High Speed Rail (West Midlands - Crewe)

Supplementary Environmental Statement and Additional Provision Environmental Statement

Volume 2: Community Area report

CA1: Fradley to Colton

March 2018

G9

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Department for Transport

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

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.gov.uk/hs2

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

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Contents

List of figures

List of tables

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

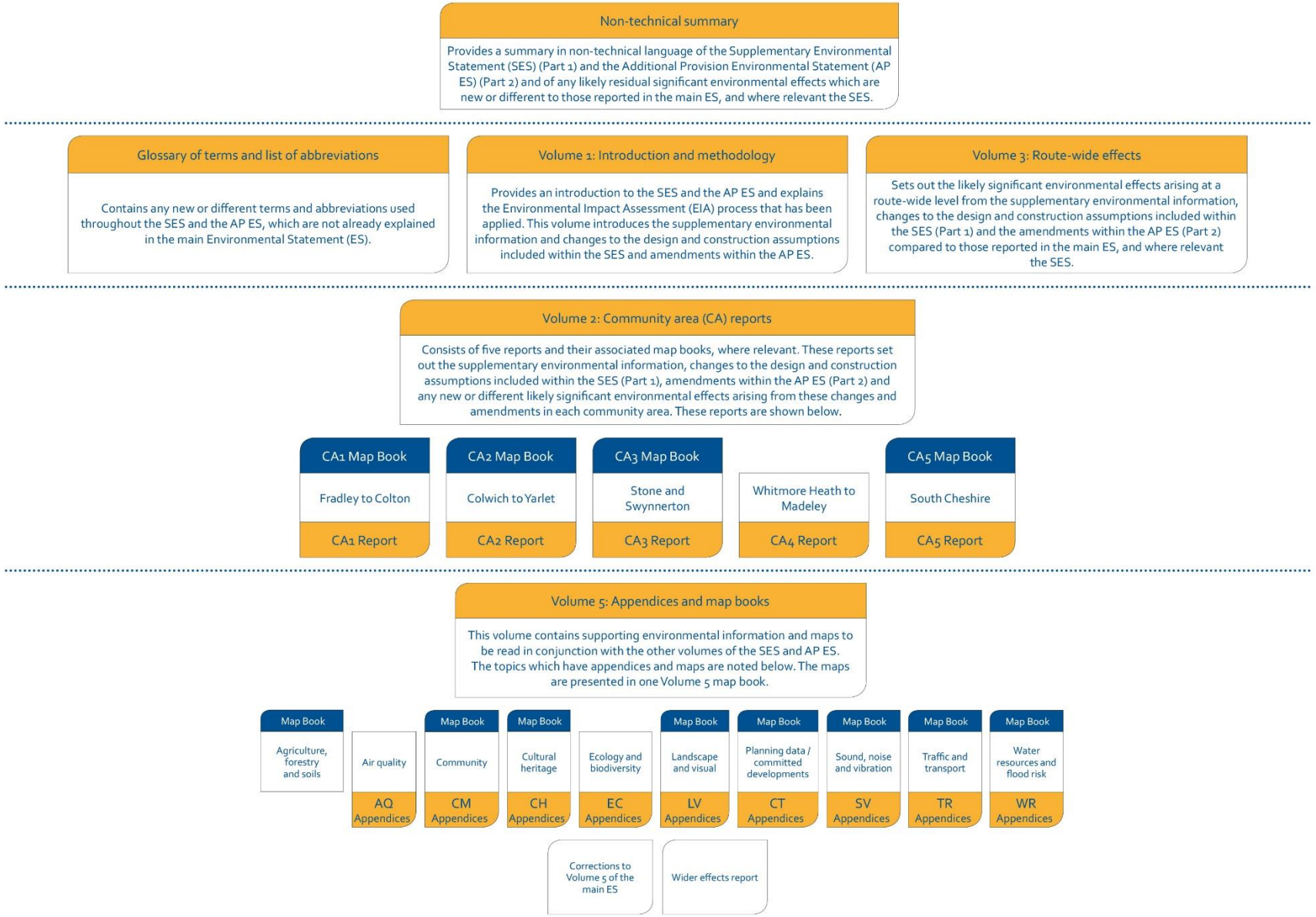
This report is part of the suite of documents that make up the Supplementary Environmental Statement (SES) and Additional Provision Environmental Statement (AP ES) for Phase 2a of the High Speed Two (HS2) rail network between the West Midlands and Crewe. The SES and the AP ES are separate documents, 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.

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.

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 Fradley to Colton area include:

- additional environmental baseline information for community; ecology and biodiversity; and water resources and flood risk;
- changes to the design and 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 Fradley to Colton area assessed within the AP ES include:

- additional land required for a temporary laydown area and a change to Bill powers at Pyford North embankment;
- additional land permanently required for the relocation of a balancing pond and provision of highway access with turning head from Pipe Lane, Pipe Ridware;
- additional land permanently required for a new site haul route and HS2 maintenance access route from Pipe Lane and modifications to existing highways;
- additional land permanently required to improve the visibility at the junction of Pipe Lane and an accommodation track;

- additional land permanently required to improve the visibility at the junctions of Moor Lane and Lount Lane with the B5013 Uttoxeter Road;
- additional land required 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 Fradley to Colton area

2.1 New environmental baseline information

Community

2.1.1 Since the production of the main ES, additional information on the locations of four walking routes, promoted by the Kings Bromley Horticultural Society, has been obtained. All four of these walks are circular walks varying between 3.75km and 10km in length, and are located to the south of Kings Bromley village.

2.1.2 Details of the promoted walking routes in this area that are relevant to the assessment, are provided in the SES and AP ES Volume 5: Appendix CM-001-000.

2.1.3 Detail of supplementary community information that is relevant to the SES assessment is provided in Section 3.

Ecology and biodiversity

2.1.4 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 Fradley to Colton area.

2.1.5 Details of additional ecological surveys completed in the Fradley to Colton area are provided in Background Information and Data (BID) documents[2] (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.

2.1.6 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.

2.1.7 Detail of supplementary ecological information that is relevant to the SES assessment is provided in Section 3.

Water resources and flood risk

2.1.8 Since production of the main ES, additional information relating to a spring located north-east of Rugeley Trent Valley Station and south-west of Old Wood Farm has been received.

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

2.1.9 Detail of supplementary water resources and flood risk information that is relevant to the SES assessment is provided in Section 3.

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

2.2.1 Since submission of the Bill the need to make changes to the design and construction assumptions have 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 layer[3] 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 Fradley to Colton area. The change to this compound relates to: a change to the operational period (duration and start/end date); a change in the number of railway system workers (peak and/or average); and a change in railway systems construction traffic numbers (heavy goods vehicles (HGV) and cars/light goods vehicles (LGV)).

2.2.4 In addition, in this area there is a need for a new railway systems compound which will be located within land included in the Bill for the provision of a civil engineering compound.

2.2.5 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 the existing compound and the provision of a new compound in this area do not require a change to the Bill and are 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.

2.2.6 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 for one compound and only a small increase for the second compound, 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.

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

2.2.7 Table 1 provides details on the changes to the operational characteristics of the existing railway systems compound and the provision of a new compound in this area. Figure 2 shows the location of the new railway systems compound.

Table 1: Summary of changes to the design and construction assumptions within the existing powers of the Bill in the Fradley to Colton area

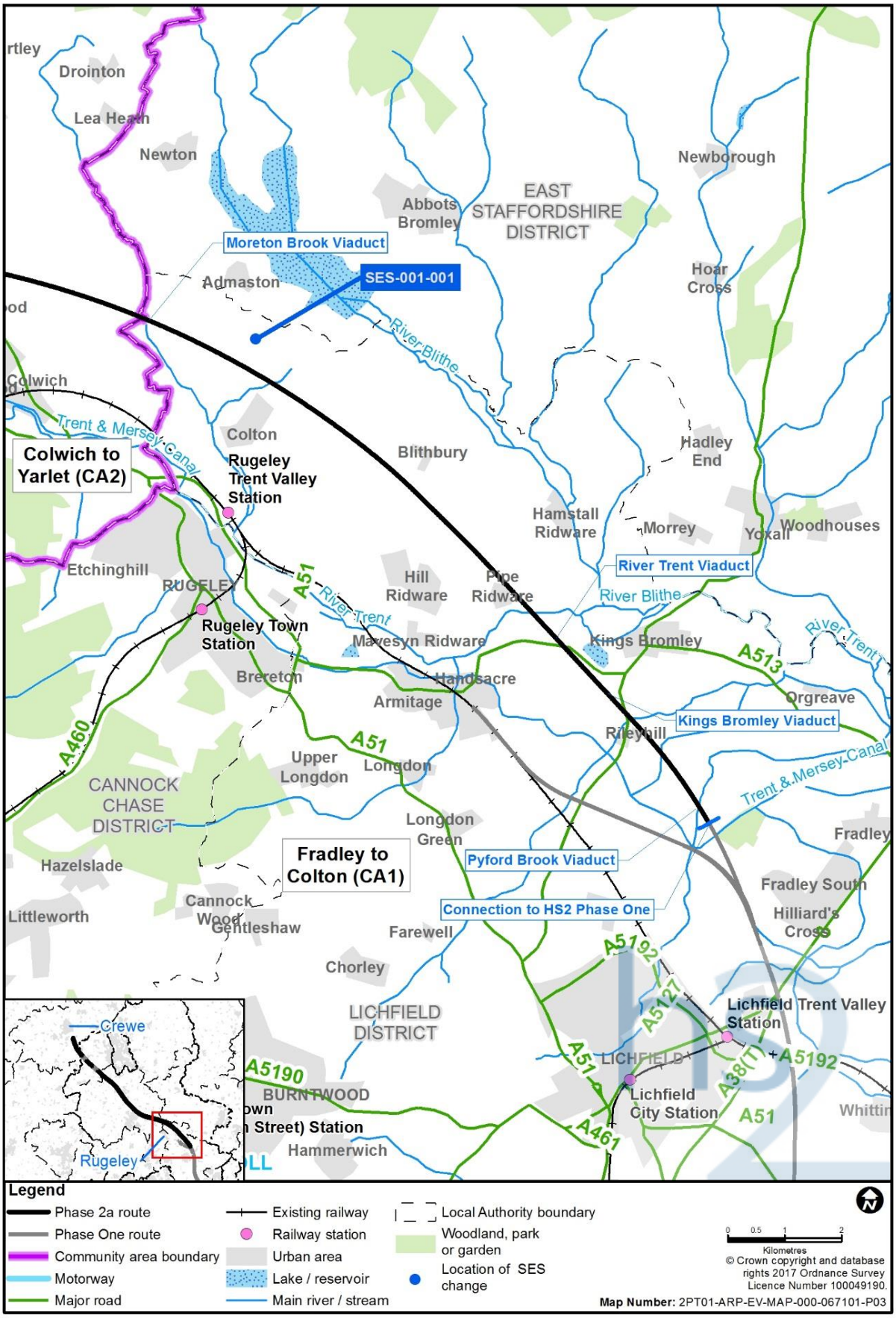
Details of changes to the design and construction assumptions	Description of the original scheme	Description of the SES scheme	Change to significant effects
Change to the operational duration[4], railway systems worker numbers, and railway systems HGV trips for the Pyford North embankment satellite compound	This compound would be operational for a total of five years, commencing during 2021. Civil engineering works would be managed from this compound for a period of three years and nine months, followed by railway installation works for a period of one year and three months. The compound would support an average of 25 civil engineering workers per day (35 workers at peak times) and an average of 30 railway systems workers per day (45 workers at peak times). The compound would generate 99-111 civil engineering HGV trips per day and up to 10 railway systems HGV trips per day during busy periods[5] and within the peak month of activity. (Map CT-05-202, G6 in the main ES, Volume 2, CA1 Map Book)	There are no changes to the operational characteristics for this compound related to civil engineering works. The railway installation works will be undertaken for a period of one year and six months, commencing during 2024. The compound will be operational for a total of five years and three months, an increase in three months from that stated in the main ES. There will be an increase in the number of railway systems workers supported by this compound with an average of 40 railway systems workers per day (60 workers at peak times). There will be an increase in the number of railway systems HGV trips generated by this compound with 82-84 trips per day during the busy periods and within the peak month of activity. This compound will support the implementation of track works.	No change. The increase in duration of the compound to support the extended duration of railway systems works is small in comparison to the overall duration of the compound (civil engineering and railway systems works). 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. 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 area for the original scheme. Therefore, the level of significance reported in the main ES with regard to compound durations, worker numbers and traffic will not change.

[4] The Volume 2 scheme description of the construction phase represents the duration of works in a different way to the Volume 5 Transport Assessment. The Volume 2 scheme description is based on quarters (each representing three months), e.g. December (Quarter 4) to February (Quarter 1) is rounded to six months, whereas the Volume 5 Transport Assessment counts the absolute duration e.g. three months.

[5] 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.

Details of changes to the design and construction assumptions	Description of the original scheme	Description of the SES scheme	Change to significant effects
Provision of a new railway systems compound at Stockwell Heath cutting satellite compound SES-001-001	Provision of a civil engineering compound only. This compound would be operational for a total of four years and three months, commencing during 2021, and would be used to manage the civil engineering works only. This compound would support an average of 25 civil engineering workers per day (35 workers at peak times). This compound would generate 66-87 civil engineering HGV trips per day during busy periods and within the peak month of activity. (Map CT-05-208, B5 and B4 in the main ES, Volume 2, CA1 Map Book)	There are no changes to the operational characteristics for this compound related to civil engineering works. A new railway systems compound will be provided within the footprint of the Stockwell Heath cutting satellite compound, included in the original scheme for civil engineering works. This railway systems compound will: • be operational for one year and three months, commencing during 2025; • support an average of 30 railway system workers per day (50 workers at peak times); • be accessed via the B5013 Uttoxeter Road; • generate 158-160 railway systems HGV trips during the busy periods and within the peak month of activity; • generate 23-38 railway systems car/LGV trips during busy periods and within the peak month of activity; • be managed from the Stone railhead main compound (in the Stone and Swynnerton area); and • support the installation of track works. (Map CT-05-208, B4 in the SES and AP ES, Volume 2, CA1 Map Book)	No change. The increase in duration of the compound to provide for a new railway systems compound is relatively small in comparison to the overall duration of the compound (civil engineering and railway systems works). 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. The increase in railway systems HGV movements will increase the total daily movements from the compound. This will not, however, materially change the overall impact of the combination of these HGV movements and those associated with other compounds in the area compared to the traffic levels assessed in the original scheme. Therefore, the level of significance reported in the main ES with regard to compound durations, worker numbers and traffic will not change.

Figure 2: Locations of the new railway systems compound in the Fradley to Colton area



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 Fradley to Colton 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. Where relevant, these corrections have been taken into account in the technical assessments contained within Section 3 of this SES.

Table 2: Summary of corrections to the main ES in the Fradley to Colton 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 Paragraphs 2.2.19 and 2.3.40, Volume 2, CA1 of the main ES	The permanent closure of Crawley Lane was reported in the main ES but not included within the scheme description. It was shown correctly on Volume 2: Map CT-06-201 of the main ES.	Paragraph 2.2.19: No text exists within the main ES for this correction. Paragraph 2.3.40: The works to be managed from this compound will require Kings Bromley Footpath 0.392(a) to be temporarily diverted for a period of three years during construction. This will divert users for 900m, 200m east of the existing alignment around the construction area required for the borrow pit located either side of Crawley Lane.	Paragraph 2.2.19, insert new bullet (fourth bullet): • permanent closure of Crawley Lane from a point approximately 50m north of where it joins the Kings Bromley Footpath 0.392(a). On completion of construction, access will be maintained between Crawley Lane and the footpath (see Volume 2: Map CT-06-201, C4); Paragraph 2.3.40: The works to be managed from this compound will require Kings Bromley Footpath 0.392(a) to be temporarily diverted for a period of three years during construction. This will divert users for 900m, 200m east of the existing alignment around the construction area required for the borrow pit located either side of Crawley Lane. *Crawley Lane will be permanently closed from a point approximately 50m north of where it joins the Kings Bromley Footpath 0.392(a) but on completion of construction, access will be maintained between Crawley Lane and the footpath.*	No change. The permanent closure of Crawley Lane was correctly described and included in the traffic and transport assessment.
Overview of the area and description of the Proposed Scheme	The permanent diversion of Mavesyn Ridware Footpath 7 was reported in the main ES but not included within the scheme description.	No text exists within the main ES for this correction.	Paragraph 2.2.29, insert new bullet (22nd bullet): • diversion of Mavesyn Ridware Footpath 7, to join the realigned B5014 Uttoxeter Road. This will shorten the footpath by approximately 50m (see Volume 2: Map CT-06-206, G4 to F3);	No change. The permanent diversion of Mavesyn Ridware Footpath 7 was correctly

