify any likely significant sound, noise or vibration effects at properties in the area close to this amendment.
- 5.1.193 An assessment has been undertaken to determine whether operational noise and vibration associated with the amendment will result in a new or different likely significant effect at any properties, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000). The operational noise results are presented in SES and AP ES (Volume 5: Appendix SV-002-000).
- 5.1.194 No new or different significant operational noise or vibration effects have been identified as a result of the amendment.

Mitigation and residual effects

Other mitigation measures

- 5.1.195 No other mitigation measures are required above those reported in the main ES.

Summary of likely residual significant effects

- 5.1.196 There are no changes to the likely residual significant operational noise and vibration effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.1.197 There are no new or different likely significant cumulative effects for noise and vibration as a result of the amendment acting in combination with any other amendments.

Monitoring

- 5.1.198 Volume 1, Section 9 of the main ES sets out the general approach to environmental monitoring during operation of the original scheme.
- 5.1.199 There are no changes to the monitoring requirements identified in the main ES for sound, noise and vibration as a result of the amendment.

Water resources and flood risk

Scope, assumptions and limitations

- 5.1.200 The assessment scope, key assumptions and limitations for water resources and flood risk are as set out in Volume 1, the SMR, and the SMR Addendum of the main ES.

Existing environmental baseline

- 5.1.201 The baseline water resources and flood risk information for the Stone and Swynnerton area is as described in Volume 2, CA 3, Section 15 of the main ES. Further details relating to flood risk for this area are provided in Volume 5: Appendix WR-003-003 of the main ES and the updated Flood risk assessment, Volume 5: Appendix WR-003-000 and Map Series WR-05 and WR-06 of the SES and AP ES.

Future environmental baseline

Construction (2020) and operation (2027)

- 5.1.202 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2020 and 2027 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).
- 5.1.203 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on water resources and flood risk.

Effects arising during construction

Avoidance and mitigation measures

- 5.1.204 No further measures are applicable to this assessment, above those stated in the draft CoCP.

Assessment of impacts and effects

Flood risk

- 5.1.205 The amendment will result in loss of 0.3ha of the Filly Brook floodplain, which would displace approximately 5,000m³ of floodwater during the peak of a 1 in 100 (1%) annual probability flood, including an allowance for climate change. Consequently, in the absence of mitigation, the amendment will give rise to new adverse flood risk effects related to receptors in the Filly Brook catchment, which are significant.
- 5.1.206 To mitigate the significant new flood risk effects, specific mitigation measures have been provided in the amendment 'Additional land permanently required for the IMB-R/Norton Bridge to Stone Railway flood mitigation measures (AP-003-002)'.

- 5.1.207 AP-003-002 incorporates several measures to better manage flood risk to existing local receptors comprising flood embankments, replacement flood storage areas (with a capacity of over 37,000m³) and land drainage works. The measures will protect HS2 infrastructure from flooding over the scheme's lifetime and reduce flood risk to existing receptors along Filly Brook.
- 5.1.208 The measures have been designed on a precautionary basis to take account of changes in peak flow that may occur due to climate change beyond 2080.
- 5.1.209 An updated flood risk assessment has been prepared and is provided in Volume 5: Appendix WR-003-000 of the SES and AP ES. In addition, the implications of these proposals in relation to alignment with flood risk policies within the National Planning Policy Framework (NPPF)²⁷ are reported in SES and AP ES Volume 3: Route-wide effects. An updated hydraulic modelling report for Filly Brook is included in the BID reports (BID-WR-004-007: Hydraulic modelling report), which accompany the SES and AP ES.
- 5.1.210 The measures provided for in AP-003-002 will ensure that the amendment will not give rise to any new or different significant effects on flood risk.

Water Framework Directive

- 5.1.211 The original scheme provided for the restoration of approximately 300m of Filly Brook from culvert to open channel. The amendment will reduce the restored length to approximately 100m.
- 5.1.212 The amendment revises the scheme in the vicinity of Filly Brook watercourse, and therefore, requires reconsideration with regard to compliance with the objectives of the Water Framework Directive (WFD). An Addendum to the WFD compliance assessment has been prepared and is provided in SES and AP ES Volume 5: Appendix WR-001-000. This document updates the relevant sections of the WFD compliance assessment from the main ES (Volume 5: Appendix WR-001-000) to reflect the impacts of the AP revised scheme. The updated assessment concludes that the AP revised scheme will not prevent the achievement of future status objectives at water body scale. The AP revised scheme will, therefore, be compliant with the legal requirements of WFD legislation and will result in no new or different significant adverse WFD related effects.

Mitigation and residual effects

Other mitigation measures

- 5.1.213 No other mitigation measures are required above the measures reported in the main ES.

Summary of likely residual significant effects

- 5.1.214 Following implementation of the mitigation measures described in the amendment 'Additional land permanently required for the IMB-R/Norton Bridge to Stone Railway flood mitigation measures (AP-003-002)', there are no changes to the residual likely

²⁷ Department for Communities and Local Government, National Planning Policy Framework, 2015.

significant construction water resources and flood risk effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.1.215 There are no new or different likely significant cumulative effects for water resources and flood risk as a result of the amendment acting in combination with any other amendments.

Effects arising from operation

Avoidance and mitigation measures

- 5.1.216 No avoidance or mitigation measures, additional to those reported in the main ES, are required.

Assessment of impacts and effects

- 5.1.217 There are no new or different significant operational effects related to water resources and flood risk as a result of the amendment, in comparison with the main ES.

Mitigation and residual effects

Other mitigation measures

- 5.1.218 No other mitigation measures are required above the measures reported in the main ES.

Summary of likely residual significant effects

- 5.1.219 There are no changes to the likely residual significant operational water resources and flood risk effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.1.220 There are no new or different likely significant cumulative effects for water resources and flood risk as a result of the amendment acting in combination with any other amendments.

Monitoring

- 5.1.221 Volume 1, Section 9 of the main ES sets out the general approach to environmental monitoring during operation of the original scheme.
- 5.1.222 There are no changes to the monitoring requirements identified in the main ES for water resources and flood risk as a result of the amendment.

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

- 5.1.223 The amendment will not result in a new or different likely residual significant effect or change the likely residual significance of the environmental effects as set out in the main ES.

5.2 Additional land permanently required for the IMB-R/Norton Bridge to Stone Railway flood mitigation measures (AP-003-002)

- 5.2.1 The Bill provides for a flood mitigation bund, 430m in length and 3m in height, and a replacement floodplain storage area located adjacent to the west side of the M6, approximately 125m north-west of the Yarnfield Lane M6 overbridge replacement. See Map CT-06-223, H10 to F10 and Map CT-06-223-L1, H2 to F1 in the main ES Volume 2, CA3 Map Book. The flood mitigation bund would provide flood attenuation for Filly Brook to reduce flood risk in the area. An area of wetland habitat creation would be located to the west of the M6, extending 870m north from the realigned Yarnfield Lane. A culvert would be located to the north-west of Yarnfield Lane and west of the M6 for the realignment of Filly Brook beneath the northbound M6 access. See Map CT-06-223, H10 and Map CT-06-223-L1, H1 in the main ES Volume 2, CA3 Map Book.
- 5.2.2 Since submission of the Bill, revised flood mitigation measures have been designed to further improve flood risk management in the area and specifically to avoid impacts on the M6. The flood mitigation bund and a replacement floodplain storage area adjacent to the M6, included in the original scheme, will be removed and replaced by three smaller replacement floodplain storage areas. See Map CT-06-222, C8 to C6; Map CT-06-223, F10 to E9 and Map CT-06-224, I7 to I6 in the SES and AP ES Volume 2, CA3 Map Book.
- 5.2.3 A smaller replacement floodplain storage area, contained by an earth bund approximately 210m in length, 1.5m in height and with a storage volume of approximately 7,300m³, will replace the proposals in the original scheme (a flood mitigation bund west of the M6 and associated replacement floodplain storage area). This replacement floodplain storage area will be located approximately 510m north-west of the Yarnfield Lane M6 overbridge replacement (see Map CT-06-223, F10 to E9 in the main ES Volume 2, CA3 Map Book). Reconfiguration of an area of wetland habitat creation, included in the original scheme, will be required to accommodate this new replacement flood storage area. Approximately 0.9ha of landscape mitigation planting and approximately 0.8ha of grassland habitat creation, associated with the flood mitigation bund in the original scheme, will no longer be implemented. Approximately 1.7ha of wet grassland habitat will be provided in this location.
- 5.2.4 A second replacement floodplain storage area, with capacity to temporarily contain up to 5,000 m³ of floodwater behind an earth bund approximately 1m in height and 143m in length, will be located within an area of grassland habitat creation, included in the original scheme, adjacent to the north-west abutment of the M6 Meaford viaduct (See Map CT-06-224, I7 to I6 in the SES and AP ES Volume 2, CA3 Map Book).
- 5.2.5 A third replacement floodplain storage area will be located to the east of the M6. This will be capable of containing approximately 25,000 m³ of flood water, which would be impounded behind the Yarnfield North Embankment, upstream of the Filly Brook culvert (see Map CT-06-222, C8 to C6 in the SES and AP ES Volume 2, CA3 Map Book). The storage area will extend upstream to the M6 and will be bisected by the Infrastructure Maintenance Base-Rail (IMB-R) embankment and associated Filly Brook West culvert.

