

# HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

## Supplementary Environmental Statement and Additional Provision 2 Environmental Statement

Volume 2 | Community forum area report  
CFA20 | Curdworth to Middleton

July 2015

SES and AP2 ES 3.2.1.20



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## Department for Transport

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# Structure of the HS2 Supplementary Environmental Statement and Additional Provision 2 Environmental Statement

The Supplementary Environmental Statement (SES) and Additional Provision 2 Environmental Statement (AP2 ES) comprises:

- non-technical summary (NTS). This provides a summary in non-technical language of the SES (Part 1) and AP2 ES (Part 2) and of any likely significant environmental effects, both beneficial and adverse, which are new or different to those reported in the High Speed Two (HS2) Phase One Environmental Statement (ES) submitted to Parliament in November 2013 in support of the hybrid Bill ('the Bill') for Phase One of HS2 (hereafter referred to as 'the main ES') and, where relevant, the AP ES submitted in September 2014 (hereafter referred to as 'the AP1 ES');
- Volume 1: introduction to the SES and the AP2 ES. This introduces the supplementary environmental information and design changes included within the SES and amendments which have resulted in the need to amend the Bill within the AP2 ES. It also explains any changes to the scope, methodology, assumptions and limitations required for the environmental impact assessment.;
- Volume 2: community forum area (CFA) reports and map books. These describe the supplementary environmental information and design changes included within the SES (Part 1), amendments within the AP2 ES (Part 2) and report any new or different likely significant environmental effects arising from these changes in each CFA compared to those reported in the main ES and, where relevant, the AP1 ES. The main local alternatives that have been considered are described, where relevant;
- Volume 3: route-wide effects. This reports new or different likely significant route-wide effects arising from the supplementary environmental information and design changes included within the SES (Part 1) and amendments within the AP2 ES (Part 2) compared to those reported in the main ES and, where relevant, the AP1 ES;
- Volume 4: off-route effects. This reports new or different likely significant off-route effects arising from the amendments within the AP2 ES compared to those reported in the main ES and, where relevant, the AP1 ES;
- Volume 5: appendices and map books. This contains supporting environmental information and associated maps; and

## SES and AP2 ES Volume 2 – CFA20, Curdworth to Middleton

- glossary of terms and list of abbreviations. This contains any new or different terms and abbreviations used throughout the SES and AP2 ES compared to those included in the main ES and AP1 ES.

# Structure of this report

This volume of the SES and AP2 ES is divided into CFA reports, which are in turn divided into two parts.

Part 1 provides supplementary environmental information relating to:

- new baseline information with respect to European Protected Species surveys, additional cultural heritage and ecology data relating to ancient woodlands, and geophysical and walkover surveys for cultural heritage.
- changes to the design or construction assumptions which do not require changes to the Bill; and
- corrections to the main ES.

Part 1 of each CFA report includes, where relevant:

- a description of the changes or updates within the CFA that have triggered the need for reassessment;
- an assessment of the environmental effects of the changes for relevant environmental topics considering the:
  - scope, assumptions and limitations of the SES assessment;
  - changes of relevance to 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 changes.

Part 2 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. The following is included where relevant:

- a summary of the proposed amendments within each CFA that have triggered the need for reassessment;
- a description of each amendment;
- an assessment of the environmental effects of each amendment for relevant environmental topics considering the:
  - scope, assumptions and limitations of the AP2 ES 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 each proposed amendment.

# 1 Introduction

- 1.1.1 The Bill for High Speed Rail between London and the West Midlands was submitted to Parliament together with the main ES in November 2013. The AP1 ES, which was submitted in September 2014, contained generally minor amendments to the design of the original scheme (i.e. the scheme submitted in November 2013). The Bill and associated Additional Provisions to the Bill, if enacted by Parliament, will provide the powers to construct, operate and maintain Phase One of HS2.
- 1.1.2 Since the submission of the main ES and AP1 ES, a number of changes or updates to environmental information and scheme design or 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 (Part 1) or AP2 ES (Part 2) of this document.
- 1.1.3 The SES contains updated environmental baseline information and scheme information relating to changes that have occurred within the current limits and powers of the Bill, and therefore do not require an Additional Provision to the Bill. This includes:
- additional environmental baseline information;
  - changes to the design or construction assumptions which do not require changes to the Bill; and
  - corrections to the main ES.
- 1.1.4 The changes are described in Part 1 under a series of sub-headings and assessed on a topic by topic basis 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 AP2 ES reports 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 assessed within AP2 ES include:
- temporary road diversion at Faraday Avenue;
  - new landowner access routes;
  - amendments to the Kingsbury Road railhead;
  - revisions to landscape earthworks and planting;
  - diversion of footpaths;
  - lowering of the HS2 route northwards of Middleton village; and
  - relocation of a compound and balancing pond at Church Lane, Middleton.

- 1.1.8 The AP2 ES assesses each amendment separately for all relevant topics. The purpose of the AP2 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) submitted in support of the Bill. Implementation of these measures has been assumed in this SES and AP2 ES.
- 1.1.10 It should be noted that, since submission of the Bill, the scheme design has been revised by amendments described in the AP1 ES (AP1 amendments) and amendments described in the AP2 ES (AP2 amendments).
- 1.1.11 In order to differentiate between the original proposals and subsequent changes, the following terms are used:
- 'the original scheme' - the Bill scheme submitted to Parliament in November 2013, which was assessed in the main ES;
  - 'the AP1 revised scheme' - the original scheme as amended by the AP1 submitted in September 2014;
  - 'the SES scheme' - the original scheme with the design changes described in the SES; and
  - 'the AP2 scheme' - the original scheme as amended by the SES scheme and AP2.

# Part 1: Supplementary Environmental Statement

## 2 Summary of changes

### 2.1 New environmental baseline information

#### Cultural heritage

- 2.1.1 Geophysical and walk-over surveys have been undertaken in this CFA since production of the main ES (September 2013). In addition, a further review of historic mapping and other available historic data sources has been carried out to verify the status of a number of woodlands in the vicinity of the route which are being considered for inclusion on the ancient woodland inventory.
- 2.1.2 Details of survey and desk-based work undertaken in this CFA since September 2013 are provided in Volume 5: Appendix CH-004-020 and Volume 5 map series CH-07; CH-09 and CH-10, where this is relevant to the assessment of a new or different significant effect.
- 2.1.3 Details of supplementary cultural heritage information from these sources that are relevant to the SES assessment are provided in Section 3.1 under 'Cultural heritage'.

#### Ecology

- 2.1.4 Surveys for bats, great crested newt and otter have been undertaken in this area since September 2013. In addition habitat survey has been undertaken at selected woodland locations to assist in determining if these areas represent ancient woodland.
- 2.1.5 Since September 2013, sludge lagoons at Coleshill Sewage Treatment Works have also been designated as Coleshill Sludge Lagoons Local Wildlife Site (LWS) on the basis of their nature conservation value.
- 2.1.6 Details of all survey work and desk-study information gathered since September 2013 which is relevant to this area is provided in Volume 5: Appendix EC-001-003 (Baseline data appendix) and Volume 5 map series EC-01; EC-04; EC-05; EC-11 and EC-12.
- 2.1.7 Further details of supplementary ecological information that are relevant to the SES assessment are included within Section 3 under 'Ecology'. This includes details of all changes relating to the status of ancient woodland.
- 2.1.8 Volume 5: Appendix EC-002-003) provides a summary of additional baseline survey data collected since September 2013, which has resulted in no change to the conclusions of the main ES. Volume 5: Appendix EC-003-003 identifies additional local/parish level effects which occur as a consequence of SES changes but are not significant.

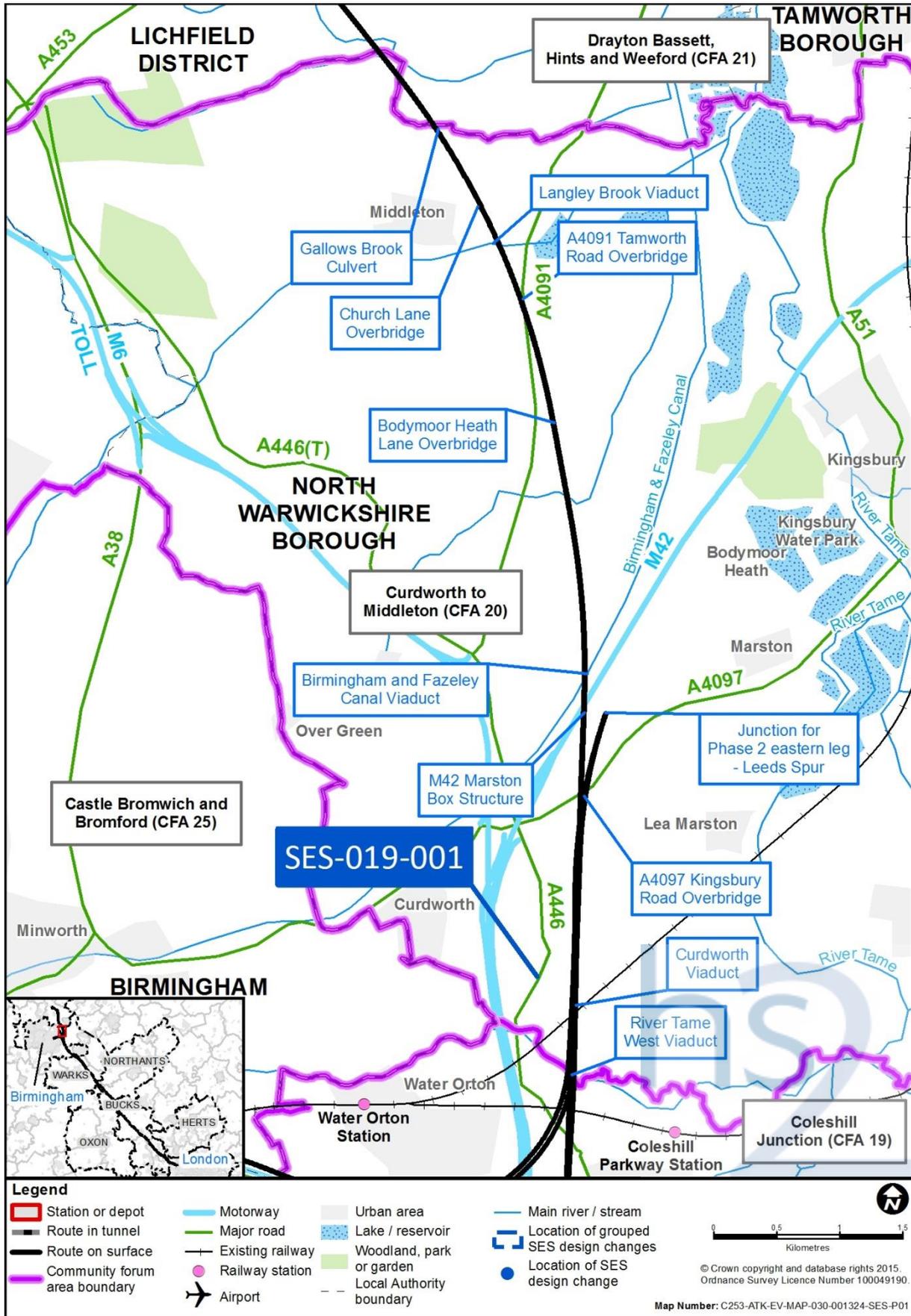
## 2.2 Changes to the design or construction assumptions not requiring a change to the Bill

2.2.1 Table 1 provides a summary of the changes to the design or construction assumptions in the Curdworth to Middleton CFA (CFA20). Figure 1 shows the locations.

Table 1: Summary of design changes not requiring a change to the hybrid Bill in CFA20

Name of design change	Description of the original scheme	Description of the SES scheme
<p>Updated construction assumptions for A446 traffic assessment (SES-019-001).</p> <p>This change also affects the A446 Lichfield Road in CFA19.</p>	<p>HS2 works generating construction traffic on the A446 Lichfield Road within CFA20.</p>	<p>The amendment assesses the impact of revised, more refined construction assumptions on the volume of HS2 construction traffic and consequential effects.</p>

Figure 1: Locations of design changes not requiring a change to the hybrid Bill in CFA20



## Description of changes to the design or construction assumptions

### *Updated construction assumptions for A446 traffic assessment (SES-019-001)*

- 2.2.2 In considering the traffic impacts on the A446, and in particular the single carriageway section south of the junction with Faraday Avenue, a more refined assessment has been developed reflecting the likely phasing of peak flows to compounds served from the A446 and the degree to which they coincide. In addition, the likely profile of worker car trips during the day has been reassessed. The amendment addresses these changes and the potential impacts on traffic flows on the A446 through this CFA from the River Tame to the junction of the A446 with the A4091 Tamworth Road.

### **Changes to the design or construction assumptions in other CFAs affecting this CFA**

- 2.2.3 This traffic assessment incorporates the updated construction assumptions for the A446 (SES-019-001) and includes consideration of traffic flows associated with, and as a result of, changes to the movement of excavated material in other CFAs. This has resulted in changes to the forecast of heavy good vehicles (HGV) flows on roads in CFA20, in comparison to those reported for the original scheme in the main ES. The assessment in relation to this is presented in Section 6 under Traffic and transport together with other impacts on topics potentially affected by these changes in traffic flows.

## **2.3 Corrections to the main ES**

- 2.3.1 Since submission of the Bill, the need for a number of corrections in 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 CFA report for Curdworth to Middleton because of the potential to alter the significant environmental effects reported in the main ES or a factual inaccuracy relating to significant effects has been identified. The table gives the location of 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 CFA20

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
<p>Sound, Noise and Vibration</p> <p>Paragraph 11.4.15 and 11.4.16, Volume 2, CFA20 of the main ES.</p>	<p>Dunton Stables was incorrectly identified as qualifying for discretionary noise insulation, rather than noise insulation as identified by the Noise Insulation (Railways and other Guided Transport Systems) Regulations 1996.</p> <p>In addition, the dwelling at Cuttle Mill Fishery was omitted from the assessment.</p>	<p>These dwellings include the following and are indicated on Volume 5: Map Book – Sound, noise and vibration, Map series SV-05:</p> <ul style="list-style-type: none"> <li>• Orchard Bungalow and Newlands Farm, Newlands Lane, Curdworth; and</li> <li>• The Bungalow, Middleton Farm, Tamworth Road, Middleton.</li> </ul> <p>The assessment has identified three additional residential buildings close to the Proposed Scheme, Dunton Hall and Dunton Stables off the A4097 Kingsbury Road, Curdworth, and 254 Lock House Lane, Curdworth; where the daytime forecast noise level does not exceed the threshold set in the Regulations but the forecast night-time noise level would exceed the World Health Organization’s Interim Target of 55dB, or the maximum noise level (dependent on the number of train passes) as a train passes exceeds the criterion. It is estimated that these buildings will also be offered noise insulation as described previously in the Avoidance and mitigation measures section. These are also identified as being likely to qualify for noise insulation as a consequence of construction noise as described earlier in this section. These buildings are indicated on Volume 5: Map Book – Sound, noise</p>	<p>These dwellings include the following and are indicated on Volume 5: Map Book – Sound, noise and vibration, Map series SV-05:</p> <ul style="list-style-type: none"> <li>• Orchard Bungalow and Newlands Farm, Newlands Lane, Curdworth;</li> <li>• The Bungalow, Middleton Farm, Tamworth Road, Middleton; and</li> <li>• Dunton Stables, Middleton.</li> </ul> <p>The assessment has identified three additional residential buildings close to the Proposed Scheme; Dunton Hall, Cuttle Mill Fishery and 254 Lock House Lane, Curdworth, where the daytime forecast noise level does not exceed the threshold set in the Regulations but the forecast night-time noise level would exceed the World Health Organization’s Interim Target of 55dB, or the maximum noise level (dependent on the number of train passes) as a train passes exceeds the criterion. It is estimated that these buildings will also be offered noise insulation as described previously in the Avoidance and mitigation measures section. These are also identified as being likely to qualify for noise insulation as a consequence of construction noise as described earlier in this section. These buildings are indicated on</p>	<p>Yes</p> <p>One dwelling (Dunton Stables) that was identified in the main ES as is estimated as likely to qualify for discretionary noise insulation is instead estimated as likely to qualify for noise insulation through the Noise Insulation Regulations.</p> <p>One additional dwelling (Cuttle Mill Fishery) is identified as being subject to a significant adverse effect, and is consequently estimated to be likely to qualify for (discretionary) noise insulation.</p> <p>The mitigation measures, including noise insulation will reduce noise inside all dwellings such that it will not reach a level where it would significantly affect residents.</p> <p>Mapping reflecting these changes is included in the SES and AP2 ES Map series SV01, SV-02, SV03, SV-04 and SV-05 (Volume 5: Sound, Noise and Vibration Map Book) and the predicted operational sound, noise and vibration levels at Cuttle Mill Fishery are contained in SES and AP2 ES Volume 5: Appendix SV-004-020.</p>

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
		and vibration, Map series SV-05.	AP2 ES Volume 5: Map Book – Sound, noise and vibration, Map series SV-05.	

## **2.4 Topics included in the SES assessment**

- 2.4.1 The changes described in Section 2.1 result in new or different significant effects in respect of cultural heritage and ecology which are described in Section 3. The changes described in Section 2.1 also result in new or different significant effects in respect of traffic and transport which are described in Section 6.

## 3 Assessment of changes

### 3.1 Cultural heritage

#### Introduction

- 3.1.1 This section of the report describes the environmental baseline in relation to cultural heritage that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the changes introduced in Section 2, compared to the original scheme. Consideration is given to effects on the value of heritage assets as a result of new survey data.

#### Scope, assumptions and limitations

- 3.1.2 The assessment scope, key assumptions and limitations for cultural heritage are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

#### Changes of relevance to this assessment

- 3.1.3 The following changes are relevant to this assessment:
- geophysical surveys undertaken since the main ES; and
  - an area of woodland likely to be added to the ancient woodland inventory at Walker’s Spinney, Middleton.

#### Environmental baseline

##### *Existing baseline*

- 3.1.4 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 heritage assets is provided in Volume 2, CFA20, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical surveys for archaeology; and a further review of historic mapping and other available historic data sources to verify the status of a number of sites which are being considered for inclusion on the ancient woodland inventory.
- 3.1.5 A summary of the baseline information relevant to the assessment of new or different effects is provided below. Further details of additional baseline information obtained since the main ES is provided in Volume 5: Appendix CH-004-020 and CH-002-020 of this document. For those assets described in the main ES, further details are provided in the baseline reports, gazetteer of heritage assets, impact assessment tables and survey reports in Volume 5 of the main ES and are shown on maps CH-01 (Heritage Assets within Study Area), CH-02 (Designated Heritage Assets) and CH-03 Archaeological Character Sub-zones. An updated gazetteer of heritage assets is provided in Appendix CH-002-020 of this document.

### **Designated assets**

- 3.1.6 An additional area of woodland that is likely to be added to the ancient woodland inventory has been identified at Walker’s Spinney, Middleton (asset reference<sup>1</sup> CWM149).