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Paragraphs 2.2.29 and 2.3.95, Volume 2, CA1 of the main ES	It was shown correctly on Volume 2: Maps CT-05-206 and CT-06-206 of the main ES.	Paragraph 2.3.95 - first bullet: • Mavesyn Ridware Footpath 7 will be temporarily diverted in two places, one for 1.3km to the west of its existing alignment, for one year and six months during the construction period, and one local diversion for 300m for six months;	Paragraph 2.3.95 – first bullet: • Mavesyn Ridware Footpath 7 will be temporarily diverted in two places, one for 1.3km to the west of its existing alignment, for one year and six months during the construction period, and one local diversion for 300m for six months. *Following completion of construction of the B5014 Uttoxeter Road, the Mavesyn Ridware Footpath 7 will be permanently diverted, to join the realigned B5014 Uttoxeter Road;*	described and included in the traffic and transport assessment.
Overview of the area and description of the Proposed Scheme Paragraphs 2.3.70, Volume 2, CA1 of the main ES Map CT-05-204, Volume 2 Map Book, CA1 of the main ES	The scheme description states that Mavesyn Ridware Footpath 30 will be temporarily diverted in two places during construction. This should have been reported as two separate temporary diversions, one for Mavesyn Ridware Footpath 30 and another for Hamstall Ridware Footpath 3. Hamstall Ridware Footpath 3 is incorrectly labelled on Volume 2: Map CT-05-204 of the main ES as Mavesyn Ridware Footpath 3. This has been corrected within the SES and AP ES Volume 2: Map CT-05-204.	Paragraph 2.3.70, second bullet: • temporary diversion of Mavesyn Ridware Footpath 30 in two places during the construction period. Users will be diverted 500m south of the existing alignment around the extent of the borrow pit for a period of three years and nine months. There will be an alternative diversion of 40m to the south, around a pier of the River Trent viaduct, for one year and six months. On completion of construction, this footpath will be permanently realigned 10m to the north of its existing alignment, around a pier of the River Trent viaduct;	Paragraph 2.3.70, second bullet: • temporary diversion of Mavesyn Ridware Footpath 30, 40m to the south of the existing alignment, around a pier of the River Trent viaduct, for one year and six months. On completion of construction, this footpath will be permanently realigned 10m to the north of its existing alignment, around a pier of the River Trent viaduct; Paragraph 2.3.70, insert new bullet (third bullet): • temporary diversion of Hamstall Ridware Footpath 3 with users diverted approximately 150m south of the existing alignment, around the edge of borrow pit north of the River Trent viaduct, for a period of three years and nine months. On completion of construction this footpath will be returned to its existing alignment; and	No change. The temporary diversion of Hamstall Ridware Footpath 3 was correctly described and included in the community, health, landscape and visual and traffic and transport assessments.
Overview of the area and description of the Proposed Scheme Paragraph 2.3.85 and Figure 6,	The operational duration of the railways systems work managed from the Blithbury Crossovers satellite compound was reported as commencing in 2025 and operational for nine months.	Paragraph 2.3.85, first bullet: • be operational for nine months, commencing during 2025; Figure 6 shows that the railways systems work managed from the Blithbury crossovers satellite	Paragraph 2.3.85, first bullet: • be operational for *six* months, commencing during *2026;* Figure 6 should show that railways systems work managed from the Blithbury crossovers satellite	No change. The assessment was based on the correct duration.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Volume 2, CA1 of the main ES	This should have been reported as commencing in 2026 and operational for six months.	compound would be operational for nine months, commencing 2025.	compound would be operational for six months, commencing 2026.	
Traffic and transport Paragraph 14.4.10 (Table 28), Volume 2, CA1 of the main ES		Paragraph 14.4.10 - Table 28, eighth entry: **Estimated duration of use (years)** – 9 months	Paragraph 14.4.10 - Table 28, eighth entry: **Estimated duration of use (years)** – 6 months	
Overview of the area and description of the Proposed Scheme Paragraph 2.3.100, Volume 2, CA1 of the main ES	Demolition of a building (stable) on Newlands Lane in Land at Stockwell Heath (CA1/51) was not included within the scheme description and assessment.	Paragraph 2.3.100: The works to be managed from this compound will not require demolition of any buildings.	Paragraph 2.3.100: The works to be managed from this compound will *require demolition of one structure.* New table would be provided showing demolitions managed from Blithbury North cutting satellite compound. Text within this table under 'Other' would state: **Description** – One stable. **Location** - Newlands Lane. **Feature resulting in the demolition** - Blithbury North cutting.	No change. There is a high impact from land required from Land at Stockwell Heath (CA1/51) which leads to a moderate adverse permanent effect, as reported in the main ES. The demolition of a stable would also be a high impact but would not change the overall significant permanent moderate adverse effect reported.
Agriculture, forestry and soils Paragraph 4.4.39, Volume 2, CA1 of the main ES		Paragraph 4.4.39: Most of the 16 holdings that will experience a moderate adverse permanent effect will have a substantial proportion of land required. This includes Shaw Lane Farm (CA1/14), which will also have property demolished as a result of the Proposed Scheme.	Paragraph 4.4.39: Most of the 16 holdings that will experience a moderate adverse permanent effect will have a substantial proportion of land required. This includes Shaw Lane Farm (CA1/14), which will also have property demolished as a result of the Proposed Scheme. *Land at Stockwell Heath (CA1/51) will also require the demolition of a stable as a result of the Proposed Scheme.*	

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 2.3.110, Volume 2, CA1 of the main ES	The number of railway systems workers supported by the Newlands Lane auto-transformer feeder station satellite compound was stated as 45 per day and 90 during the peak period. This should have been reported as 55 per day and 90 during the peak period.	Paragraph 2.3.110, second bullet: • support 45 railway systems workers per day (90 workers at peak times);	Paragraph 2.3.110, second bullet: • support *55* railway systems workers per day (90 workers at peak times);	No change. The assessment was based on the correct number of workers.
Community Paragraph 6.5.4, Volume 2, CA1 of the main ES	The community assessment reported significant noise and visual effects during operation for approximately seven properties north and south of Blithbury Road, including the proposed development 16/0074/PND. The operation of the original scheme will result in noise and visual effects on six residential properties. The planning application reference stated is incorrect.	Paragraph 6.5.4: Approximately seven residential properties north and south of Blithbury Road (including the proposed development 16/0074/PND) will be in proximity to the route of the Proposed Scheme. The operation of the Proposed Scheme will result in significant noise effects at the residential properties during the daytime and night-time due to the running of the trains. All of the properties will experience significant adverse visual effects…. The noise and visual effects will result in a permanent in-combination effect on the amenity of residents at these properties….	Paragraph 6.5.4: *A group of* seven residential properties north and south of Blithbury Road (including the proposed development *16/00753/PND*) will be in proximity to the route of the Proposed Scheme. The operation of the Proposed Scheme will result in significant noise effects at *six of* the residential properties during the daytime and night-time due to the running of the trains. All *seven* properties will experience significant adverse visual effects…. The noise and visual effects will result in a permanent in-combination effect on the amenity of residents at *six of* these properties….	Yes. This correction will result in a different significant community effect, due to a reduction in the number of properties reported to be affected by the operation of the original scheme from seven to six, but will not change the level of significance of the effect reported in the main ES.
Community Paragraphs 6.5.6 and 6.5.12, Volume 2, CA1 of the main ES	Hamley House Farm was included as two assessment locations (11187 and 11238) in the Volume 5 sound, noise and vibration assessment and consequently was counted twice in the community assessment. Hamley House Farm should have been included in just one assessment location (11238).	Paragraph 6.5.6: …The operation of the Proposed Scheme will result in significant noise effects at 20 residential properties during the daytime and night-time due to the running of the trains…. Paragraph 6.5.12 - fifth bullet: • twenty residential properties in Stockwell Heath and Hamley House due to the combination of noise and visual effects;	Paragraph 6.5.6: The operation of the Proposed Scheme will result in significant noise effects at *19* residential properties during the daytime and night-time due to the running of the trains…. Paragraph 6.5.12 - fifth bullet: • *nineteen* residential properties in Stockwell Heath and Hamley House due to the combination of noise and visual effects;	Yes. This correction will result in a different significant community effect, due to a reduction in the number of properties reported to be affected by the operation of the original scheme from

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
	As a result, the community assessment reported that 20 properties were affected. This should have been reported as 19 properties.			20 to 19, but will not change the level of significance of the effect reported in the main ES.
Ecology and biodiversity Paragraph 8.3.31, Volume 2, CA1 of the main ES	At Woodhouse Farm, planning permissions to convert agricultural buildings (10/00581/COU and 14/00614/FUL) were not considered as part of the ecology and biodiversity assessment. These committed developments, which form part of the future baseline, will result in the loss of a small common pipistrelle bat roost.	Paragraph 8.3.31: No further committed developments have been identified in this area that will materially alter the baseline conditions in 2020 for ecological receptors.	Paragraph 8.3.31: Volume 5: Appendix CT-004-000 provides details of the developments in the Fradley to Colton area that are assumed to have been implemented by 2020. The following committed development that will materially affect the future baseline conditions for ecology and biodiversity resources in this area during construction is set out in the table below. New table would be provided showing committed development. **Map book reference** – CA1/70 **Planning reference** 10/00581/COU **Description** – Demolition of agricultural building, construction of garage block and change of use of existing agricultural building to form seven holiday lets. **Map book reference** – CA1/70. **Planning reference** - 14/00614/FUL **Description** - Removal of occupancy conditions to develop existing agricultural buildings at Woodhouse Farm into seven residential properties. After the table insert the following paragraph: One of the agricultural buildings to be converted includes a small common pipistrelle bat roost that was identified during internal bat surveys; this roost will be lost as a result of the conversion.	No change. The regional level effect on the bat assemblage that was reported in the main ES included this roost as part of the assemblage although it is not the reason why the assemblage is of regional value. The roost alone is of local value as it supports a non-breeding roost of common species. The removal of this roost from the assemblage will therefore not result in a change to the significance of the bat assemblage reported in the main ES.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Landscape and visual Paragraphs 11.4.12 (Table 22) and 11.5.8 (Table 24), Volume 2, CA1 of the main ES Maps LV-03-205 and LV-04-205, Volume 2 Map Book, CA1 of the main ES	Viewpoint 004.02.004 (views south-west from Woodhouse Farm) was not included within the landscape and visual assessment.	No text exists within the main ES for this correction.	The assessment of the visual impact of the original scheme at Viewpoint 004.02.004 (views south-west from Woodhouse Farm) is reported in Section 3 of this report.	Yes. This correction will introduce new significant effects during construction and operation at Woodhouse Farm (see Section 3).
Sound, noise and vibration; Paragraphs 13.4.20, 13.4.28, 13.5.19, 13.5.23 (Table 26) 13.5.25, 13.5.32, 13.5.33 (Table 27), 13.5.37, Volume 2, CA1 of the main ES.	At Woodhouse Farm, there are two planning applications, one of which relates to the conversion of agricultural buildings to seven holiday lets (10/00581/COU) and the other relates to the removal of an occupancy condition to allow the seven holiday lets to become residential properties (14/00614/FUL). Application 14/00614/FUL was not considered within the main ES community and sound, noise and vibration assessments. This resulted in these properties being assessed as holiday lets rather than permanent residential properties, whereas it is possible they could be used as either.	Paragraph 13.4.20 - seventh bullet: • Woodhouse Farm holiday cottages (committed development (CD) ref (15/00940/COU) (assessment location ref.: 11103(N)). Paragraph 13.4.28: At Woodhouse Farm, Pipe Ridware, there is a committed development for seven holiday cottages (CD ref: 15/00940/COU). Paragraph 13.5.19: No text exists within the main ES for this correction Paragraph 13.5.23 - Table 26 No text exists within the main ES for this correction.	Paragraph 13.4.20 - seventh bullet: • Woodhouse Farm holiday cottages (committed development (CD) ref *(10/00581/COU)* (assessment location ref.: 11103(N)). Paragraph 13.4.28: At Woodhouse Farm, Pipe Ridware, there is a committed development for seven holiday cottages (CD ref: *10/00581/COU*). Paragraph 13.5.19, insert new bullet (fourth bullet): • Woodhouse Farm (CD ref (14/00614/FUL)); Paragraph 13.5.23 - Table 26, insert new entry (seventh entry): **Significant effect number** - OSV01-C07	Yes. This correction will remove the non-residential airborne noise effect during operation reported on the holiday let business at Woodhouse Farm. When considered in conjunction with The Bungalow and Woodhouse Farm, this correction will introduce a new effect likely to be significant during operation on the community (the

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
	Appendix 5 Volume SNV-001-000 sets out that: "Where a receptor has multiple uses, the assessment has been made based on the most sensitive use" In this situation the most sensitive use is different in the construction and operational phases. The most sensitive use for the construction assessment is its use as holiday lets. The most sensitive use for the operational assessment is its use as residential properties. The committed development 15/00940/COU, which relates to a change of use from agricultural land to domestic curtilage, was reported in error in the main ES and is not relevant to the sound, noise and vibration and community assessments. The relevant applications are 10/00581/COU and 14/00614/FUL and reference to application 15/00940/COU should be removed.	Paragraph 13.5.25 – sixth bullet: • a committed development for seven holiday cottages at Woodhouse Farm, Pipe Ridware (assessment location ref.: 11231(N)). Paragraph 13.5.32: At Woodhouse Farm, Pipe Ridware there is a committed development for seven holiday cottages (CD ref: 15/00940/COU), assessment location ref.: 11231(N)). The development is located to the north-west of the Proposed Scheme. A major noise effect been identified based on the change in sound level of greater than 10dB compared the future baseline sound level. Daytime operational sound levels at the closest boundary of the site to the railway are predicted to exceed the impact screening criteria for hotels of 50 dB LpAeq, 16hr by 9dB. Night-time operational sound levels exceed the impact screening criteria for hotels of 45 dBLpAeq, 8hr by 4dB. Considering the magnitude of the impact, this development has been identified, on a precautionary basis, as being subject to a significant adverse effect	**Source of significant effect**- Airborne noise increase from new train services **Time of day**- Daytime and night-time **Location and details –** Woodhouse Farm Approximately 10 dwellings (including the committed development at Woodhouse Farm (CD ref. 14/00614/FUL) in the vicinity of Woodhouse Farm and their shared external community spaces. Forecast increases in sound from the Proposed Scheme are likely to cause a major adverse effect on the acoustic character of the area around the properties. Paragraph 13.5.25: Bullet removed. No replacement text required. Paragraph 13.5.32: Paragraph removed. No replacement text required.	seven properties and the two existing properties) and their shared external community spaces. Mitigation of this effect will be provided in the form of a noise fence barrier or landscape earthworks.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
		denoted by OSV01-N06 on Map Series SV-05 (Volume 2: CA1 Map Book). Paragraph 13.5.33 - Table 27, sixth entry: **Significant effect number** - OSV01-N06 **Type of significant effect and source** - Major activity disturbance and sleep disturbance to patrons of proposed holiday cottages resulting from operational airborne sound. **Time of day**- Daytime and night-time **Location and details** - Committed development for seven holiday cottages at Woodhouse Farm, Pipe Ridware Paragraph 13.5.37 - sixth bullet: a committed development for seven holiday cottages at Woodhouse Farm, Pipe Ridware, identified by OSV01-N06 on Map SV-05-103.	Paragraph 13.5.33 -Table 27: Sixth entry removed from Table 27. No replacement text required. Paragraph 13.5.37: Bullet removed. No replacement text required.	
Community Paragraphs 6.3.18 (Table 12) and 6.5.12 Volume 2, CA1 of the main ES	As above The sound, noise and vibration and community assessment methodologies represent the number of residential properties in a different way. The sound, noise and vibration assessment rounds numbers of properties to the nearest 5, e.g. 9 is rounded to 10, whereas the community assessment counts absolute numbers of properties.	Paragraph 6.3.18 - Table 12: No text exists within the main ES for this correction No text exists within the main ES for this correction.	Paragraph 6.3.18 - Table 12, insert new entry (2nd entry): Map book reference – CA1/70 Planning reference - 14/00614/FUL Description - Removal of occupancy condition for seven holiday lets to become residential properties at Woodhouse Farm New paragraph to be inserted following paragraph 6.5.5: At Woodhouse Farm, there are two planning applications, one of which relates to the conversion of agricultural buildings to seven holiday lets (10/00581/COU) and the other relates to the removal	Yes. This correction will introduce a new significant community effect on nine residential properties (significant noise and visual effects) during operation.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
			of an occupancy condition to allow the seven holiday lets to become residential properties (14/00614/FUL). Should the residential application be implemented, approximately nine residential properties at Woodhouse Farm (including the proposed development 14/00614/FUL) will be in proximity to the route of the Proposed Scheme. The operation of the Proposed Scheme will result in significant noise effects at the residential properties during the daytime and night-time due to the running of the trains. All of the properties will also experience significant adverse visual effects due to views of the Proposed Scheme operating along the Pipe Ridware embankment and Blithbury south cutting. The noise and visual effects will result in a permanent in-combination effect on the amenity of residents at these properties. This will result in a major adverse effect, which is significant.	
		Paragraph 6.5.12: No text exists within the main ES for this correction	Paragraph 6.5.12, insert new bullet (third bullet): nine properties at Woodhouse Farm due to the combination of noise and visual effects;	
Ecology and biodiversity Paragraph 8.4.21, Volume 2, CA1 of the main ES	The amount of grassland lost to the original scheme within Trentside Meadows LWS is reported in paragraphs 8.4.8, 8.4.56 and 8.4.59 as 4.9ha (18%). In paragraph 8.4.21 the loss is stated as 4.1ha (18%). This should have been reported as 4.9ha.	Paragraph 8.4.21: Construction of the River Trent viaduct will result in the permanent loss of approximately 4.1ha (18%) of floodplain grazing marsh at Trentside Meadows LWS. The loss of this grassland habitat will result in a permanent adverse effect that is significant at up to county level.	Paragraph 8.4.21: Construction of the River Trent viaduct will result in the permanent loss of approximately *4.9ha* (18%) of floodplain grazing marsh at Trentside Meadows LWS. The loss of this grassland habitat will result in a permanent adverse effect that is significant at up to county level.	No change. The assessment was based correctly on the loss of 4.9ha and therefore this correction will not change the level of significance of the effect reported in the main ES.
Ecology and biodiversity Paragraphs 8.4.53, 8.4.62 and 8.4.78,	Areas of woodland and hedgerow habitat creation were incorrectly reported in the ecology assessment, but were shown	Paragraph 8.4.53: Within the Fradley to Colton area, approximately 40.6ha of woodland habitat creation will be undertaken at locations including the following:	Paragraph 8.4.53: Within the Fradley to Colton area, approximately *56.7ha* of woodland habitat creation will be undertaken at locations including the following:	No change. The assessment was based on the correct areas and therefore this correction will not