5.2.6 To control peak flood flows, and ensure that the flood storage areas work effectively, amendments are proposed to culverts included in the original scheme as well as provision of new culverts, as follows:

- a culvert, included in the original scheme, located to the north-west of Yarnfield Lane, on the west side of the M6, will be shortened in length from 135m to 107m due to the removal of the flood mitigation bund. See Map CT-06-223, H10 and Map CT-06-223-L1, H1 in the SES and AP ES Volume 2, CA3 Map Book;
- two new culverts, both approximately 7.5m in length and 0.6m in diameter, will be located through the bund at the south end of the smaller replacement floodplain storage area at this location (which replaces the removed flood mitigation bund west of the M6), to control peak flows passing downstream along Filly Brook. One will be positioned at bed level and the other raised approximately 0.6m above the bed level of Filly Brook. See Map CT-06-223, F10 in the SES and AP ES Volume 2, CA3 Map Book;
- a new culvert, approximately 5.5m in length and 0.6m in diameter, is proposed to control peak flood flows in the replacement floodplain storage area adjacent to the north-west abutment of the M6 Meaford viaduct. See Map CT-06-223, A8 and Map CT-06-224, I6 in the SES and AP ES Volume 2, CA3 Map Book; and
- a new culvert (Filly Brook culvert), as provided for in amendment AP-003-001, approximately 95m in length and 0.9m in diameter, will be used to control flows in Filly Brook and ensure that the replacement floodplain storage area in this location works effectively. See Map CT-06-222, C6 to C5 in the SES and AP ES Volume 2, CA3 Map Book.

5.2.7 In addition, two new flood mitigation bunds are proposed to reduce flood risk in the area west of the M6, immediately downstream of the realigned Yarnfield Lane. These comprise:

- a new flood mitigation bund, approximately 1m in height and 30m in length, located approximately 350m south-east of the Yarnfield Lane M6 overbridge replacement, adjacent to the existing culvert for Filly Brook beneath the M6. This is designed to prevent floodwater flowing westwards towards the Norton Bridge to Stone Railway. See Map CT-06-222, B8, in the SES and AP ES Volume 2, CA3 Map Book; and
- a new flood mitigation bund, approximately 0.3m in height and 65m in length, located approximately 40m south-east of the Yarnfield Lane M6 overbridge replacement, within an area of landscape mitigation planting included in the original scheme, adjacent to the Filly Brook diversion. This bund will prevent floodwater flowing westwards towards farmland and property in this area. See Map CT-06-222, A9, and Map CT-06-223-L1, I1, in the SES and AP ES Volume 2, CA3 Map Book.

5.2.8 The amendment will be constructed within the period set out in the main ES.

- 5.2.9 The land required for the southernmost bund in the revised flood mitigation scheme is outside the limits of the Bill. The amendment will result in the permanent requirement for approximately 520m² of additional land. See Map CT-06-222, B8 in the SES and AP ES Volume 2, CA3 Map Book.

Topics included in the AP assessment

- 5.2.10 The amendment is considered to only require reassessment of the environmental effects and mitigation described in the main ES for ecology and biodiversity.
- 5.2.11 Water resources and flood risk is not considered in this section as this amendment is specifically designed to manage flood risk along Filly Brook. As described in the AP-003-001 assessment, the proposal will ensure that there are no increases in flood risk and that the risks posed by flooding to a number of key receptors, including the M6 and the Norton Bridge to Stone Railway, will be reduced. The issues related to the WFD are covered under amendment AP-003-001 and are documented within the updated WFD compliance assessment report SES and AP ES Volume 5: Appendix WR-001-000). This update should be read in conjunction with Volume 5: Appendix WR-001-000 from the main ES.

Ecology and biodiversity

Scope, assumptions and limitations

- 5.2.12 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1, the Scope and Methodology Report (SMR)²⁸, and the SMR Addendum²⁹ of the main ES.
- 5.2.13 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported within the SMR and the SMR Addendum. This constitutes a 'reasonable worst case' basis for the subsequent assessment. The precautionary approach to the assessment that has been adopted identifies the likely significant ecological effects of the AP revised scheme.

Existing environmental baseline

- 5.2.14 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES, aerial photography, and relevant existing information from regional and local sources. In addition, the baseline has been informed by additional Phase 1 habitat, hedgerow, wintering birds, bats, badger, great crested newt, water vole and otter surveys and updated information from national data sources held by Natural England.
- 5.2.15 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant new or updated baseline

²⁸HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report (Appendix CT-001-001). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

²⁹HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report Addendum (Appendix CT-001-002). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

information provided in Background Information and Data (BID) documents³⁰ (BID-EC-004-000 and Map Series EC-02, EC-04, EC-05, EC-10 and EC-12), which accompany the SES and AP ES. For those receptors described in the main ES, further details are provided in Volume 2, CA3, Section 8 and in Volume 5, including Map Series EC-01 of the main ES. Baseline ecology reports that accompanied the main ES are provided in BID-EC-002-000 to BID-EC-014-000 and Map Series EC-02 to EC-12³¹.

Designated sites

- 5.2.16 There is one local wildlife site (LWS) of relevance to the assessment of the amendment, which is of county value. Highlow Meadows LWS is located to the west of the M6 and east of Swynnerton Grange, partially within the land required for the amendment.
- 5.2.17 There is one woodland, Birchwood, of relevance to the assessment of the amendment that was added to the ancient woodland inventory (AWI) on the basis of the heritage review undertaken by HS2 Ltd to inform the main ES. Birchwood is located adjacent to the M6, to the south of Blakelow, within the land required for the amendment, and is of up to county value.

Habitats

- 5.2.18 Habitats within the land required for the amendment include semi-natural broadleaved woodland, species poor and species rich hedgerows, lowland meadow, arable, ponds and minor watercourses. The habitats of potential relevance to the assessment of the amendment are described in further detail below.
- 5.2.19 National Vegetation Classification (NVC) MG4 *Alopecurus pratensis-Sanguisorba officinalis* grassland is located adjacent to the M6 and partially within the area designated as Highlow Meadows LWS. This grassland is representative of lowland meadow, which is a habitat of principal importance listed under the provisions of Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006)³² and a conservation priority of the Staffordshire Biodiversity Action Plan (BAP)³³. The grassland is of county value.
- 5.2.20 Semi-improved neutral grassland is located directly adjacent to the M6 and north-east of Yarnfield. On a precautionary basis it is assumed to qualify as lowland meadow habitat of principal importance. The grassland is of district/borough value.
- 5.2.21 An unnamed belt of young mixed deciduous woodland runs along the western edge of the M6 connecting to the woodland at Fox Covert. The woodland is of local/parish value.
- 5.2.22 Hedgerows within the land required for the amendment include intact species-poor hedgerows and defunct³⁴ species-rich hedgerows. These hedgerows may qualify as a habitat of principal importance and a conservation priority of the Staffordshire BAP.

³⁰ HS2 Ltd (2018). High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data, Available online at: www.gov.uk/hs2

³¹ HS2 Ltd (2017). High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data, Available online at: www.gov.uk/hs2

³² Natural Environment and Rural Communities Act 2006 (2006 CHAPTER 16). Her Majesty's Stationery Office, London.

³³ Staffordshire Biodiversity Partnership. *Staffordshire Biodiversity Action Plan* [online]. Available at: <http://www.sbap.org.uk/>

³⁴ A defunct hedgerow is one that no longer functions as a stock-proof barrier due to its gappy nature.

These contribute towards a wider hedgerow network across the Stone and Swynnerton area that is of district/ borough value.

5.2.23 Ten ponds are located to the west of the M6 between Birchwood and Yarnfield Lane. On a precautionary basis it is assumed that these ponds qualify as a habitat of principal importance and a conservation priority of the Staffordshire BAP. The ponds are of up to district/borough value.

5.2.24 A series of smaller watercourses that are tributaries of Filly Brook run alongside the west of the M6. These watercourses are of district/borough value.

Species

5.2.25 Protected and notable species that are known or assumed to occur within the land required for the amendment include bats, great crested newt, common amphibians, barn owls, wintering and breeding birds, terrestrial invertebrates, badger, polecat, harvest mouse, European hedgehog, brown hare and common reptile species.