### **Non-designated assets**

- 3.1.7 Geophysical survey at land to the south of Faraday Avenue and east of the A446 Lichfield Road (Survey CNo27; WSI-CFA20-001, Volume 5: Appendix CH-004-020 of this document), has identified potential ditched boundaries and pits of low value in the southern part of the survey area. This is an additional non-designated asset to those reported in the main ES (asset reference CWM150). In addition, survey in the same area did not support the presence of a substantial enclosure (asset reference CWM001) previously identified by cropmarks in the main ES. The value of this asset has therefore been reduced from moderate to low.
- 3.1.8 Geophysical survey at land between Kingsbury Road (A4097) and the M42 (Survey CNo30; WSI-CFA20-004: Volume 5: Appendix CH-004-020 of this document) recorded a large quantity of modern ferrous and ceramic debris possibly associated with the construction of the M42, to the west of Mullensgrove Farm. This indicates the likely disturbance of any archaeological remains at the site of the potential deserted settlement (asset reference CWM014). The value of the asset has, therefore, been changed from moderate to low.
- 3.1.9 Geophysical survey north of Middleton (Survey CNo34; WSI-CFA20-008; Volume 5: Appendix CH-004-020 of this document) has identified anomalies possibly representing short sections of ditch and a number of circular pits. Two large potential pits are located at the north-west part of the survey area. Ditches at the south-western and eastern parts of the site may relate to former field boundaries. A number of other potential archaeological features are dispersed across the survey area. This is an additional non-designated asset of to those reported in the main ES (asset reference CWM152), and is of low value.

### *Future baseline*

#### **Construction (2017)**

- 3.1.10 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 3.1.11 None of the identified developments affects the assessment of the SES scheme’s likely construction impacts on cultural heritage.

#### **Operation (2026)**

- 3.1.12 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

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<sup>1</sup> Cultural heritage assets are identified with a unique reference code, CWMXXX; further detail on these assets can be found in the Gazetteer in Volume 5 of the main ES: Appendix CH-002-020.

- 3.1.13 None of the identified developments affects the assessment of the SES scheme's likely operational impacts on cultural heritage.

### **Effects arising during construction**

#### *Avoidance and mitigation measures*

- 3.1.14 The draft CoCP (Volume 5: Appendix CT-003-000 in the main ES) sets out the provisions that will be adopted to control effects on cultural heritage assets.

#### *Assessment of impacts and effects*

##### **Temporary effects**

- 3.1.15 There will be no change in the likely significant temporary effects identified in the main ES as a result of the geophysical surveys undertaken.

- 3.1.16 The identification of an additional area of woodland at Walker's Spinney (asset reference CWM149) that is likely to be added to the ancient woodland inventory will give rise to a new significant effect. During construction the current rural setting of the woodland will be disrupted by activities associated with the construction of embankments and the removal of areas of the woodland. This will result in a temporary low adverse impact and moderate adverse significant effect not reported in the main ES.

##### **Permanent effects**

- 3.1.17 The main ES reported a high adverse impact on a possible enclosure (asset reference CWM001) of moderate value, giving rise to a major adverse effect, which was significant. The results of geophysical survey have reduced the value of this asset from moderate to low. This will change the level of significance of the effects reported in the main ES from major to moderate adverse. This is a different significant effect to that reported in the main ES (refer to SES and AP2 Volume 5: Appendix CH-003-020).
- 3.1.18 An additional non-designated asset has been identified by geophysical survey (asset reference CWM150) comprising potential ditched boundaries and pits of low value. The asset is wholly within the land required for construction of the scheme and will be removed. This will result in a high adverse impact on the asset and moderate adverse effect, which is significant. This is a new significant effect not reported in the main ES (refer to SES and AP2 Volume 5: Appendix CH-003-020 and map series CH-01-114b).
- 3.1.19 The main ES reported a high adverse impact on the site of a possible deserted settlement (asset reference CWM014) of moderate value, giving rise to a major adverse effect, which was significant. The results of geophysical survey have reduced the value of this asset from moderate to low. This will change the level of significance of the effects reported in the main ES from major to moderate adverse. This is a different significant effect to that reported in the main ES (refer to SES and AP2 Volume 5: Appendix CH-003-020).

- 3.1.20 The identification of an additional area of woodland at Walker’s Spinney (asset reference CWM149) that is likely to be added to the ancient woodland inventory will give rise to a new significant effect. The woodland will be partially removed by the construction of the Church Lane embankment. This will result in a new low adverse impact and moderate adverse significant effect not reported in the main ES (refer to SES and AP2 Volume 5: Appendix CH-003-020).
- 3.1.21 An additional non-designated asset has been identified by geophysical survey (asset reference CWM152) comprising a number of circular and linear anomalies indicating the potential presence of pits and short sections of ditch of low value. The asset is partly within the land required for construction of the scheme. This will result in a high adverse impact on the asset and moderate adverse effect, which is significant. This is a new significant effect not reported in the main ES (refer to SES and AP2 Volume 5: Appendix CH-003-020 and map series CH-01-116).

#### *Other mitigation measures*

- 3.1.22 No further mitigation measures are required other than those set out as part of the draft CoCP (Volume 5: Appendix CT-003-000).

#### *Cumulative effects*

- 3.1.23 There are no new or different likely significant cumulative effects for cultural heritage as a result of the SES changes acting in combination with the other SES changes, or as a result of any relevant committed developments interacting with the revised scheme.

#### *Summary of likely residual significant effects*

- 3.1.24 A number of new and different significant residual effects have been identified on non-designated assets as a result of geophysical survey undertaken since September 2013.
- 3.1.25 Three additional non-designated assets have been identified that experience residual significant effects, and therefore constitute new significant effects to those reported in the main ES. These are:
- potential ditch boundaries and pits (asset reference CWM150) will experience a permanent moderate adverse residual effect;
  - Walker's Spinney (asset reference CWM149), a woodland likely to be added to the ancient woodland inventory, will experience a temporary moderate adverse residual effect and a permanent moderate adverse residual effect; and
  - potential pits and short sections of ditch (asset reference CWM152) will experience a permanent moderate adverse residual effect.
- 3.1.26 Two non-designated assets have been identified as experiencing different significant residual effects to those reported in the main ES as a result of geophysical survey altering the value of the asset. These are:
- possible enclosure (CWM001) where a change in value from moderate to low has resulted in the residual effect reducing from major to moderate adverse; and

- a possible deserted settlement (CWM014) where a change in value from moderate to low has resulted in the residual effect reducing from major to moderate adverse.

### Effects arising from operation

- 3.1.27 There are no new or different operational effects for cultural heritage as a result of new geophysical surveys or the identification of woodland at Walker's Spinney, Middleton which is likely to be added to the ancient woodland inventory.

## 3.2 Ecology

### Introduction

- 3.2.1 This section of the report describes the environmental baseline in relation to ecology that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the changes introduced in Section 2, compared to the original scheme. Consideration is given to the potential for impacts on species, habitats and sites designated on the basis of their importance for nature conservation.

### Scope, assumptions and limitations

- 3.2.2 The assessment scope for ecology is as set out in Volume 1 of the SES and AP2 ES. The key assumptions and limitations, and the methodology for determining significance of effects are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.
- 3.2.3 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. 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 SES Scheme.

### Changes of relevance to this assessment

- 3.2.4 The following changes are relevant to this assessment:
- since publication of the main ES, Coleshill Sludge Lagoons at Coleshill Sewage Treatment Works has been designated as a LWS; and
  - additional cultural heritage baseline relating to ancient woodland at Walker's Spinney.

### Environmental baseline

#### *Existing baseline*

- 3.2.5 The ecological baseline for the assessment takes into account baseline information collected in support of the main ES, which included field survey data, aerial photography and relevant existing information gathered from national organisations and regional and local sources. A full list of ecological data sources is provided in Volume 2, CFA20, Section 7 of the main ES.

- 3.2.6 The assessment also takes into account additional desk-based study and survey undertaken since September 2013. Supplementary information relevant to the assessment in this CFA includes additional information on woodland at Walker's Spinney. Further information has also been obtained from Warwickshire Biological Records Centre.
- 3.2.7 A summary of the baseline information relevant to the assessment is provided below. Further details of all baseline information obtained since September 2013 is provided in the Volume 5: Appendix EC-001-003. For those receptors described in the main ES, further details are provided in Volume 2, CFA20, Section 7 and in Volume 5 maps EC-01 to EC-12 of the main ES.

### *Designated sites*

- 3.2.8 Coleshill Sludge Lagoons LWS has been designated since the submission of the main ES. It consists of a series of disused sludge lagoons stretching for almost 1km alongside the River Tame within the grounds of the Coleshill Sewage Treatment Works. The majority of the LWS falls within CFA20 although the southern and eastern edge falls within CFA19. The River Tame forms the southern boundary, with a water conduit forming the northern boundary, beyond which is the National Distribution Park at Hams Hall. The lagoons once contained a series of habitats ranging from open water and swamp through drying mud to older disused ones which were colonised by sallow scrub. Since the lagoons became redundant about ten or more years ago they no longer receive liquid effluent and are drying out.
- 3.2.9 The LWS has been designated for its mosaic of habitats including swamp, bare ground, pioneer habitats, steep banks, dense and open scrub and damp areas. The site also has several county rare or notable species including blue fleabane, common cudweed and common meadow-rue. The mosaic habitat is important for breeding warblers, including willow warbler and there are two breeding birds on the RSPB/BTO Red-list of Birds of Conservation Concern associated with the lagoons including grasshopper warbler. The LWS is in two parts; an eastern and western section separated by an operational area in the centre of Coleshill Sewage Works. The LWS is of county/metropolitan value.
- 3.2.10 A review of historical mapping and other relevant data sources has been carried out on Walker's Spinney since September 2013. Walker's Spinney is currently being considered by Natural England for inclusion on the ancient woodland inventory and is likely to be added to the ancient woodland inventory. For the purposes of assessment it is considered as ancient woodland.
- 3.2.11 Statutory and non-statutory designated sites within this area are described in Volume 2, CFA20, Section 7 and are shown on Volume 5: maps EC-01-056b to EC-01-058a of the main ES.

### *Habitats*

- 3.2.12 Extended Phase 1 habitat surveys and National Vegetation Classification (NVC) surveys were carried out at selected locations within Coleshill Sewage Treatment Works to support the main ES. The habitats within Coleshill Sewage Treatment Works were described in the main ES (CFA20, Volume 2, Section 7) as the greater part lies within CFA20. Surveys found the land to contain a mosaic of vegetation communities

that have established on disused gravel settlement beds, predominantly tall ruderal vegetation and unmanaged grasslands with scattered trees and scrub, and areas of reed swamp. No Warwickshire notable plant species were identified. The grassland community surveyed was considered to be indicative of unmanaged habitats on high nutrient soils and was given local/parish value in the main ES.

- 3.2.13 Further information available on habitats within Coleshill Sewage Treatment Works, from the citation for Coleshill Sludge Lagoons LWS, indicates that the mosaic of habitats has greater than the local/parish value stated in the main ES. Based on the additional information received from Warwickshire Biological Records Centre the mosaic of habitats within Coleshill Sewage Treatment Works is of district/borough value.
- 3.2.14 Walker's Spinney is a woodland of 1.6ha in size adjacent to Church Lane, Middleton. It contains lowland mixed deciduous woodland, a habitat of principal importance. An NVC survey undertaken as part of the main ES identified a mosaic of wet and dry woodland communities with a diverse ground flora in the wetter areas. The ground flora species does include a number of ancient woodland indicator species such as bluebell, wild garlic, moschatel, pignut, wood millet and dog's mercury. Within the main ES this woodland was identified to be of local/parish value. Based on the survey and subsequent detailed heritage review, the woodland supports habitat of principal importance and is likely to be added to the ancient woodland inventory. The woodland is, as a precaution, considered as being of district/borough value.

#### *Protected and/or notable species*

- 3.2.15 The citation for Coleshill Sewage Treatment Work mentions plant species recorded in 2011 including the Warwickshire notable species: blue fleabane, common cudweed and common meadow-rue. These plants, reported on the site citation and accompanying information, are noted in the east of the site, outside the land required for construction of the original scheme. NVC surveys carried out in support of the main ES, within land required for construction of the original scheme did not identify these species. The population of these species is each considered to be of no more than local/parish value.
- 3.2.16 Grasshopper warbler, a species listed on the RSPB/BTO Red-list of Birds of Conservation Concern<sup>2</sup>, bred at Coleshill Sewage Treatment Works, based on surveys carried out on the site in 2011. However, this species was not recorded during the 2013 breeding bird surveys carried out at the site to support the main ES, and the species is thought to no longer breed on site. One other widespread nationally red-listed bird and several widespread amber-listed breeding species were recorded during HS2 surveys to support the main ES. The evaluation of the breeding bird assemblage within Coleshill Sewage Treatment Works, reported in the main ES as of local/parish value, has not changed.

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<sup>2</sup> Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009), *Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man*. British Birds 102, pp296-341.

### *Future baseline*

#### **Construction (2017)**

- 3.2.17 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 3.2.18 None of the identified developments affects the assessment of the SES scheme's likely construction impacts on ecology.

#### **Operation (2026)**

- 3.2.19 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 3.2.20 None of the identified developments affects the assessment of the SES scheme's likely operational impacts on ecology.

### **Effects arising during construction**

#### *Avoidance and mitigation measures*

- 3.2.21 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES), which includes translocation of protected species where appropriate.

#### *Assessment of impacts and effects*

##### **Designated sites**

- 3.2.22 There will be habitat loss and severance within the Coleshill Sludge Lagoons LWS as a result of the land required for construction of the route. This LWS was not reported in the main ES as it was designated by Warwickshire County Council after publication of the main ES.
- 3.2.23 An area of 5.9ha of Coleshill Sludge Lagoons LWS is located within the land required for construction. This will result in a loss of approximately 27% of the total LWS area and will entirely remove the western part of the LWS and a wet lagoon in the eastern part of the LWS. As the retained part of the LWS will be situated almost entirely east of the scheme it is unlikely there will be impacts from fragmentation or severance of the habitats within the LWS. The scheme will result in an adverse effect on the integrity of Coleshill Sludge Lagoons LWS that is significant at the county/metropolitan level. This is a new significant effect which is not reported in the main ES.

##### **Habitats**

- 3.2.24 The habitats within the Coleshill Sewage Treatment Works were not valued as a mosaic of habitats within the main ES and there was no significant effect reported on individual habitats within the works as these were valued at a local/parish level. The scheme will result in the loss of 5.9ha within Coleshill Sewage Treatment Works including areas containing ruderals, grassland, sludge (bare ground at edges of former sludge beds), willow scrub and one of the only remaining areas of open water and reed

swamp within the works. The scheme will result in an adverse effect on the mosaic of habitats that is significant at the district/borough level. This is a new significant effect which was not reported in the main ES.

- 3.2.25 Based on the revised baseline information, 0.2ha of Walker's Spinney lost as part of the original scheme is now likely to be reclassified as ancient woodland. The SES scheme will result in an adverse effect on the conservation status of the ancient woodland at Walker's Spinney that is significant at a district/borough level. This is a new significant effect which is not reported in the main ES. It is unlikely that the SES changes will result in any other new or different effects on habitat receptors of relevance at more than the local/parish level. Additional local/parish level effects (i.e. in addition to those identified in the main ES) arising from SES changes are listed in Volume 5: Appendix EC-003-003.

### **Protected and/or notable species**

- 3.2.26 The new baseline data will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 3.2.27 There are no new or different likely cumulative effects for ecology as a result of the SES changes acting in combination with an AP1 amendment or as a result of any relevant committed development interacting with the AP2 revised scheme.

### *Other mitigation measures*

- 3.2.28 There is a requirement for additional compensation to address impacts on the newly designated Coleshill Sludge Lagoons LWS and associated habitats. Appropriate measures will be brought forward either in a subsequent AP or by direct agreement with landowners.
- 3.2.29 There is a requirement for further compensation to address the loss of 0.2ha of ancient woodland at Walker's Spinney. Ancient woodland is irreplaceable. A suitable receptor sites has been identified that will accommodate the translocated ancient woodland soil with its associated seed bank. This site is located north of the Church Lane realignment on the western side of the route, located between the embankment and Highfields Farm. This site is approximately 30m from the retained area of Walker's Spinney. It is adjacent to proposed landscape planting so ensures there is still woodland connectivity in the locality and is within the scheme limits.

### *Summary of likely residual significant effects*

- 3.2.30 The SES scheme will result in losses within Coleshill Sludge Lagoons LWS that will result in a new adverse residual effect that is significant at the county/metropolitan level.
- 3.2.31 The majority of the LWS falls within CFA20 although the southern and eastern edge falls within CFA19 and consequently this designated site is also reported in CFA19 Volume 2 report.

- 3.2.32 The scheme will result in a new adverse residual effect on the mosaic of habitats within Coleshill Sewage Treatment Works that is significant at the district/borough level. This residual adverse effect was not reported in the main ES.
- 3.2.33 Ancient woodland is an irreplaceable resource. The loss of 0.2ha of ancient woodland at Walker's Spinney will therefore result in a new adverse likely residual significant effect at the district/borough level which was not reported in the main ES.

#### **Effects arising from operation**

- 3.2.34 There are no new or different operational effects for ecology as a result of additional baseline information and the designation of Coleshill Sludge Lagoons as a LWS.

# Part 2: Additional Provision 2 Environmental Statement

## 4 Summary of amendments

- 4.1.1 Table 3 provides a summary of the amendments in the Curdworth to Middleton community forum area (CFA20) and Figure 2 shows the locations.
- 4.1.2 Amendments in this CFA result in significant changes to waste arisings, which are reported in Volume 5, Appendix WM-001-000 of the SES and AP2 ES.
- 4.1.3 An assessment of the likely significant environmental effects associated with the disposal of construction, demolition, excavation, worker accommodation site and operational waste has been undertaken for the SES scheme and AP2 scheme as a whole. See Volume 3, Section 19 of the SES and AP2 ES for further information.