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Volume 2, CA1 of the main ES	correctly on Volume 2: Maps CT-06 of the main ES for CA1. There is no requirement for additional land as a result of this correction.	First bullet: • approximately 3.0ha of woodland habitat creation to the north of Bourne embankment…; Third bullet: • approximately 4.9ha of woodland habitat creation along Pyford Brook watercourse…; Fourth bullet: • approximately 2.9ha of woodland habitat creation along Ashby Sitch watercourse…; and Fifth bullet: • approximately 3.3ha of woodland habitat creation adjacent to the north of Tomlinson's Spinney…. Paragraph 8.4.62: …Approximately 52.4km of new hedgerows will be planted, including to enhance connectivity to Pipe Wood Lane Hedgerow LWS and Newlands Lane LWS, and to compensate for short sections lost from other hedgerow BAS…. This represents a net loss in hedgerow of approximately 12.4km after mitigation, which represents a permanent adverse effect that is significant at the county level…. Paragraph 8.4.78 On a precautionary basis, it is assumed that there is a net loss in hedgerow of approximately 12.4km, which will result in a permanent adverse residual effect that is significant at the county 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 28.8km of existing hedgerow. The provision of the majority of this reinstated hedgerow would reduce the residual effect to a level that is not significant.	First bullet: • approximately *2.9ha* of woodland habitat creation to the north of Bourne embankment…; Third bullet: • approximately *4.5ha* of woodland habitat creation along Pyford Brook watercourse…; Fourth bullet: • approximately *3.2ha* of woodland habitat creation along Ashby Sitch watercourse …; and Fifth bullet: • approximately *3.4ha* of woodland habitat creation adjacent to the north of Tomlinson's Spinney…. Paragraph 8.4.62: …Approximately *50.9km* of new hedgerows will be planted, including to enhance connectivity to Pipe Wood Lane Hedgerow LWS and Newlands Lane LWS, and to compensate for short sections lost from other hedgerow BAS…. This represents a net loss in hedgerow of approximately *13.9km* after mitigation, which represents a permanent adverse effect that is significant at the county level… Paragraph 8.4.78 On a precautionary basis, it is assumed that there is a net loss in hedgerow of approximately *13.9km*, which will result in a permanent adverse residual effect that is significant at the county 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 28.8km of existing hedgerow. The provision of the majority of this reinstated hedgerow would reduce the residual effect to a level that is not significant.	change the level of significance of the effect reported in the main ES.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Ecology and biodiversity Paragraph 8.4.59, Volume 2, CA1 of the main ES	The overall area of mitigation at Lount Farm LWS is correctly described and assessed in the main ES, however the distribution of the mitigation was incorrectly described. Mitigation was reported as being distributed between the Fradley to Colton area and the Colwich to Yarlet area, whereas the mitigation is all within the Fradley to Colton area, with none in the Colwich to Yarlet area. The distribution of mitigation to both the east and west side of Moreton Brook was incorrectly described.	Paragraph 8.4.59 – second bullet: • approximately 3.3ha of lowland meadow at Lount Farm LWS will be restored and enhanced on the west side of Moreton Brook. In particular, this will compensate for the loss of approximately 3.3ha of lowland meadow at Lount Farm LWS within the Fradley to Colton area, which is affected by works associated with the underground diversion of an existing 132kV power line. In addition, approximately 2.7ha of species-rich grassland will be created on land to the east side of Moreton Brook, to partly compensate for the further loss of 8.4ha of lowland meadow within and adjacent to Lount Farm LWS in the Colwich to Yarlet area (4.4ha of which is within the LWS);	Paragraph 8.4.59 – second bullet: • approximately 8.7ha of lowland meadow will be created or enhanced alongside Moreton Brook, in order to connect the two currently disparate sections of Lount Farm LWS within the Fradley to Colton area. The majority of this mitigation (7.4ha) occurs to the immediate west of Moreton Brook, with 1.3ha to the east (beneath the Moreton Brook viaduct). In particular, this will partially compensate for the loss of approximately 11.7ha of lowland meadow from Lount Farm LWS (7.7ha) and its surrounding area (4ha) which is affected by works associated with the construction of the Moreton North embankment (within the Colwich to Yarlet area) and the underground diversion of an existing 132kV power line. Of these losses, 3.3ha occur within the Fradley to Colton area (within Lount Farm LWS);	No change. The overall area of mitigation at Lount Farm LWS was correctly described and assessed in the main ES, and so there is no change to the significant effects reported in the main ES.

3 Assessment of changes in the Fradley to Colton area

3.1 Introduction

3.1.1 Section 3 reports the assessment for community; ecology and biodiversity; landscape and visual; and water resources and flood risk as a result of the SES changes.

3.2 Community

Introduction

3.2.1 The environmental baseline relevant to the community 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 new baseline information received since the production of the main ES.

Scope, assumptions and limitations

3.2.2 The assessment scope, key assumptions and limitations for community are as set out in Volume 1, the Scope and Methodology Report (SMR)[6] and the SMR Addendum[7] of the main ES.

SES changes of relevance to this assessment

3.2.3 The inclusion of new baseline information relating to promoted walks in and around Kings Bromley is relevant to this assessment.

Environmental baseline

Existing baseline

3.2.4 The baseline community information for the Fradley to Colton area is as described in Volume 2, CA1, Section 6 of the main ES.

3.2.5 Kings Bromley Horticultural Society promotes four walking routes to the south and east of Kings Bromley. Walk 1 (including Kings Bromley Footpaths 7, 8 and 11) is a 3.75km circular route to the south of Kings Bromley. Walk 2 (including Kings Bromley Footpath 12, the A515 Lichfield Road, Trent and Mersey Canal towpaths, Kings Bromley Footpath 0.390 and Kings Bromley Bridleway 0.391) is a circular walking route south of Kings Bromley and provides both a 5km and an 8km route. Walk 3 is a circular walking route south of Kings Bromley and provides both a 7km and a 10km route. The shorter route passes along lanes and public rights of way (PRoW) including Crawley Lane, Kings Bromley Footpath 0.392(a), Fradley and Streethay Footpath 53, and Alrewas Bridleway 33. The longer route additionally passes along the Trent and

[6] HS2 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

[7] 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

Mersey Canal tow path, the A515 Lichfield Road and Kings Bromley Footpath 12. Walk 4 (including Kings Bromley Bridleway 13, Crawley Lane and Kings Bromley Footpath 11) is a 10km circular walking route east and south of Kings Bromley, passing Orgreave and Alrewas.

Future baseline

Construction (2020) and operation (2027)

3.2.6 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).

3.2.7 None of the identified developments affect the assessment of the SES scheme's likely construction and operation impacts on community.

Effects arising during construction

Avoidance and mitigation measures

3.2.8 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

3.2.9 Part of the Kings Bromley Walk 1 route will be temporarily closed for approximately two months while works associated with the 400kV National Grid overhead power lines are undertaken. This will result in a negligible adverse effect for up to two months, which is not significant.

3.2.10 Part of the Kings Bromley Walk 2 route will be temporarily diverted around a borrow pit located next to the A515 Lichfield Road and the A515 Lichfield Road realignment. In addition, another section will be closed for approximately two months while works associated with the 400kV National Grid overhead power lines are undertaken, however, this is applicable to the long route only. This will result in a negligible adverse effect for up to three years, which is not significant.

3.2.11 Part of the Kings Bromley Walk 3 route will be temporarily diverted around a borrow pit located either side of Crawley Lane and a borrow pit located next to the A515 Lichfield Road. In addition, the walk will pass through lanes and PRoW located on land required for the construction of the original scheme. Access for pedestrians will be maintained in these locations throughout construction. This will result in a negligible adverse effect for up to three years, which is not significant.

3.2.12 Part of the Kings Bromley Walk 4 route will be temporarily closed for approximately two months while works associated with the 400kV National Grid overhead power lines are undertaken. In addition, the walk will pass through lanes and PRoW located on land required for the construction of the original scheme. Access for pedestrians

[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

will be maintained in these locations throughout construction. This will result in a negligible adverse effect for up to two months, which is not significant.

3.2.13 Kings Bromley Walk 2 and Walk 3 will be permanently diverted along the A515 Lichfield Road realignment. This will result in a negligible effect, which is not significant.

Other mitigation measures

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

Summary of likely residual significant effects

3.2.15 There are no changes to the likely residual significant construction community effects identified in the main ES as a result of the new baseline information.

Cumulative effects

3.2.16 There are no new or different likely significant cumulative effects for community as a result of the new baseline information acting in combination with any other SES changes.

Effects arising from operation

3.2.17 There are no new or different significant operational effects for community as a result of the new baseline information, in comparison with the main ES.

3.3 Ecology and biodiversity

Introduction

3.3.1 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

3.3.2 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.

3.3.3 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

3.3.4 New baseline information on great crested newt resulting from additional ecological surveys in the Fradley to Colton area is relevant to the assessment.

Environmental baseline

Existing baseline

3.3.5 The baseline ecology and biodiversity information for the Fradley to Colton area is as described in Volume 2, CA1, Section 8 of the main ES. A summary of the baseline information relevant to the assessment of the SES change is provided below.

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

Species

3.3.7 The outcomes of additional ecological surveys undertaken for great crested newt have formed the basis of a review of the composition of metapopulations[9] across the Fradley to Colton 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.

3.3.8 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.

3.3.9 The main ES reported a great crested newt metapopulation in nine ponds between Rugeley and Blithbury (assumed metapopulation (AMP) 1.2) and a great crested newt metapopulation in 26 ponds near Hill Ridware, south of Colton (AMP 1.3). Across both metapopulations, field surveys recorded one great crested newt population of small size class. On a precautionary basis, the presence of medium size populations of great crested newt was assumed in the remaining 34 ponds. Each of these metapopulations is valued at up to county level in the main ES.

[9] A metapopulation is a group of spatially separated populations that interact.

3.3.10 Additional surveys have confirmed:

- absence of great crested newt within 12 ponds where great crested newt populations were previously assumed to be present and form part of these metapopulations;
- presence of great crested newt within two ponds where great crested newt populations were previously assumed to be present and form part of these metapopulations; and
- presence of great crested newt within 12 ponds that were not previously considered to form part of these metapopulations.

3.3.11 The review of the composition of metapopulations across this area has identified that movement of individual great crested newt between AMP 1.2 and AMP 1.3 is likely to occur. As a result these metapopulations have been merged to form metapopulation AMP 1.7, which occurs between Rugeley and Hill Ridware. In addition to the confirmed great crested newt population within AMP 1.2 and AMP 1.3 reported in the main ES (one pond) and the confirmed populations within AMP 1.2 and AMP 1.3 identified from additional surveys (14 ponds), there are 30 further ponds with assumed populations that are considered to form part of AMP 1.7. The merged metapopulation, therefore, includes 45 ponds with confirmed or assumed populations of great crested newt, with the largest population being of assumed medium size class. This metapopulation occurs partially within the land required for the original scheme. The merged metapopulation and increase in the number of ponds with confirmed or assumed population of great crested newt does not change the value of AMP 1.7 (AMP 1.2 and 1.3), as reported in the main ES.

3.3.12 The main ES reported a great crested newt metapopulation in 16 ponds on land adjacent to the B5013 Uttoxeter Road south-west of Admaston (AMP 1.4). 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 11 further ponds. This metapopulation is valued at county level in the main ES.

3.3.13 Additional surveys have confirmed:

- absence of great crested newt within three 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 two ponds where great crested newt populations were previously assumed to be present and form part of these metapopulations. These ponds still form part of the metapopulation; and
- presence of great crested newt within one pond that was not previously considered to form part of this metapopulation. This pond is now included in this metapopulation.

3.3.14 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 (three ponds), there are

nine further ponds with assumed populations that are considered to form part of AMP 1.4. The revised metapopulation, therefore, includes 17 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 increase in the number of ponds with confirmed or assumed populations of great crested newt does not change the value of AMP 1.4, as reported in the main ES.

3.3.15 Additional surveys have identified a new great crested newt metapopulation in five ponds located between Hill Ridware and Hamstall Ridware (AMP 1.6), not previously reported in the main ES. Additional surveys recorded great crested newt presence within one pond, comprising a population of medium size class. Four further assumed populations of medium size class are considered to form part of AMP 1.6. This metapopulation occurs partially within the land required for the original scheme and is valued at county level.

3.3.16 Additional surveys have identified a new great crested newt metapopulation in six ponds located at Stockwell Heath village (AMP 1.8), not previously reported in the main ES. Additional surveys recorded great crested newt presence within two ponds, with the largest population being of medium size class. This metapopulation occurs partially within the land required for the original scheme and is valued at county level.

3.3.17 In addition to the known and assumed great crested newt populations that are considered to form metapopulations, there are 11 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)

3.3.18 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).

3.3.19 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

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

Assessment of impacts and effects

Species

3.3.21 In combination, the main ES reported the loss of 10 ponds that are associated with the great crested newt metapopulations situated between Rugeley and Blithbury (AMP 1.2) and near Hill Ridware, south of Colton (AMP 1.3), all of which were 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 permanent adverse effects on each of these great crested newt metapopulations that are significant at a county level, as reported in the main ES. Following additional surveys being undertaken, these metapopulations have been merged into a single metapopulation situated between Rugeley and Hill Ridware (AMP 1.7). The number of ponds associated with this merged metapopulation that will be lost as a result of construction of the original scheme will reduce to eight. The reduction 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.

3.3.22 The main ES reported the loss of four ponds associated with the great crested newt metapopulation on land adjacent to the B5013 Uttoxeter Road, south-west of Admaston (AMP1.4), comprising one pond with a confirmed population of great crested newt and three 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 reduce to one. The reduction 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.

3.3.23 The presence of the great crested newt metapopulation located between Hill Ridware and Hamstall Ridware (AMP 1.6) was not reported in the main ES. Construction of the original scheme will result in the loss of one pond and terrestrial habitat associated with this metapopulation. This will result in a new permanent adverse effect on this metapopulation, which will be significant at a county level.

3.3.24 The presence of the great crested newt metapopulation located adjacent to Stockwell Heath village (AMP 1.8) was not reported in the main ES. Construction of the original scheme will result in the loss of one pond and terrestrial habitat associated with this metapopulation. This will result in a new permanent adverse effect on this metapopulation, which will be significant at a county level.

3.3.25 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 Fradley to Colton 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 50, as reported in the main ES, to up to 23.

Other mitigation measures

Species

3.3.26 The main ES reported that significant effects to the great crested newt metapopulations within the Fradley to Colton area would be addressed by provision of measures within the ecological habitat creation areas near Pyford Brook, near Westfield Covert and Kings Bromley Marina, near Quintons Orchard, between

Stonyford Lane and Hadley Gate, and near Hurst Wood. 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 Fradley to Colton area would be reduced to a level that is not significant.

3.3.27 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

3.3.28 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

3.3.29 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

3.3.30 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.

3.4 Landscape and visual

Introduction

3.4.1 The environmental baseline relevant to the landscape and visual 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 correction to the main ES.

Scope, assumptions and limitations

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

SES changes of relevance to this assessment

3.4.3 The correction to the main ES relating to the landscape and visual assessment of viewpoint 004.02.004 is relevant to the assessment.

Environmental baseline

Existing baseline

3.4.4 The baseline landscape and visual information for the Fradley to Colton area is as described in Volume 2, CA1, Section 11 of the main ES.

3.4.5 Viewpoint 004.02.004 is located within the Colton and Stockwell Heath Settled Farmlands Landscape Character Area (LCA). The landscape comprises gently rolling medium to large-scale arable fields typically bounded by hedgerows with occasional hedgerow trees and woodland belts. Settlements within the LCA are linked by a network of rural roads and lanes and are defined by dispersed farmsteads such as Woodhouse Farm, the historic settlement of Colton and the hamlet of Stockwell Heath.

Future baseline

Construction (2020) and operation (2027)

3.4.6 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).

3.4.7 None of the identified developments affect the assessment of the SES scheme's likely construction and operational impacts on landscape and visual.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of temporary impacts and effects

Visual assessment

3.4.9 Residents at Woodhouse Farm (viewpoint 004.02.004) will have close range views of construction activity associated with the Pipe Ridware embankment, Pipe Lane diversion, Mavesyn Ridware Footpath 38 accommodation overbridge and Blithbury South cutting. The presence of construction equipment and movement of vehicles will also impact on views. The construction works will be prominent from both the ground and upper floors of Woodhouse Farm and will be incongruous and prominent features within the rolling farmland, reducing scenic quality and interrupting views to Cannock Chase Area of Outstanding Natural Beauty (AONB).

3.4.10 Construction of the original scheme will result in a high magnitude of visual change and a new major adverse effect, which is significant.

3.4.11 Full details of effects are described in the SES and AP ES Volume 5, Appendix LV-001-000 and presented on Map LV-03-205 in the SES and AP ES Volume 2, CA1 Map Book and Map LV-07-205 in the SES and AP ES Volume 5 Map Book.

Other mitigation measures

3.4.12 No other mitigation measures have been identified above those reported in the main ES.

Summary of likely residual significant effects

3.4.13 The construction of the original scheme will result in a new major adverse visual effect on residents at Woodhouse Farm, which is significant.

Cumulative effects

3.4.14 There are no new or different likely significant cumulative effects for landscape and visual as a result of the SES change acting in combination with other SES changes.

Effects arising from operation

Avoidance and mitigation measures

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

Assessment of impacts and effects

Visual assessment

3.4.16 At year 1 of operation residents at Woodhouse Farm (viewpoint 004.02.004) will have close range views of the Pipe Ridware embankment and Mavesyn Ridware Footpath 38 accommodation overbridge. These features will appear prominent and incongruous within the rural landscape. Combined with the severance of the field pattern, alterations to the landform and loss of existing hedgerows, the current outlook across gently rolling arable fields will completely change. Long distance views to Cannock Chase AONB will also be interrupted. This is an open view and the lack of intervening vegetation means that there will be little screening or filtering of views in summer.

3.4.17 Operation of the original scheme in year 1 will therefore result in a high magnitude of visual change and new major adverse effect, which is significant.

3.4.18 By year 15 the original scheme will becomes less noticeable in the view as the maturing hedgerow and tree planting will help to integrate it within its wider visual context. This planting will also partially screen views of the overhead line equipment and passing trains.

3.4.19 Operation of the original scheme in year 15 will reduce to a medium magnitude of visual change and new moderate adverse effect, which is significant.

3.4.20 By year 60 mitigation planting will be mature and the Pyford North embankment and Mavesyn Ridware Footpath 38 accommodation overbridge will be better integrated within the view, but the overhead line equipment and passing trains will still be visible at close range.