5.2.26 The main ES reported a bat assemblage associated with habitats present between Lodge Covert and Birchwood. Field surveys in this area recorded one tree roost supporting noctule bats and one building roost supporting an unidentified bat species. Foraging and commuting activity was recorded by an assemblage including common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, Myotis species, brown long-eared, noctule and Nyctalus/Eptesicus species bats. The land required for the amendment contains potential bat roosting, foraging and commuting habitats that are likely to be used by this bat assemblage. The bat assemblage includes several species of principal importance and species that are conservation priorities of the Staffordshire BAP. The bat assemblage is of county value.

5.2.27 The SES reports a metapopulation³⁵ of great crested newt that occurs between Yarnfield and Swynnerton (assumed metapopulation (AMP) 3.1), comprising known or assumed populations of great crested newt within a network of 42 ponds. The land required for the amendment contains habitats with potential for great crested newt breeding, foraging and shelter, which are likely to be used by this metapopulation. Great crested newt are an Annex 2³⁶ species, a species of principal importance, and a conservation priority of the Staffordshire BAP. The metapopulation is of county value.

5.2.28 The main ES reported populations of amphibian species including palmate newt, smooth newt, common toad and common frog, identified through field surveys, within ponds throughout the Stone and Swynnerton area. Amphibian species are assumed to be present in ponds that have not yet been surveyed. The land required for the amendment includes ponds, grassland, hedgerow and woodland habitats that are likely to be used by these species. Common toad is a species of principal importance. The population of common amphibians throughout Stone and Swynnerton is of local/parish value.

5.2.29 The main ES reported populations of barn owl at Blakelow and Yarnfield identified through field surveys and desk study records. The land required for the amendment

³⁵ A metapopulation is a group of spatially separated populations that interact. Metapopulations are described in BID-EC-007-000 (which accompanied the main ES) and BID-EC-004-000 (which accompanies the SES and AP ES).

³⁶ Annex 2 of the EU's Habitats Directive (1992) lists priority species whose conservation requires the designation of Special Areas of Conservation.

includes grassland habitats that are likely to be used by foraging barn owls, and suitable trees and buildings, which may be used by nesting barn owls. Barn owl is a conservation priority of the Staffordshire BAP. The barn owl populations at Blakelow and Yarnfield are of county value.

- 5.2.30 The main ES reported wintering and breeding bird assemblages at Highlow Meadows, identified through field surveys. The land required for the amendment includes habitats that provide foraging and nesting opportunities for these bird assemblages. The assemblages are typical of the habitats present, but include species of principal importance and/or conservation priority species. The bird assemblages at Highlow Meadows are of local/parish value.
- 5.2.31 The main ES reported the presence of otters, identified by desk study records, in numerous locations on the River Trent and Filly Brook, which flows into the Trent. The land required for the amendment includes tributaries of Filly Brook and nearby ponds that provide suitable foraging, breeding and dispersal habitats for otter. Otter is an Annex 2 species, a species of principal importance and a conservation priority of the Staffordshire BAP. The otter population using the River Trent, Filly Brook, its tributaries and associated habitats is of district/borough value.
- 5.2.32 The main ES reported an assemblage of terrestrial invertebrates, identified through field survey, at Highlow Meadows LWS. The land required for the amendment includes the habitats at Highlow Meadows LWS that support this assemblage. The terrestrial invertebrate assemblage at Highlow Meadows LWS is of local/parish value.
- 5.2.33 The main ES reported at least six social groups of badgers, identified through field surveys, throughout the Stone and Swynnerton area. The land required for the amendment includes suitable sett building and foraging habitats for badger. The badger populations throughout the Stone and Swynnerton area are of local/parish value.

Future environmental baseline

Construction (2020) and operation (2027)

- 5.2.34 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2020 and 2027 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).
- 5.2.35 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

- 5.2.36 No further measures are applicable to this assessment, above those stated in the draft Code of Construction Practice (CoCP)³⁷.

³⁷ HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, draft Code of Construction Practice (CT-003-000). Available online at <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2a>

Assessment of impacts and effects

Designated sites

- 5.2.37 The main ES reported the loss of 1.2ha (20%) of Highlow Meadows LWS. This loss was reported in the main ES as a permanent adverse effect on the structure and function of the site that is significant at county level. The amendment will result in the loss of an additional 0.2ha of the LWS. The amendment will result in a different significant effect on Highlow Meadows LWS. However, this will not change the level of significance of the effect as reported in the main ES.
- 5.2.38 The main ES reported the loss of 0.6ha (100%) of Birchwood ancient woodland. This loss was reported in the main ES as a permanent adverse effect that was significant at the county level. The amendment will not alter the extent of loss of the ancient woodland. The amendment will not give rise to a new or different significant effect on Birchwood ancient woodland, and will not change the level of significance of the effect as reported in the main ES.

Habitats

- 5.2.39 The main ES reported the loss of approximately 1.2ha of lowland meadow at Highlow Meadows LWS. This loss was reported in the main ES as a permanent adverse effect that is significant at the county level. The amendment will result in the loss of an additional 0.2ha of grassland for construction of a flood mitigation bund. The amendment will result in a different significant effect on lowland meadow habitat. However, this will not change the level of significance of the effect as reported in the main ES.
- 5.2.40 The main ES reported the permanent diversion, realignment and culverting of smaller watercourses throughout the original scheme, severing the habitat corridors that follow these watercourses. Habitat loss and fragmentation is reported in the main ES as a permanent effect that is significant at up to district/borough level. The amendment will reduce the length of a culvert, north-west of Yarnfield Lane and west of the M6, from 135m to 107m and new culverts will be provided to control water entering the flood storage area. This will increase the fragmentation and habitat loss along these watercourses resulting in a different significant effect. However, this will not change the level of significance of effect as reported for minor watercourses in the main ES.
- 5.2.41 On a precautionary basis, the assessment reported in the main ES assumes that all ponds that have not been subject to survey are habitats of principal importance, a conservation priority of the Staffordshire BAP and are each of up to district/borough value. The ponds located within the land required for the amendment will be retained within areas of grassland habitat creation. The amendment will not give rise to a new or different significant effect on ponds, and will not change the level of significance of the effect as reported in the main ES.
- 5.2.42 It is not likely that any other effects on habitats of relevance at more than the local/parish level will occur as a result of the amendment. Additional local/parish level effects arising from the AP revised scheme are listed in the SES and AP ES Volume 5: Appendix EC-003-000.

Species

- 5.2.43 The main ES reported a direct loss of roosts and a loss and fragmentation of foraging and commuting habitat used by the assemblage of bats between Lodge Covert and Birchwood. In addition, the loss of woodland, scattered trees and the proximity of the original scheme to buildings was considered likely to reduce the roosting opportunities for bats within this location. In combination, these effects represent a permanent adverse effect that is significant at county level. The amendment will result in the loss of an additional 0.1ha of woodland from the belt that runs alongside the west of the M6 that is likely to be utilised as a foraging resource by the bat assemblage, and trees within the woodland have significant bat roosting potential. The assumed loss of additional roosts in this woodland will result in a different significant effect on the bat assemblage between Lodge Covert and Birchwood. However, this will not change the level of significance of the effect reported in the main ES.
- 5.2.44 The main ES, as updated in the SES, reports the loss of 12 ponds and associated terrestrial habitats that are known or assumed to be used by the great crested newt metapopulation between Yarnfield and Swynnerton (AMP 3.1). A permanent adverse effect that is significant at up to county level was reported upon this metapopulation as a result of the SES new baseline information. The amendment will result in the loss of an additional 0.2ha of grassland in proximity to retained ponds that support great crested newt and this represents an additional loss of core terrestrial habitats. This will result in a different significant effect on the metapopulation between Yarnfield and Swynnerton. However, this will not change the level of significance of this effect as reported in the SES.
- 5.2.45 The main ES reported the loss of barn owl foraging habitat and potential roosting sites within mature trees. A permanent adverse effect identified at Blakelow and Yarnfield that is significant at up to the county level was reported on the barn owl populations. The amendment will result in additional loss of potential foraging habitat and tree roosts at Highlow Meadows and the woodland belt along the M6. The assumed loss of additional tree roosts will result in a different significant effect on the barn owl populations identified at Blakelow and Yarnfield. However, this will not change the level of significance of the effect reported in the main ES.
- 5.2.46 The main ES reported the loss of potential dispersal, foraging and breeding opportunities for otter from the realignment of Filly Brook and loss of marginal habitats along the realigned sections. A permanent adverse local/parish level effect, that is not significant, was reported on otter. The amendment includes the reduction in length of one culvert and addition of new culverts on the tributaries of Filly Brook on the western side of the M6. The additional culverts will reduce the dispersal corridor function of the watercourses, however, the Filly Brook tributaries on this side of the M6 are considered to have lower suitability for otter due to the high levels of disturbance from the motorway. The amendment will not give rise to a new or different significant effect on otter, and will not change the level of significance of the effects reported in the main ES.