Table 3: Summary of amendments in CFA2o

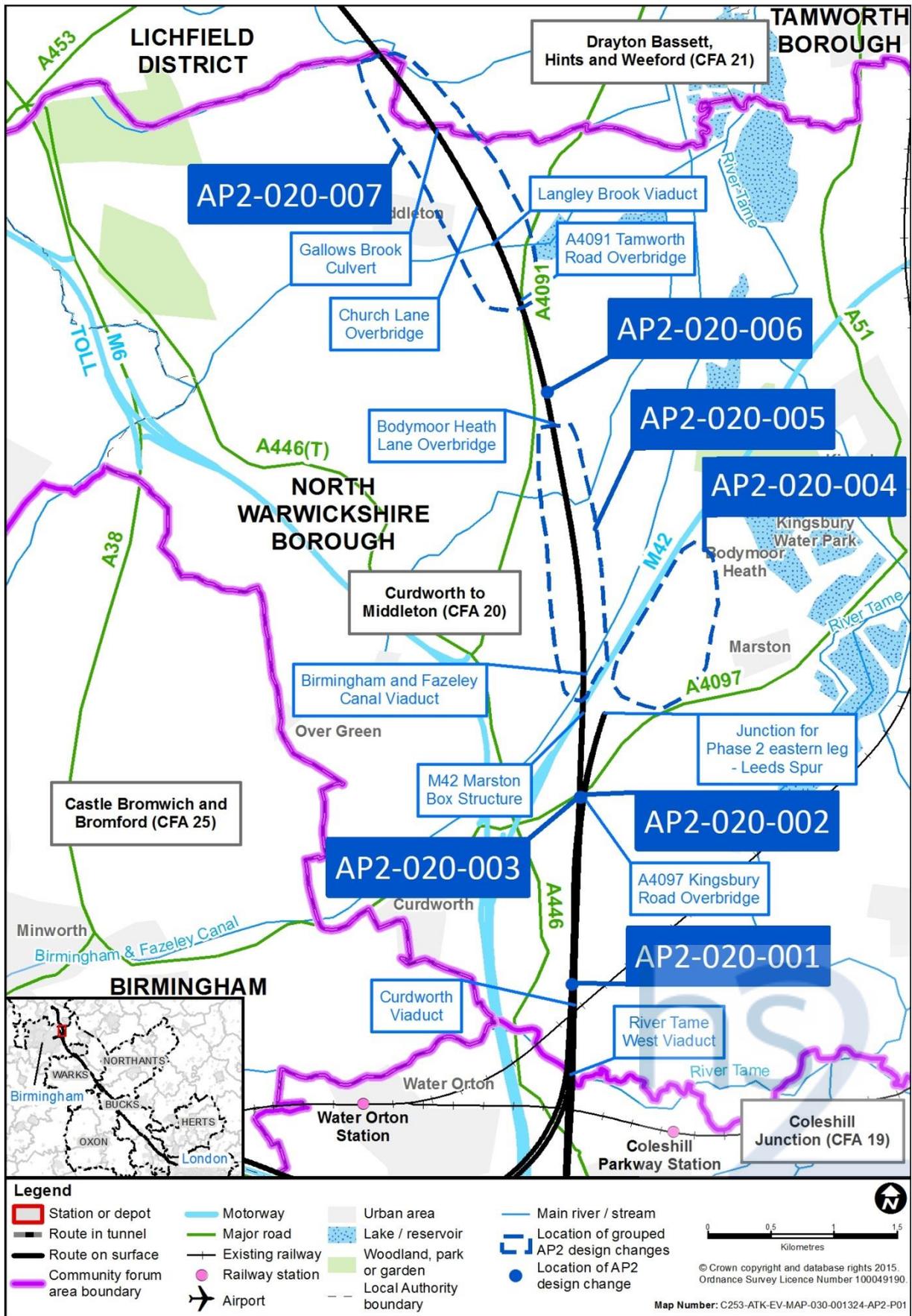
Name of amendment	Description of the original scheme	Description of the AP2 scheme
<p>Alternative temporary diversion of Faraday Avenue (AP2-020-001)</p>	<p>Faraday Avenue was to be lowered to pass under the route via an underbridge. A temporary road diversion to the north was to be implemented to provide a link between the A446 and Faraday Avenue. Under this junction arrangement, Faraday Avenue will be restricted to a single lane in each direction during construction.</p>	<p>Businesses along Faraday Avenue rely on the dual 2-lane carriageway as their sole commercial access. Through discussions with Warwickshire County Council and a number of major companies in the business park, it was determined that the temporary arrangement described in the main ES would not provide the desired resilience.</p> <p>An alternative temporary diversion has been designed which will connect into the existing roundabout rather than a temporary T-junction, maintaining a minimum of three lanes over two carriageways at all times. At other times all four lanes will remain open although traffic management may be used. A small additional area of highway land (26m<sup>2</sup>) adjacent to the junction between the A446 Lichfield Road and Faraday Avenue will be required on a temporary basis.</p>
<p>Provision of access to severed land at Dunton Hall Farm (AP2-020-002)</p>	<p>Agricultural land associated with Dunton Hall to the east of the route was left severed as no direct access was provided from the public highway.</p>	<p>The Dunton Hall Farm amendment includes provision of two accesses to a previously severed area of land associated with Dunton Hall.</p> <p>The first access will provide a connection for agricultural use only from the A4097 Kingsbury Road. The second access will provide a connection from Hams Lane to accommodate traffic associated with existing non-agricultural uses on this land. The access at Hams Lane will require additional land on both a temporary and permanent basis to accommodate necessary sight lines.</p>
<p>Revised access to Mullensgrove Farm (AP2-020-003)</p>	<p>Seven buildings at Mullensgrove Farm were identified for demolition and much of the holding was to be acquired temporarily or permanently. The A4097 Kingsbury Road overbridge main compound, with worker accommodation was to be provided west of the route.</p>	<p>The temporary worker accommodation within the A4097 Kingsbury Road overbridge main construction compound will be relocated to the west, away from the A4097 Kingsbury Road, so as to not preclude the future replacement of Mullensgrove Farm buildings by private planning application.</p>
<p>Kingsbury Road railhead area amendments (AP2-020-004)</p>		
<p>Amendments to landscape earthworks and planting</p>	<p>The provision of mitigation planting for the area surrounding the north, east and southern portions of the Kingsbury Road railhead</p>	<p>Although the Kingsbury Road railhead is temporary its long-term nature is recognised. As a result the landscape mitigation design at the Kingsbury Road railhead has been enhanced to provide additional visual screening.</p>

Name of amendment	Description of the original scheme	Description of the AP2 scheme
		<p>Landscape mitigation will be provided around the area of the Leeds Spur, the headshunt track, reception sidings and the balancing ponds. Landscape mitigation earthworks around the railhead (north, east and southern sides) will be revised.</p> <p>Seeney Lane will be realigned to the north of the route described in the main ES, to run along the toe of the landscape earthworks to the north of the Kingsbury Road railhead. Landscape mitigation will be provided around the area of the Leeds Spur, the headshunt track, reception sidings and the balancing ponds. Landscape mitigation earthworks around the railhead (north, east and southern sides) will be revised.</p>
Revisions to the balancing pond	A balancing pond was proposed to the north of the railhead.	Division of the balancing pond into two and reorientation of the ponds into the area east of the Leeds Spur. This will allow for rearrangement of the pond design on the sloping ground alongside the headshunt track rather than across the slope.
Reclassification of Seeney Lane	The upgrading of Seeney Lane bridleway M23a to a byway open to all traffic to replace connectivity across the M42 lost by the closing of Marston Lane to vehicular traffic.	If upgraded to a byway open to all traffic, Seeney Lane could become a route for unwanted cut-through traffic. Seeney Lane will therefore be retained as a bridleway with private access, rather than a byway open to all traffic.
Temporary diversion of Footpath M23	The closure of Footpath M23 until the permanent diversion of the footpath via the Seeney Lane overbridge is available following closure of the Kingsbury Road railhead.	The temporary diversion of Footpath M23 until closure of the Kingsbury Road railhead. This arrangement will minimise the duration that Footpath M23 would need to be closed. During construction of the railhead, Footpath M23 may be subject to minor temporary diversions close to its existing alignment.
North Wood area amendments (AP2-020-005)		
Revised access route to the Cuttle Mill midpoint auto-transformer station and balancing pond to the east of Cuttle Mill Fishery	The Cuttle Mill midpoint auto-transformer station will be located to the west of the route, north of the Birmingham and Fazeley Canal, to the south of Cuttle Mill Fishery. Access to the midpoint auto-transformer station as well as a balancing pond to be provided from the A4091 Tamworth Road, via Cuttle Mill Lane, running to the south-west of the Cuttle Mill Fishery.	<p>An alternative route has been identified which will result in less land being removed from agricultural use in this area.</p> <p>The access to the midpoint auto-transformer station and balancing pond will be realigned to the east of Cuttle Mill Fishery, following the western toe of the North Wood Embankment landscape earthworks.</p>

Name of amendment	Description of the original scheme	Description of the AP2 scheme
Revised access route to the balancing pond near North Wood	Access to the proposed balancing pond north of North Wood will extend eastward from the A4091 Tamworth Road, following the southern boundary of North Wood and approaching the balancing pond from the south-west corner.	<p>The access was located in a field boundary strip set aside as part of an environmental stewardship scheme. The route affected the edge of an ancient woodland.</p> <p>The access to the balancing pond to the north of North Wood will be realigned to follow an existing field boundary to the north and avoid the stewardship and ancient woodland areas.</p>
Revisions to the landscape earthworks and planting between Cuttle Mill Fishery and Bodymoor Heath Lane	Permanent mitigation planting surrounding Cuttle Mill Fishery to compensate for the loss of ancient woodland from North Wood Local Wildlife Site; and extending northward along the east side of the route.	It has been identified that the mitigation planting could be relocated to an area of lower quality Subgrade 3b agricultural land within the same agricultural holding to reduce the amount of higher quality agricultural land removed from use. The landscape earthworks and planting will therefore be revised on the east side of the route northward from Cuttle Mill Fishery to Bodymoor Heath Lane.
Reduction in the width of the North Wood landscape earthworks	Landscape earthworks were located between the Cuttle Mill underbridge and the North Wood Scheduled Monument, on the east side of the route near to the North Wood embankment.	It has been identified that the outer slope of the landscape earthworks on the east side of the route at this location could be designed with steeper gradients to minimise the amount of land temporarily disturbed and maximise the area of level agricultural land available for use on a permanent basis. The full area of the outer slope of the landscape earthworks will be subject to landscape planting as the steeper slopes will make this area unsuitable for return to agricultural use.
Revised diversion of Footpath T17 at Bodymoor Heath Lane (AP2-020-006)	Footpath T17 will be permanently realigned at Hunts Green Farm on the west side of the route along the realigned Bodymoor Heath Lane and over the realigned Bodymoor Heath Lane overbridge, reconnecting with the existing route of Footpath T17 on the east side of the route.	It has been identified that a longer section of the existing footpath could be provided off-road, which would improve connections to the local footpath network for leisure users. Footpath T17 will be permanently realigned running along its existing alignment for a longer stretch on the western side of the route, then southward within the proposed landscape planting parallel to the A4091 Tamworth Road. The footpath will cross over the diverted Bodymoor Heath Lane overbridge to the east and then run northwards within the planting on the east side of the route, rejoining the existing Footpath T17 alignment at the area proposed for wetland habitat creation in the main ES. An alternative route with a longer on-road section but shorter length has been identified for non-leisure users. The amendment will require a small area of additional land on a temporary and permanent basis.
Middleton area amendments (AP2-020-007)		

Name of amendment	Description of the original scheme	Description of the AP2 scheme
<p>Lowering of the alignment of the HS2 route northwards of Middleton</p> <p>(continuing into CFA21 Drayton Bassett, Hints and Weeford AP2-021-001)</p>	<p>The proposals outlined in the Bill provided for the route between Park Lane, Middleton and CFA21 (Drayton Bassett, Hints and Weeford) to alternate between cutting and embankment. Planting and landscape earthworks were proposed throughout this section. This amendment addresses only the section of the scheme within CFA20.</p> <p>The proposals included a viaduct with five spans approximately 90m long over Langley Brook (Langley Brook viaduct), an embankment approximately 120m long (Church Lane embankment) with a height of approximately 5m, and an embankment approximately 1.1km long (Trickley Coppice embankment) of varying heights extending just past Gallows Brook. Church lane would be diverted to the north onto a new overbridge.</p>	<p>It has been identified that the section of scheme between Park Lane, Middleton and CFA21 (Drayton Bassett, Hints and Weeford) could be lowered by a maximum of 3.3m to reduce the environmental impact of the scheme.</p> <p>The viaduct over Langley Brook will be lowered and shortened to 40m long, comprising three spans. The route will be lowered by approximately 0.75m at the southern end of the Langley Brook viaduct. At the Church Lane embankment, the route will be lowered by approximately 1.1m and the Church Lane overbridge lowered by approximately 2.1m. At the boundary with CFA 21 (Drayton Bassett, Hints and Weeford), the route will be lowered by approximately 2.5m to reduce visual intrusion and noise.</p> <p>To the north of Langley Brook viaduct, up to the CFA21 (Drayton Bassett, Hints and Weeford) boundary, landscape earthworks will be adjusted to fit the new vertical alignment. The lowering of the route will allow earthworks to be generally reduced in width leading to a reduction in the land and earthmoving required.</p>
<p>Relocation of Church Lane overbridge satellite compound and balancing pond</p>	<p>The Church Lane overbridge satellite compound was proposed to the west of the route on the south side of Church Lane. A balancing pond was to be provided to the east of the route.</p>	<p>The Church Lane overbridge satellite compound will be relocated to the east side of the route, south of Church Lane, to move the construction activities away from the village of Middleton. The balancing pond will be relocated in the same location as the construction compound adjacent to the route, immediately south of the realigned Church Lane.</p>
<p>Revision to planting to the south of Gallows Brook, west of the HS2 route</p>	<p>Gallows Brook would be culverted below the railway embankment, with an associated diversion along the western edge of the route.</p>	<p>It has been identified that the shape of the remaining land form to the west of the route would be difficult to farm productively. The mitigation planting design will therefore be revised to the south of Gallows Brook on the west side of the route, to include grading of earthworks such that they mirror the existing field boundaries. This revision will be part of the overall earthworks associated with AP-020-007.</p>

Figure 2: Locations of amendments in CFA20



## 5 Assessment of amendments

### 5.1 Alternative temporary diversion of Faraday Avenue (AP2-020-001)

- 5.1.1 The Bill provides for an underbridge allowing Faraday Avenue to cross under the route (refer to main ES maps CT-06-112b and CT-05-112b, grid reference E6, Volume 2, CFA20 Map Book). A temporary road diversion to the north was to be implemented to provide a link between the A446 Lichfield Road and Faraday Avenue. Land was provided for a temporary T-junction at the intersection of the diverted Faraday Avenue at the A446 Lichfield Road.
- 5.1.2 Since submission of the Bill, it was identified that businesses along Faraday Avenue rely on the dual two-lane carriageway as their sole commercial access (see map CT-05-112b, grid reference E6 in the SES and AP2 ES Volume 2, CFA20 Map Book). Through discussions with Warwickshire County Council and a number of major companies in the business park, it was determined that the temporary arrangement described in the main ES would not provide the desired resilience. An alternative temporary diversion was designed which will connect into the existing roundabout with the A446 Lichfield Road rather than the temporary T-junction, maintaining a minimum of three lanes over two carriageways at all times. Where possible all four lanes will remain open with the use of traffic management.
- 5.1.3 The final layout of Faraday Avenue will remain the same as assessed in the original scheme and will cross under the route.
- 5.1.4 The following general sequence of activities will be required to undertake the construction works:
- diversion of utilities;
  - temporary road constructed and traffic diverted onto temporary route;
  - construction of the HS2 main line;
  - Faraday Avenue lowered to pass under the HS2 main line via an underbridge and traffic diverted back on to the original route; and
  - a temporary road removed and land restored.
- 5.1.5 The Bill limits include almost all of the land required to facilitate this amendment. However, a small area of highway land (26m<sup>2</sup>) adjacent to the A446 Lichfield Road/Faraday Avenue roundabout outside the Bill limits will be required on a temporary basis.
- 5.1.6 The period the temporary diversion will be in use while the works to lower Faraday Avenue are completed is expected to be approximately 22 months.

- 5.1.7 The implementation of the junction arrangement and construction sequence is not considered to make changes that will require a reassessment of the effects or proposed mitigation as set out in the main ES with respect to: agriculture, forestry and soils; air quality; community; cultural heritage; ecology; land quality; landscape and visual; socio-economics; sound, noise and vibration; and water resources and flood risk assessment (FRA). However, there are changes where reassessment is considered to be required in respect of traffic and transport.

### **Traffic and transport**

#### *Scope, assumptions and limitations*

- 5.1.8 The assessment scope, key assumptions and limitations for traffic and transport are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

#### *Existing baseline*

- 5.1.9 The environmental baseline for traffic and transport is set out in Volume 2, CFA20, Section 12 of the main ES for the existing baseline. There is no change to the existing baseline as reported in the main ES.
- 5.1.10 Traffic flows on Faraday Avenue are 16,000 vehicles per weekday with a maximum weekend traffic flow of 6,500 vehicles per day. Analysis shows that the junction of the A446 Lichfield Road and Faraday Avenue operates within capacity.

#### *Future baseline*

##### **Construction**

- 5.1.11 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA20, Section 12.3).

##### **Operation (2026 and 2041)**

- 5.1.12 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES (Volume 2, CFA20, Section 12.3).

#### *Effects arising during construction*

- 5.1.13 The alternative temporary diversion of Faraday Avenue will maximise the amount of time that the dual carriageway is maintained and will restrict single lane working to seven 24-hour periods to be undertaken over weekends.
- 5.1.14 Weekend traffic levels are significantly lower than during the weekday and do not exceed 500 vehicles per hour in any direction. This is well within the capacity of a single lane and this will therefore not result in any significant effects on traffic accessing the area as a result of the weekend restrictions.
- 5.1.15 A revised alignment into the junction of the A446 Lichfield Road and Faraday Avenue is also proposed and the effects of this are reported in Section 6 of this report relating to combined effects.

- 5.1.16 The alternative temporary diversion of Faraday Avenue will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Effects arising from operation*

- 5.1.17 The amendment has no impacts in operation and consequently there are no new or different operational effects for traffic and transport compared to those reported in the main ES.

#### *Mitigation and residual effects*

- 5.1.18 No changes to the mitigation measures reported in Volume 2, CFA20 of the main ES are required.

- 5.1.19 The amendment will not give rise to any new or different residual significant effects and will not change the level of significance of the effects reported in the main ES.

#### *Cumulative effects*

- 5.1.20 Cumulative effects are reported in Section 12, Volume 2, CFA20 of the main ES. The assessment includes for the cumulative effects of planned development by taking this into account within the background traffic growth. The assessment also considers in combination effects by taking into account traffic and transport movements from other areas.

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

- 5.2.1 The alternative temporary diversion of Faraday Avenue does not generate any new or different significant effects and will not change the significance of the environmental effects as set out in the main ES (Volume 2, CFA20, Curdworth to Middleton).

## **5.3 Provision of access to severed land at Dunton Hall (AP2-020-002)**

- 5.3.1 The Bill created a severed area of agricultural land associated with Dunton Hall to the east of the route for which vehicular access was not provided (refer to main ES maps CT-05-119 and CT-06-119, grid references F3 through I3 and F4 through I4, Volume 2, CFA20 Map Book).
- 5.3.2 Since submission of the Bill, the severance issue has been identified and the amendment therefore now includes provision of two access routes to this area of land associated with Dunton Hall.
- 5.3.3 The first access route provides for agricultural access only from the A4097 Kingsbury Road with a new short access track constructed through to the northern edge of the severed land associated with Dunton Hall (refer to maps CT-05-119 and CT-06-119, grid reference F4 in the SES and AP2 ES Volume 2, CFA20 Map Book) This connection will not require land outside of the existing Bill limits.
- 5.3.4 The second proposed access provides for access to the southern portion of the severed area of land via the HS2/farm access road described in the main ES west from Hams Lane. An additional short length of road will be required to connect the severed

land to the HS2/farm access road which will be extended eastward to Hams Lane (refer to maps CT-05-119 and CT-06-119, grid references J1 to J3 in the SES and AP2 ES Volume 2, CFA20 Map Book). The extended access track will be located alongside an existing field boundary adjacent to the National Grid substation compound. At the connection with Hams Lane, the second proposed access will cut through a small section of hedgerow and there will be some trimming back of the existing hedgerow to create suitable sight lines for turning onto Hams Lane.