3.4.21 Operation of the original scheme in year 60 will remain a medium magnitude of visual change and moderate adverse effect, which is significant.

3.4.22 Full details of effects are described in the SES and AP ES Volume 5, Appendix LV-001-000 and presented on Map LV-04-205 in the SES and AP ES Volume 2, CA1 Map Book and Map LV-08-205 in the SES and AP ES Volume 5 Map Book.

Other mitigation measures

3.4.23 The permanent effects of the original scheme on landscape and visual receptors have been 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 would 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 sensitivity of the surrounding receptors.

Summary of likely residual significant effects

3.4.24 Following year 15 of operation of the original scheme there will remain a moderate adverse visual effect on residents at Woodhouse Farm. This is a new significant effect compared to the main ES.

Cumulative effects

3.4.25 There are no new or different likely significant cumulative effects for landscape and visual as a result of the SES change acting in combination with the other SES changes.

3.5 Water resources and flood risk

Introduction

3.5.1 The environmental baseline relevant to the water resources and flood risk assessment is described below. Any new or different likely significant environmental effects as a result of the changes introduced in Section 2 are then identified, compared to the original scheme. Consideration is given to new baseline information received since the production of the main ES.

Scope, assumptions and limitations

3.5.2 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.

SES changes of relevance to this assessment

3.5.3 New environmental baseline information relating to a spring near Old Wood Farm, within the land required for the construction of the 132kV power line from Rugeley Power Station to the Newlands Lane auto-transformer feeder station, is relevant to this assessment.

Environmental baseline

Existing baseline

3.5.4 The baseline water resources and flood risk information for the Fradley to Colton area is as described in Volume 2, CA1, Section 15 of the main ES. New information relating to a spring south-west of Old Wood Farm, approximately 1.5km north-east of Rugeley, has been received since the production of the main ES. This spring is used by

the landowner for agricultural and domestic purposes and is assessed as a high value receptor. See Map WR-02-201, D5 in the SES and AP ES Volume 5 Map Book.

Future baseline

Construction (2020) and operation (2027)

3.5.5 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).

3.5.6 None of the identified developments affect the assessment of the SES scheme's likely construction and operation impacts on water resources and flood risk.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

3.5.8 The measures outlined in the draft CoCP will ensure that the spring south-west of Old Wood Farm is identified and protected from physical damage and pollution during the construction of the 132kV power line from Rugeley Power Station to the Newlands Lane auto-transformer feeder station. In the unlikely event that the spring cannot be avoided, it will be relocated nearby and a replacement water source will be provided to the affected landowner.

3.5.9 It is therefore anticipated that there will be no new or different significant permanent effects related to water resources receptors as a result of the new baseline information, in comparison with the main ES.

Other mitigation measures

3.5.10 A survey of the spring south-west of Old Wood Farm, and any associated features or infrastructure, will be undertaken to verify its nature and precise location. The 132kV power line from Rugeley Power Station to the Newlands Lane auto-transformer feeder station will be designed to ensure any poles for the overhead line are not sited on, nor directly adjacent to, the spring. If avoiding the spring is not reasonably practicable, the spring will be relocated in consultation with the landowner and a temporary alternative source of water will be provided if required.

Summary of likely residual significant effects

3.5.11 There are no changes to the likely residual significant construction water resources and flood risk effects identified in the main ES as a result of the new baseline information.

Cumulative effects

3.5.12 There are no new or different likely significant cumulative effects for water resources and flood risk as a result of the new baseline information acting in combination with any other SES changes.

Effects arising from operation

3.5.13 There are no new or different significant operational effects for water resources and flood risk 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 Fradley to Colton area

4.1 Introduction

4.1.1 In the Fradley to Colton 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

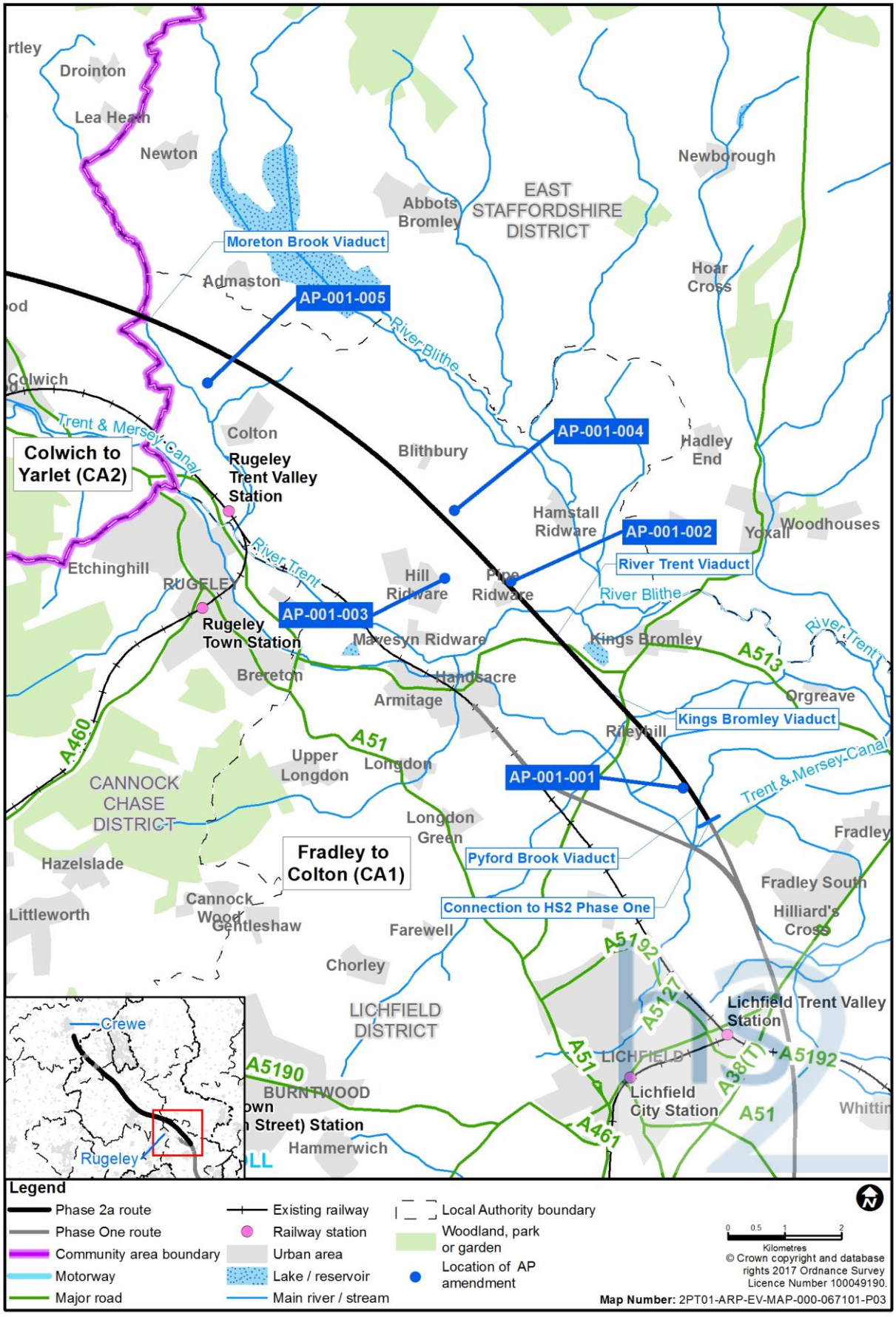
4.2.1 Engineering amendments will be required in the Fradley to Colton area that will result in changes to the land or Bill powers required for the original scheme. Table 3 provides a summary of the engineering amendments. Figure 3 shows the locations of the engineering amendments.

Table 3: Summary of engineering amendments in the Fradley to Colton area

Name of amendment	Description of the original scheme	Description of the AP revised scheme
Additional land required for a temporary laydown area and a change to Bill powers at Pyford North embankment AP-001-001 Map CT-05-201, E7 to E8, and Map CT-06-201, E4 and E6 to D6, in the SES and AP ES Volume 2, CA1 Map Book	Permanent acquisition of land for the diversion of a British Pipeline Agency (BPA) 10-inch diameter fuel pipeline crossing the HS2 route at Pyford North embankment.	Additional land for a temporary laydown area required during construction of the BPA 10-inch pipeline diversion. Change to Bill powers for the extension of the BPA 10-inch diameter pipeline diversion on both side of the HS2 route.
Additional land permanently required for the relocation of a balancing pond and provision of highway access with turning head from Pipe Lane, Pipe Ridware AP-001-002 Map CT-06-204, E4 to D5, in the SES and AP ES Volume 2, CA1 Map Book	Permanent acquisition of land for a balancing pond, associated maintenance access area and lay-by, located on the west side of the diverted Pipe Lane.	Additional land for the permanent relocation of a balancing pond and provision of highway access with new turning head. The balancing pond will be relocated, from the west side of the diverted Pipe Lane to the east side of the diverted Pipe Lane. The maintenance access area and lay-by, described in the original scheme, will not be provided.

Name of amendment	Description of the original scheme	Description of the AP revised scheme
Additional land permanently required for a new site haul route and HS2 maintenance access route from Pipe Lane and modifications to existing highways AP-001-003 Map CT-05-204, D10 to B7, Map CT-06-204, D10 to B7, and Map CT-06-204-L1, D4 to C1, in the SES and AP ES Volume 2, CA1 Map Book	Permanent acquisition of land for highway modifications along Common Lane and Pipe Lane and temporary modifications along the B5014 Ridware Road/Uttoxeter Road, including the provision of temporary control points for four to six heavy goods vehicles (HGVs), on the north-western and eastern approaches to Hill Ridware during construction.	Additional land for the permanent provision of a new site haul route and HS2 maintenance access route, and the permanent widening of Common Lane and a section of Pipe Lane. Highway modifications along Pipe Lane, between Pipe Ridware and the junction with Common Lane will no longer be required. Temporary modifications to the highway network on the B5014 Ridware Road/Uttoxeter Road will also not be required.
Additional land permanently required to improve the visibility at the junction of Pipe Lane and an accommodation track AP-001-004 Map CT-06-205, D4, in the SES and AP ES Volume 2, CA1 Map Book	Permanent acquisition of land to upgrade the junction of an existing accommodation access track with Pipe Lane, located north-west of the HS2 route.	Additional land for the permanent reinstatement of existing hedgerow and relocation of proposed hedgerow habitat creation, included in the original scheme, to improve visibility at the junction of an existing accommodation track with Pipe Lane.
Additional land permanently required to improve the visibility at the junctions of Moor Lane and Lount Lane with the B5013 Uttoxeter Road AP-001-005 Map CT-06-208, B9 to B10, in the SES and AP ES Volume 2, CA1 Map Book	Permanent acquisition of land for the realignment of the B5013 Uttoxeter Road, which would tie-in the existing junctions with Moor Lane and Lount Lane, on the south side of the HS2 route.	Additional land for the permanent reinstatement of existing hedgerow and relocation of proposed hedgerow habitat creation, included in the original scheme, to improve visibility at the junction of Moor Lane and the B5013 Uttoxeter Road and the junction of Lount Lane with the B5013 Uttoxeter Road.

Figure 3: Locations of engineering amendments in the Fradley to Colton area



4.3 Minor utility amendments

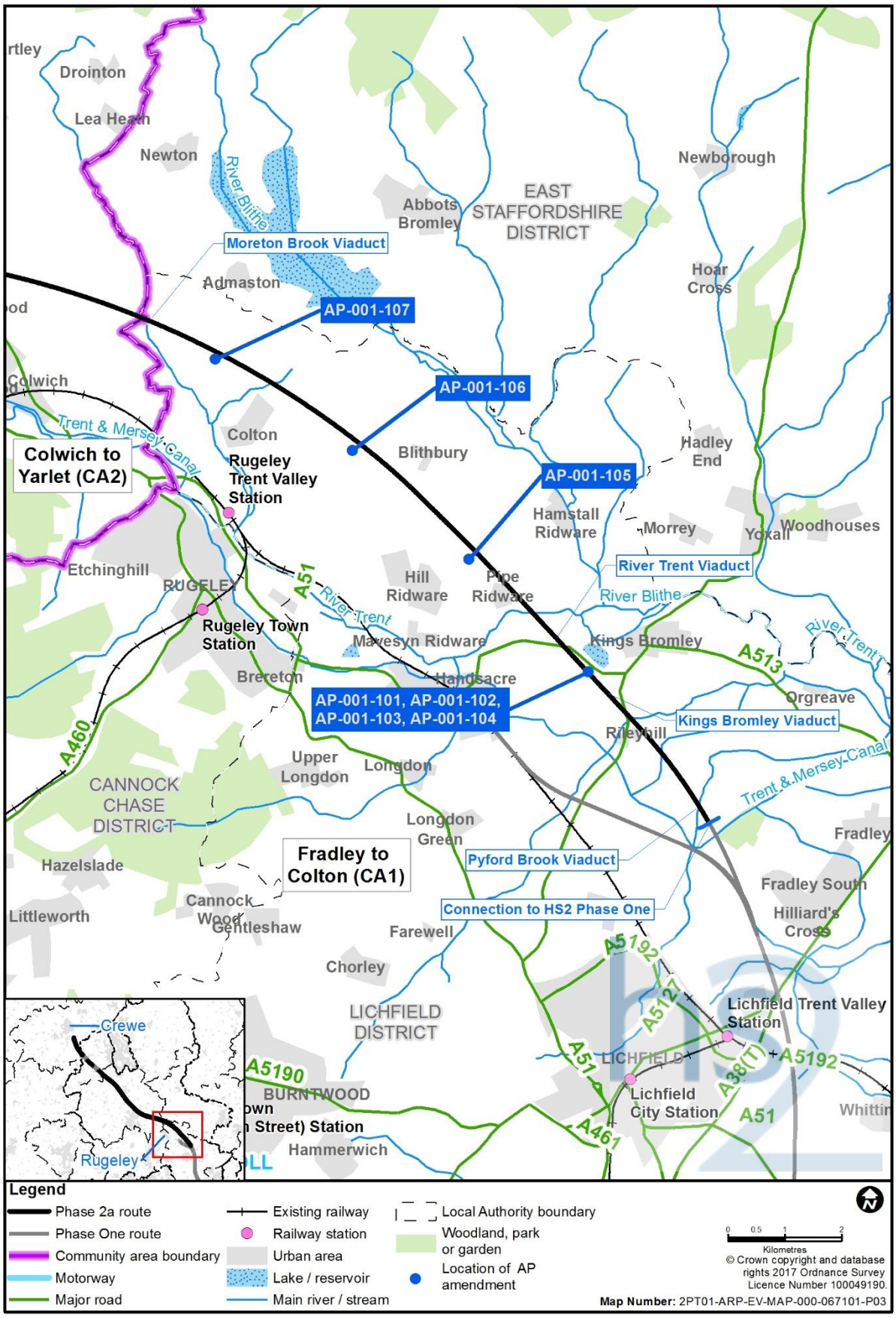
4.3.1 Amendments to minor utilities will be required in the Fradley to Colton area to provide connections to construction compounds and to maintain continuity of supply in the area. This will result in changes to the land or Bill powers required for the original scheme. Typically, works associated with 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 4 shows the general location of the minor utility amendments.

Table 4: Summary of minor utility amendments in the Fradley to Colton area

Utility	Description of the activities	Change to Bill powers
South Staffordshire Water 33-inch water mains AP-001-101 Map CT-06-203, E6 and E5 to D5, in the SES and AP ES Volume 2, CA1 Map Book	Permanent diversion of utility, 425m in length, crossing the HS2 route under the River Trent viaduct.	Additional land permanently required.
Two South Staffordshire Water 36-inch water mains AP-001-102 Map CT-06-203, D6 to C5, in the SES and AP ES Volume 2, CA1 Map Book	Permanent diversion of two utilities, both 175m in length, crossing the HS2 route under the River Trent viaduct.	Additional land permanently required.
South Staffordshire Water 6-inch water mains AP-001-103 Map CT-06-203, D5, in the SES and AP ES Volume 2, CA1 Map Book	Permanent diversion of utility, 100m in length, to run parallel to the A513 Rugeley Road.	Additional land permanently required.
BT Openreach overhead telecommunications cable AP-001-104 Map CT-06-203, F7, in the SES and AP ES Volume 2, CA1 Map Book	Permanent diversion of utility, 650m in length, parallel to A513 Rugeley Road and within an access road serving Echills Farm.	Additional land permanently required.
BT Openreach overhead telecommunications cable AP-001-105 Map CT-06-205, I7 to F7 and D4 to D3, in the SES and AP ES Volume 2, CA1 Map Book	Permanent diversion of utility, 620m in length, along the access road to Quintons Orchard Farm.	Additional land permanently required.

Utility	Description of the activities	Change to Bill powers
BT Openreach overhead telecommunications cable AP-001-106 Map CT-06-207, I7 to H7, in the SES and AP ES Volume 2, CA1 Map Book	Permanent diversion of utility, 500m in length, along Hadley Gate Lane.	Additional land permanently required.
South Staffordshire Water 400mm, 200mm and 6-inch water mains AP-001-107 Map CT-06-208, B9 to A10 and A2 , in the SES and AP ES Volume 2, CA1 Map Book	Permanent diversion of three utilities, 1.1km in length, to follow the B5013 Uttoxeter Road realignment.	Additional land permanently required.

Figure 4: Locations of minor utility amendments in the Fradley to Colton 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 Fradley to Colton area.