- 5.2.47 It is not likely that any other effects on species of relevance at more than local/parish level will occur as a result of the amendment. Additional local/parish level effects arising from the AP revised scheme are listed in SES and AP ES Volume 5: Appendix EC-003-000.

Mitigation and residual effects

Other mitigation measures

- 5.2.48 The main ES, as corrected in the SES, reported the creation of approximately 2.7ha of native species-rich marshy grassland within the floodplain directly adjacent to the south of Highlow Meadows LWS and an additional 5.5ha of grassland creation adjacent to the M6 and Meaford North embankment. This was designed to mitigate the loss of 1.2ha of lowland meadow with marshy grassland character at Highlow Meadows LWS and 3.8ha of lowland meadow at Yarnfield Lane. The amendment will remove 0.8ha of grassland habitat and 0.9ha of landscape mitigation planting on the flood mitigation bund, located adjacent to the west side of the M6. Wetland habitat creation will be extended by 1.7ha to cover the area of the former bund and landscape mitigation, which will result in a net increase in habitat creation of 0.8ha. Once established, this will compensate the additional loss of 0.2ha of grassland at Highlow Meadows LWS, and reduce the effect on the LWS to a level that is not significant.
- 5.2.49 The main ES reported that where watercourses are realigned or diverted they will be naturalised with a profile to promote the establishment of marginal vegetation and pools. This principle of mitigation has been applied to the tributaries of the Filly Brook to the west of the M6 that are impacted by the amendment. Once the vegetation has developed the adverse effect of habitat loss and fragmentation on the tributaries of Filly Brook west of the M6 will be reduced to a level that is not significant.
- 5.2.50 The main ES reported habitat creation measures between Yarnfield and Birchwood including the creation of species-rich grassland, wetland, ponds, hedgerows and semi-natural woodland. This would compensate for the bat foraging habitats lost to the original scheme. Once established, the areas of woodland creation near Birchwood, and large areas of grassland, ponds and wetland at Highlow Meadows will compensate for the additional loss of potential foraging and tree roosts at Highlow Meadows and the woodland belt along the M6. Areas of woodland creation are included in the original scheme either side of Meaford North embankment, which once established will compensate for the tree roosting opportunities lost to the amendment, and reduce the effect on the bat assemblage between Lodge Covert and Birchwood to a level that is not significant.
- 5.2.51 The main ES reported that ponds, species-rich grassland and broadleaved woodland would be created and designed to compensate for the loss of breeding sites, foraging habitat and places of shelter used by great crested newt and other amphibian species. Compensation will be provided within the ecological habitat creation area at Highlow Meadows. Additional great crested newt terrestrial habitat loss required for construction of the flood attenuation bund within Highlow Meadows will be compensated through grassland creation on the bunds and through an increase in extent of wetland habitats adjacent to the M6. Following implementation, the adverse effect on the great crested newt metapopulation between Yarnfield and Swynnerton will be reduced to a level that is not significant.

- 5.2.52 The main ES reported habitat creation measures such as grassland creation near Highlow Meadows, and woodland and hedgerow creation between Blakelow and Birchwood as providing foraging and nesting opportunities for barn owl populations identified at Blakelow and Yarnfield. The amendment will also include the creation of 1.7ha of wetland habitat creation to cover the area of the former bund and landscape mitigation, resulting in a net increase in habitat creation by 0.8ha. These areas of habitat creation, once established, will reduce the adverse effect resulting from the loss of foraging habitat and potential nesting sites associated with the AP revised scheme to a level that is not significant.

Summary of likely residual effects

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

Cumulative effects

- 5.2.54 There are no new or different likely significant cumulative effects for ecology and biodiversity as a result of the amendment acting in combination with any other amendments.

Effects arising from operation

Avoidance and mitigation measures

- 5.2.55 The main ES reported that where the HS2 route will cross a watercourse likely to be used by mammal species such as otter and water vole, means of safe passage will be provided, such as provision of mammal ledges within a culvert, or provision of a separate dry underpass. This principle of mitigation has been applied to the locations where the route of the AP revised scheme will cross tributaries of Filly Brook to the west of the M6, in order to allow free passage for wildlife, including otter.

Assessment of impacts and effects

- 5.2.56 There are no new or different significant operational effects for ecology and biodiversity as a result of the amendment, in comparison with the main ES.

Mitigation and residual effects

Other mitigation measures

- 5.2.57 No other mitigation measures are required above the measures reported in the main ES.

Summary of likely residual significant effects

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

Cumulative effects

- 5.2.59 There are no new or different likely significant cumulative effects for ecology and biodiversity as a result of the amendment acting in combination with any other amendments.

Monitoring

- 5.2.60 Volume 1, Section 9 of the main ES sets out the general approach to environmental monitoring during operation of the original scheme.
- 5.2.61 There are no changes to the monitoring requirements identified in the main ES for ecology and biodiversity as a result of the amendment.

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

- 5.2.62 The amendment will not result in a new or different likely residual significant effect or change the likely residual significance of the environmental effects as set out in the main ES.

5.3 Additional land permanently required for a new junction of the A51 Bury Bank and Stone Rural BOAT 34 (AP-003-003)

- 5.3.1 The Bill provides for the permanent widening of Stone Rural Byway Open to All Traffic (BOAT) 34, which would be up to 3.5m wide with passing bays, between the A51 Bury Bank and Swynnerton Footpath 27. Stone Rural BOAT 34 would provide HS2 maintenance access to the HS2 route. See Map CT-05-224, E3 to E1 and Map CT-05-224-R1, F6 to E10 in the main ES Volume 2, CA3 Map Book.
- 5.3.2 Since submission of the Bill, a requirement has been identified to improve visibility for vehicles at the junction of the Stone Rural BOAT 34 and the A51 Bury Bank. To improve visibility at this junction, Stone Rural BOAT 34 will be permanently diverted to the east of its existing alignment, immediately adjacent to the A51 Bury Bank. A new junction will be provided 180m east of the existing junction between Stone Rural BOAT 34 and the A51 Bury Bank. See Map CT-06-224-R1, G5 to F7 in the SES and AP ES Volume 2, CA3 Map Book.
- 5.3.3 The amendment will be constructed within the period set out in the main ES.
- 5.3.4 The land required for this amendment is outside of the limits of Bill. The amendment will result in the permanent requirement for approximately 0.8ha of additional land. See Map CT-06-224-R1, G5 to F7 in the SES and AP ES Volume 2, CA3 Map Book.

Topics included in the AP assessment

- 5.3.5 The amendment is considered to only require reassessment of the environmental effects and mitigation described in the main ES for traffic and transport.

Traffic and transport

Scope, assumptions and limitations

- 5.3.6 The assessment scope, key assumptions and limitations for traffic and transport are as set out in Volume 1, the Scope and Methodology Report (SMR)³⁸, and the SMR Addendum³⁹ of the main ES.

Existing environmental baseline

- 5.3.7 The baseline traffic and transport information for the Stone and Swynnerton area is as described in Volume 2 CA3, Section 14 of the main ES.
- 5.3.8 There are four primary 'A' roads that pass through the Stone and Swynnerton area including the A51 Stone Road, which connects Stone to Stableford via Swynnerton.
- 5.3.9 As in the original scheme, the HS2 route will cross the existing routes of 10 PRoW. One further PRoW, Stone Rural BOAT 34, is affected by the AP revised scheme due to a permanent upgrade for maintenance access.

Future environmental baseline

Construction (2023) and operation (2027 and 2041)

- 5.3.10 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2023, 2027 and 2041 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).
- 5.3.11 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on traffic and transport.

Effects arising during construction

Avoidance and mitigation measures

- 5.3.12 No further measures are applicable to this assessment, above those stated in the draft Code of Construction Practice (CoCP)⁴⁰.

Assessment of impacts and effects

- 5.3.13 There are no new or different significant construction effects on traffic and transport as a result of the amendment, in comparison with the main ES.

³⁸HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report (Appendix CT-001-001). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

³⁹HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report Addendum (Appendix CT-001-002). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

⁴⁰HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, draft Code of Construction Practice (CT-003-000). Available online at <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2a>

Mitigation and residual effects

Other mitigation measures

- 5.3.14 No other mitigation measures are required above the measures reported in the main ES.

Summary of likely residual significant effects

- 5.3.15 There are no changes to the likely residual significant construction traffic and transport effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.3.16 There are no new or different likely significant cumulative effects for traffic and transport as a result of the amendment acting in combination with any other amendments.

Effects arising from operation

Avoidance and mitigation measures

- 5.3.17 No avoidance or mitigation measures, additional to those reported in the main ES, are required.