- 5.3.5 The amendment will result in a net increase of 384m<sup>2</sup> in land required on a permanent basis to accommodate the access to Hams Lane.
- 5.3.6 The amendment is not considered to result in changes that will require a reassessment of the effects or proposed mitigation as set out in the main ES with respect to: agriculture, forestry and soils; air quality; community; land quality; socio-economics; sound, noise and vibration; traffic and transport; and water resources and flood risk assessment. However, reassessment is considered to be required in respect of cultural heritage; ecology; and landscape and visual assessment.

## Cultural heritage

### *Scope, assumptions and limitations*

- 5.3.7 The assessment scope, key assumptions and limitations for cultural heritage are as set out Volume 1, the SMR (Volume 5: Appendix CT-001 -000) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.

### *Existing baseline*

- 5.3.8 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 heritage assets is provided in Volume 2, CFA20, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical surveys for archaeology. A further review of historic mapping and other available historic data sources has also been carried out to verify the status of a number of woodlands in the vicinity of the route which are being considered for inclusion on the ancient woodland inventory.
- 5.3.9 Details of survey and desk based-work undertaken in this CFA since September 2013 is provided in Volume 5: Appendix CH-004-020 and Volume 5 map series CH-07, CH-09 and CH-10 where this is relevant to the assessment of a new or different significant effect.
- 5.3.10 The amendment does not result in a change to land required from any designated or non-designated heritage assets however the following assets located in the vicinity of the amendment are potentially affected through changes to their setting:
- CWM008 Sych Wood ancient woodland (high value);
  - CWM059 Dunton Hall, Barn and Pigeonhouse (moderate value); and
  - CWM060 Dunton Hall Garden (low value).

### *Future baseline*

#### **Construction (2017)**

- 5.3.11 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.3.12 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on cultural heritage.

#### **Operation (2026)**

- 5.3.13 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.3.14 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on cultural heritage.

### *Effects arising during construction*

- 5.3.15 The main ES reported a temporary high adverse impact and temporary major adverse effect upon Dunton Hall, Barn and Pigeonhouse (asset reference CWM059). The main ES also reported a temporary high adverse impact and temporary moderate adverse effect upon Dunton Hall Garden (asset reference CWM060). Both effects were as a result of the construction of the large cutting to the east of the assets affecting the assets' setting. When considered in the context of the original scheme, the amendment is not of sufficient scale to give rise to a different significant effect on these assets or change the level of significance of the effects reported in the main ES.
- 5.3.16 The main ES reported a moderate adverse effect on Sych Wood (asset reference CWM008), as a result of the removal of a small area of woodland and a change to its setting. The amendment will not result in a change to the land required from the asset. When considered in the context of the original scheme, the amendment is not of sufficient scale to give rise to a different significant effect on this asset or change the level of significance of effects reported in the main ES.

### *Effects arising from operation*

- 5.3.17 The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.3.18 The draft CoCP sets out the provisions that will be adopted to control effects on cultural heritage assets. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.3.19 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.3.20 There are no new or different likely significant cumulative effects for cultural heritage as a result of the amendment acting in combination with another amendment in AP2, or as a result of any relevant committed development interacting with the AP2 revised scheme.

### **Ecology**

#### *Scope, assumptions and limitations*

- 5.3.21 The assessment scope for ecology is set out in Volume 1 of the SES and AP2 ES. The key assumptions and limitations, and the methodology for determining significance of effects are set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.
- 5.3.22 To address any limitations in data, a precautionary baseline has been adopted according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. This constitutes a 'reasonable worst-case' basis for the subsequent assessment. The precautionary approach to the assessment identifies the likely significant ecological effects of the AP2 scheme.

#### *Existing baseline*

- 5.3.23 The ecological baseline of the land required for the Dunton Hall access has been based on field data collated for the main ES, aerial photography and relevant existing information gathered for the main ES from national organisations and regional and local sources including Warwickshire Biological Records Centre and Warwickshire Wildlife Trust.
- 5.3.24 A summary of the baseline information relevant to the assessment of the amendment is provided in the next section. This takes account of any new or updated baseline information provided in Volume 5: Appendix EC-001-003. For those receptors described in the main ES, further details are provided in Volume 2: CFA20, Section 7 and in Volume 5: maps EC-01 to EC-12 of the main ES.

### **Designated sites**

- 5.3.25 Hams Hall Woodlands LWS is located within 150m of the land required for the Dunton Hall access amendment. Hams Hall Woodlands LWS is made up of three component woodlands and two of these, Sych Wood and Hams Lane Woodland, are within 150m of the nearest land required for the amendment.
- 5.3.26 The three woodlands that together form the Hams Hall Woodlands LWS cover an area of 13.8ha and are relatively mature with a reasonable range of species typical of oak woodland and wet woodland communities. The LWS lies within the Tame Valley corridor, with the only other similar habitat in the district being Dunton Wood LWS, 1km north-west of Hams Hall Woodlands LWS. Hams Hall Woodlands LWS is lowland mixed deciduous woodland, a habitat of principal importance, and is of county/metropolitan value.

### **Habitats**

- 5.3.27 The additional land required for the amendment contains arable fields with some hedgerow boundaries and is adjacent to broadleaved woodland. The arable fields have negligible value, the woodland has local/parish value and the hedgerows surveyed as part of the main ES have local/parish value.

### **Protected and/or notable species**

- 5.3.28 Great crested newt surveys were undertaken in the wider local area in support of the main ES. Great crested newts were recorded within a water body at Dunton Hall which is approximately 700m from the land required for the amendment. No other water bodies with breeding great crested newts were recorded within 500m.
- 5.3.29 As part of the work to support the main ES, bat roost potential assessments of trees were undertaken of which three trees were identified as having medium potential for roosting bats within 150m of the amendment boundary. No confirmed bat roosts were recorded within these trees. Within the main ES it was reported that there was a population of bats using a tree roost, which is approximately 400m from the land required for the amendment, within woodland along Hams Lane.

### *Future baseline*

#### **Construction (2017)**

- 5.3.30 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.3.31 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on ecology.

#### **Operation (2026)**

- 5.3.32 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.3.33 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on ecology.

### *Effects arising during construction*

#### **Avoidance and mitigation measures**

- 5.3.34 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000) of the main ES, which includes translocation of protected species where appropriate.

#### **Designated sites**

- 5.3.35 There are no new or different significant effects on designated sites as a result of the provision of access to severed land associated with Dunton Hall.

## **Habitats**

- 5.3.36 The main ES reported no broadleaved woodland loss within the area of the land required for the amendment. The AP2 scheme will not result in any woodland habitat loss and there will be no new or different significant effects as a result of the AP2 scheme.
- 5.3.37 Within the main ES it was reported that the majority of hedgerows within the wider area that will be lost are species-poor. Hedgerows form wildlife corridors within a largely arable landscape and are therefore important for habitat connectivity. At the interface/connection with Hams Lane, as part of the amendment the proposed access will cut through a small section of hedgerow and there will be some trimming back of the existing hedgerow to create suitable sightlines along Hams Lane. The construction of the amendment will therefore result in the loss of a small section of hedgerow. However, given that the loss and severance of this hedgerow is minimal, the amendment will result in no new or different significant effects on the conservation status of hedgerow habitat reported in the main ES, which remains significant at the district/borough level.
- 5.3.38 It is unlikely that the amendment will result in any other new or different effects on habitats of relevance at more than the local/parish level. Additional local/parish level effects (i.e. in addition to those identified in the main ES or SES) are listed in Volume 5: Appendix EC-003-003.

## **Protected and/or notable species**

- 5.3.39 The existing ditch that runs alongside the proposed Hams Lane access road is not considered suitable to support great crested newt. Therefore, the amendment will result in no new or different significant effects on great crested newt.
- 5.3.40 Within the main ES it was reported that there was a population of bats using one tree roost within woodland along Hams Lane. This tree is within land required for the construction of the original scheme and the main ES reported a permanent adverse effect on the conservation status of bats significant at up to the county/ metropolitan level. The amendment will not result in any new or different effects on the bat population to those reported in the main ES.
- 5.3.41 There are three other trees within 150m of the amendment that have the potential for roosting bats; however, these trees will be retained and the amendment will not change the significance of effects as reported in the main ES.
- 5.3.42 It is unlikely that the amendment will result in any further new or different effects on species receptors of relevance at more than the local/parish level. Additional local/parish level effects (i.e. in addition to those identified in the main ES) arising from the amendment are listed in Volume 5: Appendix EC-003-003.

## **Cumulative effects**

- 5.3.43 There are no new or different likely cumulative effects for ecology as a result of the Dunton Hall access amendment acting in combination with another amendment in AP2or as a result of any relevant committed development interacting with the AP2 revised scheme.

## Mitigation and residual effects

### *Other mitigation measures*

- 5.3.44 The main ES reported that the ecological mitigation woodland planting area near to Dunton Wood would compensate for the loss of woodland along the A4097 Kingsbury Road and Marston Lane (compensating for a local/parish effect as identified in Volume 5: Appendix EC-005-003). The provision of access to severed land at Dunton Hall will run east of the proposed woodland planting area near to Dunton Wood and will not encroach into this planting area.
- 5.3.45 No additional mitigation measures (i.e. in addition to those identified in the main ES) are required.

### *Summary of likely residual effects*

- 5.3.46 No new or different residual effects on ecological receptors occur as a consequence of the amendment. The significant residual effects in this area are therefore unchanged from those reported in the main ES.

### *Effects arising from operation*

- 5.3.47 There are no new or different operational effects for ecology as a result of the provision of access to severed land associated with Dunton Hall.

## Landscape and visual assessment

### *Scope, assumptions and limitations*

- 5.3.48 The assessment scope, key assumptions and limitations for the landscape and visual assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES. An update to the methodology for the landscape and visual assessment is also described in Volume 1 of the AP1 ES.

### *Existing baseline*

- 5.3.49 The area of land required for the amendment is located within the Middleton to Curdworth Tame Valley Farmlands Landscape Character Area (LCA) as described in the main ES (Volume 2, CFA20, Section 9).
- 5.3.50 Views from Reindeer Park Lodge Caravan Park off A4097 Kingsbury Road (viewpoint 320.2.003) are also located in close proximity to the area and are described in the main ES.

### *Future baseline*

#### **Construction (2017)**

- 5.3.51 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.3.52 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on landscape and views.

### **Operation (2026)**

- 5.3.53 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.3.54 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on landscape and views.

#### *Effects arising during construction*

##### **Landscape assessment**

- 5.3.55 The Middleton to Curdworth Tame Valley Farmland LCA was assessed as being affected by the original scheme, and will not be further affected by this amendment. The Middleton to Curdworth Tame Valley Farmland LCA is of fair condition, low tranquillity and regional value, therefore it is considered to be of medium sensitivity to change. The main ES reported a major adverse effect during construction due to the scale of activity across the LCA and major alteration to existing characteristic landscape features.
- 5.3.56 The amendment creates an additional short length of access track extending east of the A4097 Kingsbury Road and an additional short length of road to connect the severed land to Hams Lane via the HS2/ farm access track. The nature of the construction activity associated with the peak construction phase incorporating the amendment is not expected to change relative to the original scheme reported in the main ES. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

##### **Visual assessment**

- 5.3.57 Viewpoint 320.2.003 (from Reindeer Park Lodge Caravan Park off A4097 Kingsbury Road) was assessed as being affected by the original scheme, however it will not be further affected by this amendment. The main ES reported a major adverse effect to this viewpoint, with a moderate adverse effect reported during night-time hours due to the continuous lighting of the A4097 Kingsbury Road overbridge construction compound.
- 5.3.58 The amendment creates an additional short length of access track extending east of the A4097 Kingsbury Road and an additional short length of road to connect the severed land to Hams Lane via the HS2/ farm access track. The nature of the construction activity associated with the peak construction phase incorporating the amendment is not expected to change relative to the original scheme reported in the main ES. In the context of the wider change of view and the fact that the view was assessed as a major adverse effect in the main ES, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Effects arising from operation*

##### **Landscape assessment**

- 5.3.59 The Middleton to Curdworth Tame Valley Farmlands LCA was assessed as being affected by the original scheme, however it will not be further affected by this

amendment. The main ES reported a moderate adverse effect during years 1 and 15 of operation due to the loss of characteristic features, introduction of structures and immaturity of the landscape mitigation planting, reducing to non-significant in year 60.

- 5.3.60 The amendment creates an additional short length of access track extending east of the A4097 Kingsbury Road and an additional short length of road to connect the severed land at Hams Lane via the HS2/ farm access track. The amendment is considered to be small in scale in comparison to the scale of the landscape character area in which it is located. As such, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### **Visual assessment**

- 5.3.61 Viewpoint 320.2.003 was assessed as being affected by the original scheme, however it will not be further affected by this amendment. The main ES reported a moderate adverse effect in year 1 of operation, reducing to non-significant by years 15 and 60.
- 5.3.62 The proposed amendment creates an additional short length of access track extending east of the A4097 Kingsbury Road and an additional short length of road to connect the severed land to Hams Lane via the HS2/ farm access track. The amendment will result in a small change within the view in comparison to the effects reported in the main ES. As such, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.3.63 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.3.64 There are no new or different residual construction or operational effects for landscape and visual as a result of the proposed amendment, in comparison with the main ES.

### *Cumulative effects*

- 5.3.65 There are no new or different likely significant cumulative effects for landscape and visual as a result of the proposed amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.4.1 The provision of access to severed land at Dunton Hall will not result in new or different significant effects or change the level of significance of the environmental effects as set out in the main ES (Volume 2, CFA20, Curdworth to Middleton).

## 5.5 Revised access to Mullensgrove Farm (AP2-020-003)

- 5.5.1 The Bill provides for works which require the demolition of seven buildings at Mullensgrove Farm, including a farm shop, and much of the landholding was to be acquired temporarily or permanently as part of construction and operation (refer to main ES maps CT-05-119 and -06-119, grid references D5 and E5, Volume 2, CFA20 Map Book).
- 5.5.2 The Bill also provides for the A4097 Kingsbury Road overbridge main construction compound to be located to the south-west of Mullensgrove Farm (refer to main ES maps CT-05-119 and -06-119, grid reference F8, Volume 2, CFA20 Map Book). Temporary accommodation for 36 workers is to be provided at the compound. The existing land use at this location is an arable agricultural field.
- 5.5.3 Since submission of the Bill, it has been identified that the temporary worker accommodation within the A4097 Kingsbury Road overbridge main construction compound could be relocated to the west to enable access to be provided to this agricultural field (refer to maps CT-05-119 and CT-06-119, grid reference F7 in the SES and AP2 ES Volume 2, CFA20 Map Book). This will ensure that the future use of the land for replacement of Mullensgrove Farm buildings by private planning application would not be precluded. The amendment requires a total area of land approximately 0.8ha in size which overlaps slightly with the previous area of worker accommodation, resulting in a net increase of 0.10ha in land required on a temporary basis.
- 5.5.4 The amendment is not considered to result in changes that will require a reassessment of the effects or proposed mitigation as set out in the main ES with respect to agriculture, forestry and soils; air quality; community; ecology; land quality; landscape and visual assessment; socio-economics; sound, noise and vibration; traffic and transport; and water resources and FRA. However, reassessment is considered to be required in respect of cultural heritage.

### Cultural heritage

#### *Scope, assumptions and limitations*

- 5.5.5 The assessment scope, key assumptions and limitations for cultural heritage are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.

#### *Existing baseline*

- 5.5.6 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which includes walk-over survey, geophysical survey, remote-sensing data, and data from national and local registers. A full list of heritage assets is provided in Volume 2, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical surveys for archaeology.
- 5.5.7 Details of survey and desk-based work undertaken in this CFA since September 2013 is provided in Volume 5: Appendix CH-004-020 and Volume 5 map series CH-07; CH-09 and CH-10, where this is relevant to the assessment of a new or different significant effect.

5.5.8 Heritage assets potentially affected by the amendment through physical change or changes to their setting are:

- CWM014 potential deserted settlement (moderate value in main ES amended to low value in SES, Part 1, Section 3);
- CWM059 Dunton Hall, Barn and Pigeonhouse (moderate value); and
- CWM060 Dunton Hall Garden (low value).

### *Future baseline*

#### **Construction (2017)**

5.5.9 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

5.5.10 None of the identified developments affects the assessment of the AP2 revised scheme's likely construction impacts on cultural heritage.

#### **Operation (2026)**

5.5.11 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

5.5.12 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on cultural heritage.

### *Effects arising during construction*

5.5.13 The main ES reported a temporary high adverse impact and temporary major adverse effect on Dunton Hall, Barn and Pigeonhouse (asset reference CWM059) and a high adverse impact and temporary moderate adverse effect on Dunton Hall Garden (asset reference CWM060) both as a result of the construction of a large cutting to the east of the assets. When considered in the context of the original scheme, the amendment is not of sufficient scale to give rise to a new or different significant effect on these assets and does not change the level of significance reported in the main ES.

5.5.14 The SES (Part 1, Section 3) reported a moderate adverse significant effect at the site of a potential deserted settlement (asset reference CWM014) as a result of updated baseline information. The amendment requires an area of additional land from this asset but this will not change the level of significance of the effects reported in the SES.

### *Effects arising from operation*

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

### *Mitigation and residual effects*

5.5.16 The draft CoCP sets out the provisions that will be adopted to control effects on cultural heritage assets. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.

- 5.5.17 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Cumulative effects*

- 5.5.18 There are no new or different likely significant cumulative effects for cultural heritage as a result of the proposed amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.6.1 The revised access to Mullensgrove Farm will not result in new or different significant effects or change the level of significance of environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA20, Curdworth to Middleton).

## **5.7 Kingsbury Road railhead area amendments (AP2-020-004) Amendments to landscape earthworks and planting**

- 5.7.1 The Bill provides for landscape earthworks and planting mitigation on the southern, eastern and northern edges of the proposed Kingsbury Road railhead area to provide ecological mitigation as well as visual and noise screening. This included a variety of planting types and landscape earthworks of varying heights. However, the headshunt track (to facilitate the turning back of trains) and the area around the proposed balancing pond to the north of the railhead were left largely unmitigated (refer to main ES map CT-06-113-R1, Volume 2, CFA20 Map Book). The Bill also provides for construction of a permanent overbridge to carry Seeney Lane over the Kingsbury Road railhead tracks and a balancing pond to the north-east of the railhead (refer to main ES map CT-06-113-R1, grid reference F7, Volume 2, CFA20 Map Book).
- 5.7.2 Although the Kingsbury Road railhead is a temporary facility, its long-term nature is recognised and additional visual screening is considered appropriate. Landscape earthworks and planting at the railhead have therefore been revised. The landscape earthworks proposed in the main ES around the Kingsbury Road railhead will be raised to a maximum of 5m above the rail level at the northern side of the railhead; a maximum of 6m above the rail level at the eastern side; and a maximum of 4m above rail level at the southern side. Landscape mitigation planting will also be provided around the area of the Leeds Spur, reception sidings and the headshunt track.
- 5.7.3 Since submission of the Bill, it has also been identified that Seeney Lane will need to be relocated in order to accommodate the revisions to the landscape earthworks and planting at the north end of the Kingsbury Road railhead (refer to map CT-06-113-R1, grid reference F6 in the SES and AP2 ES Volume 2, CFA20 Map Book). Seeney Lane will therefore be moved by a maximum of 170m northwards of the route described in the main ES to run along the toe of the landscape earthworks to the north of the Kingsbury Road railhead.