Table 5: Summary of other amendments requiring changes to Bill powers in the Fradley to Colton area

Name of amendment	**Description of the original scheme (Schedule 8 of the Bill)**	**Description of the AP revised scheme**
Additional access rights to land plot AP1-3 in the parish of Kings Bromley AP-001-201 Bill plan replacement sheet 1-02	Provision of access for construction	Provision of access for construction and maintenance
Additional access rights to land plots AP1-39 and AP1-40 in the parish of Mavesyn Ridware AP-001-202 Bill plan replacement sheet 1-14		
Additional access rights to land plots AP1-1 and AP1-2 in the parish of Armitage with Handsacre AP-001-203 Bill plan replacement sheet 1-18		
Additional access rights to land plots AP1-1, AP1-2, AP1-3, AP1-4, AP1-5 and AP1-6 in the parish of Brereton and Ravenhill AP-001-204 Bill plan replacement sheet 1-18		

5 Assessment of engineering amendments in the Fradley to Colton area

5.1 Additional land required for a temporary laydown area and a change to Bill powers at Pyford North embankment (AP-001-001)

5.1.1 The Bill provides for a permanent diversion of a British Pipeline Agency (BPA) 10-inch diameter fuel pipeline for approximately 150m. The diversion would cross the HS2 route under the Pyford North embankment, approximately 250m north-west of the Pyford Brook viaduct. See Map CT-06-201, E4 to E6, in the main ES, Volume 2, CA1 Map Book.

5.1.2 Since submission of the Bill, a requirement has been identified through further consultation with the utility provider to extend the diverted pipeline on the north and south sides of the HS2 route, and introduce a new temporary laydown area that will be used during construction of the pipeline diversion. The diversion of the pipeline will cross the HS2 route at the same location as proposed in the original scheme. However, it will be extended on both sides of the embankment increasing the total length of the diversion to approximately 300m. See Map CT-06-201, E4 to D6, in the SES and AP ES, Volume 2, CA1 Map Book. The temporary laydown area, measuring approximately 0.5ha, will be located approximately 300m west of Pyford Brook viaduct. See Map CT-05-201, E7 to E8, in the SES and AP ES, Volume 2, CA1 Map Book.

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

5.1.4 The extension of the pipeline diversion will be within land included within the limits of the Bill but will require a change to the limits of deviation[10] as set out in the Bill. See Map CT-06-201, E4 and E6 to D6, in the SES and AP ES, Volume 2, CA1 Map Book).

5.1.5 The land required for the provision of the laydown area is outside the limits of the Bill and will result in the temporary requirement for an additional 0.5ha of land. See Map CT-05-201, E7 to E8, in the SES and AP ES, Volume 2, CA1 Map Book.

Topics included in the AP assessment

5.1.6 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.

[10] 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.

5.2 Additional land permanently required for the relocation of a balancing pond and provision of highway access with turning head from Pipe Lane, Pipe Ridware (AP-001-002)

5.2.1 The Bill provides for a balancing pond for highways drainage, located approximately 150m south-east of the Pipe Ridware auto-transformer station, on the west side of the diverted Pipe Lane. The balancing pond would be situated within an area of grassland habitat creation of approximately 2.5ha, to provide habitat connectivity and landscape integration. A maintenance access area, which would serve the balancing pond, and a lay-by would be provided along the existing Pipe Lane, immediately south of the balancing pond. Approximately 15m north of the balancing pond, the Bill provides for the permanent diversion of a National Grid Gas Transmission 1,050mm diameter high pressure gas main. See Map CT-06-204, D4 to D5, in the main ES, Volume 2, CA1 Map Book.

5.2.2 Since submission of the Bill, a requirement has been identified for a permanent turning head and parking area adjacent to the outfall of the balancing pond. The turning head with provision for parking, approximately 620m^2 in area, will enable maintenance activities to be undertaken in close proximity to the balancing pond. To avoid the turning head from encroaching on the National Grid Gas Transmission 1,050mm diameter high pressure gas main, the balancing pond will be permanently relocated from the west side of the diverted Pipe Lane to the east side. The turning head will be provided from Pipe Lane. A new area of grassland habitat creation, approximately 0.2ha, and a section of hedgerow habitat creation, approximately 130m in length, will surround the balancing pond and turning head to provide habitat connectivity and landscape integration. See Map CT-06-204, E4 to D5, in the SES and AP ES, Volume 2, CA1 Map Book.

5.2.3 The grassland habitat creation on the west side of the diverted Pipe Lane will be extended by approximately 0.1ha to occupy the area of land previously allocated for the balancing pond. See Map CT-06-204, D4 to D5, in the SES and AP ES Volume 2, CA1 Map Book.

5.2.4 The lay-by and maintenance access off the existing Pipe Lane, included in the original scheme, will no longer be provided.

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

5.2.6 The land required for the relocation of the balancing pond and provision of highway access with a turning head from the existing Pipe Lane is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 0.7ha of land. See Map CT-06-204, E4 to D5, in the SES and AP ES, Volume 2, CA1 Map Book.

Topics included in the AP assessment

5.2.7 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.

5.3 Additional land permanently required for a new site haul route and HS2 maintenance access route from Pipe Lane and modifications to existing highways (AP-001-003)

5.3.1 The Bill provides for modifications to existing highways, including the B5014 Ridware Road/Uttoxeter Road, Common Lane and Pipe Lane. Modifications would be required to improve the existing highway through Hill Ridware, which would not be sufficiently wide for the passage of construction heavy goods vehicles (HGVs) accessing the Blithbury Central cutting satellite compound. During operation, the modifications to Common Lane and Pipe Lane would allow for maintenance access to the Pipe Ridware auto-transformer station.

5.3.2 The modifications provided for in the Bill would include:

- permanent provision of two passing bays along Common Lane (approximately 15m long and 2m wide). See Map CT-06-204-L1, D3 to D1, in the main ES Volume 2, CA1 Map Book;
- temporary modifications along the B5014 Ridware Road/Uttoxeter Road which included the provision of six passing bays (approximately 15m long and 2m wide) and the provision of temporary control points[11] for four to six HGVs (each approximately 30m long by 15m wide), on the north-western and eastern approaches to Hill Ridware. See Map CT-05-204-L1, D3 to A6, and Map CT-05-206, H6 to H10, in the main ES Volume 2, CA1 Map Book and Map CT-05-250, Inset 2, I5 to F3, and Inset 3, F9 to A6, in the main ES Volume 4, Off Route Map Book;
- approximately 840m of hedgerow habitat creation would be located along sections of the B5014 Ridware Road/Uttoxeter Road which would aid the integration of the highway modifications into the landscape. See Map CT-06-204-L1, D3 to A6, and Map CT-06-206, H10, in the main ES Volume 2, CA1 Map Book and Map CT-06-250, Inset 2, I5 to F3, and Inset 3, F9 to A6, in the main ES Volume 4, Off Route Map Book;
- permanent widening of Pipe Lane, from the junction with Common Lane into Pipe Ridware, to 5.5m to accommodate two-way HGV traffic, with approximately 490m of hedgerow habitat creation proposed on the south side of the road and a further 90m of hedgerow habitat creation along the road junction into Pipe Ridware which would aid the integration of the highway modifications into the landscape. See Map CT-06-204, C10 to D6, in the main ES Volume 2, CA1 Map Book; and
- provision of an area of grassland habitat creation (5m wide strip, approximately 0.2ha in area) along Pipe Lane from Pipe Ridware to Quintons Orchard. This grassland habitat creation would connect surrounding ponds forming great crested newt terrestrial habitat compensation. See Map CT-06-204, D7 to B7, in the main ES Volume 2, CA1 Map Book.

[11] A control point is a lay-by that allows HGVs to be held at the side of the road.

5.3.3 Since the submission of the Bill, it has been identified that there is a need to reduce the volume of construction traffic passing through Hill Ridware and reduce the impact on the village. A new site haul route and HS2 maintenance access route will be provided with associated highway modifications to Common Lane and Pipe Lane.

5.3.4 The amendment will include:

- provision of a new site haul route and permanent HS2 maintenance access route crossing agricultural land, approximately 470m in length and 5.5m wide with 1.5m verges on both sides, from Pipe Lane towards the Pipe Ridware embankment. A culvert will be provided to convey Luth Burn watercourse beneath the route. A section of the route will provide shared access from Pipe Lane to Church Farm. See Map CT-05-204, C10 to B7, and Map CT-06-204, C10 to B7, in the SES and AP ES Volume 2, CA1 Map Book;
- permanent widening of Common Lane and a section of Pipe Lane, for approximately 200m from Pipe Ridware towards Quintons Orchard, to 5.5m. Approximately 120m of hedgerow habitat creation will be provided along the east side of Common Lane, near the junction with Pipe Lane to provide replacement hedgerow habitat and aid landscape integration. Due to the localised widening of Pipe Lane, the adjacent grassland habitat creation proposed in the original scheme will be reduced by approximately 180m^2. See Map CT-06-204, D7 to C6, and Map CT-06-204-L1, D4 to C1, in the SES and AP ES Volume 2, CA1 Map Book;
- upgrade of approximately 4km of a site haul route between Pipe Lane and the B5014 Uttoxeter Road (near Blithbury) to accommodate construction traffic. See Map CT-05-204, C7 to A5, Map CT-05-205, J6 to A6, Map CT-05-206, J5 to G9 in the SES and AP ES Volume 2, CA1 Map Book; and
- reduction in the area of one temporary material stockpile adjacent to Pipe Lane on the east side of the HS2 route by approximately 0.1ha (10%) to accommodate the change in the site haul route. See Map CT-05-204, C6 to B6, in the SES and AP ES Volume 2, CA1 Map Book.

5.3.5 As a result of the amendment, construction traffic through Hill Ridware and Pipe Ridware would be substantially reduced. The modifications along Pipe Lane, between Pipe Ridware and the junction with Common Lane, and the temporary modifications along the B5014 Ridware Road/Uttoxeter Road will no longer be required. Consequently, the 1.4km of proposed hedgerow habitat creation associated with these highway works will no longer be provided.

5.3.6 Construction will be managed from the Pipe Ridware embankment satellite compound. The construction of the new site haul route and HS2 maintenance access route, and widening of Common Lane and a section of Pipe Lane, will be undertaken between 2021 and 2022 and will take approximately six months. The widening of Common Lane and a section of Pipe Lane will require temporary traffic control management measures along Common Lane and the junctions with Pipe Lane and the B5014 Ridware Road/Uttoxeter Road.

5.3.7 The land required for the addition of the site haul route and HS2 maintenance access route and widening of Common Lane is outside the limits of the Bill. The amendment

will result in the permanent requirement for an additional 2.3ha of land. See Map CT-05-204, D10 to B7, Map CT-06-204, D10 to B7, and Map CT-06-204-L1, D4 to C1, in the SES and AP ES Volume 2, CA1 Map Book.

Local alternatives

5.3.8 Two options for this amendment were considered as follows:

- Option 1: provision of a new permanent road which would be used for construction and a HS2 maintenance access, approximately 2.5km in length, to the east of Hill Ridware. Following construction this road would be permanently retained as a public highway to reduce through-traffic in Hill Ridware. Permanent junction improvements would be required within Blithbury as well as an area of localised widening along Pipe Wood Lane. Modifications to the section of Pipe Lane from the junction with Common Lane into Pipe Ridware and to the B5014 Ridware Road/Uttoxeter Road, as included in the original scheme, would no longer be required; and
- Option 2 (AP revised scheme): provision of a new site haul route and HS2 maintenance access route, approximately 470m in length, linking Common Lane to the site haul route along the HS2 route to the north-west of Pipe Ridware. During construction, this site haul route would be used for construction traffic and upon completion it would be retained to provide maintenance access to the Pipe Ridware auto-transformer station. Common Lane and a section of Pipe Lane would be permanently widened to 5.5m and approximately 4km of the site haul route, between Common Lane and the B5014 Uttoxeter Road (near Blithbury), would be upgraded to accommodate construction traffic, including HGVs. Modifications to the section of Pipe Lane from the junction with Common Lane into Pipe Ridware and to the B5014 Ridware Road/Uttoxeter Road, as included in the original scheme, would no longer be required.

5.3.9 Option 2 was identified as the preferred option, as on balance it presented the most favourable environmental outcome. Whilst Option 1 would provide a new public highway and would reduce through-traffic in Hill Ridware, in comparison to Option 2 it would require a substantial area of additional agricultural land to the east of Hill Ridware for the construction of the new road. Option 1 would also result in increased impacts on Bentley Brook and would impact on the landscape character of the area and the setting of built heritage assets. Due to the proximity of the new road to the east of Hill Ridware, there would also be a reduction in air quality as a result of dust from constructing the road and subsequent increase in HGV emissions near residential receptors due to its use as a construction traffic route. This would also result in increased noise impacts on residents to the east of Hill Ridware when compared to Option 2. Option 1 would also result in additional cost when compared to Option 2, due to the increased length and greater land requirement.

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

Option 2

5.3.11 In comparison with the original scheme, in Option 2 construction traffic would be directed along Common Lane and via the site haul route. This would divert construction traffic away from the village of Hill Ridware, thereby reducing road safety risk, construction traffic noise and air quality impacts on residential receptors and Henry Chadwick Primary School. In addition, there would be a reduction in the visual impact on residential receptors during construction as well as on the historic setting of designated heritage assets in Hill Ridware.

5.3.12 During operation, the introduction of the HS2 maintenance access would allow HS2 maintenance vehicles to avoid passing through Pipe Ridware and therefore reduce visual and traffic noise impacts on residential properties.

5.3.13 Construction of Option 2 would require approximately 2.3ha of additional land from outside of the limits of the Bill for the site haul route and modifications to existing highways. This would include best and most versatile (BMV) agricultural land of Grades 1 to 3a[12], increasing the land required from Church Farm, Land at Luthbar and Quintons Orchard Farm, compared to the original scheme. Construction activities would impact landscape character to the north-west and west of Pipe Ridware. There would be an increased number of HGVs along Common Lane, compared to the original scheme, and works required to widen the road would result in the loss of hedgerow and mature trees that form a green corridor linking to Bailey Bridge Wetland and Sitch Covert Local Wildlife Site (LWS) to the south. Construction activities would also result in the loss of buried archaeological remains to the north-west of Pipe Ridware, including those associated with an Iron Age square barrow and field system west of Parva House, Pipe Ridware.

5.3.14 Isolated properties near Pipe Lane would be likely to experience reduced impacts on air quality from construction traffic emissions, compared to the original scheme. There would, however, be increased community in-combination effects on residential properties at Bentley Farm, Quintons Orchard and Luthbur as a result of the increased traffic movements along the site haul route near these properties.

5.3.15 Option 2 does not introduce any technical or construction complexities, risk of safety hazards or lengthening of the construction programme as set out in the main ES. This option would result in additional cost compared to the original scheme due to the construction of the road and the permanent requirement for additional land.

Option 1

5.3.16 In comparison with Option 2, the new permanent road in Option 1 would be located to the east of Hill Ridware. This would remove HS2 construction and operational traffic from Hill Ridware, as well as reducing existing traffic through Hill Ridware, which would be likely to be beneficial to non-motorised users. However, the proximity of this new road would result in noise impacts on residential properties to the east of Hill Ridware, during construction and operation, due to the introduction of traffic movements, including HGVs, close to the properties. This option would require approximately 7ha of additional agricultural land from outside of the limits of the Bill

[12] Agricultural land classifications: Grade 1 is excellent, Grade 2 is very good, Grade 3a is good.

due to the increased length of the road, which is significantly more land than is required in Option 2. This would include agricultural BMV land of Grades 1 to 3a. The permanent road would also sever Mavesyn Ridware Footpaths 9 and 19, and the School Lane playing field (a public open space).

5.3.17 The permanent road would introduce a new feature into the historic landscape of Pipe Ridware and east of Hill Ridware, which, due to the increased length of the road and proximity to Hill Ridware, would present a greater visual impact than Option 2. As the road would alter field patterns and sever agricultural land it would have a permanent impact on the character of the landscape. Option 1 would result in the partial removal of potential buried archaeological remains associated with a possible Neolithic cursus monument to the east of Hill Ridware as well as a post-medieval turnpike road, the buried archaeological remains of a medieval and post-medieval field system, and the buried remains of an enclosure of unknown date.

5.3.18 Option 1 would require a crossing of the Bentley Brook at two locations, which would change the local watercourse characteristics and aquatic habitat. There would also be a loss of mature hedgerows and trees where the permanent road intersects existing field boundaries, severing several features which have the potential to be important corridors for bat populations in the area. Additionally, the permanent junction improvements and areas of localised widening of Pipe Wood Lane, south of Blithbury, would directly impact on Pipe Wood Lane LWS, with potential indirect impacts upon connectivity to Pipe Wood Lane ancient woodland.

5.3.19 Option 1 would not introduce any technical or construction complexities, risk of safety hazards or lengthening of the construction programme compared to Option 2. Construction of Option 1 would cost more than Option 2 due to the increased length of the road and additional land requirements.

Topics included in the AP assessment

5.3.20 The amendment is considered to only require reassessment of the environmental effects and mitigation in the main ES for the following topics: agriculture, forestry and soils; air quality; cultural heritage; ecology and biodiversity; health; traffic and transport; and water resources and flood risk.

Agriculture, forestry and soils

Scope, assumptions and limitations

5.3.21 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1, the Scope and Methodology Report (SMR)[13], and the SMR Addendum[14] of the main ES.

[13]HS2 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

[14] 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

Existing environmental baseline

5.3.22 The baseline agriculture, forestry and soils information for the Fradley to Colton area is as described in Volume 2, CA1, Section 4 of the main ES.

5.3.23 The area of land required for the amendment has soil in the Wick 1 association, as described in the main ES (Volume 2, CA1, Section 4). Wick 1 association comprises deep well drained coarse loamy and sandy soils, locally over gravel. This land is classified as very good quality agricultural land in Grade 2.

5.3.24 Three farm holdings, already affected by the original scheme, will be further affected by this amendment. These are:

- Church Farm (CA1/20), a 12ha small beef cattle unit of medium sensitivity to change;
- Land at Luthbar (CA1/22), a 1ha non-commercial equestrian holding of low sensitivity to change; and
- Quintons Orchard Farm (CA1/25), a 316ha mixed arable, beef cattle and sheep unit, with equestrian and fishery enterprises, of medium sensitivity to change.

Future environmental baseline

Construction (2020) and operation (2027)

5.3.25 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).

5.3.26 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on agriculture, forestry and soils.

Effects arising during construction

Avoidance and mitigation measures

5.3.27 No further measures are applicable to this assessment, above those stated in the draft Code of Construction Practice (CoCP)[15].