Assessment of impacts and effects

- 5.3.18 The proposed change to Stone Rural BOAT 34 will increase travel distance for non-motorised users by up to 400m, giving rise to a new minor severance effect, which is significant. See SES and AP ES Volume 5: Appendix TR-001-000; and Map TR-04-211 in the SES and AP ES Volume 5 Map Book.

Mitigation and residual effects

Other mitigation measures

- 5.3.19 No other avoidance or mitigation measures have been identified above those reported in the main ES.

Summary of likely residual significant effects

- 5.3.20 The amended junction of the A51 Bury Bank and Stone Rural BOAT 34 introduces a new likely residual significant severance effect to non-motorised users of Stone Rural BOAT 34 due to increased travel distance.

Cumulative effects

- 5.3.21 There are no new or different likely significant cumulative effects for traffic and transport as a result of the amendment acting in combination with any other amendments.

Monitoring

- 5.3.22 Volume 1, Section 9 of the main ES sets out the general approach to environmental monitoring during operation of the original scheme.

- 5.3.23 There are no changes to the monitoring requirements identified in the main ES for traffic and transport as a result of this amendment.

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

- 5.3.24 The amended junction of the A51 Bury Bank and Stone Rural BOAT 34 introduces a new likely residual significant severance effect to non-motorised users of Stone Rural BOAT 34.

5.4 Additional land permanently required to widen the highway verge along the A51 Stone Road (AP-003-004)

- 5.4.1 The Bill provides for the permanent diversion of Tittensor Road, approximately 800m in length, 375m north-west of its existing alignment. The diverted Tittensor Road would cross over the HS2 route via Tittensor Road overbridge before connecting into the diverted A51 Stone Road, approximately 100m west of Long Compton Farm. See Map CT-06-225, F9 to C4 in the main ES Volume 2, CA3 Map Book.
- 5.4.2 The Bill provides for environmental mitigation to the east of the diverted Tittensor Road/diverted A51 Stone Road junction as follows. See Map CT-06-225, D4 in the main ES Volume 2, CA3 Map Book:
- an area of landscape mitigation planting, approximately 0.1ha in area, located immediately east of the diverted Tittensor Road/diverted A51 Stone Road junction;
 - an area of grassland habitat creation, approximately 0.3ha in area, located 50m south-east of the diverted Tittensor Road/diverted A51 Stone Road junction; and
 - a section of hedgerow habitat creation, approximately 60m in length, located along the south side of the diverted A51 Stone Road, 100m east of the diverted Tittensor Road/diverted A51 Stone Road junction.
- 5.4.3 Since submission of the Bill, a requirement has been identified to improve visibility for vehicles joining the diverted A51 Stone Road from the diverted Tittensor Road. When approaching the junction from the south, the visibility of westbound traffic along the diverted A51 Stone Road would be obscured by existing hedgerow and the landscape mitigation planting and hedgerow habitat creation included in the original scheme along the south edge of the A51 Stone Road.
- 5.4.4 To improve visibility at the junction, the highway verge along the south edge of the diverted A51 Stone Road will be widened by up to 8.8m (10.3m in total including the previous 1.5m verge) for a length of 130m. To accommodate these works, the following changes to environmental mitigation included in the original scheme will be required. See Map CT-06-225, E3 to D4 in the SES and AP ES Volume 2, CA3 Map Book:
- 60m of hedgerow habitat creation along the south side of the diverted A51 Stone Road included in the original scheme will no longer be provided;

- a reduction in landscape mitigation planting in the original scheme by 521m², immediately east of the junction, and
- a reduction in grassland habitat creation in the original scheme by 38m², located 50m south-east of the junction.

5.4.5 The amendment will be constructed within the period set out in the main ES.

5.4.6 The land required for amending the junction and mitigation to improve visibility is outside the limits of the Bill. The amendment will result in the permanent requirement for approximately 900m² of additional land. See Map CT-06- 225, E3 to D4 in the SES and AP ES Volume 2, CA3 Map Book.

Topics included in the AP assessment

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

5.5 Additional land permanently required for the alignment of the Swynnerton Estate North green overbridge (AP-003-005)

5.5.1 The Bill provides for the Swynnerton Estate North green overbridge, which would cross the HS2 route at a height of 9m above existing ground and rail levels, and lie adjacent to the Common Lane Cold War Bunkers. The overbridge would provide vehicle access to the Swynnerton Estate across the HS2 route. There would be landscape mitigation planting on both sides of the overbridge and shrub and tree planting across the overbridge to facilitate ecological connectivity across the route. Landscape earthworks would be provided on the south side of the overbridge. See Map CT-06-227, H7 to H5 in the main ES Volume 2, CA3 Map Book.

5.5.2 Since submission of the Bill, a requirement has been identified to provide a greater clearance between the rail level of the HS2 main line and the underside of the Swynnerton Estate North green overbridge by 1m. As a result, the overbridge will be at a height of 10m above both existing ground and rail levels. In raising the height of the overbridge, there will be a requirement to adjust the earthworks on the northern and southern approaches.

5.5.3 As a result of the increased area of earthworks, landscape mitigation planting will be required to be adjusted on the southern approach, however, the overall area of landscape mitigation planting will be unchanged from the original scheme. There will be no change to the shrub and tree planting across the overbridge. See Map CT-06-227, H7 to H5 in the SES and AP ES Volume 2, CA3 Map Book.

5.5.4 The amendment will be constructed within the period set out in the main ES.

5.5.5 The amendment will require additional land outside the limits of the Bill. The amendment will result in the permanent requirement for approximately 590m² of additional land. See Map CT-06-227, H5 in the SES and AP ES Volume 2, CA3 Map Book.

Topics included in the AP assessment

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

5.6 Additional land permanently required for the provision of a roundabout at the junction of the realigned Dog Lane, the A51 The Rowe, Bent Lane and the A51 through Stableford (AP-003-006)

5.6.1 The Bill provides for the permanent realignment of Dog Lane for approximately 950m in length, from a point approximately 125m north-west of its existing alignment. The realigned Dog Lane would cross over the HS2 route via the Dog Lane overbridge. The realigned Dog Lane would tie into the A51 The Rowe at the same point as the existing Dog Lane to the east of the West Coast Main Line (WCML), adjacent to the tie-in of Bent Lane (South) to the A51 The Rowe. See Map CT-06-228a, E3 to E9 in the main ES Volume 2, CA3 Map Book.

5.6.2 An area of woodland habitat creation, approximately 0.4 ha in size, would be located to the east of the junction of the A51 The Rowe and the realigned Dog Lane. In addition, approximately 665m of hedgerow habitat creation would be provided along the realigned Dog Lane. See Map CT-06-228a, E9 to E8 in the main ES Volume 2, CA3 Map Book.

5.6.3 Modifications to the junction of the A51 The Rowe with Dog Lane/Bent Lane (South) and the A51 through Stableford would include the provision of permanent signage to warn users of the potential hazard of heavy goods vehicles (HGV) turning into oncoming traffic. The installation of the signage would be within the existing highway boundary. See Map CT-06-252, I5 to G2 in the main ES Volume 4, Off-route Map Book.

5.6.4 Since submission of the Bill, it has been identified that there is a need to improve the safety of the junction between the A51 The Rowe and Dog Lane/Bent Lane (South). When approaching the junction from the south-east, traffic on the A51 The Rowe looking to turn right onto the realigned Dog Lane would have poor visibility due to the existing railway bridge. To improve the safety of the junction, a four-arm roundabout will be provided. To accommodate this change, the following amendments will be required:

- modifications to the vertical alignment of the realigned Dog Lane, Bent Lane (South), and the A51 The Rowe; increasing the height of each road by approximately 1.6m, 0.6m and 0.7m, respectively, to tie into the roundabout. See Map CT-06-228a, F10 to D7 in the SES and AP ES Volume 2, CA3 Map Book;
- modifications to the horizontal alignment of Bent Lane (South), which will be realigned approximately 28m east, and the A51 The Rowe, which will be realigned approximately 14m east, to tie into the roundabout. See Map CT-06-228a, F10 to D7 in the SES and AP ES Volume 2, CA3 Map Book;

- removal of permanent signage on the A51 The Rowe and along the A51 through Stableford warning users of the potential hazard of HGVs turning into oncoming traffic. See Map CT-06-228a, F10 to Eg in the SES and AP ES Volume 2, CA3 Map Book;
- the addition of a junction bell-mouth⁴³ to a residential property on the A51 The Rowe, to maintain existing access into the property from the realigned section of the A51 The Rowe. See Map CT-06-228a, F9 in the SES and AP ES Volume 2, CA3 Map Book;
- an approximately 0.1ha reduction in the woodland habitat creation, included in the original scheme, located east of the junction of the diverted Dog Lane and the A51 The Rowe. See Map CT-06-228a, E8 to Eg in the SES and AP ES Volume 2, CA3 Map Book;
- an approximately 60m reduction in hedgerow habitat creation, included in the original scheme, along the realigned Dog Lane. See Map CT-06-228a, Eg in the SES and AP ES Volume 2, CA3 Map Book; and
- approximately 500m of new hedgerow planting will be provided along both sides of the Bent Lane (South) realignment, on the approach to the roundabout. See Map CT-06-228a, Eg to D7 in the SES and AP ES Volume 2, CA3 Map Book.