## Revisions to the balancing pond

- 5.7.4 The Bill provides for a balancing pond to the north-east of the railhead (refer to main ES maps CT-06-113-R1, grid reference E5, Volume 2, CFA20 Map Book).
- 5.7.5 Since submission of the Bill, an improved balancing pond design has been developed. The balancing pond described in the main ES will be divided into two ponds (refer to map CT-06-113-R1, grid references E6 and D5 in the SES and AP2 ES Volume 2, CFA20 Map Book), with one pond (for railway drainage) at a lower level than the other (for railhead drainage). This division will allow for rearrangement of the pond design on the sloping ground alongside the headshunt track rather than across the slope.
- 5.7.6 New planting will be provided around the two balancing ponds. This planting will link to an existing small, partially wooded field beside the M42 motorway, which will be enhanced with the additional planting. The revised mitigation and balancing pond design will be within the existing hedges, which will be retained and enhanced. The diversion of Footpath M22 will be accommodated to the east of the redesigned balancing ponds.

## Reclassification of Seeney Lane

- 5.7.7 The Bill provides for Seeney Lane/Bridleway M23a to be upgraded to a byway open to all traffic to replace connectivity across the M42 motorway lost by the closure of Marston Lane to vehicular traffic (refer to main ES maps CT-05-113-R1 and CT-06-113-R1 and CT-05-113 and CT-06-113, Volume 2, CFA20 Map Book).
- 5.7.8 Since submission of the Bill it has been identified that, if upgraded to a byway open to all traffic, Seeney Lane could become a route for unwanted cut-through traffic. Therefore, as part of the amendment, Seeney Lane, including the section approaching the Birmingham and Fazeley Canal, will not be upgraded and will remain classified only as a bridleway with private access for motorised vehicles.

## Temporary diversion of Footpath M23

- 5.7.9 The Bill provides for Footpath M23, which runs through the railhead area, to be closed during construction until the permanent diversion via the Seeney Lane overbridge will be available following closure of the Kingsbury Road railhead (refer to main ES maps CT-05-113-R1 and CT-06-113-R1, grid references G8, H8 and I8, Volume 2, CFA20 Map Book).
- 5.7.10 Since submission of the Bill, it has been determined that an alternative temporary diversion for Footpath M23 could be provided such that the footpath could remain open throughout construction.
- 5.7.11 The amendment includes a temporary diversion of Footpath M23 from near its departure from the A4097 Kingsbury Road around the railhead. Footpath M23 will be routed around the east side of the railhead following the base of the revised landscape earthworks connecting to the existing Seeney Lane bridleway near the north-east corner of the railhead (refer to SES and AP2ES map book CT-05-113-R1, grid references F5 to F8). During construction of the railhead Footpath M23 may be subject to minor temporary diversions close to its existing alignment.

- 5.7.12 As reported in the main ES, upon closure of the Kingsbury Road railhead, Footpath M23 will be permanently realigned through the middle of the railhead area, continuing northward to connect with Seeney Lane at the north-west corner of the Kingsbury Road railhead.

### Scope of assessment

- 5.7.13 The Kingsbury Road railhead area amendments will result in a net decrease of 0.35ha of land on a temporary basis and a net increase of 5.4ha of land required on a permanent basis, primarily as a result of the additional land needed for revised landscaping earthworks and mitigation planting proposals.
- 5.7.14 The amendment is not considered to result in changes that will require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: air quality; community; land quality; and socio-economics. However, there are changes where reassessment is considered to be required in respect of agriculture, forestry and soils; cultural heritage; ecology; landscape and visual; sound, noise and vibration; traffic and transport; and water resources and FRA.

### Agriculture, forestry and soils

#### *Scope, assumptions and limitations*

- 5.7.15 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

#### *Existing baseline*

- 5.7.16 Bedrock of the Mercia Mudstone Group underlies the whole of the study area. The Kingsbury Road railhead area is covered by superficial, glacial lake deposits (i.e. clay and silt), with glacial outwash sands and gravels in the vicinity.
- 5.7.17 The characteristics of the soils are described by the Soil Survey of England and Wales<sup>3</sup> and shown on the National Soil Map<sup>4</sup>. The soils are grouped into associations which are groups of soils of similar types.
- 5.7.18 The soils developed in the clayey and silty glacial lake deposits are grouped in the Whimple 3 association, with medium clay loam or medium silty clay loam topsoil and upper subsoil. There is generally slight seasonal waterlogging on this land (Wetness Class [WC] II) but, on lower slopes, soils are more seasonally waterlogged (WC III to IV). The quality of agricultural land on these soils is limited to Subgrade 3a.
- 5.7.19 Soils of the Arrow association are mapped on the river terrace and glacial outwash deposits. These have deep permeable sandy loam topsoils and subsoils variably affected by groundwater with sands and gravels at depth. They experience slight seasonal waterlogging (WC II), with lower lying areas having more prolonged waterlogging (WC III). Agricultural land developed on these soils is limited to Grade 2 and Subgrade 3a.

<sup>3</sup> Soil Survey of England and Wales (1984), Soils and their Use in Midland and Western England, Bulletin 12.

<sup>4</sup> Cranfield University (2001), The National Soil Map of England and Wales 1:250,000 scale, National Soil Resources Institute, Cranfield University, UK.

- 5.7.20 The main ES reported that agricultural land required for constructing and operating the original scheme in the Curdworth to Middleton (CFA20) area is predominantly in the best and most versatile (BMV) category (91%), i.e. mainly in Subgrade 3a (47%) and the remainder of Grade 2 classification (44%).
- 5.7.21 There are five agricultural holdings affected by the proposed amendment. These are woodland to the north of Mullensgrove Farm (CFA20/3), Land South of Bodymoor Lane (A) (CFA20/20), Land South of Bodymoor Lane (B) (CFA20/21), Land Adjacent to Wheatley House (CFA20/26) and Land South of Parklands Stud (CFA20/27). Holding CFA20/03 measures 12.9 ha and is assessed as being of medium sensitivity to change. Holdings CFA20/20 (34.4ha), CFA20/21 (7.6ha) and CFA20/27 (2.8ha) are all arable farms and they are assessed as being of medium sensitivity. Holding CFA20/27 is a 0.4ha parcel of grassland, which is assessed as being of medium sensitivity.

### *Future baseline*

#### **Construction (2017)**

- 5.7.22 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.23 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on agriculture, forestry and soils.
- 5.7.24 Most existing environmental stewardship agreements will expire in 2015 and be replaced by a new environmental land management scheme (countryside stewardship) which is voluntary but competitive. It is more targeted than previous schemes, with its priorities being to protect and enhance biodiversity and water quality.
- 5.7.25 The widespread basic environmental management associated with entry level stewardship will be replaced by a new concept of greening introduced by Common Agricultural Policy reform, which will now be the main means by which farmers will provide environmental benefits in return for their direct support payments. Greening will encourage the retention of permanent grasslands, greater crop diversification and the creation of Ecological Focus Areas. These changes will affect the detailed management of individual farm holdings but are not expected to change fundamentally the baseline circumstances described in the main ES.

#### **Operation (2026)**

- 5.7.26 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.27 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on agriculture, forestry and soils.

### *Effects arising during construction*

- 5.7.28 The amendment will result in an additional 5.3ha of best and most versatile agricultural land (in this case a mix of Grade 2 and Subgrade 3a) required permanently.

However, this amendment will not change the level of significance of the effect on best and most versatile agricultural land reported in the main ES and the AP1 ES.

- 5.7.29 The amendment will result in an additional permanent requirement of 0.6ha (4.7%) from holding CFA20/3, 6.3 ha (18.3%) from holding CFA20/20, and 0.2ha (7.1%) from holding CFA20/26. However, these changes will not change the level of significance of the effects reported in the main ES and the AP1 ES.
- 5.7.30 The amendment results in the reduction of 2.0 ha (26.3%) from holding CFA20/21, due to the relocation of a balancing pond outside this holding. This would reduce the significance of the effect reported in the main ES from major/moderate adverse (significant) to negligible (not significant).
- 5.7.31 The amendment will require an additional 0.2ha (50%) from holding CFA20/27. In this case, the level of significance reported in the main ES does not change from major/moderate adverse (significant), but an increase in the permanent land requirement from 50% to a 100% of the holding is required, resulting in a different significant effect.

#### *Effects arising from operation*

- 5.7.32 The amendment will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES and the AP1 ES.

#### *Mitigation and residual effects*

- 5.7.33 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.7.34 The amendment will result in the removal of one residual significant effect reported in the main ES. The major/moderate adverse residual significant effect on Land South of Bodymoor Heath Lane (B) (CFA20/21) is removed by the amendment. The level of significance of effect has been reduced to negligible, which is not significant.
- 5.7.35 The amendment results in a different residual significant effect to that reported in the main ES for one holding. The major/moderate adverse (significant) effect on Land South of Parklands Stud (CFA20/27) does not change but there is an increase in the permanent land requirement from of the holding from 50% to 100% of the holding.

#### *Cumulative effects*

- 5.7.36 There are no new or different likely residual significant effects for agriculture, forestry and soils as a result of the amendment acting in combination with another amendment in AP2, or in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

### **Cultural heritage**

#### *Scope, assumptions and limitations*

- 5.7.37 The assessment scope, key assumptions and limitations for cultural heritage are as set out Volume 1, the SMR (Volume 5: Appendix CT-001 -000) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.

### *Existing baseline*

- 5.7.38 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 heritage assets is provided in Volume 2, CFA20, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical surveys for archaeology.
- 5.7.39 Details of survey and desk-based work undertaken in this CFA since September 2013 is provided in Volume 5: Appendix CH-004-020 and Volume 5 map series CH-07; CH-09 and CH-10, where this is relevant to the assessment of a new or different significant effect.
- 5.7.40 One heritage asset is potentially affected by the amendment through changes to its setting, this is Lea Marston Old School (asset reference CWMo64), an asset of low value.

### *Future baseline*

#### **Construction (2017)**

- 5.7.41 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.42 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on cultural heritage.

#### **Operation (2026)**

- 5.7.43 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.44 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on cultural heritage.

### *Effects arising during construction*

- 5.7.45 The main ES reported a permanent high adverse impact and moderate adverse effect on the setting of Lea Marston Old School (asset reference CWMo64), resulting from the removal of key components of the wider rural setting. There is no land required from this asset as a result of the amendment and the setting impact is unchanged as the landscape components are still removed by the AP2 revised scheme. The main ES also reported a temporary medium adverse impact and minor adverse effect on this asset due to noise and construction activity associated with construction of the Kingsbury Road railhead. The amendment moves construction activity closer to the asset but this will not alter the level of significance of effects reported in the main ES.
- 5.7.46 The amendment will not give rise to a new or different significant effect on the setting of Lea Marston Old School and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

- 5.7.47 The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.7.48 The draft CoCP sets out the provisions that will be adopted to control effects on cultural heritage assets. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.7.49 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.7.50 There are no new or different likely significant cumulative effects for cultural heritage as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## **Ecology**

### *Scope, assumptions and limitations*

- 5.7.51 The assessment scope for ecology is set out in Volume 1 of the SES and AP2 ES. The key assumptions and limitations, and the methodology for determining significance of effects, are set out in Volume 1 of the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.
- 5.7.52 To address any limitations in data, a precautionary baseline has been adopted according to the guidance reported in the main ES (Volume 5: Appendix CT-001-000/2). This constitutes a 'reasonable worst-case' basis for the subsequent assessment. The precautionary approach to the assessment identifies the likely significant ecological effects of the AP2 scheme.

### *Existing baseline*

- 5.7.53 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 gathered for the main ES from national organisations and regional and local sources including Warwickshire Biological Records Centre and Warwickshire Wildlife Trust.
- 5.7.54 A summary of the baseline information relevant to the assessment of the amendment is provided in the following paragraphs. Further details of all baseline information obtained since the main ES is described in Part 1 of this report; with further details provided in Volume 5: Appendix EC-001-003. For those receptors described in the main ES, further details are provided in Volume 2, CFA20, Section 7 and in Volume 5: Ecology, CFA20, maps EC-01 to EC-12 in the main ES.

## **Designated sites**

- 5.7.55 There are no designated sites within 500m of the land required for the Kingsbury Road railhead area amendments.

- 5.7.56 Sych Wood, which is part of the Hams Hall Woodland LWS, is ancient woodland. The north-easterly edge of this section of woodland was to be lost as part of the original scheme. The site is more than 1km from the amendment but the mitigation area required for the translocation of the soils and seed bank from this woodland is located within the land required for this amendment.

### **Habitats**

- 5.7.57 The area of land required for the Kingsbury Road railhead area amendment is within an area of arable farmland with hedgerow and tree-lined boundaries, small fields of pasture grassland and a plantation woodland. Within the main ES the arable habitat was reported as being of negligible value and the remaining habitats were evaluated as of no more than local/parish value.

### **Protected and/or notable species**

- 5.7.58 Reptile surveys were undertaken in an area of plantation woodland (Marston Lane woodland), as part of the main ES. This area is within the most southern area of land required for the Kingsbury Road railhead amendment. As part of the main ES, a low population size class of common lizard, grass snake and slow worm were recorded within the rough grassland found along the woodland ride and boundary edges. Common lizard, grass snake and slow worm are all species of principal importance identified in Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006)<sup>5</sup>. The main ES reported the reptile population as being of local/parish value.
- 5.7.59 Within the main ES, the assemblage of bats using roosting, foraging and commuting habitats south of the A4097 Kingsbury Road was evaluated as of county/metropolitan value (located approximately 500m from the amendment). Additional survey work reported in the SES (Part 1, Section 3.2) identified two trees adjacent to the amendments. They were considered to have high potential for roosting bats but no confirmed bat roosts were recorded.
- 5.7.60 Wintering and breeding birds were identified at nearby Dunton Hall (approximately 1km distance from the amendment) as part of the main ES. The main habitat type surveyed was arable fields and woodland edge, representative of the land use affected by the amendment. Breeding bird surveys recorded 52 bird species within the area of the amendment of which 26 are notable. Sixteen notable species are thought to have bred on and near to land required for the amendment, including species such as linnet and yellowhammer, both species of principal importance. Species recorded are considered to be common and widespread in the habitat types surveyed, and no large or important populations were reported in the main ES.
- 5.7.61 Wintering bird surveys recorded 36 bird species within this area of which 18 are notable, including species such as corn bunting and grey partridge. Species recorded are considered to be common and widespread in the habitat types surveyed, and no large or important populations were recorded.

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<sup>5</sup> Natural Environment and Rural Communities Act 2006 (Chapter 16). Her Majesty's Stationery Office

- 5.7.62 Both the breeding bird and wintering bird assemblage recorded are of no more than local/parish value. There is no new baseline information that has not already been identified in the main ES.

#### *Future baseline*

##### **Construction (2017)**

- 5.7.63 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.64 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on ecology.

##### **Operation (2026)**

- 5.7.65 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.66 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on ecology.

#### *Effects arising during construction*

##### **Avoidance and mitigation measures**

- 5.7.67 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES), which includes translocation of protected species where appropriate.

##### **Designated sites**

- 5.7.68 The proposed 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**

- 5.7.69 The amendment will require the same area of land assessed in the main ES and there will therefore be no new or different significant effects on habitats compared to those reported in the main ES.
- 5.7.70 It is unlikely that any other effects on habitats of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: Appendix EC-003-003.

##### **Protected and/or notable species**

- 5.7.71 The amendment will require the same area of land assessed in the main ES. And there will therefore be no new or different significant effects on species compared to those reported in the main ES.

- 5.7.72 It is unlikely that any other effects on species of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: Appendix EC-003-003.

### **Cumulative effects**

- 5.7.73 There are no new or different likely residual significant effects for ecology as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

### **Mitigation and residual effects**

#### *Other mitigation measures*

- 5.7.74 It was proposed in the main ES that, for the small loss of ancient woodland habitat at Sych Wood, ancient woodland soil with its associated seed bank will be salvaged and translocated to a receptor site located between the A4097 Kingsbury Road and Seeney Lane (refer to main ES map CT-06-113-R1, grid reference I6, Volume 2, CF20 Map Book)). As part of this amendment, the area for translocation will be relocated to an area south of Marston Lane (between the M42 motorway and the Leeds spur). The new receptor site is larger than the previously proposed area near Seeney Lane (approximately 2.8ha compared to 1.8ha in the main ES). Other measures such as planting native tree and shrub species of local provenance and translocation of coppice stools and dead wood will be undertaken in accordance with the principles of ecological mitigation identified in the SMR addendum of the main ES (Volume 5: Appendix CT-000-0001/2).

- 5.7.75 An area to the north of Marston Lane is also a proposed woodland creation area as part of this amendment and this will further mitigate for the loss of woodland habitat at Hams Lane Wood, which is lost as part of the original scheme. With this mitigation, effects will be reduced to a level that is not significant except for the residual effect from the loss of ancient woodland at Sych Wood which was previously reported in the main ES. The amendment will result in no new or different significant effects, and will not change the level of significance of the effects reported in the main ES.

#### *Summary of likely residual effects*

- 5.7.76 No new or different residual effects on ecological receptors will occur as a consequence of the amendment. The significant residual effects of the AP2 scheme in this area are therefore unchanged from those reported in the main ES.

#### *Effects arising from operation*

- 5.7.77 There are no new or different operational effects for ecology as a result of the Kingsbury Road Railhead amendments.

### **Landscape and visual assessment**

#### *Scope, assumptions and limitations*

- 5.7.78 The assessment scope, key assumptions and limitations for the landscape and visual assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES. An

update to the methodology for the landscape and visual assessment is also described in Volume 1 of the AP1 ES.

### *Existing baseline*

- 5.7.79 The area of land required for the amendment is located within the Middleton to Curdworth Tame Valley Farmlands LCA as described in the main ES (Volume 2, CFA20, Section 9.3).
- 5.7.80 The following viewpoints are also located in close proximity to the area and are described in the main ES (Volume 5: Appendix LV-001-020, Part 2):
- 324.3.001 and 322.2.003 (Views west from residence adjacent to Bodymoor Heath Lane and from PRow (Footpath T26) and Bodymoor Heath Lane);
  - 324.3.007 (Views south-east from PRow (Footpath T26), near to Marston Farm Hotel, south of Bodymoor Heath);
  - 320.4.012 and 322.3.002 (Views north and west from A4097 Kingsbury Road, west of Marston and view west from PRow Bridleway (M32a), off Seeney Lane);
  - 320.2.008, 320.2.011 and 322.2.001, (Views west from residence adjacent A4097 Kingsbury Road (Wheatley House), north and west from residences (Lea Marston Old School and School House) and west from residential properties and Marston Caravan and Camping Park in Marston, adjacent to the A4097 Kingsbury Road);
  - 322.3.010 (View south-west along the Birmingham and Fazeley Canal (local cycle route 017));
  - 324.3.006 (Views from Birmingham and Fazeley Canal and traffic-free cycle route, near to Cheatle's Farm Bridge); and
  - 322.3.005 (Views west from Seeney Lane Bridleway (T154), as it crosses the M42 motorway).