Assessment of impacts and effects

5.3.28 The amendment will temporarily require an additional 1ha of Grade 2 agricultural land and 0.4ha of non-agricultural land, and permanently require an additional 0.3ha of Grade 2 agricultural land and 0.2ha of non-agricultural land. This will not change the level of significance of the effects on agricultural land reported in the main ES, which were assessed as moderate temporary significant adverse and minor permanent adverse (which is not significant).

[15] 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

5.3.29 The additional land required from Church Farm for the amendment will be negligible (less than 0.1ha) and as such there will be no change to the major/moderate temporary adverse effect, and the moderate permanent adverse effect on the holding reported in the main ES.

5.3.30 The amendment will temporarily require an additional 0.2ha from Land at Luthbar, which increases the proportion of the holding required during construction to 30%. This will result in a new temporary moderate adverse effect, which is significant. See Map AG-01-103 in the SES and AP ES Volume 5 Map Book. An additional 0.1ha will also be required permanently by the amendment, which will increase the proportion of the holding required permanently to 10%. This will not change the negligible permanent effect on the holding reported in the main ES.

5.3.31 The amendment will also temporarily require an additional 1.1ha and permanently require an additional 0.3ha at Quintons Orchard Farm. The additional land required for the amendment, however, does not materially change the proportion of land at the holding required temporarily (5%) or permanently (3%), and as such there will be no change to the temporary moderate significant adverse effect, and the permanent minor adverse effect (which is not significant) on the holding reported in the main ES.

5.3.32 The amendment will not materially increase disruption on Quintons Orchard Farm although it will increase severance effects on the holding as a previously unaffected field is bisected. As access to the field will be provided, there will be no change to the temporary moderate adverse effect, and the permanent minor adverse effect (which is not significant) on the holding reported in the main ES.

Mitigation and residual effects

Other mitigation measures

5.3.33 The land required temporarily for construction will be restored to its former agricultural condition once the works are completed, following good practice techniques in handling, storing and reinstating soils on that land, as set out in the draft CoCP. No other mitigation has been identified.

Summary of likely residual significant effects

5.3.34 The amendment will result in a new temporary moderate effect, which is significant, due to the additional 0.2ha of land temporarily required from Land at Luthbar.

Cumulative effects

5.3.35 There are no new or different likely significant cumulative effects for agriculture, forestry and soils as a result of the amendment acting in combination with any other amendments.

Effects arising from operation

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.37 There are no new or different significant operational effects for agriculture, forestry and soils as a result of the amendment, in comparison with the main ES.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual significant effects

5.3.39 There are no changes to the likely residual significant operational agriculture, forestry and soils effects identified in the main ES as a result of the amendment.

Cumulative effects

5.3.40 There are no new or different likely significant cumulative effects for agriculture, forestry and soils as a result of the amendment acting in combination with any other amendments.

Monitoring

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

5.3.42 There are no changes to the monitoring requirements identified in the main ES for agriculture, forestry and soils as a result of the amendment.

Air quality

Scope, assumptions and limitations

5.3.43 The assessment scope, key assumptions and limitations for air quality are as set out in Volume 1, the SMR, and the SMR Addendum of the main ES.

Existing environmental baseline

5.3.44 The baseline air quality information for the Fradley to Colton area is as described in Volume 2, CA1, Section 5 of the main ES.

5.3.45 The main sources of air pollution in the Fradley to Colton area are emissions from road vehicles and agricultural activities. The main roads within the vicinity of the amendment are the A515 Lichfield Road, the A513 Rugeley Road, the B5014 Uttoxeter Road/Ridware Road and local roads.

Future environmental baseline

Construction (2020) and operation (2027)

5.3.46 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).

5.3.47 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

5.3.48 Emissions to the atmosphere will be controlled and managed during construction through the route-wide implementation of the CoCP.

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

Assessment of impacts and effects

5.3.50 Changes in construction traffic flows associated with the construction traffic routes have been assessed for their potential to give rise to new significant air quality effects. Reductions in construction traffic flows are anticipated along the B5014 Ridware Road/Uttoxeter Road and increases in construction traffic flows are anticipated along Common Lane and the site haul routes in this area.

5.3.51 The changes in traffic flows, however, are not considered to give rise to any significant effects at any receptor in relation to annual mean NO2, PM10 and PM2.5[16] 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

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

Summary of likely residual significant effects

5.3.53 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

5.3.54 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.

Effects arising from operation

Avoidance and mitigation measures

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

[16] PM2.5 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

Assessment of impacts and effects

5.3.56 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

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

Summary of likely residual significant effects

5.3.58 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

5.3.59 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

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

5.3.61 There are no changes to the monitoring requirements identified in the main ES for air quality as a result of the amendment.

Cultural heritage

Scope, assumptions and limitations

5.3.62 The assessment scope, key assumptions and limitations for cultural heritage are as set out in Volume 1, the SMR, and the SMR Addendum of the main ES.

Existing environmental baseline

5.3.63 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which included walk-over survey, geophysical survey, remote-sensing data, and data from national and local registers. A full list of data sources is provided in the main ES, Volume 2, Section 7 and the Background Information and Data (BID) document which accompanied the main ES (BID-CH-004-001)[17].

5.3.64 The baseline cultural heritage information for the Fradley to Colton area is as described in Volume 2, CA1, Section 7 of the main ES.

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

5.3.65 The amendment will be constructed in proximity to seven designated assets of moderate value, which comprise:

- The Old Rectory and attached walls and gate piers, Hill Ridware (FRC101), a Grade II* listed building, approximately 1.4km from the land required for the amendment;
- Juxta House, Hill Ridware (FRC100), a Grade II listed building, located approximately 1.km from the land required for the amendment;
- The Thatch, Hill Ridware (FRC102), a Grade II listed building located approximately 1.5km from the land required for the amendment;
- Rake End House, Hill Ridware (FRC103), a Grade II listed building, located approximately 1.5km from the land required for the amendment;
- an unoccupied house approximately 90m south of Juxta House, Hill Ridware (FRC099), a Grade II listed building, located approximately 1km from the land required for the amendment;
- Pipe Ridware Hall, including remains of a dovecote, garden walls and gate piers, and farmstead (FRC078), a Grade II listed building, located approximately 400m from the land required for the amendment; and
- Wheelwright cottage and attached workshop, Pipe Ridware (FRC079), a Grade II listed building, located approximately 380m from the land required for the amendment.

5.3.66 The following non-designated assets of low value lie wholly or partially within the land required for the amendment:

- the cropmark remains of an Iron Age square barrow and field system west of Parva House, Pipe Ridware (FRC083); and
- a mortuary enclosure, ring ditches and pit alignment to the west of Pipe Ridware (FRC075).

Future environmental baseline

Construction (2020) and operation (2027)

5.3.67 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).

5.3.68 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on cultural heritage.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.70 There are no new or different significant temporary construction effects for cultural heritage as a result of the amendment, in comparison with the main ES.

5.3.71 The main ES reported there would be no impact on the cropmark remains of an Iron Age square barrow and field system located to the west of Parva House, Pipe Ridware (FRC083), an asset of moderate value. Elements of the field system within the asset will be partially removed by the construction of the amendment. This will constitute a permanent medium adverse impact and a new moderate adverse significant effect. See Map CH-01-203 in the SES and AP ES, Volume 5 Map Book and the SES and AP ES Volume 5: Appendix CH-003-000.

5.3.72 The main ES reported a neutral effect, which is not significant, on the Mortuary enclosure, ring ditches and pit alignment located to the west of Pipe Ridware (FRC075), an asset of moderate value. This has been corrected in the Volume 5: Appendix CH-003-000 of the SES and AP ES as it should have been reported as a minor adverse effect, which is not significant. A small part of the western limits of the asset will be removed by the construction of the amendment. This will constitute a permanent medium adverse impact and a new moderate adverse significant effect. See Map CH-01-203 in the SES and AP ES, Volume 5 Map Book and the SES and AP ES Volume 5: Appendix CH-003-000.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual significant effects

5.3.74 The amendment will introduce two new moderate adverse likely residual significant effects on:

- the cropmark remains of an Iron Age square barrow and field system west of Parva House, Pipe Ridware (FRC083) and;
- a mortuary enclosure, ring ditches and pit alignment to the west of Pipe Ridware (FRC075).

Cumulative effects

5.3.75 There are no new or different likely significant cumulative effects for cultural heritage as a result of the amendment acting in combination with any other amendments.

Effects arising from operation

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.77 There are no new or different significant operational effects for cultural heritage as a result of the amendment, in comparison with the main ES.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual significant effects

5.3.79 There are no changes to the likely residual significant operational cultural heritage effects identified in the main ES as a result of the amendment.

Cumulative effects

5.3.80 There are no new or different likely significant cumulative effects for cultural heritage as a result of the amendment acting in combination with any other amendments.

Monitoring

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

5.3.82 There are no changes to the monitoring requirements identified in the main ES for cultural heritage as a result of the amendment.

Ecology and biodiversity

Scope, assumptions and limitations

5.3.83 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.

5.3.84 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

5.3.85 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 and otter surveys and updated information from national data sources held by Natural England.

5.3.86 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 BID documents[18] (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, CA1, 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 BID-EC-002-000 to BID-EC-014-000 and Map Series EC-02 to EC-12[19].

Designated sites

5.3.87 There are two LWS of relevance to the assessment of the amendment, each of which is of county value. They are:

- Bailey Bridge Wetland and Sitch Covert LWS, covering an area of approximately 14ha, which supports semi-improved grassland, woodland, and a recently created wetland with standing water. The LWS is located to the east of the B5014 Uttoxeter Road, approximately 90m south of the land required for the amendment. This LWS was not reported in the main ES as it was not relevant to the assessment of the original scheme; and
- Trentside Meadows LWS, located between the A513 Rugeley Road and the River Trent, approximately 540m east of the land required for the amendment.

Habitats

5.3.88 Habitats within the land required for the amendment include semi-natural broadleaved woodland, poor semi-improved grassland, species-rich hedgerows, two watercourses (Luth Burn and Bentley Brook), three ponds, scattered scrub, scattered trees, improved grassland and arable land. The habitats of relevance to the assessment of the amendment are described in further detail below.

5.3.89 A small copse of semi-natural broadleaved woodland occurs at the junction of Common Lane and Ridware Road. This habitat is likely to qualify as lowland mixed deciduous 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)[20] and a conservation priority of Staffordshire Biodiversity Action Plan (BAP)[21]. This woodland is of local/parish value. It was not reported within the main ES as it was not relevant to assessment of the original scheme.

5.3.90 Species-poor semi-improved grassland occurs alongside Pipe Wood Lane adjacent to Luth Burn. This grassland contributes to a wider resource of species-poor semi-improved grassland across the Fradley to Colton area that is of local/parish value.

5.3.91 Hedgerows within the land required for the amendment are predominantly species-rich. The hedgerows are located along Pipe Lane and Common Lane and they qualify as a habitat of principal importance and a conservation priority of the Staffordshire

[18] HS2 Ltd (2018), High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data, Available online at: www.gov.uk/hs2
[19] HS2 Ltd (2017), High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Background Information and Data, Available online at: www.gov.uk/hs2
[20] Natural Environment and Rural Communities Act 2006 (2006 CHAPTER 16). Her Majesty's Stationery Office, London.
[21] Staffordshire Biodiversity Partnership. *Staffordshire Biodiversity Action Plan* [online]. Available at: http://www.sbap.org.uk/

BAP. These contribute towards a wider hedgerow network within the Fradley to Colton area that is of county value.

5.3.92 The section of Luth Burn that flows through the land required for the amendment is enriched with nutrients, likely to be runoff from nearby agricultural land and it is heavily shaded by mature trees. Due to the high nutrient levels the water quality is likely to be deteriorated. This watercourse is of local/parish value.

5.3.93 Bentley Brook is a primary tributary of the River Trent that flows through the land required for the amendment. This watercourse is of up to district/borough value. It was not reported within the main ES as it was not relevant to the assessment of the original scheme.

5.3.94 On a precautionary basis it is assumed that the three ponds within the land required for the amendment are habitats of principal importance and a conservation priority of the Staffordshire BAP and are of district/borough value.

Species

5.3.95 Protected and notable species that are known or assumed to occur within the land required for the amendment include fish, bats, great crested newt, water vole, otter and aquatic macro-invertebrates.

5.3.96 Bentley Brook is a primary tributary of the River Trent. The River Trent supports a population of spined loach of up to national value, and a different assemblage of fish, including bullhead and European eel, of up to district/borough value. Spined loach is an Annex 2[22] species and a species of principal importance. Bullhead is an Annex 2 species and European eel is a species of principal importance. On a precautionary basis it is assumed that these fish receptors also occur within the section of Bentley Brook that occurs within the land required for the amendment.

5.3.97 The main ES reported a bat assemblage associated with habitats at the River Trent, Trentside Meadows LWS and land around Pipe Ridware. Field surveys in this area recorded common pipistrelle and soprano pipistrelle roosts and other species foraging and commuting including brown long-eared bat, noctule, Leisler's bat and serotine. 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 assemblage is of county value.

5.3.98 The ponds within the land required for the amendment do not form part of any assumed great crested newt metapopulation[23] reported within the main ES or SES. The ponds have not been subject to survey and on a precautionary basis it is assumed that they support breeding populations of great crested newt of medium size class. Great crested newt is an Annex 2 species, a species of principal importance, and a conservation priority of the Staffordshire BAP. The assumed populations within the land required for the amendment are of up to county value.

[22] Annex 2 of the EU's Habitats Directive (1992) lists priority species whose conservation requires the designation of Special Areas of Conservation.
[23] 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).

5.3.99 Water vole surveys were undertaken along two sections of Luth Burn, approximately 30m north-west and approximately 200m east of the land required for the amendment. As a result of the poor quality terrestrial and aquatic habitat and the lack of evidence of water vole in these nearby sections, it is considered not likely that a population of water vole occurs within the section of Luth Burn within the land required for the amendment.

5.3.100 The main ES reported an assumed water vole population at Trentside Meadows LWS, of up to county value. Given the proximity of this population and the direct connectivity afforded by the watercourses, it is assumed that a water vole population occurs within the section of Bentley Brook within the land required for the amendment. Water vole is a species of principal importance and a conservation priority of the Staffordshire BAP. The assumed water vole population within Bentley Brook is of up to county value.

5.3.101 The otter population along the River Trent and associated watercourses, including Luth Burn and Bentley Brook, is reported within the main ES to be of district/borough value. Both watercourses within the land required for the amendment support suitable habitat for otter dispersal and the margins of Bentley Brook could potentially support breeding habitat. Otter is an Annex 2 species, a species of principal importance and a conservation priority of the Staffordshire BAP. It is assumed that the watercourse corridors within the land required for the amendment are used by the otter population of district/borough value that is associated with the River Trent.

5.3.102 Luth Burn and Bentley Brook do not form part of any aquatic macro-invertebrate populations reported within the main ES. On a precautionary basis it is assumed that the section of Bentley Brook that occurs within the land required for the amendment supports an aquatic invertebrate assemblage of up to district/borough value.

Future environmental baseline

Construction (2020) and operation (2027)

5.3.103 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).

5.3.104 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

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

Assessment of impacts and effects

Designated sites

5.3.106 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

5.3.107 On a precautionary basis, the main ES reported a loss of 64.8km of existing hedgerow within the land required for construction of the original scheme within the Fradley to Colton area, which is a permanent adverse effect that is significant at a county level. This included the loss and/or fragmentation of approximately 1.9km of existing hedgerow along Pipe Lane and along the B5014 Ridware Road/Uttoxeter Road. The modifications to Pipe Lane and the temporary modifications along the B5014 Ridware Road/Uttoxeter Road, as included in the original scheme, are no longer being undertaken, and therefore, the existing hedgerow will be retained. However, the amendment will result in the loss of approximately 520m of existing hedgerow from along Common Lane, a small section of Pipe Lane and an access track to Church Farm, which on a precautionary basis is assumed to be species-rich hedgerow. The amendment will reduce the existing hedgerow loss by approximately 1.4km. The amendment will result in a different significant effect on hedgerows. However, this will not change the level of significance of the effect on hedgerows within the Fradley to Colton area reported within the main ES.

5.3.108 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 up to district/borough value. Three ponds are located with the land required for the amendment, one of which is within the land required for the original scheme and the loss of this pond is reported in the main ES. The other two ponds will be lost as a result of construction of the amendment. The amendment will, therefore, result in an adverse effect on the conservation status of these two ponds that is significant at the district/ borough level, in each case.

5.3.109 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 SES and AP ES Volume 5: Appendix EC-003-000.

Species

5.3.110 A section of the Bentley Brook, a primary tributary of the River Trent, is located within the land required for the amendment. On a precautionary basis it is assumed that Bentley Brook supports a spined loach population, an assemblage of other fish species associated with the River Trent, a population of water vole and a notable assemblage of aquatic macro-invertebrates. There will be no loss or degradation of this watercourse as a result of the amendment. The amendment will not give rise to a new or different significant effect on fish, water vole or aquatic macro-invertebrates, and will not change the level of significance of the effects reported in the main ES.

5.3.111 The main ES reported that the construction of the original scheme would not result in the loss of known bat roosts associated with the assemblage of bats at the River Trent, Trentside Meadows LWS and land around Pipe Ridware, and no significant effect upon the assemblage was identified. The amendment will result in the loss of approximately 520m of hedgerow along Common Lane, a small section of Pipe Lane and an access track to Church Farm, which is assumed to be utilised as a foraging and

roosting resource by this bat assemblage. The amendment will result in an adverse effect on the bat assemblage that is significant at up to a county level.

5.3.112 The main ES reported the loss of the pond located to the west of Pipe Ridware, adjacent to Pipe Wood Lane because it occurs partially within the land required for the original scheme. On a precautionary basis, it was assumed that the pond would support a breeding population of great crested newt and that its loss would result in an adverse effect that is significant at up to county level. The amendment will result in the loss of two additional ponds adjacent to Pipe Lane. On a precautionary basis it is assumed that these two ponds will also support breeding populations of great crested newt of medium size class. The amendment will result in an adverse effect on assumed great crested newt populations using these two ponds that is significant at up to county level.