5.6.5 The amendments will be constructed within the period set out in the main ES.

5.6.6 The land required for the permanent roundabout is outside the limits of the Bill. The amendment will result in the permanent requirement for approximately 1.4ha of additional land. See Map CT-06-228a, F10 to D7, F8 to E8 and C8 in the SES and AP ES Volume 2, CA3 Map Book.

Topics included in the AP assessment

5.6.7 The amendment is considered to only require reassessment of the environmental effects and mitigation in the main ES for landscape and visual.

5.6.8 The amendment has been subject to traffic capacity assessment and the modifications are shown to operate within capacity during construction and operation. Details of the capacity assessment are provided in the Transport Assessment Addendum (SES and AP ES Volume 5: Appendix TR-001-000).

⁴³ A term used to refer to a new access junction with the highway or another access. The new carriageway for the access is shaped like a bell.

Landscape and visual

Scope, assumptions and limitations

- 5.6.9 The assessment scope, key assumptions and limitations for landscape and visual are as set out in Volume 1, the Scope and Methodology Report (SMR)⁴², and the SMR Addendum⁴³ of the main ES.

Existing environmental baseline

- 5.6.10 The baseline landscape and visual information for the Stone and Swynnerton area is as described in Volume 2, CA3, Section 11 of the main ES.
- 5.6.11 The area of land required for the amendment is located within the Meece Brook Valley Sandstone Hills and Heaths landscape character area (LCA), as described in Volume 5: Appendix LV-001-003 of the main ES.
- 5.6.12 The amendment affects a number of viewpoints, which lie in proximity to the area, as described in Volume 5: Appendix LV-001-003 of the main ES. These are:
- view east from the edge of Stableford (viewpoint 019.02.012, located within the Whitmore Heath to Madeley area (CA4));
 - view east from Chapel and Hill Chorlton Footpath 12 (viewpoint 019.03.010);
 - view north-east from Dog Lane (viewpoint 019.04.009);
 - view west from Dog Lane (viewpoint 019.04.006); and
 - view south-west from a route with public access to Swynnerton Old Park (viewpoint 019.03.007).

Future environmental baseline

Construction (2020) and operation (2027)

- 5.6.13 SES and AP ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2020 and 2027 respectively, additional to those identified in the main ES (Volume 5: Appendix CT-004-000).
- 5.6.14 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on landscape and visual.

⁴²HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report (Appendix CT-001-001). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

⁴³HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, Environmental Impact Assessment Scope and Methodology Report Addendum (Appendix CT-001-002). Available online at <https://www.gov.uk/government/publications/scope-and-methodology-report-for-hs2-phase-2a>

Temporary effects arising during construction

Avoidance and mitigation measures

- 5.6.15 No further measures are applicable to this assessment, above those stated in the draft Code of Construction Practice (CoCP)⁴⁴.

Assessment of impacts and effects

Landscape assessment

- 5.6.16 The Meece Brook Valley Sandstone Hills and Heaths LCA was assessed as being affected by the original scheme and will also be affected by the AP revised scheme. This LCA is considered to be of medium sensitivity to change. The main ES reported a moderate adverse significant effect. This was due to the construction works associated with the Dog Lane overbridge, the realignment of Dog Lane, Bent Lane (South) and the A51, and the associated earthworks, which would introduce uncharacteristic features within the landscape and would add to the indirect effects caused by the presence of the HS2 main line construction works in the adjacent LCA.
- 5.6.17 The amendment will result in a slight increase in the footprint of the construction works, resulting in the removal of an additional small section of hedgerow along Dog Lane. Overall, however, when considered in the context of the works taking place as part of the original scheme, construction of the amendment will be noticeable at close range but will not affect the character of the Meece Brook Valley Sandstone Hills and Heaths LCA. The amendment will not give rise to a new or different significant effect or change the level of significance of the effects reported in the main ES.

Visual assessment

Viewpoints 019.04.009 and 019.04.011

- 5.6.18 Construction activity associated with the amendment, will be visible from viewpoints 019.04.009 and 019.04.011. These viewpoints were assessed as being affected by construction of the original scheme and will also be affected by the AP revised scheme. The main ES reported a major adverse significant effect due to the construction of the Dog Lane overbridge, the realignment of Dog Lane, Bent Lane and the A51 Stone Road, and the associated earthworks impacting views across the rural landscape, albeit in the context of the existing WCML.
- 5.6.19 The amendment will introduce additional construction activity into the view, specifically construction of a new roundabout, modifications to the original road realignments and provision of a junction bell-mouth for access to a residential property on the A51 The Rowe. When viewed in the context of other construction activity taking place as part of the original scheme, they will be noticeable but will not give rise to a new or different significant effect or change the level of significance of the effects reported in the main ES.

⁴⁴ HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, draft Code of Construction Practice (CT-003-000). Available online at <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2a>

Viewpoints 019.03.010, 019.04.006 and 019.03.007

- 5.6.20 Construction activity associated with the amendment, specifically the provision of a junction bell-mouth for access to a residential property on the A51 The Rowe, will also be visible in filtered views from viewpoints 019.03.010, 019.04.006 and 019.003.007. These viewpoints were assessed as being affected by construction of the original scheme and will also be affected by the AP revised scheme. The main ES reported a moderate adverse significant effect due to the construction of the Dog Lane overbridge, the realignment of Dog Lane, Bent Lane and the A51, and the associated earthworks impacting views across the rural landscape, albeit in the context of the existing WCML.
- 5.6.21 When viewed in the context of other construction activity taking place as part of the original scheme, the amendment represents a barely perceptible change in views from these locations, particularly since many of the views will be filtered by intervening vegetation. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

Other mitigation measures

- 5.6.22 No other mitigation measures have been identified above the measures reported in the main ES.

Summary of likely residual significant effects

- 5.6.23 There are no changes to the likely residual significant construction landscape and visual effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.6.24 There are no new or different likely significant cumulative effects for landscape and visual as a result of the amendment acting in combination with any other amendments.

Permanent effects arising during operation

Avoidance and mitigation measures

- 5.6.25 No avoidance or mitigation measures, additional to those reported in the main ES, are required.

Assessment of impacts and effects

Landscape assessment

- 5.6.26 The Meece Brook Valley Sandstone Hills and Heaths LCA was assessed as being affected by the original scheme and will also be affected by the AP revised scheme. This LCA is considered to be of medium sensitivity to change. The main ES reported a moderate adverse significant effect at year 1 of operation, reducing to non-significant at year 15 of operation as mitigation planting matures. This was due to the presence of the Dog Lane overbridge, the realignment of existing highways, and the indirect

effects caused by the presence of the HS2 main line in the adjoining LCA reducing the perception of tranquillity and impacting on views and the quality of the landscape.

- 5.6.27 The amendment will introduce new features into the landscape, but these will be in the context of the original scheme and the urbanising effect of the nearby WCML. Overall, in the context of the wider LCA and the components of the original scheme, these features will be inconsequential and the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Visual assessment

Viewpoints 019.04.009 and 019.04.011

- 5.6.28 The amendment will be visible from viewpoints 019.04.009 and 019.04.011. These viewpoints were assessed as being affected by the presence of the original scheme and will also be affected by the AP revised scheme. The main ES reported a moderate adverse significant effect for viewpoint 019.04.009 (before reducing to non-significant at year 60) and a moderate adverse significant effect in winter of year 1 reducing to non-significant in summer of year 1 through to year 60 for viewpoint 019.04.011. This is due to the presence of the Dog Lane overbridge, the realignment of Dog Lane, Bent Lane (South) and the A51 Stone Road, and the associated earthworks, all of which would noticeably change the current rural views (albeit in the context of the WCML) and reducing reduce scenic quality.