### *Future baseline*

#### **Construction (2017)**

- 5.7.81 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.82 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on landscape and views.

#### **Operation (2026)**

- 5.7.83 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

- 5.7.84 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on landscape and views.

### *Effects arising during construction*

#### **Landscape assessment**

- 5.7.85 The Middleton to Curdworth Tame Valley Farmland LCA is of fair condition, low tranquillity and regional value, therefore it is considered to be of medium sensitivity to change. The main ES reported a major adverse effect during construction due to the scale of activity across the LCA and major alteration to existing characteristic landscape features.
- 5.7.86 The nature of the construction activity associated with the peak construction phase incorporating the amendment is not expected to change relative to the original scheme reported in the main ES. The amendment, including the provision of additional planting and increased height of the landscape earthworks will not give rise to any new or different significant effect and will not change the level of significance of the effects reported in the main ES with regard to the landscape assessment.

#### **Visual assessment**

- 5.7.87 There are 11 viewpoints in the area with potential views of the amendment. The main ES reported a mixture of moderate and major adverse effects to these viewpoints during construction (refer to Volume 2, CFA20, Section 9 of the main ES for individual viewpoint assessments).
- 5.7.88 Viewpoint 324.3.001 and 322.2.003 (Views west from residence adjacent to Bodymoor Heath Lane and from PRoW (Footpath T26) and Bodymoor Heath Lane): the main ES reported westward views of activities associated with the railhead, visible in the middle ground, which were incongruous with the existing character of the view. This resulted in major adverse effects.
- 5.7.89 Although the increased height of the surrounding earthworks and additional planting associated with the amendment will reduce the visibility of some lower-level construction activities, high-level construction equipment and plant and material movements will still be evident during the peak construction phase. As such, the amendment will not give rise to any new or different significant effects on landscape character and views and will not change the level of significance of the effects reported in the main ES.
- 5.7.90 Viewpoint 324.3.007 (view south-east from ProW (Footpath T26), near to Marston Farm Hotel, south of Bodymoor Heath): the main ES reported views of activities associated with the Kingsbury Road railhead through intervening vegetation in the middle ground, resulting in moderate adverse effects.
- 5.7.91 Although the increased height of the surrounding earthworks and new planting will reduce the visibility of some lower-level construction activities, high-level construction equipment and plant and material movements will still be evident during the peak construction phase. As such, the amendment will not give rise to any new or different significant effects on landscape character and views and will not change the level of significance of the effects reported in the main ES.

- 5.7.92 Viewpoints 320.4.012 and 322.3.002, (Views north and west from A4097 Kingsbury Road, west of Marston and view west from ProW Bridleway (M32a), off Seeney Lane): the main ES reported views north and west of railhead activities visible in the foreground and middle ground, resulting in moderate adverse effects.
- 5.7.93 Although the enhanced landscape earthworks and planting associated with the amendment will reduce the visibility of some lower-level construction activities, high-level construction equipment and plant and material movements will still be evident during the peak construction phase. As such, the amendment will not give rise to any new or different significant effects on landscape character and views and will not change the level of significance of the effects reported in the main ES.
- 5.7.94 Viewpoints 320.2.008, 320.2.011 and 322.2.001, (Views west from residence adjacent A4097 Kingsbury Road (Wheatley House), north and west from residences (Lea Marston Old School and School House) and west from residential properties and Marston Caravan and Camping Park in Marston, adjacent to the A4097 Kingsbury Road): the main ES reported partially screened views north or west in the foreground and middle ground towards activities at the Kingsbury Road railhead, including tall construction plant, storage and lighting. This resulted in moderate adverse effects.
- 5.7.95 These viewpoints are partially screened by substantial mature vegetation from the rear of their properties. The enhanced landscape earthworks and planting associated with the amendment will further reduce the visibility of construction activities. However, high-level construction equipment and plant will still be evident during the peak construction phase. The amendment will not give rise to any new or different significant effects on landscape character and views and will not change the level of significance of the effects reported in the main ES.
- 5.7.96 Viewpoint 322.3.010 (view south-west along the Birmingham and Fazeley Canal (local cycle route 017)): the main ES reported views of the activities at the Kingsbury Road railhead as well as a satellite compound and tall construction plant associated with the Birmingham and Fazeley Canal viaduct visible in the foreground and middle ground. This was reported as a major adverse effect in the main ES.
- 5.7.97 Although the enhanced landscape earthworks and planting associated with the amendment will reduce the visibility of some of the lower-level construction activities at the railhead, high-level construction equipment and plant and material movements will still be evident during the peak construction phase, as will those associated with views south and west of the Birmingham and Fazeley Canal viaduct construction activities. However, the amendment will not give rise to any new or different significant effects on landscape character and views and will not change the level of significance of the effects reported in the main ES.
- 5.7.98 Viewpoint 324.3.006 (Views from Birmingham and Fazeley Canal and traffic-free cycle route, near to Cheate's Farm Bridge): the main ES reported open views south and west from the Birmingham and Fazeley Canal onto construction activities including construction compounds and tall construction plant associated with Cuttle Mill, Hunts Green and Northwood bridges. Long range views south towards the railhead site were also identified. A major adverse effect was reported in the main ES.
- 5.7.99 The main views of construction activities associated with the amendment will be those west towards the HS2 route and as such the enhanced landscaping earthworks

and planting will create a limited improvement to the view. As such, the amendment will not give rise to any new or different significant effects on landscape character and views and will not change the level of significance of the effects reported in the main ES.

- 5.7.100 Viewpoint 322.3.005 (Views west from Seeney Lane Bridleway (T154), as it crosses the M42 motorway): The main ES reported views of construction activities associated with the Kingsbury Road railhead and Cuttle Mill underbridge. As well, vegetation at North wood will be partially visible in the middle ground, resulting in moderate adverse effects.
- 5.7.101 The main views of construction activities associated with the amendment will be those west towards the HS2 route and as such the enhanced landscape earthworks and planting will create a limited improvement to the view. The amendment will not give rise to any new or different significant effects on landscape character and views and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

#### **Landscape assessment**

- 5.7.102 The Middleton to Curdworth Tame Valley Farmland LCA is of fair condition, low tranquillity and regional value, therefore it is considered to be of medium sensitivity to change. The main ES reported a moderate adverse effect during years 1 and 15 of operation due to the loss of characteristic features, introduction of structures and immaturity of the landscape mitigation planting, reducing to non-significant in year 60.
- 5.7.103 The amendment is considered to be small in scale in comparison to the overall scale of the LCA within which it is located. The amendment, including the provision of additional planting and increased height of the landscape earthworks will not give rise to any new or different significant effect and will not change the level of significance of the effects reported in the main ES.

#### **Visual assessment**

- 5.7.104 There are four viewpoints in the area with potential views of the amendment, others were removed from the operational phase following the cessation of railhead construction activities (refer to Volume 2, CFA20, Section 9 of the main ES for individual viewpoint assessments).
- 5.7.105 Viewpoints 322.3.010, 322.3.005, 324.3.002, and 324.3.006 all have westward views at close to mid-range with visible new elements including overhead line equipment, trains and embankments, with major or moderate adverse effects remaining through years 1, 15 and 60 in all but one viewpoint, 322.3.005. The views south and east from these viewpoints during operation will remain of a large planted embankment surrounding a decommissioned former railhead. The amendment includes additional planting however, the proposed increase in the height of the landscape earthworks will not give rise to any new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.7.106 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.7.107 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.7.108 There are no new or different likely significant cumulative effects for landscape and visual as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## **Sound, noise and vibration**

### *Scope, assumptions and limitations*

- 5.7.109 The assessment scope, key assumptions and limitations for the sound, noise and vibration assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.7.110 Local assumptions and limitations for sound, noise and vibration are set out in Volume 2, CFA20 in the main ES.

### *Existing baseline*

- 5.7.111 The baseline sound, noise and vibration information for the area is described in the main ES (Volume 5: Appendix SV-002-020). Baseline sound levels representative of the assessment locations affected by the AP2 scheme have been used in the construction and operational assessments.

### *Future baseline*

#### **Construction (2017)**

- 5.7.112 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.113 None of the identified developments affect the assessment of the AP2 scheme's likely construction impacts on sound, noise and vibration.

#### **Operation (2026)**

- 5.7.114 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.115 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on sound, noise and vibration.

### *Effects arising during construction*

- 5.7.116 No significant construction noise or vibration effects in the vicinity of the Kingsbury Road railhead were reported in the main ES.

- 5.7.117 An assessment has been undertaken to determine whether construction noise levels from the AP2 scheme will result in a likely significant effect, using the methodology and significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 5.7.118 The revised landscape earthworks surrounding the Kingsbury Road railhead and associated construction activities do not represent a significant intensification of the works when compared to the original scheme. Due to the short duration required for the AP2 works in that context, the impacts at any one receptor will be limited and any potential adverse noise effects will be controlled and reduced by the management processes set out in the draft CoCP. Once the landscape earthworks have been constructed, this will have the effect of reducing noise levels on adjoining residential receptors during the construction of the railhead itself, however this will not change the level of significance of the effects reported in the main ES.

#### *Effects arising from operation*

- 5.7.119 There are no new or different operational effects for operational sound, noise and vibration as a result of the Kingsbury Road railhead area amendments.

#### *Mitigation and residual effects*

- 5.7.120 The assessment of construction noise and vibration assumes implementation of the principles and management processes set out in the draft CoCP, as described in Volume 2, CFA20 in the main ES.
- 5.7.121 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.

#### *Cumulative effects*

- 5.7.122 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

### **Traffic and transport**

#### *Scope, assumptions and limitations*

- 5.7.123 The assessment scope, key assumptions and limitations of the traffic and transport assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-0001-000/1) and the SMR Addendum (Volume 5: Appendix CT-0001-000/2) of the main ES.

#### *Existing baseline*

- 5.7.124 The environmental baseline for traffic and transport is set out in Volume 2, CFA20, Section 12 of the main ES.
- 5.7.125 Seeney Lane (Bridleway M23a), which is used by non-motorised users and as a private access for vehicular traffic, meets Footpath M23 and passes over the M42 motorway and the Birmingham and Fazeley Canal. Footpath M23 is used by non-motorised users, currently running through the area proposed for the Kingsbury Road railhead.

### *Future baseline*

#### **Construction**

- 5.7.126 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA20, Section 12).

#### **Operation (2026 and 2041)**

- 5.7.127 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES (Volume 2, CFA20, Section 12).

### *Effects arising during construction*

- 5.7.128 To construct the Kingsbury Road railhead, the original scheme proposed the closure of Footpath M23 for nine years resulting in significant increases in journey times for pedestrians and a minor adverse significant effect was reported in the main ES.
- 5.7.129 The amendment enables access to be provided along Footpath M23 throughout the construction period and the previously proposed closure will be avoided, removing the minor adverse effect reported in the main ES. However, the length of the diversion proposed as part of the amendment will create an increased journey time for non-motorised users, resulting in a minor adverse significant effect. Whilst this is a different significant effect, due to the length of the proposed diversion, the minor adverse level of significant effect reported in the main ES will remain unchanged.
- 5.7.130 The amendment includes a minor realignment to Seeney Lane which has no material impact on the distance travelled by users of the lane. Retaining Seeney Lane as a bridleway with private access for motorised vehicles will have no impact on existing users of Seeney Lane (Bridleway M23a). The changes to Seeney Lane (Bridleway M23a) will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

- 5.7.131 There are no new or different operational significant effects to traffic and transport as a result of the amendment.

### *Mitigation and residual effects*

- 5.7.132 No changes to the mitigation measures reported in Volume 2, CFA20 of the main ES are required.
- 5.7.133 The proposed diversion of Footpath M23 will give rise to a different minor adverse residual significant effect but will not change the level of significance of the effects reported in the main ES. The other elements of the Kingsbury Road railhead area amendments will not give rise to a new or different residual significant effect and will not change the level of significance reported in the main ES.

### *Cumulative effects*

- 5.7.134 Cumulative effects are reported in Section 12, Volume 2, CFA20 of the main ES. The assessment of the amendment has taken into account these cumulative effects, including planned development, by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in other areas.

## Water resources and flood risk assessment

### *Scope, assumptions and limitations*

- 5.7.135 The assessment scope, key assumptions and limitations for water resources and flood risk are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.7.136 The only element of the amendment in the Kingsbury Road railhead area that could impact on water resources and flood risk is the revision to the balancing pond as part of the landscape earthworks and planting.

### *Existing baseline*

- 5.7.137 The balancing pond proposed at the Kingsbury Road railhead (as reported in the main ES and for this amendment) discharged into a tributary of the River Tame (Volume 5: Route Wide Appendix Map Book, WR-01-033, grid reference C4).

### *Future baseline*

#### **Construction (2017)**

- 5.7.138 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.139 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on water resources and flood risk.

#### **Operation (2026)**

- 5.7.140 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.7.141 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on water resources and flood risk.

### *Effects arising during construction*

- 5.7.142 Temporary construction works will be carried out in accordance with Section 16.3 of the draft CoCP. The proposed revisions to the balancing pond will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.7.143 Although the amendment results in a change to the number and location of the balancing ponds, the receiving watercourse for the discharge from the ponds will not change. The drainage has been designed to reduce the rate and volume of runoff from the route and the railhead and to avoid an increase in flood risk. The balancing ponds will be designed where practicable to discharge at existing runoff rates and will accommodate flood events up to and including the 1 in 100 annual probability (1%) including an allowance for climate change.

- 5.7.144 The proposed revisions to the balancing pond will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Effects arising from operation*

- 5.7.145 The amendment, including revision of the balancing pond in the Kingsbury Road railhead area will not give rise to a new or different significant operational effect and will not change the level of significance of the effects reported in the main ES.

#### *Mitigation and residual effects*

- 5.7.146 No additional mitigation measures (i.e. in addition to those identified in the main ES and ES) are required.

- 5.7.147 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Cumulative effects*

- 5.7.148 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 another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.8.1 In terms of effects on agriculture, forestry and soils, the Kingsbury Road railhead area amendments will result in the removal of one residual significant effect reported in the main ES. The major/moderate adverse residual significant effect on Land South of Bodymoor Heath Lane (B) (CFA20/21) is removed by the amendment. The level of significance of effect has been reduced to negligible, which is not significant. The amendment results in a different residual significant effect to that reported in the main ES for one holding. The major/moderate adverse (significant) effect on Land South of Parklands Stud (CFA20/27) does not change but there is an increase in the permanent land requirement from of the holding from 50% to 100% of the holding.
- 5.8.2 In terms of traffic and transport effects, the proposed diversion of Footpath M23 will give rise to a different minor adverse residual significant effect but will not change the level of significance of the effects reported in the main ES.
- 5.8.3 There are no other changes to the significance of the environmental effects as set out in the main ES (Volume 2, CFA20, Curdworth to Middleton).

## **5.9 North Wood area amendments (AP2-020-005)**

### **Revised access route to the Cuttle Mill mid-point auto-transformer station and balancing pond**

- 5.9.1 The Bill provides for the Cuttle Mill midpoint auto-transformer station located to the west of the route, north of the Birmingham and Fazeley Canal, to the south of Cuttle Mill Fishery. Access to this auto-transformer station is provided from the A4091 Tamworth Road, via Cuttle Mill Lane, running to the south-west of the Cuttle Mill

Fishery. This access also provided a route to the proposed balancing pond and emergency access points at each side of the railway (refer to main ES maps CT-06-113 and CT-05-113, grid references F7, G7 and H6, Volume 2, CFA20 Map Book).

- 5.9.2 Since submission of the Bill, an alternative route has been identified which will result in less land being removed from agricultural use in this area. As the Birmingham and Fazeley Canal restricts access to the Cuttle Mill midpoint auto-transformer station and balancing pond from the east and south-east, the only feasible alternative is to pass around the eastern boundary of the Cuttle Mill Fishery, following the toe of the North Wood embankment landscape earthworks on the west side of the route (refer to map CT-06-113, grid references F5, G5 and H5 in the SES and AP2 ES Volume 2, CFA20 Map Book). The revised access will result in a reduction in the footprint of the landscape mitigation earthworks and planting but the height of the earthworks will be maintained. The outer slope of the false cutting will be shaped accordingly and the balancing pond remodelled to suit the revised layout.

### **Revised access route to the balancing pond near North Wood**

- 5.9.3 The Bill provides for an access route to a balancing pond to the north of North Wood along a field boundary. This access route encroaches slightly into North Wood ancient woodland (refer to main ES maps CT-06-113 and CT-05-113, grid references C6 and D6 to D9, Volume 2, CFA20 Map Book).
- 5.9.4 Since submission of the Bill, it has been identified that the field boundary strip, selected as the access road route, had been set aside as part of an Environmental Stewardship Scheme. It has also been recognised that the access road route affected the edge of the ancient woodland.
- 5.9.5 This amendment includes relocation of this access route to the northern side of the adjoining field to the north (see map CT-06-113, grid references B6 to B9 in the SES and AP2 ES Volume 2, CFA20 Map Book). This will shorten the access route to the balancing pond and also avoid the areas of the environmental stewardship scheme and ancient woodland. The amendment also includes a minor adjustment to the location of the balancing pond.

### **Revisions to the landscape earthworks and planting between Cuttle Mill Fishery and Bodymoor Heath Lane**

- 5.9.6 The Bill provides for permanent landscape mitigation planting on land surrounding Cuttle Mill Fishery and North Wood to provide visual screening. This area of planting will include a translocation receptor site for ancient woodland soils to address the loss of ancient woodland from the North Wood LWS (refer to main ES maps CT-06-113, grid reference E6, Volume 2, CFA20 Map Book).
- 5.9.7 Since submission of the Bill, it has been identified that the mitigation planting could be relocated to an area of lower quality Subgrade 3b agricultural land within the same agricultural holding (see map CT-06-113 and CT-05-113, grid reference E6 in the SES and AP2 ES Volume 2, CFA20 Map Book). Incorporating some changes to the landscape earthworks, this will reduce the amount of high quality agricultural land removed from use.

- 5.9.8 The amendment includes a reduction in the landscape mitigation planting on the west side of the route, an increase in planting on the east side of the route and a reduction in landscape earthworks on both sides of the route. The replacement planting areas will serve as receptors for the ancient woodland soils and remain contiguous with North Wood to provide visual screening and habitat connectivity. The redesign will utilise a greater proportion of smaller field remnants and Subgrade 3b land and reduce the area of Subgrade 3a land removed from agricultural use.

### **Reduction in the width of the North Wood landscape earthworks**

- 5.9.9 The Bill provides for false cuttings on both sides of the route between the Cuttle Mill underbridge and the North Wood Scheduled Monument. Large landscape earthworks are located on the east side of the route (refer to main ES maps CT-06-113 grid references C<sub>4</sub>, D<sub>4</sub> and E<sub>4</sub>, Volume 2, CFA20 Map Book). This will provide screening to views of trains as the route rises southwards to cross the Birmingham and Fazeley Canal and the M<sub>42</sub> motorway. The landscape earthworks will be provided with relatively shallow reverse slopes to enable the land to be returned to agricultural use.
- 5.9.10 Since submission of the Bill, it has been identified that the outer slope of the landscape earthworks on the east side of the route at this location could be designed with steeper gradients to reduce the area of land removed temporarily from agricultural use and maximise the area of level agricultural land available permanently (refer to map CT-06-113 and CT-05-113, grid references C<sub>4</sub> to E<sub>4</sub> in the SES and AP2 ES Volume 2, CFA20 Map Book). The full area of the outward facing slope of the landscape earthworks will be subject to landscape planting as the steeper slopes will make this area unsuitable for return to agricultural use.