5.3.113 The main ES does not report any significant effects upon the otter population that uses the River Trent and associated watercourses. The amendment will not result in any loss of, or degradation to, Bentley Brook. The section of Luth Burn to be culverted as a result of the amendment is not likely to offer foraging or breeding habitat, but is likely to be used for occasional dispersal by otter. This dispersal corridor will be temporarily unavailable during construction, which will result in a negligible impact on the conservation status of the local otter population. The amendment will not give rise to a new or different significant effect on the otter population, and will not change the level of significance of the effects reported in the main ES.

5.3.114 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 the SES and AP ES Volume 5: Appendix EC-003-000.

Mitigation and residual effects

Other mitigation measures

5.3.115 The main ES reported a small area, approximately 0.2ha, of grassland mitigation planting along Pipe Lane. The amendment will result in the reduction of approximately 180m^2 of the grassland habitat creation. This will result in a net reduction of grassland habitat creation to approximately 0.18ha.

5.3.116 The main ES, as corrected in the SES, reports that approximately 50.9km of new hedgerows will be planted, which included the provision of 1.4km of hedgerow habitat creation along Pipe Lane and the B5014 Ridware Road/Uttoxeter Road. As the modifications to Pipe Lane and the temporary modifications along the B5014 Ridware Road/Uttoxeter Road are no longer being undertaken this hedgerow habitat creation will no longer be provided. The amendment includes approximately 120m of new hedgerow habitat creation, which will be provided along Common Lane. The amendment will result in the loss of approximately 520m of existing hedgerow from along Common Lane, a small section of Pipe Lane and an access track to Church Farm. The amendment will, therefore, result in a net loss of approximately 400m of hedgerow habitat in this location after mitigation. The amendment will result in a different residual effect on hedgerows. However, this will not change the level of significance of the effect on hedgerows within the Fradley to Colton area, as reported within the main ES.

5.3.117 The main ES, as corrected in the SES, reports a net loss of 13.9km of hedgerow across the Fradley to Colton area, which represents an adverse residual effect that is significant at county level. The net loss of hedgerow habitat from the amendment will contribute to the net loss of 14.7km of hedgerow after mitigation, across the Fradley to Colton area, which represents a different adverse residual effect to that reported in the main ES. However, this will not change the level of significance of the adverse residual effect on hedgerows, as reported within the main ES.

5.3.118 The main ES states that at least one pond will be created for every pond lost within the original scheme. This principle of mitigation has been applied to the two additional ponds lost as a result of the amendment. Once new ponds are established it is anticipated that any adverse effect upon pond habitats will be reduced to a level that is not significant.

5.3.119 The amendment will result in a loss of hedgerow with trees suitable for use as a foraging and roosting resource by the assemblage of bats at the River Trent, Trentside Meadows LWS and land around Pipe Ridware. This will result in a new significant adverse effect upon the local bat assemblage. The original scheme included habitat creation measures to the north of Pipe Ridware comprising woodland habitat creation of approximately 2.3ha and grassland habitat creation of approximately 2.5ha bounded by hedgerow planting, to compensate for woodland and grassland losses. Additional replacement bat roosts will be provided within these habitats to compensate for any additional roost loss that may arise from the amendment. The habitat creation in these areas will also compensate for the additional loss of foraging habitat, as a result of the amendment, used by the local bat assemblage. Once new woodland and grassland is established it is anticipated that any adverse effect upon the assemblage of bats at the River Trent, Trentside Meadows LWS and land around Pipe Ridware will be reduced to a level that is not significant.

5.3.120 The main ES reported that provision of ponds, species-rich neutral grassland and broadleaved woodland are included within the original scheme to compensate for the loss of breeding sites, foraging habitat and places of shelter used by great crested newt. In the original scheme, precautionary mitigation for great crested newt is provided within ecological habitat creation areas near Pyford Brook, near Westfield Covert and Kings Bromley Marina, near Quintons Orchard, between Stonyford Lane and Hadley Gate Lane and near Hurst Wood. Provision of these habitats will also contribute to compensation for route-wide losses of ponds, grassland and woodland.

5.3.121 Additional baseline information reported within the SES for great crested newt confirms the absence of this species in 27 ponds within the Fradley to Colton area, where they were assumed to be present on a precautionary basis for the main ES. Whilst the amendment will result in the loss of two additional ponds assumed to support great crested newt, the impacts of the AP revised scheme on great crested newt will be reduced from those reported in the main ES. Therefore, the provision of compensatory habitats as reported in the main ES, once established, will reduce the new adverse effect on the assumed great crested newt populations within the land required for the amendment to a level that is not significant.

Summary of likely residual significant effects

5.3.122 The amendment will result in a net loss of approximately 400m of hedgerow habitat in this location after mitigation and will result in a different residual effect on hedgerows.

5.3.123 The main ES, as corrected in the SES, reports a net loss of 13.9km of hedgerow across the Fradley to Colton area, which represents an adverse residual effect that is significant at county level. The net loss of hedgerow habitat from the amendment will contribute to the net loss of 14.7km of hedgerow after mitigation across the Fradley to Colton area, which represents a different residual effect to that reported in the main ES. However, this will not change the level of significance of the adverse residual effect on hedgerows, as reported within the main ES.

Cumulative effects

5.3.124 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

5.3.125 Where the amendment will cross Luth Burn a culvert will be provided to allow passage for mammals. No other mitigation measures are required above the measures reported in the main ES.

Assessment of impacts and effects

5.3.126 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

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

Summary of likely residual significant effects

5.3.128 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

5.3.129 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

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

5.3.131 There are no changes to the monitoring requirements identified in the main ES for ecology and biodiversity as a result of the amendment.

Health

Scope, assumptions and limitations

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

Existing environmental baseline

5.3.133 The baseline health information for the Fradley to Colton area is as described in the Volume 2, CA1, Section 9 of the main ES.

Future environmental baseline

Construction (2020) and operation (2027)

5.3.134 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).

5.3.135 None of the identified developments affect the assessment of the AP revised scheme's likely construction and operation impacts on health.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.137 The amendment will remove HGV construction traffic through Hill Ridware. This will remove the adverse effects on residents of Hill Ridware associated with concerns about road safety and the perception of reduced neighbourhood quality in the village reported in the main ES.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual effects

5.3.139 The amendment will remove the adverse effects on residents of Hill Ridware associated with concerns about road safety and the perception of reduced neighbourhood quality in the village.

Cumulative effects

5.3.140 There are no new or different likely cumulative effects for health as a result of the amendment acting in combination with any other amendments.

Effects arising from operation

Avoidance and mitigation measures

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

Assessment of impacts and effects

5.3.142 There are no new or different operational effects for health as a result of the amendment, in comparison with the main ES.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual effects

5.3.144 There are no changes to the likely residual operational health effects identified in the main ES as a result of the amendment.

Cumulative effects

5.3.145 There are no new or different likely cumulative effects for health as a result of the amendment acting in combination with any other amendments.

Monitoring

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

5.3.147 There are no changes to the monitoring requirements identified in the main ES for health as a result of the amendment.

Traffic and transport

Scope, assumptions and limitations

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

Existing environmental baseline

5.3.149 The baseline traffic and transport information for the Fradley to Colton area is as described in the Volume 2, CA1, Section 14 of the main ES.

5.3.150 The B5014 Uttoxeter Road is a main traffic route within the Fradley to Colton area, and is a north-south link connecting the settlements of Blithbury, Abbotts Bromley, Handsacre and Hill Ridware to Uttoxeter in the north and Lichfield in the south. Common Lane and School Road are local roads that connect Pipe Ridware to the B5014 Uttoxeter Road. There are no accesses on to Common Lane and limited accesses on School Road between Common Lane and Pipe Ridware.

Future environmental baseline

Construction (2023) and operation (2027 and 2041)

5.3.151 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).

5.3.152 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

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

Assessment of impacts and effects

5.3.154 The original scheme required construction HGV traffic to travel through Hill Ridware on the B5014 Uttoxeter Road to access construction works to the north of Hill Ridware. To accommodate construction traffic, temporary modifications to the B5014 Ridware Road/Uttoxeter Road were proposed. Due to the increase in HGV traffic through Hill Ridware, the main ES reported a major adverse traffic severance effect on non-motorised users on the B5014 Uttoxeter Road between Stonyford Lane and Common Lane and a moderate adverse traffic severance effect on the B5014 Uttoxeter Road between Stonyford Lane and the HS2 route. The original scheme also required construction HGV traffic to travel through Pipe Ridware to access construction works to the east of Pipe Ridware. Due to the increase in HGV traffic through Pipe Ridware, the main ES reported a moderate adverse traffic severance effect on non-motorised users on the Pipe Lane between School Lane and Pipe Wood Lane.

5.3.155 The amendment (permanent widening of Common Lane and a section of Pipe Lane, and the provision of a new site haul route from Pipe Lane towards the Pipe Ridware embankment) will enable construction traffic to access construction works to the south of Hill Ridware. Construction HGV traffic for compounds to the north of Hill Ridware will then use site haul routes to access construction works. The amendment will remove construction HGV traffic travelling through Hill Ridware to access the works. The amendment will also enable construction HGV traffic to be removed from Pipe Lane through Pipe Ridware which will be able to utilise the new site haul road. The amendment will also remove the need for traffic modifications to the B5014 Ridware Road/Uttoxeter Road, as proposed in the original scheme.

5.3.156 The amendment will remove construction HGV traffic passing through Hill Ridware, removing the major adverse traffic severance effect on the B5014 Uttoxeter Road between Stonyford Lane and Common Lane and the moderate adverse traffic severance effect on the B5014 Uttoxeter Road between Stonyford Lane and the HS2 route, as reported in the main ES. The amendment will remove construction HGV traffic passing through Pipe Ridware, removing the moderate adverse traffic severance effect on Pipe Lane between School Land and Pipe Wood Lane, as reported in the main ES. The amendment will, however, give rise to a new moderate adverse

traffic severance effect for non-motorised users on Common Lane, between the B5014 Uttoxeter Road and Pipe Lane, as a result of an increase in HGV traffic on this section of the road. See SES and AP ES Volume 5: Appendix TR-001-000; and Map TR-03-203 and Map TR-03-203-L1 in the SES and AP ES Volume 5 Map Book.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual significant effects

5.3.158 The amendment will remove the major adverse traffic severance effect on the B5014 Uttoxeter Road between Stonyford Lane and Common Lane and the moderate adverse traffic severance effect on the B5014 Uttoxeter Road between Stonyford Lane and the HS2 route, as reported in the main ES. The amendment will also remove the moderate adverse traffic severance effect on Pipe Lane between School Land and Pipe Wood Lane. However, the amendment will give rise to a new moderate adverse traffic severance effect on Common Lane, between the B5014 Uttoxeter Road and Pipe Lane, during construction as a result of an increase in HGV traffic along this road.

Cumulative effects

5.3.159 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

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

Assessment of impacts and effects

5.3.161 The amendment will provide a new permanent HS2 maintenance access route to the Pipe Ridware auto-transformer station. However, as use of the maintenance access will be infrequent, this will not result in any new significant traffic effects.

5.3.162 There are no new or different significant operational effects for traffic and transport as a result of the amendment, in comparison with the main ES.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual significant effects

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

Cumulative effects

5.3.165 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

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

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

Water resources and flood risk

Scope, assumptions and limitations

5.3.168 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

5.3.169 The baseline water and flood risk information for the Fradley to Colton area is as described in Volume 2, CA1, Section 15 of the main ES.

Future environmental baseline

Construction (2020) and operation (2027)

5.3.170 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).

5.3.171 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

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

Assessment of impacts and effects

Flood risk

5.3.173 Land required for the amendment is located within the floodplain of Luth Burn and the River Trent and therefore has the potential to affect flood risk. This is as a result of construction activities interfering with existing flood flow paths and/or reducing

floodplain storage. The detailed design of the amendment will aim to reduce such impacts, as follows:

- changes in local ground level will be avoided as far as is reasonably practicable;
- the realignment of Luth Burn beneath the new site haul route and maintenance access route via a new culvert will ensure the new channel has equivalent hydraulic capacity to the existing channel; and
- the new culvert to convey Luth Burn beneath the site haul route and HS2 maintenance access route will have the capacity to convey the 1 in 100 (1%) annual probability peak flow with an explicit allowance for climate change.

5.3.174 It is anticipated that, by adopting these design principles, the amendment can be constructed without affecting flood risk.

Water Framework Directive

5.3.175 The realignment of Luth Burn does not affect the Water Framework Directive (WFD) compliance assessment, as the watercourse at this location is an artificial drainage ditch of low value. However, the realignment of Luth Burn provides an opportunity to improve this watercourse. The measures outlined in the draft CoCP will ensure that the potential for these works to result in pollution of the water environment during construction is mitigated, such that there will be no significant adverse effects.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual significant effects

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

Cumulative effects

5.3.178 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

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

Assessment of impacts and effects

5.3.180 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

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

Summary of likely residual significant effects

5.3.182 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

5.3.183 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

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

5.3.185 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

5.3.186 The amendment will result in a new temporary moderate adverse effect for agriculture, forestry and soils, which is significant, due to the additional 0.2ha of land temporarily required from Land at Luthbar.

5.3.187 The amendment will require the partial removal of the cropmark remains of an Iron Age square barrow and field system west of Parva House, Pipe Ridware (FRC083) and a mortuary enclosure, ring ditches and pit alignment to the west of Pipe Ridware (FRC075). The amendment will result in a new moderate adverse significant effect on these buried heritage assets.

5.3.188 The net loss of hedgerow habitat from the amendment will contribute to the net loss of 14.7km of hedgerow after mitigation across the Fradley to Colton area, which represents a different likely residual significant effect.

5.3.189 The amendment will remove the adverse effects on residents of Hill Ridware associated with concerns about road safety and the perception of reduced neighbourhood quality in the village.

5.3.190 The amendment will remove the major adverse traffic severance effect on the B5014 Uttoxeter Road between Stonyford Lane and Common Lane and the moderate adverse traffic severance effect on B5014 Uttoxeter Road between Stonyford Lane and the HS2 route. The amendment will also remove the moderate adverse traffic severance effect on Pipe Lane between School Land and Pipe Wood Lane. The amendment will give rise to a new moderate adverse traffic severance effect on Common Lane, between the B5014 Uttoxeter Road and Pipe Lane, as a result of an increase in HGV traffic.

5.4 Additional land permanently required to improve the visibility at the junction of Pipe Lane and an accommodation track (AP-001-004)

5.4.1 The Bill provides for the permanent upgrade of a junction between an existing accommodation access track and Pipe Lane on the north-east side of the HS2 route, 450m north-west of Woodhouse Farm. This would provide maintenance access to the HS2 route. There would be a section of approximately 200m of hedgerow habitat creation along both sides of the accommodation access track to provide habitat connectivity. See Map CT-06-205, D4, in the main ES Volume 2, CA1 Map Book.

5.4.2 Since submission of the Bill, a requirement has been identified to improve visibility for vehicles turning into Pipe Lane from the accommodation access track. To improve visibility at the junction, approximately 90m of existing hedgerow will be removed and subsequently reinstated along the southern edge of Pipe Lane at the junction. In addition, approximately 10m of hedgerow habitat creation, included in the original scheme, will be relocated so it is set back from the junction. There will be no net change in the provision of hedgerow habitat creation as a result of the amendment and no change to the layout of the junction from the original scheme. See Map CT-06-205, D4, in the SES and AP ES Volume 2, CA1 Map Book.

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

5.4.4 The land required to improve visibility at the junction is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 0.2ha of land. See Map CT-06-205, D4, in the SES and AP ES Volume 2, CA1 Map Book.

Topics included in the AP assessment

5.4.5 The amendment is considered to only require reassessment of the environmental effects and mitigation described in the main ES for ecology and biodiversity.

Ecology and biodiversity

Scope, assumptions and limitations

5.4.6 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1, the Scope and Methodology Report (SMR)[24], and the SMR Addendum[25] of the main ES.

5.4.7 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

5.4.8 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 and otter surveys and updated information from national data sources held by Natural England.

5.4.9 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) documents[26] (BID-EC-004-000and 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, CA1, 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-12[27].

Designated sites

5.4.10 The land required for the amendment is located within the Natural England Impact Risk Zone[28] for Blithfield Reservoir Site of Special Scientific Interest (SSSI), which is a site of national value. The SSSI is located north of Stockwell Heath, approximately 3.8km north-west of the land required for the amendment.

[24]HS2 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

[25] 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

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

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

[28] The Impact Risk Zones are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks to SSSI posed by development proposals and indicate the types of development proposal which could potentially have adverse impacts. In this case the Impact Risk Zone for infrastructure has been considered.

5.4.11 There is one local wildlife site (LWS) of relevance to the assessment of the amendment, which is of county value. Pipe Wood Lane LWS is located on Pipe Wood Lane, south of Blithbury, partially within the land required for the amendment.

5.4.12 There is one biodiversity alert site (BAS) of relevance to the assessment of the amendment, which is of district/ borough value. Pipe Wood Lane BAS is located on Pipe Wood Lane, south of Blithbury, partially within the land required for the amendment.

5.4.13 There is one ancient woodland inventory (AWI) site of potential relevance to the assessment of the amendment, which is of county value. Pipe Wood AWI site is located on Pipe Wood Lane, south of Blithbury, approximately 280m north of the land required for the amendment.

Habitats

5.4.14 Habitats within the land required for the amendment include semi-natural broadleaved woodland, semi-improved neutral grassland, species-rich hedgerows, a pond, dense scrub, scattered trees and arable land. The habitats of relevance to the assessment of the amendment are described in further detail below.

5.4.15 A small copse of semi-natural broadleaved woodland occurs adjacent to Pipe Wood Lane. This habitat is likely to qualify as lowland mixed deciduous woodland, which is a habitat of principal importance under the provisions Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006)[29] and a conservation priority of Staffordshire Biodiversity Action Plan (BAP)[30]. This woodland is of local/ parish value.

5.4.16 Semi-improved neutral grassland occurs alongside Pipe Wood Lane in the corner of an arable field. This grassland contributes to a wider resource of semi-improved neutral grassland across the Fradley to Colton area that is of county value.