- 5.6.29 The amendment is in a location where the rural character of the view is already eroded by the presence of the WCML, multiple roads, including the A51 Stone Road, and two static caravan parks. The amendment will not appear uncharacteristic and will not affect the quality of the views. Therefore, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Viewpoints 019.03.010, 019.04.006 and 019.03.007

- 5.6.30 The amendment will be visible in filtered views from viewpoints 019.03.010, 019.04.006 and 019.03.007. These viewpoints were assessed as being affected by the presence of the original scheme and will also be affected by the AP revised scheme. The main ES reported a moderate adverse significant effect at year 1 reducing to non-significant by year 60 for viewpoint 019.04.006 due to the maturing of mitigation planting as reported in the main ES. For viewpoints 019.03.010 and 019.03.07 the effect was assessed as moderate adverse significant at year 1 (winter) reducing to non-significant from year 1 (summer) through to year 60 due to the screening effect of arable crops. When viewed in the context of the original scheme, the amendment represents a barely perceptible change in the medium range views from these locations, particularly since many of the views will be filtered by intervening vegetation. For viewpoints 019.04.006 and 019.03.007 the amendment will also be seen in the context of the HS2 main line, which will further reduce its perceptibility. The amendment will, therefore, not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

Other mitigation measures

- 5.6.31 No other mitigation measures are required above the measures reported in the main ES.

Summary of likely significant residual effects

- 5.6.32 There are no changes to the likely residual significant operational landscape and visual effects identified in the main ES as a result of the amendment.

Cumulative effects

- 5.6.33 There are no new or different likely significant cumulative effects for landscape and visual as a result of the amendment acting in combination with any other amendments.

Monitoring

- 5.6.34 Volume 1, Section 9 of the main ES sets out the general approach to environmental monitoring during operation of the original scheme.
- 5.6.35 There are no changes to the monitoring requirements identified in the main ES for landscape and visual as a result of the amendment.

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

- 5.6.36 The amendment will not result in a new or different likely residual significant effect or change the likely residual significance of the environmental effects as set out in the main ES.

6 Assessment of minor utility amendments in the Stone and Swynnerton area

6.1 Additional land for the permanent diversion of BT Openreach overhead telecommunications cable along Stone Rural Bridleway 0.1135 (AP-003-101)

- 6.1.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert an existing BT Openreach overhead telecommunications cable. This will include an underground diversion of an existing overhead telecommunications cable. The diversion of the utility will be 440m in length, running along Stone Rural Bridleway 0.1135 and crossing the HS2 route within the Stone Rural Bridleway 0.1135 accommodation overbridge. See Map CT-06-221, I6 to H4 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 0.1ha of additional land will be permanently required (see Map CT-06-221, H5 to H4 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.1.2 The activities will require the removal of existing utility infrastructure (where necessary), the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing) and installation of the utility. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utility are currently planned to be carried out in 2021-2022 and are expected to take approximately six months to complete.
- 6.1.3 The amendment is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

6.2 Additional land for the permanent diversion of BT Openreach and Zayo underground telecommunications cables along the B5026 Eccleshall Road (AP-003-102)

- 6.2.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert two existing BT Openreach underground telecommunications cables and an existing Zayo underground fibre optic telecommunication cable. The diversion of the utilities will be 880m in length; following the route of the B5026 Eccleshall Road realignment and connecting to Walton House Farm on the eastern side of the HS2 route (see Map CT-06-222, H1 to G7 in the SES and AP ES Volume 2, CA3 Map Book). Approximately 0.2ha of additional land will be permanently required (see Map CT-06-222, H3 to H1 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.2.2 The activities will require the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing), the removal of existing utility infrastructure (where necessary) and installation of the utilities. As required and where suitable, topsoil will be temporarily stored adjacent to the

working area and will be used to reinstate the area once the diversion is complete. Activities to divert the utilities are currently planned to be carried out in 2021-2023 and are expected to take approximately 13 months in total to complete, however, the work will take place over an approximate 20-month period.

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

6.3 Additional land for the permanent diversion of BT Openreach overhead telecommunications cable along the realigned B5026 Eccleshall Road (AP-003-103)

- 6.3.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert an existing BT Openreach overhead telecommunications cable and for the re-establishment of a utility connection to a residential property at Micklow House Farm, to the north of the B5026 Eccleshall Road. This will include an underground diversion of an existing overhead telecommunications cable. The diversion of the utility will be 170m in length, running along the realigned B5026 Eccleshall Road. An underground connection from the diverted utility to Micklow House Farm will be provided. See Map CT-06-222, H2 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 0.3ha of additional land will be permanently required (see Map CT-06-222, H2 and G4 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.3.2 The activities will require the removal of existing utility infrastructure (where necessary), the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing) and installation of the utility. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utility are currently planned to be carried out in 2022-2023 and are expected to take approximately seven months to complete.
- 6.3.3 The amendment is considered to only require reassessment of the environmental effects and mitigation in the main ES for community and ecology and biodiversity.

Community

- 6.3.4 The amendment will result in additional land for the construction of the AP revised scheme, which will be within the boundary of a residential property. The impact of the utility diversion at this property will be small in scale and of short duration (up to three months), resulting in minor adverse effects, which are not significant. A description of the affected property is included in SES and AP ES Volume 5: Appendix CM-001-000.

Ecology and biodiversity

- 6.3.5 Construction associated with the amendment will result in additional habitat losses to those reported in the main ES, including approximately 20m of hedgerow including two trees, approximately three further scattered trees and 0.1ha of grassland. The trees have the potential to support roosting bats and barn owl, and the grassland is within proximity of ponds used by great crested newt. The loss of these habitats will,

therefore, result in different significant effects upon these species. However, this will not change the level of significance of the effects, which are each reported in the main ES as being of significance at up to county level.

- 6.3.6 Separately, the main ES reported the creation of 0.9ha of grassland and two ponds around a retained pond at Micklow House Farm. The amendment will remove the ability to deliver 0.3ha of this habitat creation in advance of construction. The temporary reduction in this area will have an adverse impact upon its function as mitigation for the loss of habitats associated with the great crested newt metapopulation⁴⁵ that is reported within the main ES as subject to a county level effect. This will, therefore result in a different significant effect upon this metapopulation, but it will not change the level of significance of effects reported in the main ES.

6.4 Additional land for the permanent diversion of Western Power Distribution overhead lines parallel to the HS2 main line and connection to Micklow House Farm (AP-003-104)

- 6.4.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert two Western Power Distribution 11kV overhead lines. This will include an underground diversion of a section of the existing overhead lines. The diversion of the utilities will be 660m in length, to the east of the HS2 route along the B5026 Eccleshall Road and parallel to the HS2 main line. The diverted utilities will reconnect to the existing overhead lines to the east of the B5026 Eccleshall Road and the existing overhead lines at Micklow House Farm. See Map CT-06-222, H5 to G4 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 0.2ha of additional land will be permanently required (see Map CT-06-222, H5 and G5 to G4 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.4.2 The activities will require the removal of existing utilities infrastructure (where necessary), the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing) and installation of the utilities. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utilities are currently planned to be carried out in 2022-2023 and are expected to take approximately seven months to complete.
- 6.4.3 The amendment is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

6.5 Additional land for the permanent removal of Zayo underground telecommunications cables near Yarnfield Lane (AP-003-105)

- 6.5.1 Since submission of the Bill, a requirement has been identified for additional land to permanently remove an existing Zayo fibre optic telecommunications cable. A 600m

⁴⁵ A metapopulation is a group of spatially separated populations that interact.

section of the existing utility will be removed to the north of the HS2 route, near Yarnfield Lane. See Map CT-05-222, D4 to B5 in the SES and AP ES Volume 2, CA3 Map Book). Approximately 0.4ha of additional land will be temporarily required (see Map CT-05-222, D4 to B5 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.

6.5.2 The activities will require removal of the utility through existing utility ducts. Activities to remove the utility are currently planned to be carried out in 2023-2024 and are expected to take approximately six months to complete.

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

6.6 Additional land and change in Bill powers for the permanent removal of a Zayo underground telecommunications cable between Yarnfield Lane and the A51 Bury Bank (AP-003-106)

6.6.1 Since submission of the Bill, a requirement has been identified for additional land and a change in Bill powers from temporary (access rights) to permanent (surface works in highways) at one plot of land to permanently remove an existing Zayo fibre optic telecommunication cables. A 4.6km section of the existing utility will be removed between Yarnfield Lane and the A51 Bury Bank. See Map CT-05-223, D10 to A8; Map CT-05-223-L1, I6 to A1; Map CT-05-224, E2 to D1 and J9 to H6; and Map CT-05-224-R1, E10 to C8 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 3.7ha of additional land will be temporarily required. See Map CT-05-223, C10 to A8; Map CT-05-223-L1, I4 to G5, G5 to E2, E2 to C1 and C1 to A1; Map CT-05-224, J9 to H6 and E2 to D1; and Map CT-05-224-R1, E10 to C8 in the SES and AP ES Volume 2, CA3 Map Book. The additional land and Bill powers needed to meet this requirement are not included within the Bill, hence the need for this amendment.

6.6.2 The activities will require removal of the utility through existing utility ducts. Activities to remove the utility are currently planned to be carried out in 2023-2024 and are expected to take approximately six months to complete.