### **Scope of assessment**

- 5.9.11 The North Wood area amendments will result in a net reduction of 4.3ha of land required on a temporary basis and a new increase of 3.2ha of land required on a permanent basis, primarily as a result of the revisions to the landscape earthworks and planting.
- 5.9.12 The amendment is not considered to result in changes that will require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: air quality; community; land quality; and socio-economics. However, there are changes where reassessment is considered to be required in respect of agriculture, forestry and soils; cultural heritage; ecology; landscape and visual assessment; sound, noise and vibration; traffic and transport; and water resources and FRA.

### **Agriculture, forestry and soils**

#### *Scope, assumptions and limitations*

- 5.9.13 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

### *Existing baseline*

- 5.9.14 Bedrock of the Mercia Mudstone Group underlies the whole of the study area. The North Wood area is covered partly by head (i.e. clay and silt), with glacial outwash sands and gravels in the vicinity.
- 5.9.15 The characteristics of the soils are described by the Soil Survey of England and Wales and shown on the National Soil Map. The soils are grouped into associations which are groups of soils of similar types.
- 5.9.16 The soils developed in the clayey and silty head deposits are grouped in the Whimple 3 association, with medium clay loam or medium silty clay loam topsoil and upper subsoil. There is generally slight seasonal waterlogging on this land (Wetness Class [WC] II) but, on lower slopes, soils are more seasonally waterlogged (WC III to IV). The quality of agricultural land on these soils is limited to Subgrade 3a.
- 5.9.17 Soils of the Arrow association are mapped on the river terrace and glacial outwash deposits. These have deep permeable sandy loam topsoils and subsoils variably affected by groundwater with sands and gravels at depth. They experience slight seasonal waterlogging (WC II), with lower lying areas having more prolonged waterlogging (WC III). Agricultural land developed on these soils is limited to Grade 2 and Subgrade 3a.
- 5.9.18 The main ES reported that agricultural land required for constructing and operating the original scheme in CFA20 is predominantly in the best and most versatile (BMV) category (91%), i.e. mainly in Subgrade 3a (47%) and the remainder of Grade 2 classification (44%).
- 5.9.19 The amendment affects two agricultural holdings, which are Land at Cuttle Mill/Rye Farm (CFA20/5) and Middleton House Farm (CFA20/6). In addition to cereals, holding CFA20/5 (404.7ha) produces crops which are irrigated, and is assessed as being of high sensitivity. Holding CFA20/6 (93.2ha) is an arable farm which is assessed as being of medium sensitivity.

### *Future baseline*

#### **Construction (2017)**

- 5.9.20 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.21 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on agriculture, forestry and soils.
- 5.9.22 Most existing environmental stewardship agreements will expire in 2015 and be replaced by a new environmental land management scheme (countryside stewardship) which is voluntary but competitive. It is more targeted than previous schemes, with its priorities being to protect and enhance biodiversity and water quality.
- 5.9.23 The widespread basic environmental management associated with entry level stewardship will be replaced by a new concept of greening introduced by Common Agricultural Policy reform, which will now be the main means by which farmers will

provide environmental benefits in return for their direct support payments. Greening will encourage the retention of permanent grasslands, greater crop diversification and the creation of Ecological Focus Areas. These changes will affect the detailed management of individual farm holdings but are not expected to change fundamentally the baseline circumstances described.

### **Operation (2026)**

- 5.9.24 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.25 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on agriculture, forestry and soils.

### *Effects arising during construction*

- 5.9.26 The area of best and most versatile agricultural land (in this case Subgrade 3a) required permanently for the amendment is increased from the main ES by 3.0ha. However, this change will not result in a different significant effect or change the level of significance of the effect on the best and most versatile land reported in the main ES.
- 5.9.27 The amendment will result in a slight decrease in the amount of land required permanently from holding CFA20/5 (0.6ha or 0.2% of the holding). The amendment will result in an increase in the amount of land required permanently from holding CFA20/6 (3.5ha or 3.8% of the holding). These changes will not result in a different significant effect or change the significance of the effects reported in the main ES or AP1 ES.

### *Effects arising from operation*

- 5.9.28 The amendment will not give rise to a new or different significant operational effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.9.29 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.9.30 The amendment will not result in new or different significant effects or change the level of significance of the residual effects reported in the main ES.

### *Cumulative effects*

- 5.9.31 There are no new or different likely residual significant effects for agriculture, forestry and soils as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## Cultural heritage

### *Scope, assumptions and limitations*

- 5.9.32 The assessment scope, key assumptions and limitations for cultural heritage are as set out Volume 1, the SMR (Volume 5: Appendix CT-001 -000) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.

### *Existing baseline*

- 5.9.33 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 heritage assets is provided in Volume 2, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical surveys for archaeology.
- 5.9.34 Details of survey and desk based work undertaken in this CFA since September 2013 are provided in Volume 5: Appendix CH-004-020 and Volume 5 map series CH-07; CH-09 and CH-10, where this is relevant to the assessment of a new or different significant effect.
- 5.9.35 Heritage assets potentially affected by the amendment through physical change or changes to their setting are:
- CWMo77 Cuttle Mill (low value);
  - CWMo23 Fish ponds in North Wood (moderate value);
  - CWMo24 North Wood ancient woodland (high value);
  - CWMo26 Cropmark linear feature (moderate value);
  - CWMo27 Moat at North Wood (high value);
  - CWMo83 Middleton House Farm (low value); and
  - CWMo84 Primrose Cottage, Bodymoor Heath Road (low value).

### *Future baseline*

#### **Construction (2017)**

- 5.9.36 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.37 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on cultural heritage.

#### **Operation (2026)**

- 5.9.38 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

- 5.9.39 None of the identified developments affects the assessment of the AP2 scheme’s likely operational impacts on cultural heritage.

*Effects arising during construction*

- 5.9.40 The main ES reported a temporary and permanent moderate adverse effect on Cuttle Mill (asset reference CWMo77) due to extensive construction works associated with the embankment and changes to the relationship of the asset with the surrounding historic landscape respectively. The revised access route to the Cuttle Mill mid-point auto-transformer station will pass closer to the asset, but neither this or the other elements of the amendment will be of sufficient scale to change the level of significance of the effects on this asset reported in the main ES.
- 5.9.41 The main ES reported a temporary and permanent major adverse effect on North Wood ancient woodland (asset reference CWMo24) resulting from extensive construction work associated with the embankment and loss of woodland from the asset. The revised access route to the balancing pond near North Wood results in a slight reduction in the land required from this asset but this does not change the level of significance (permanent major adverse). When considered in the context of the original scheme the other changes associated with this amendment are not of sufficient scale to change the level of significance of the effects on this asset reported in the main ES.
- 5.9.42 The main ES reported a permanent medium adverse impact and moderate adverse effect on fish ponds at North Wood (asset reference CWMo23) and a permanent high adverse impact and major adverse effect at the scheduled moat at North Wood (asset reference CWMo27) due to impacts on their historic landscape setting. The reduction in the width of the North Wood landscape earthworks will not reduce the impacts on the historic landscape which will remain severed by the route. The amendment will therefore not give rise to a new or different significant effect and will not change the level of significance of the effects on these assets reported in the main ES.
- 5.9.43 The main ES reported a high adverse impact and major adverse effect on the cropmark linear features east of the route at Middleton House Farm (asset reference CWMo26). The reduction in the width of the North Wood landscape earthworks will result in a small reduction in the land required from this asset. The reduction is not of sufficient scale to change the level of significance of the effects on this asset reported in the main ES.
- 5.9.44 The main ES reported a temporary and permanent high adverse impact and moderate adverse effect on Middleton House Farm (asset reference CWMo83) as a result of the proximity of the asset to construction work, demolition of farm buildings and alteration to historic landscape. The revisions to landscape earthworks and planting in the vicinity of this asset will not result in a material change to the effects reported in the main ES due to their small scale in comparison to the original scheme.

*Effects arising from operation*

- 5.9.45 The revised access routes to the Cuttle Mill midpoint auto-transformer station and balancing pond near North Wood will not give rise to a new or different significant effect and will not change the level of significance of the operational effects reported in the main ES.

- 5.9.46 The main ES reported a high adverse impact and major adverse operational effect on the scheduled moat at North Wood (asset reference CWM027) as a result of changes in setting due to increased noise and the visibility of trains. The revision of landscape mitigation planting will increase the area of planting to the south and north of the asset, however, this will not change the level of significance of the operational effects on this asset reported in the main ES. There are no new or different significant effects on this asset as a result of the amendment.
- 5.9.47 The main ES reported a medium adverse impact and minor adverse effect (not significant) on Primrose Cottage (asset reference o84) through changes in setting as a result of the visibility of the route and increased noise. The increased planting to the south-west of the asset will reduce visibility of the HS2 route, which will reduce the impact from medium adverse to low adverse, but the adverse effect will remain minor (not significant) as reported in the main ES. There are no new or different significant effects on this asset as a result of the amendment.

#### *Mitigation and residual effects*

- 5.9.48 The draft CoCP sets out the provisions that will be adopted to control effects on cultural heritage assets. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.9.49 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Cumulative effects*

- 5.9.50 There are no new or different likely significant cumulative effects for cultural heritage as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

### **Ecology**

#### *Scope, assumptions and limitations*

- 5.9.51 The assessment scope for ecology is set out in Volume 1 of the SES and AP2 ES. The key assumptions and limitations and the methodology for determining significance of effects are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.
- 5.9.52 To address any limitations in data, a precautionary baseline has been adopted according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. 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 AP2 scheme.

### *Existing baseline*

- 5.9.53 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES, additional survey work for bats and great crested newt undertaken since the main ES, aerial photography and relevant existing information gathered for the main ES from national organisations and regional and local sources including Warwickshire County Council (Warwickshire Biological Records Centre) and Warwickshire Wildlife Trust.
- 5.9.54 A summary of the baseline information relevant to the assessment of the amendment is provided in the following sections. Further details of all baseline information obtained since the main ES is described in Part 1 of this report; with further details provided in Volume 5: Appendix EC-001-003. For those receptors described in the main ES, further details are provided in Volume 2, CFA20, Section 7 and in Volume 5: CFA20, maps EC-01 to EC-12.

### **Designated sites**

- 5.9.55 There is one LWS (North Wood LWS) located within the area of the amendment. North Wood LWS is situated near Middleton House Farm approximately 2.3km south of Middleton village. The LWS contains ancient semi-natural and replanted woodland. The wood is designated as an example of pedunculate oak-bracken-bramble community, which is characteristic woodland on the more acid soils found in this area. However, only the canopy in the central third of the wood is dominated by pedunculate oak, with the rest being dominated by ash. This woodland is lowland mixed deciduous woodland, a habitat of principal importance, and is identified in the main ES as being of county/metropolitan value.

### **Habitats**

- 5.9.56 The area of land required temporarily for the amendment is within an area of arable fields with hedgerow boundaries considered to be of local/parish value and broadleaved woodland comprising North Wood and nearby Mill Plantation and Lower Mill Plantation at Cuttle Mill Fishery, which are outside the LWS woodland. These three woodlands are lowland mixed deciduous woodland, a habitat of principal importance. Both Mill and Lower Mill plantations are identified in the main ES as being of district/borough value.
- 5.9.57 North Wood contains ancient semi-natural and replanted woodland. It is included on the Natural England inventory of habitats of principal importance as lowland mixed deciduous woodland, identified in Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006). Lowland mixed deciduous woodland is widespread nationally but sparse within Warwickshire and is likely to be of county/metropolitan value. This woodland is located within the land required for the original scheme.

### **Protected and/or notable species**

- 5.9.58 Assessments of the potential for trees to support roosting bats were undertaken during detailed ground level assessments (mainly located within North Wood). A total of 14 trees were considered to have medium or high potential for roosting bats. No confirmed bat roosts were recorded.

- 5.9.59 In the main ES, activity and static surveys confirmed a diverse assemblage of bats using habitats in proximity to the north and south of North Wood. There are no barriers to dispersal between the habitats known to be utilised by these assemblages of bat species and habitats at North Wood. Bat species include common pipistrelle, soprano pipistrelle, brown long-eared, *Myotis* species, noctule and Leisler's, which may all roost within trees in the area. In the main ES, the bat assemblage/population was evaluated as up to regional value as a consequence of the roosting and foraging habitat within and near North Wood. Additional survey since the main ES has added detailed information relating to trees with medium or high potential for roosting bats. This additional information does not change the value reported in the main ES.
- 5.9.60 As a precaution it is assumed that, based upon the assemblage recorded in the area, North Wood and the woodland at Cuttle Mill Fisheries could support bat breeding colonies of both common and rarer species of regional value.

#### *Future baseline*

##### **Construction (2017)**

- 5.9.61 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.62 None of the identified developments affects the assessment of AP2 scheme's likely construction impacts on ecology.

##### **Operation (2026)**

- 5.9.63 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.64 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on ecology.

#### *Effects arising during construction*

##### **Avoidance and mitigation measures**

- 5.9.65 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES), which includes translocation of protected species where appropriate.

### Designated sites

- 5.9.66 The main ES reported that there would be habitat loss and severance within North Wood LWS as a result of the land required for construction of the original scheme, including North Wood embankment. There would be permanent loss of 2.2ha, approximately 30% of the 7.2ha LWS which includes both areas of ancient semi-natural and replanted ancient woodland. The main effects would include direct habitat loss of ancient woodland; fragmentation and isolation of retained eastern and western sections of the woodland either side of the original scheme; and reduced size of remnant blocks causing vulnerability to edge effects. These impacts would result in a permanent adverse effect on the integrity of the LWS, which would be significant at a county/metropolitan level.
- 5.9.67 The amendment will result in a different significant effect due to the reduction in the amount of woodland lost by 0.3ha to 1.9ha. However, this does not change the significance level of the adverse effect reported in the main ES.

### Habitats

- 5.9.68 The main ES reported loss and severance of ancient woodland of approximately 30% (2.2ha) within North Wood. The loss of this woodland would cause a permanent adverse effect on the conservation status of ancient woodland which would be significant at a county/metropolitan level. The amendment will result in a different significant effect by reducing the amount of ancient woodland lost by 0.3ha. The loss of 1.9ha of ancient woodland within the land required for the AP2 revised scheme remains a significant adverse effect at the county/metropolitan level.
- 5.9.69 The main ES reported that there would be a loss of arable land and species poor hedgerows resulting in a local/parish level effect that is not significant. The loss of woodland around Cuttle Mill Fishery was also considered unlikely to result in an effect at more than the local/parish level within the main ES.
- 5.9.70 The area of woodland habitat to be lost will also be reduced around Cuttle Mill Fishery (Lower Mill and Mill Plantation) from 0.1ha to 0.07ha due to the amendment. There will be no additional loss of arable land or hedgerows due to the amendment. Although there is a reduction in habitat loss resulting from the amendment this will not change the level of significance of effects on habitats reported in the main ES.
- 5.9.71 It is unlikely that any other effects on habitats of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: Appendix EC-003-003.

### Protected and/or notable species

- 5.9.72 Within the main ES, the original scheme crossed key commuting routes and foraging habitats around Cuttle Mill Fishery and the Birmingham and Fazeley Canal used by a diverse assemblage of bats including common pipistrelle, soprano pipistrelle, noctule; brown long-eared and Leisler's. The main ES reported a permanent loss and severance of key commuting routes along hedgerows but connectivity along the Birmingham and Fazeley Canal would be retained. Disturbance and severance impacts may deter bats from using the habitats and move bat populations away from preferred foraging and commuting habitats. While the impacts on areas of key

foraging and key commuting habitat would be localised, the habitat supports a diverse assemblage of bats, some of which are rare within the UK, and the combination of these impacts would lead to an adverse effect on the conservation status of the assemblage of bats concerned that will be significant at a district/borough level as reported in the main ES.

5.9.73 There will be a reduction in the habitat loss within the woodlands around Cuttle Mill Fishery (Lower Mill and Mill Plantation) and North Wood due to the amendment and there are therefore no additional impacts on bats compared to those reported in the main ES. The amendment will not give rise to a new or different effect and will not change the level of significance of the effects on species reported in the main ES.

5.9.74 It is unlikely that any other effects on species of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: Appendix EC-003-003.

### **Cumulative effects**

5.9.75 There are no new or different likely effects for ecology as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

### **Mitigation and residual effects**

#### *Other mitigation measures*

5.9.76 The amendment slightly reduces the area of ecological mitigation to the south of North Wood from 2.6ha to 2.5ha. However, an additional mitigation area (of 0.6ha) between Cuttle Mill Fishery and the balancing pond at North Wood means the total area of mitigation as part of the amendment is 3.1ha which is more than in the original scheme (2.6ha). The amendment provides contiguous woodland planting between the remaining sections of North Wood and the wider woodland around Cuttle Mill Fishery. Consequently the amendment will not change the significance of effects on the woodland habitat reported in the main ES. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.

#### *Summary of likely residual effects*

5.9.77 The amendment reduces the loss of ancient woodland within North Wood by 0.3ha, so that the remaining area within the land required is 1.9ha. This results in a different significant effect. However, the effect remains significant at the county/metropolitan level. Ancient woodland is an irreplaceable resource. Effects arising from operation

5.9.78 There are no new or different operational effects for ecology as a result of the North Wood area amendments.

### **Landscape and visual assessment**

#### *Scope, assumptions and limitations*

5.9.79 The assessment scope, key assumptions and limitations for the landscape and visual assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES. An

update to the methodology for the landscape and visual assessment is also described in Volume 1 of the AP1 ES.

### *Existing baseline*

5.9.80 The amendment is located within the Middleton to Curdworth Tame Valley Farmlands LCA as described in Volume 2, CFA20, Section 9.3 of the main ES.

5.9.81 The following viewpoints are also located in close proximity to the area and are described in the main ES (Volume 2, CFA20, Section 9):

- 324.2.004 and 324.3.003 (Views from residences around Bodymoor Heath Lane and from PRoW Footpath (T18) near Homestead Farm, off Bodymoor Heath Lane);
- 322.3.010 (View south-west along the Birmingham and Fazeley Canal (local cycle route 017));
- 324.3.007 and 322.3.005 (Views south-east from PRoW (Footpath T26), near to Marston Farm Hotel, south of Bodymoor Heath and from Seeney Lane Bridleway (T154), as it crosses the M42);
- 322.3.006 and 324.3.006 (Views west from junction of PRoW Footpath (T18) and Bridleway (T154) to the east of North Wood and from the Birmingham to Fazeley Canal towpath near to Cheatle's Farm Bridge));
- 324.3.002 (View south and west from the public cycleway on the Birmingham and Fazeley Canal towpath);
- 319.3.003, 319.3.009 and 319.3.010 (Views east from the PRoW (M6/ local cycle route) adjacent to the Birmingham and Fazeley Canal and north-east and south-east adjacent to the Birmingham and Fazeley Canal towpath; view north from the towpath adjacent to the Birmingham and Fazeley Canal);
- 321.2.001 (View south-east from Grange Farm Cottages, off the A4091 Tamworth Road);
- 321.2.012 (View north-east from residence within Cuttle Mill Fishery);
- 321.6.006 (View north-east from Cuttle Mill Fishery and office complex);
- 321.2.004 and 321.3.005 (Views east from residence within The Belfry golf club and from Historic Green Lane, Cuttle Mill Lane);
- 323.3.001 (View east across The Belfry golf course from Wishaw Lane);
- 323.2.004 and 325.2.006 (Views north, south and east from The Bungalow and Middleton House Farm and east and south from Pool House Farm on the corner of Brick Kiln Lane and the A4091 Tamworth Road); and
- 323.2.002 (View north-east from Maple leaf Farm on the A4091 Tamworth Road).