5.4.17 Hedgerows within the area required for the amendment are predominantly species-rich and with good structure. All of the hedgerows fall either within Pipe Wood Lane LWS or Pipe Wood Lane BAS, which form a linear corridor of habitat that connects to Pipe Wood AWI to the north. The hedgerows qualify as a habitat of principal importance and a conservation priority of the Staffordshire BAP. These contribute towards a wider hedgerow network within the Fradley to Colton area that is of county value.

5.4.18 On a precautionary basis it is assumed that the pond within the land required for the amendment is a habitat of principal importance and a conservation priority of the Staffordshire BAP, and is of district/borough value.

Species

5.4.19 Protected and notable species that are known or are assumed to occur within the land required for the amendment include bats, great crested newt and badgers.

[29] Natural Environment and Rural Communities Act 2006 (2006 CHAPTER 16). Her Majesty's Stationery Office, London.
[30] Staffordshire Biodiversity Partnership. *Staffordshire Biodiversity Action Plan* [online]. Available at: http://www.sbap.org.uk/

5.4.20 The main ES reported a bat assemblage associated with habitats near Pipe Wood and land to the south and east of Blithbury. Field surveys in this area recorded noctule and brown long-eared bat maternity roosts and other species foraging and commuting including Nathusius' pipistrelle, common pipistrelle and Myotis 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 includes several species of principal importance and species that are conservation priorities of the Staffordshire BAP. The assemblage is of regional value.

5.4.21 The pond within the land required for construction of the amendment does not form part of any assumed great crested newt metapopulation[31] reported within the main ES or SES. The pond has not been subject to survey and on a precautionary basis it is assumed to support a breeding population of great crested newt of medium size class. Great crested newt is an Annex 2[32] species, a species of principal importance, and a conservation priority of the Staffordshire BAP. The assumed population within the land required for the amendment is of up to county value.

5.4.22 A badger sett has been recorded within the vicinity of the land required for amendment. The social group of badgers in the local area is of local/ parish value.

Future environmental baseline

Construction (2020) and operation (2027)

5.4.23 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).

5.4.24 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

5.4.25 No further measures are applicable to this assessment, above those stated in the draft Code of Construction Practice (CoCP)[33].

Assessment of impacts and effects

Designated sites

5.4.26 Whilst the amendment is within the impact risk zone for Blithfield Reservoir SSSI, no adverse effects on the integrity of the SSSI are predicted due to the distance of the amendment to the SSSI.

5.4.27 The main ES reported the loss of 40m of hedgerow habitat from Pipe Wood Lane LWS, a permanent adverse effect on site integrity, which would be significant at

[31] A metapopulation is a group of spatially separated populations which 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).
[32] Annex 2 of the EU's Habitats Directive (1992) lists priority species whose conservation requires the designation of Special Areas of Conservation.
[33] 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

county level. The additional loss, due to the construction of the amendment, comprises approximately 80m of hedgerow habitat for which the site is designated. The amendment will result in a different significant effect on Pipe Wood Lane LWS due to the additional loss of hedgerow. However, this will not change the level of significance of the effect, as reported in the main ES.

5.4.28 The main ES reported the loss of hedgerow habitat from the Pipe Wood Lane BAS, a permanent adverse effect on the structure and function of the site, which would be significant at district/borough level. The additional loss, due to the construction of the amendment, comprises approximately 10m of hedgerow habitat for which the site is designated. The amendment will result in a different significant effect on Pipe Wood Lane BAS due to the additional loss of hedgerow. However, this will not change the level of significance of the effect, as reported in the main ES.

5.4.29 The main ES does not report any significant effects upon on Pipe Wood AWI. The amendment will not give rise to new or different significant effects on this AWI site.

Habitats

5.4.30 On a precautionary basis, the main ES assumed a permanent loss and/or fragmentation of 64.8km of hedgerow habitat within the land required for construction of the original scheme within the Fradley to Colton area, which is a permanent adverse effect that is significant at a county level. The amendment will result in the loss of an additional 90m of species-rich hedgerow from along Pipe Wood Lane. The amendment will result in a different significant effect on hedgerows. However, this will not change the level of significance of the effect as reported within the main ES.

5.4.31 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. One additional pond will be lost as a result of construction works associated with the amendment. The amendment will result in an adverse effect on the conservation status of the pond that is significant at the district/ borough level. This is a new significant effect, which is not reported in the main ES.

5.4.32 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 SES and AP ES Volume 5: Appendix EC-003-000.

Species

5.4.33 The main ES reported that the construction of the original scheme would result in the loss of a noctule maternity tree roost. Noctule is a component species of the bat assemblage associated with habitats near Pipe Wood and land to the south and east of Blithbury. The loss of this roost would constitute a significant effect on this bat assemblage at the regional level. The amendment will result in the loss of approximately 90m of hedgerow, a pond and a broadleaved woodland copse that could be utilised by foraging and roosting bats from the bat assemblage associated with habitats near Pipe Wood and land to the south and east of Blithbury. The amendment will result in a different significant effect on the bat assemblage

associated with habitats near Pipe Wood and land to the south and east of Blithbury, but will not change the level of significance of the effects reported in the main ES.

5.4.34 An assumed great crested newt population occurs within an additional pond that will be lost as a result of the amendment. The amendment will result in an adverse effect on this population that is significant at up to county level. This is a new significant effect, which is not reported in the main ES.

5.4.35 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

5.4.36 The amendment will result in the removal and subsequent reinstatement of approximately 90m of existing hedgerow and the relocation of approximately 10m of habitat creation included in the original scheme. There will be no net loss in extent of hedgerow habitat creation in the Fradley to Colton area as a result of the amendment and it will not change the level of significance of the effects reported in the main ES.

5.4.37 The main ES states that at least one pond will be created for every pond lost within the original scheme. This principle of mitigation has been applied to the one additional pond lost as a result of the amendment. Once new ponds are established it is anticipated that any adverse effect upon pond habitats will be reduced to a level that is not significant.

5.4.38 The original scheme included woodland habitat creation to the north of Quintons Orchard of approximately 2.6ha that would be provided to compensate for woodland loss. Additional replacement bat roosts will be provided within this habitat to compensate for any additional roost loss that may arise from the amendment. The habitat creation in this area will also compensate for the additional loss of foraging habitat used by the local bat assemblage that may arise from the amendment. Once new woodland is established it is anticipated that any adverse effect upon the assemblage of bats associated with habitats near Pipe Wood and land to the south and east of Blithbury will be reduced to a level that is not significant.

5.4.39 The main ES reported that provision of ponds, species-rich neutral grassland and broadleaved woodland are included within the original scheme to compensate for the loss of breeding sites, foraging habitat and places of shelter used by great crested newt. In the original scheme, precautionary mitigation for great crested newt is provided within ecological habitat creation areas near Pyford Brook, near Westfield Covert and Kings Bromley Marina, near Quintons Orchard, between Stonyford Lane and Hadley Gate Lane, and near Hurst Wood. Provision of these habitats will also contribute to compensation for route-wide losses of ponds, grassland and woodland.

5.4.40 Additional baseline information reported within the SES for great crested newt confirms the absence of this species in 27 ponds within the Fradley to Colton area, where they were assumed present on a precautionary basis for the main ES. Whilst the amendment will result in the loss of one additional pond assumed to support great

crested newt, the impacts of the AP revised scheme on great crested newt are reduced from those reported in the main ES. Therefore, the provision of compensatory habitats as reported in the main ES, once established, will reduce the new adverse effect on the assumed great crested newt population within the land required for the amendment to a level that is not significant.

Summary of likely residual significant effects

5.4.41 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

5.4.42 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

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

Assessment of impacts and effects

5.4.44 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

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

Summary of likely residual significant effects

5.4.46 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

5.4.47 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

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

5.4.49 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

5.4.50 The additional land required to improve the visibility at the junction of Pipe Lane and an accommodation track will not give rise to a new or different likely residual significant effects or change the likely residual significance of the environmental effects as set out in the main ES.

5.5 Additional land permanently required to improve the visibility at the junctions of Moor Lane and Lount Lane with the B5013 Uttoxeter Road (AP-001-005)

5.5.1 The Bill provides for the permanent realignment of the B5013 Uttoxeter Road, which would pass under the HS2 route via the B5013 Uttoxeter Road underbridge. On the west side of the HS2 route, Moor Lane and Lount Lane would join the realigned B5013 Uttoxeter Road. There would be hedgerow habitat creation along the B5013 Uttoxeter Road on both sides of the junctions to create new habitat and aid the integration of the realigned B5013 Uttoxeter Road into the landscape. See Map CT-06-208, B9 to B10, in the main ES Volume 2, CA1 Map Book.

5.5.2 Since the submission of the Bill, a requirement has been identified to improve visibility for vehicles joining the realigned B5013 Uttoxeter Road at the junction with Moor Lane and the junction with Lount Lane. To improve visibility at the junction of Moor Lane and the B5013 Uttoxeter Road, approximately 140m of existing hedgerow will be removed and subsequently reinstated along the southern edge of B5013 Uttoxeter Road. In addition, approximately 290m of hedgerow habitat creation, included in the original scheme, will be relocated so it is set back from the junction. There will be no net change in the provision of hedgerow habitat creation as a result of the amendment and no change to the layout of the junction from the original scheme. See Map CT-06-208, B9 to B10, in the SES and AP ES Volume 2, CA1 Map Book.

5.5.3 To improve visibility at the junction of Lount Lane and the B5013 Uttoxeter Road, approximately 120m of existing hedgerow will be removed and subsequently reinstated along the northern edge of the B5013 Uttoxeter Road, to the south-west and north-east of the junction with Lount Lane. There will be no net change in the provision of hedgerow habitat creation as a result of the amendment and no change to the layout of the junction from the original scheme. See Map CT-06-208, B9 to B10, in the SES and AP ES Volume 2, CA1 Map Book.

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

5.5.5 The land required to improve visibility at the junctions is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 0.2ha of land. See Map CT-06-208, B9 to B10 in the SES and AP ES Volume 2, CA1 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.

6 Assessment of minor utility amendments in the Fradley to Colton area

6.1 Additional land for the permanent diversion of South Staffordshire Water 33-inch water mains under River Trent viaduct (AP-001-101)

6.1.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert an existing South Staffordshire Water 33-inch water main. The diversion of the utility will be 425m in length, crossing the HS2 route under the River Trent viaduct, between Rookery Lodge and 100m north of Echills Farm. See Map CT-06-203, F6 to D5, in the SES and AP ES Volume 2, CA1 Map Book. Approximately 0.6ha of additional land will be permanently required (see Map CT-06-203, E6 and E5 to D5, in the SES and AP ES Volume 2, CA1 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 any surface material from the area of the 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 10 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 two South Staffordshire Water 36-inch water mains under River Trent viaduct (AP-001-102)

6.2.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert two existing South Staffordshire Water 36-inch water mains. The diversion of the utilities will be 175m in length, crossing the HS2 route under the River Trent viaduct, and crossing under and running parallel to the A513 Rugeley Road. See Map CT-06-203, D6 to C5, in the SES and AP ES Volume 2, CA1 Map Book. Approximately 0.8ha of additional land will be permanently required (see Map CT-06-203, D6 to C5, in the SES and AP ES Volume 2, CA1 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 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 works are complete. Activities to divert

the utilities are currently planned to be carried out in 2021 - 2022 and are expected to take approximately 10 months to complete.

6.2.3 The amendment is considered to only require reassessment of the environmental effects and mitigation described in the main ES for cultural heritage and ecology and biodiversity.

Cultural heritage

6.2.4 The main ES reported a minor adverse effect, which is not significant, on possible field boundaries, west of Kings Bromley (FRC096). The amendment will extend the land required for the AP revised scheme and increase the extent of the impact on the asset. As a result, the level of the effect will increase, from that reported in the main ES, to moderate adverse, which is a new significant effect. See Map CH-01-202 in the SES and AP ES, Volume 5 Map Book and the SES and AP ES Volume 5: Appendix CH-003-000.

6.2.5 In addition, the main ES reported a major adverse significant effect on buried archaeological deposits associated with the cropmark remains of four Bronze Age round barrows north-west of Echills (FRC040). The amendment will extend the land required for the AP revised scheme and increase the extent of the impact on the asset. This will result in a different significant effect, however, it will not change the level of the effect which remains a major adverse significant effect, as reported in the main ES. See Map CH-01-202 in the SES and AP ES, Volume 5 Map Book and the SES and AP ES Volume 5: Appendix CH-003-000.

Ecology and biodiversity

6.2.6 No loss of habitat from Kings Bromley Pit (north-west of Manor Park) local wildlife site (LWS) was reported in the main ES, as this site was located outside of the land required for the construction of the original scheme. This site is of county value. The amendment will extend the land required for the AP revised scheme and result in a loss of 400m² of semi-natural broadleaved woodland habitat (a habitat of principal importance) from the LWS, for which the site is designated. Therefore, the amendment would result in a new significant effect upon this feature at up to a county level. The habitat creation measures within the original scheme will compensate for the loss of semi-natural broadleaved woodland habitat from the LWS. This will reduce the level of effect to a level that it is not significant.

6.3 Additional land for the permanent diversion of South Staffordshire Water 6-inch water main along the A513 Rugeley Road (AP-001-103)

6.3.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert an existing South Staffordshire Water 6-inch water main. The diversion of the utility will be 100m in length, running parallel to its existing alignment within the A513 Rugeley Road. See Map CT-06-203, D6 to D5, in the SES and AP ES Volume 2, CA1 Map Book. Approximately 900m² of additional land will be permanently required (see Map CT-06-203, D5, in the SES and AP ES Volume 2, CA1 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 any surface material from the area of the 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 and are expected to take approximately six months to complete.

6.3.3 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.

6.4 Additional land for the permanent diversion of BT Openreach overhead telecommunications cable along the A513 Rugeley Road and access road to Echills Farm (AP-001-104)

6.4.1 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 a section of an existing overhead telecommunications cable. The diversion of the utility will be 650m in length, running parallel to the A513 Rugeley Road and then within an access road serving Echills Farm. See Map CT-06-203, H4 to E7, in the SES and AP ES Volume 2, CA1 Map Book. Approximately 600m² of additional land will be permanently required (see Map CT-06-203, F7, in the SES and AP ES Volume 2, CA1 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 utility infrastructure (where necessary), the removal of any surface material from the area of the 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.

6.4.3 The amendment is considered to only require reassessment of the environmental effects and mitigation described in the main ES for community.

Community

6.4.4 The amendment will result in additional land for the construction of the AP revised scheme, which will be within the boundaries of residential properties. The impact of the utility diversion at these properties 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 properties is included in SES and AP ES Volume 5: Appendix CM-001-000.

6.5 Additional land for the permanent diversion of BT Openreach overhead telecommunications cable at Quintons Orchard Farm (AP-001-105)

6.5.1 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 a section of an existing telecommunications cable. The diversion of the utility will be 620m in length and will follow the route of an access road to Quintons Orchard Farm. A section of the existing utility, where it crosses the HS2 route to Quintons Orchard Farm, will be removed. See Map CT-06-204, B7, and Map CT-06-205, I7 to D3, in the SES and AP ES Volume 2, CA1 Map Book. Approximately 0.6ha of additional land will be permanently required (see Map CT-06-205, I7 to F7 and D4 to D3, in the SES and AP ES Volume 2, CA1 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 the removal of existing utility infrastructure (where necessary), the removal of any surface material from the area of the 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.

6.5.3 The amendment is considered to only require reassessment of the environmental effects and mitigation described in the main ES for community and cultural heritage.

Community

6.5.4 The amendment will result in additional land for the construction of the AP revised scheme, which will be within the boundaries of residential properties. The impact of the utility diversion at these properties 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 properties is included in SES and AP ES Volume 5: Appendix CM-001-000.

Cultural heritage

6.5.5 The main ES reported a neutral effect, which is not significant, on a field system of narrow ridge and furrow, boundaries and tracks (FRC087). The construction of the amendment will affect the setting of the asset. This will result in a new impact on the asset and a new temporary negligible adverse effect, which is not significant.

6.5.6 In addition, the main ES reported a moderate adverse significant effect on Pipehalle moated site, north-west of Pipe Ridware (FRC088). The construction of the amendment will result in a new impact on the setting of the asset. This will result in a different significant effect, however, it will not change the level of the effect which remains a moderate adverse significant effect, as reported in the main ES. See Map CH-01-203 in the SES and AP ES, Volume 5 Map Book and the SES and AP ES Volume 5: Appendix CH-003-000.

6.6 Additional land for the permanent diversion of BT Openreach overhead telecommunications cable along Hadley Gate Lane (AP-001-106)

6.6.1 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 a section of an existing overhead telecommunications cable. The diversion of the utility will be 500m in length running along Hadley Gate Lane. Sections of the existing utility will be removed where it crosses the HS2 route and also from the land within Rosewood Farm. See Map CT-06-206, C8 to B1, and Map CT-06-207, I9 to H2, in the SES and AP ES Volume 2, CA1 Map Book. Approximately 400m² of additional land will be permanently required (see Map CT-06-207, I7 to H7, in the SES and AP ES Volume 2, CA1 Map Book). The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.

6.6.2 The activities will require the removal of existing utility infrastructure (where necessary), the removal of any surface material from the area of the 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.

6.6.3 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 three South Staffordshire Water water mains along the B5013 Uttoxeter Road (AP-001-107)

6.7.1 Since submission of the Bill, a requirement has been identified for additional land to permanently divert three existing South Staffordshire Water water mains, one 400mm water mains, one 200mm water mains, and one 6-inch water mains. The diversion of the utilities will be 1.1km in length, following the B5013 Uttoxeter Road realignment. See Map CT-06-208, B10 to A2, in the SES and AP ES Volume 2, CA1 Map Book. Approximately 0.4ha of additional land will be permanently required (see Map CT-06-208, B9 to A10 and A2, in the SES and AP ES Volume 2, CA1 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 route (this may include vegetation, soil, and road surfacing), the removal of existing utilities 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 utilities are currently planned to be carried out in 2022-2023 and are expected to take approximately 10 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.

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

08081 434 434
HS2Enquiries@hs2.org.uk