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

6.7 Additional land for the permanent diversion of BT Openreach underground telecommunications cable along Swynnerton Footpath 27 accommodation underbridge (AP-003-107)

6.7.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert an existing underground BT Openreach telecommunication cables. The diversion of the utility will be 550m in length, following the route of the Swynnerton Footpath 27 accommodation underbridge and connecting to Blakelow Farm. A section of the existing utility will be removed where it will cross the HS2 route. See Map CT-06-224, E6 to E3 in the SES and AP ES Volume 2, CA3 Map Book). Approximately 0.3ha of additional land will be permanently required see Map CT-06-

224, E5 to E3 in the SES and AP ES Volume 2, CA3 Map Book. The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.

- 6.7.2 The activities will require the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing), the removal of existing utility infrastructure (where necessary) and installation of the utility. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utility are currently planned to be carried out in 2021-2022 and are expected to take approximately six months to complete.
- 6.7.3 The amendment is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

6.8 Additional land for the permanent diversion of three Severn Trent Water water mains south of the M6 (AP-003-108)

- 6.8.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert two existing Severn Trent Water 10-inch water mains and one existing Severn Trent Water 400mm water main. The diversion of the utilities will be 375m in length, crossing the HS2 route to the south of the M6 and south-west of the Swynnerton Estate South underbridge. See Map CT-06-224, C7 to B4 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 0.7ha of additional land will be permanently required (see Map CT-06-224, C6 to B7 and C5 to B4 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.8.2 The activities will require the removal of any surface material from the area of the diversion (this may include vegetation, soil, and road surfacing), the removal of existing utilities infrastructure (where necessary) and installation of the utilities. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utilities are currently planned to be carried out in 2021 - 2022 and are expected to take approximately six months to complete.
- 6.8.3 The amendment is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

6.9 Additional land for the permanent diversion of Western Power Distribution 11kV overhead lines south of Sandyford Farm (AP-003-109)

- 6.9.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert an existing Western Power Distribution 11kV overhead line. This will include an underground diversion of a section of the existing overhead line to the south of Sandyford Farm. The diversion of the utility will be 250m in length, to the south of Sandyford Farm, near the Swynnerton New Bridleway accommodation underbridge. See Map CT-06-225, F4 in the SES and AP ES Volume 2, CA3 Map Book.

Approximately 250m² of additional land will be permanently required to provide access to the existing overhead lines from Tittensor Road (see Map CT-06-225, F₄ in the SES and AP ES Volume 2, CA₃ Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.

- 6.9.2 The activities will require the removal of existing utility infrastructure, the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing) and installation of the utility. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utility are currently planned to be carried out in 2021 - 2022 and are expected to take approximately six months to complete.
- 6.9.3 The amendment is considered to only require reassessment of the environmental effects and mitigation in the main ES for community.

Community

- 6.9.4 The amendment will result in additional land for the construction of the AP revised scheme, which will be within the boundary of a residential property. The impact of the utility diversion at this property will be small in scale and of short duration (up to three months), resulting in minor adverse effects, which are not significant. A description of the affected property is included in SES and AP ES Volume 5: Appendix CM-001-000.

6.10 Additional land for the permanent diversion of BT Openreach telecommunications cable along Tittensor Road (AP-003-110)

- 6.10.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert existing BT Openreach underground telecommunications cables. The diversion of the utility will be 1.3km in length, following the Tittensor Road diversion. See Map CT-06-225, D₁₀ to F₂ in the SES and AP ES Volume 2, CA₃ Map Book. Approximately 0.5ha of additional land will be permanently required (see Map CT-06-225, F₁₀ to F₉ and F₂ to D₄ in the SES and AP ES Volume 2, CA₃ Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.10.2 The activities will require the removal of existing utility infrastructure (where necessary), removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing) and installation of the utility. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utility are currently planned to be carried out in 2021 - 2022 and are expected to take approximately six months to complete.
- 6.10.3 The amendment is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

6.11 Additional land for the permanent vertical realignment of four Severn Trent Water water mains along Tittensor Road (AP-003-111)

- 6.11.1 Since submission of the Bill, a requirement has been identified for additional land for the permanent vertical realignment of four existing Severn Trent Water water mains, one 400mm main, two 10-inch mains and one 9-inch main, between the retained Tittensor road and the diverted Tittensor Road, on the south-western side of the HS2 route. The utilities will be reinstalled along their existing alignment at up to 1m lower than the current depth. See Map CT-06-225, F8 to E8 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 280m² of additional land will be permanently required (see Map CT-06-225, E8 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.11.2 The activities will require the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing), excavation and reinstallation of the utilities. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to vertically realign the utilities are currently planned to be carried out in 2021-2022 and are expected to take approximately six months to complete.
- 6.11.3 The amendment is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

6.12 Additional land for the permanent diversion of BT Openreach overhead telecommunications cable along the A519 Newcastle Road (AP-003-112)

- 6.12.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert a section of an existing BT Openreach telecommunications cables. This will include an underground diversion of a section of the existing overhead lines. The diversion of the utility will be 840m in length, following the A519 Newcastle Road realignment, between Bottom Lane and the A51 Stone Road. See Map CT-06-226, F8 to F1 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 0.4ha of additional land will be permanently required (see Map CT-06-226, F8 to F7 and F3 to F1 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.12.2 The activities will require the removal of any existing utility infrastructure (where necessary), the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing) and installation of the utility. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utility are currently planned to be carried out in 2021-2022 and are expected to take approximately six months to complete.

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

6.13 Additional land for the permanent diversion of Severn Trent Water 400mm water main west of Bent Lane (South) (AP-003-113)

- 6.13.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert a Severn Trent Water 400mm water main. The diversion of the utility will be 400m in length, running along the eastern side of the West Coast Main Line (WCML) and to the west of the realigned Bent Lane (referred to as Bent Lane (South)), passing around a balancing pond for railway drainage. See Map CT-06-228a, D9 to C7 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 1.1ha of additional land will be permanently required (see Map CT-06-228a, E9 to C8 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.13.2 The activities will require the removal of any surface material (this may include vegetation, soil, and road surfacing), the removal of existing utility infrastructure (where necessary) and installation of the utility. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the works are complete. Activities to divert the utility are currently planned to be carried out in 2021-2022 and are expected to take approximately six months to complete.
- 6.13.3 The amendment is not considered to require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

6.14 Additional land for the permanent diversion of two Severn Trent Water water mains along Swynnerton Footpath 10 accommodation underbridge (AP-003-114)

- 6.14.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert two existing 400mm Severn Trent Water water mains. The diversion of the utilities will be 350m in length, crossing the HS2 route within the Swynnerton Footpath 10 accommodation underbridge and connecting to Shelton-under-Harley Farm. See Map CT-06-228a, C7 to B5 in the SES and AP ES Volume 2, CA3 Map Book. Approximately 700m² of additional land will be permanently required (see Map CT-06-228a, C7 to B6 in the SES and AP ES Volume 2, CA3 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 6.14.2 The activities will require the removal of any surface material from the area of the diversion route (this may include vegetation, soil, and road surfacing), the removal of existing utilities infrastructure (where necessary) and installation of the utilities. As required and where suitable, topsoil will be temporarily stored adjacent to the working area and will be used to reinstate the area once the diversion is complete.

Activities to divert the utilities are currently planned to be carried out in 2021 - 2022 and are expected to take approximately six months to complete.

- 6.14.3 The amendment is considered to only require reassessment of the environmental effects and mitigation in the main ES for sound, noise and vibration.

Sound, noise and vibration

- 6.14.4 The main ES reported that Camelot Cottage and Honeysuckle Cottage at Shelton under Harley Farm, Shelton under Harley would experience construction noise levels above the eligibility criteria for noise insulation as defined in the HS2 noise insulation and temporary rehousing policy⁴⁶. No other likely significant construction sound, noise or vibration significant effects are predicted in the vicinity of the amendment.
- 6.14.5 As a result of the amendment, when considered in combination with the construction works described in the main ES, in addition to those properties identified in the main ES, Shelton under Harley Farm, Shelton Under Harley (assessment location ref.: 13166) is forecast to experience construction noise levels above the eligibility criteria for noise insulation as defined in the draft Code of Construction Practice (CoCP)⁴⁷. The mitigation measures reported in the draft CoCP, including noise insulation for the additional residential property, will reduce noise inside the dwelling such that it does not reach a level where it will significantly affect residents. This will not change the level of significance as reported in the main ES.

⁴⁶ Further information is provided in HS2 Phase 2a Information Paper E13: Control of construction noise and vibration.

⁴⁷ HS2 Ltd (2017). *High Speed Rail (West Midlands - Crewe) Environmental Statement*, Volume 5: Technical appendices, draft Code of Construction Practice (CT-003-000). Available online at <https://www.gov.uk/government/publications/draft-code-of-construction-practice-for-hs2-phase-2a>

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