### *Future baseline*

#### **Construction (2017)**

- 5.9.82 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.83 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on landscape and views.

#### **Operation (2026)**

- 5.9.84 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.85 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on landscape and views.

### *Effects arising during construction*

#### **Landscape assessment**

- 5.9.86 Middleton to Curdworth Tame Valley Farmland LCA is of fair condition, low tranquillity, of regional value and therefore it is considered to be of medium sensitivity to change. The main ES reported a major adverse effect on the Middleton to Curdworth Tame Valley Farmland LCA.
- 5.9.87 The nature of the construction activity associated with the peak construction phase of the amendment is not expected to change relative to the original scheme reported in the main ES. As such, the amendment will not give rise to a new or different significant landscape effect and will not change the level of significance of the effects reported in the main ES.

#### **Visual assessment**

- 5.9.88 There are 20 viewpoints in the area of this amendment (refer to Volume 2, CFA20, Section 9 of the main ES for individual viewpoint assessments).
- 5.9.89 Viewpoint 322.3.010 (View south-west along the Birmingham and Fazeley Canal (local cycle route 017)): the main ES reported south and west facing views of the Birmingham and Fazeley Canal viaduct construction and the associated cuttings and embankments, all visible in the foreground and resulting in major adverse effects.
- 5.9.90 Viewpoints 324.2.004 and 324.3.003 (Views from residences around Bodymoor Heath Lane and from PRoW Footpath (T18) near Homestead Farm, off Bodymoor Heath Lane): the main ES reported west facing views of the construction of Bodymoor Heath Lane overbridge, Hunts Green underbridge and views to the construction of the North Wood underbridge. There will also be views of the demolition of part of Middleton House Farm and the formation of the North Wood embankment and Bodymoor Heath Lane embankments. Overall, this resulted in a major adverse effect.
- 5.9.91 Viewpoints 324.3.007 and 322.3.005 (Views south-east from PRoW (Footpath T26), near to Marston Farm Hotel, south of Bodymoor Heath and from Seeney Lane

Bridleway (T154), as it crosses the M42): the main ES reported west facing views of construction activities visible in the middle ground including tall construction plant at the Cuttle Mill underbridge. The removal of part of North Wood will also alter a key characteristic of the existing view. Overall, this resulted in moderate adverse effects.

- 5.9.92 Viewpoints 322.3.006 and 324.3.006 (Views west from junction of PRoW Footpath (T18) and Bridleway (T154) to the east of North Wood and from the Birmingham to Fazeley Canal towpath near to Cheatle's Farm Bridge): the main ES reported west facing views of the Cuttle Mill underbridge construction compound in the foreground. Tall construction plant at Cuttle Mill, Hunts Green and North Wood underbridges will also be visible, together with the demolition of Middleton House Farm and loss of mature trees at North Wood and views of the formation of North Wood embankment in the middle ground. Overall, this resulted in major adverse effects.
- 5.9.93 Viewpoint 324.3.002 (View south and west from the public cycleway on the Birmingham and Fazeley Canal towpath): the main ES reported west facing views of construction activities associated with the North Wood embankment and Hunts Green underbridge as well as the demolition of part of Middle House Farm resulting in moderate adverse effects.
- 5.9.94 The changes to planting and embankments as a result of the amendment from this grouping of viewpoints will marginally reduce the area of construction activities visible but it will not alter the nature of the construction activity associated with the peak construction phase. As such, the amendment will not give rise to a new or different significant visual effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.95 Viewpoints 319.3.003, 319.3.009 and 319.3.010 (Views east from the PRoW (M6/ local cycle route) adjacent to the Birmingham and Fazeley Canal and north-east and south-east adjacent to the Birmingham and Fazeley Canal towpath; view north from the towpath adjacent to the Birmingham and Fazeley Canal): the main ES reported north and east facing views of construction activity, including the construction compounds and access tracks associated with the Birmingham and Fazeley Canal. Tall construction plant at the Birmingham and Fazeley Canal viaduct and the construction of cuttings and embankments for the main line are visible in the foreground and middle ground. Overall, this resulted in major adverse effects.
- 5.9.96 Viewpoint 321.2.001 (View south-east from Grange Farm Cottages, off the A4091 Tamworth Road): the main ES reported east facing views of construction activity, visible in the middle and background including tall construction plant at the Birmingham and Fazeley Canal viaduct and the construction of the North Wood embankment. Overall, this resulted in moderate adverse effects.
- 5.9.97 The reductions to planting and embankments and the remodelling of the balancing ponds associated with the amendment are visible from this grouping of viewpoints. Whilst the amendment will marginally reduce the area of construction activities visible, it will not alter the nature of the construction activity associated with the peak construction phase. As such, the amendment will not give rise to a new or different significant visual effect and will not change the level of significance of the effects reported in the main ES.

- 5.9.98 Viewpoints 321.6.006 (View north-east from Cuttle Mill Fishery and office complex) and 321.2.012 (View north-east from residence within Cuttle Mill Fishery): the main ES reported extensive views of construction activity in the foreground including the construction of Cuttle Mill underbridge and North Wood embankment, resulting in a major adverse effect at Viewpoint 321.6.006. Viewpoint 321.2.012 has boundary vegetation, filtering views and reducing the effects to moderate adverse.
- 5.9.99 The changes to planting and embankments and the realignment of the access track associated with the amendment will alter the views of construction activity with increased activity in some areas and reduced activity in others. Overall, it will not alter the nature of the construction activity associated with the peak construction phase. The amendment will not give rise to a new or different significant visual effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.100 Viewpoints 321.2.004 and 321.3.005 (Views east from residence within The Belfry golf club and from Historic Green Lane, Cuttle Mill Lane): the main ES reported construction activities associated with the North Wood embankment, the balancing pond area and tall construction plant at the Cuttle Mill underbridge visible in the middle ground. Tall construction plant at the Birmingham and Fazeley Canal viaducts will also be visible in the background resulting in major adverse effects from these viewpoints.
- 5.9.101 The reductions in planting and embankments and the relocation of an access track associated with the amendment are visible from this grouping of viewpoints and will marginally reduce the area of construction activities visible. However, the amendment will not alter the nature of the construction activity associated with the peak construction phase. The amendment will not give rise to a new or different significant visual effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.102 Viewpoint 323.3.001 (View east across The Belfry golf course from Wishaw Lane): the main ES reported views of construction activities associated with the Bodymoor Heath Lane diversion, the Hunts Green and North Wood underbridges, and the Bodymoor Heath Lane overbridge and Primrose culvert construction compounds and plant and material storage areas. Overall, this resulted in a moderate adverse effect.
- 5.9.103 The additional planting and relocated access track associated with the amendment will be visible from this location and will marginally increase the construction activities visible. However, it will not alter the nature of the construction activity associated with the peak construction phase. The amendment will not give rise to a new or different significant visual effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.104 Viewpoints 323.2.004 and 325.2.006 (Views north, south and east from The Bungalow and Middleton House Farm and east and south from Pool House Farm on the corner of Brick Kiln Lane and the A4091 Tamworth Road): the main ES reported east facing views of construction activity associated with the Bodymoor Heath Lane overbridge, the Hunts Green underbridge and the North Wood underbridge, including tall construction plant. A major adverse effect was reported in the main ES.

- 5.9.105 Viewpoint 323.2.002 (View north-east from Maple leaf Farm on the A4091 Tamworth Road): the main ES reported east facing views of construction activity including oblique views of the Bodymoor Heath Lane overbridge construction compound. There will also be views of the construction of Bodymoor Heath Lane overbridge and Hunts Green underbridge; the demolition of part of Middleton House Farm and the formation of North Wood embankment. Overall, this resulted in a major adverse effect.
- 5.9.106 The additional planting areas associated with the amendment will be visible from this location, marginally increasing the construction activities visible from these viewpoints. However, it will not alter the nature of the construction activity associated with the peak construction phase. The amendment will not give rise to a new or different significant visual effect and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

#### **Landscape assessment**

- 5.9.107 Middleton to Curdworth Tame Valley Farmland LCA is of fair condition, low tranquillity, of regional value and therefore it is considered to be of medium sensitivity to change. The main ES reported a moderate adverse effect on the Middleton to Curdworth Tame Valley Farmland LCA in year 1 of operation, reducing to non-significant in years 15 and 60.
- 5.9.108 The amendment is considered to be small in scale in comparison to the overall scale of the landscape character area within which it is located. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

#### **Visual assessment**

- 5.9.109 There are 17 viewpoints in the area of this amendment. The main ES reported a mixture of moderate and major adverse effects to these viewpoints during operation reducing to non-significant in some cases in year 60 (refer to Volume 2, CFA20, Section 9 of the main ES for individual viewpoint assessments).
- 5.9.110 Viewpoint 322.3.010 (View south-west along the Birmingham and Fazeley Canal (local cycle route 017)): the main ES reported north and west facing views from PRow (local cycle route 017) along the Birmingham and Fazeley Canal. The original scheme will be highly visible in the foreground and will include the North Wood embankment, the overhead line equipment and passing trains, with major adverse effects remaining through years 1, 15 and 60.
- 5.9.111 The planting areas will be slightly reduced in the area of the amendment. However, this will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

- 5.9.112 Viewpoint 322.3.005 (Views from Seeney Lane Bridleway (T154), as it crosses the M42]: the main ES reported west facing views of the route, including overhead line equipment and passing trains, with a moderate adverse effect in years 1 and 15 of operation. By year 60 of operation, matured planting will almost entirely obscure views of the North Wood embankment and the overhead line equipment and passing trains reducing effects on this viewpoint to non-significant.
- 5.9.113 The reduction in the extent of the embankment and the additional landscape planting associated with the amendment will improve this view. However, planting will not have matured by year 15 and the Cuttle Mill underbridge together with the overhead line and passing trains are likely to remain visible. The effects will therefore remain as moderate adverse at years 1 and 15, reducing to non-significant at year 60. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.114 Viewpoint 322.3.006 (Views west from junction of PRow Footpath (T18) and Bridleway (T154) to the east of North Wood): the main ES reported west facing views of the original scheme which will be visible in the foreground and middle ground on the Cuttle Mill underbridge. North Wood embankment will be visible in the middle ground as well as many new elements. This will result in a major adverse effect at years 1 and 15, reducing to moderate adverse by year 60.
- 5.9.115 The additional planting on the embankment associated with this amendment will improve the view but planting will not have matured sufficiently by year 15 and many elements are likely to remain visible with effects remaining as major adverse. By year 60, the effects will remain as moderate adverse due to the proximity of the viewpoint to the HS2 route in this location. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.116 Viewpoint 324.3.002 (View south and west from the public cycleway on the Birmingham and Fazeley Canal towpath): the main ES reported west facing views of the original scheme crossing the floodplain on the North Wood embankment. This would include views of trains and overhead line equipment filtered by hedgerows and canal side vegetation in the foreground. This resulted in moderate adverse effects remaining through years 1, 15 and 60. Although proposed planting will provide some screening, the elements of the scheme will remain clearly visible beyond.
- 5.9.117 The additional planting to the embankment in this location associated with the amendment will improve the view but planting will not have matured sufficiently by year 15 and many elements are likely to remain visible with effects remaining as moderate adverse through years 1 and 15. However the effects will reduce to non-significant by year 60.

- 5.9.118 Viewpoints 324.3.006 (View from the Birmingham to Fazeley Canal towpath near to Cheatle's Farm Bridge), 324.3.003 (View from PRoW Footpath (T18) near Homestead Farm, off Bodymoor Heath Lane), and 324.2.004 (Views from residences around Bodymoor Heath Lane): the main ES reported west facing views of the original scheme on embankment, including overhead line equipment and trains, with major or moderate adverse effects remaining through years 1, 15 and 60. Although proposed planting will provide some screening, the elements of the original scheme will remain clearly visible beyond.
- 5.9.119 The additional planting to the embankment associated with the amendment will be on the periphery of these viewpoints and will improve the view marginally, however elements of the scheme will remain clearly visible. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.120 Viewpoints 319.3.003, 319.3.009 and 319.3.010 (Views east from the PRoW (M6/ local cycle route) adjacent to the Birmingham and Fazeley Canal and north-east and south-east adjacent to the Birmingham and Fazeley Canal towpath; view north from the towpath adjacent to the Birmingham and Fazeley Canal): the main ES reported north and east facing views of the route and the Birmingham and Fazeley Canal viaducts including overhead line equipment and trains on Dunton Wood embankment. This resulted in major adverse effects in the winter of year 1 of operation, reducing to moderate adverse by the summer of year 1 remaining to year 15 of operation. By year 60 of operation, the proposed planting will screen views of the passing trains and overhead line equipment and filter views of the trains and lower limits of the overhead line equipment over the Birmingham and Fazeley Canal viaducts, reducing the effects to non-significant.
- 5.9.121 The reductions to planting and remodelled balancing pond in this area associated with the amendment will marginally reduce the screening in this area from these viewpoints. However, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.122 Viewpoints 321.2.012 (View north-east from residence within Cuttle Mill Fishery) and 321.6.006 (View north-east from Cuttle Mill Fishery and office complex): the main ES reported east facing views from Cuttle Mill Fishery of the Cuttle Mill underbridge noise barrier, overhead line equipment and passing trains in close proximity resulting in moderate adverse effects at years 1 and 15, reducing to non-significant by year 60.
- 5.9.123 The reductions to the planting and slopes in this area associated with the amendment will marginally reduce the screening from these viewpoints but not sufficiently to increase the effects. Therefore, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.124 Viewpoints 321.2.004 and 321.3.005 (Views east from residence within The Belfry golf club and from Historic Green Lane, Cuttle Mill Lane): the main ES reported east facing views from a private residence within The Belfry golf club and from the Historic Lane, Cuttle Mill lane towards the Cuttle Mill underbridge and North Wood embankment

resulting in moderate adverse effects in years 1 and 15, reducing to non-significant by year 60.

- 5.9.125 The changes to slopes and reductions in planting associated with the amendment in this area will marginally reduce the screening value from these viewpoints but not sufficiently to increase the effects. Therefore, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.126 Viewpoint 323.3.001 (View east across The Belfry golf course from Wishaw Lane): the main ES reported east facing views of the route including the Bodymoor Heath Lane overbridge and false cuttings in front of Bodymoor Heath Training Grounds. The Hunts Green underbridge and the North Wood embankment are also likely to be visible with vegetation loss apparent in the vicinity of Middleton Pool. This resulted in a moderate adverse effect in year 1 of operation, reducing to non-significant by years 15 and 60 of operation once proposed planting has matured.
- 5.9.127 The additional planting around the balancing ponds associated with the amendment likely to be visible from this location is considered to be marginal and will not change the effects. The amendment will therefore not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.128 Viewpoint 323.2.004 and 325.2.006 (Views north, south and east from The Bungalow and Middleton House Farm and east and south from Pool House Farm on the corner of Brick Kiln Lane and the A4091 Tamworth Road): the main ES reported views of the route including the Hunts Green underbridge, the North Wood embankment, as well as passing trains and overhead line equipment in close proximity. The embankment and overbridge of the realigned Bodymoor Heath Lane and a large balancing pond will also be clearly visible. This resulted in a major adverse effect remaining through years 1, 15 and 60.
- 5.9.129 The additional planting associated with the amendment in this area will not improve the screening value from this viewpoint and its proximity to the route means that many elements will remain highly visible. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.9.130 Viewpoint 323.2.002 (View north-east from Maple leaf Farm on the A4091 Tamworth Road): the main ES reported east facing views of the route crossing the floodplain on embankment with oblique, close range views of the Hunts Green underbridge and Bodymoor Heath Lane overbridge. Trains and overhead line equipment will also be visible. This resulted in a moderate adverse effect in year 1 of operation reducing to non-significant in years 15 and 60 once proposed planting has matured.
- 5.9.131 The additional planting associated with the amendment in this area will marginally improve the screening value from this viewpoint but the proximity of the route means that many elements will remain visible with the moderate adverse effects remaining at year 1, reducing to non-significant in years 15 and 60. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.9.132 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.9.133 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.9.134 There are no new or different likely significant cumulative effects for landscape and visual as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## **Sound, noise and vibration**

### *Scope, assumptions and limitations*

- 5.9.135 The assessment scope, key assumptions and limitations for the sound, noise and vibration assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.9.136 Local assumptions and limitations for sound, noise and vibration are set out in Volume 2, CFA20 in the main ES.

### *Existing baseline*

- 5.9.137 The baseline sound, noise and vibration information for the area is described in the main ES (Volume 5: Appendix SV-002-020). Baseline sound levels representative of the assessment locations affected by the AP2 scheme have been used in the construction and operational assessments.

### *Future baseline*

- 5.9.138 In the absence of the HS2 scheme, existing sound levels in the area of the amendment are likely to increase gradually over time. This is primarily due to road traffic growth on the existing road network. Changes in car technology may offset some of the expected sound level increases due to traffic growth on low speed roads. On higher speed roads, tyre sound dominates overall levels and hence the expected growth in traffic is likely to continue to increase ambient sound levels.

## **Construction (2017)**

- 5.9.139 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.140 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on sound, noise and vibration.

## **Operation (2026)**

- 5.9.141 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

- 5.9.142 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on sound, noise and vibration.

*Effects arising during construction*

- 5.9.143 No construction noise or vibration significant effects in the vicinity of the North Wood area amendments were reported in the main ES.
- 5.9.144 The revised access route for the Cuttle Mill midpoint auto-transformer station and balancing pond located to the west of the HS2 route will move construction activities to within 40m of the residential property at Cuttle Mill (ID 157992).
- 5.9.145 An assessment has been undertaken to determine whether construction noise levels from the AP2 scheme will result in a likely significant effect, using the methodology and significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 5.9.146 The amendment, and associated construction activities, do not represent a substantive change to that detailed in the main ES, when considered in the context of the magnitude of change brought about by the original scheme. As a consequence, the predicted construction noise levels due to the AP2 scheme do not lead to a change in the impacts reported in the main ES. The amendment does not change the construction vibration levels.
- 5.9.147 The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

*Effects arising from operation*

- 5.9.148 The ES correction presented in the SES, Part 1, Section 2 identifies a new significant operational noise effect at Cuttle Mill Fishery. The main ES does not identify any residual significant operational noise or vibration effects in the vicinity of this amendment.
- 5.9.149 An assessment has been undertaken to determine whether operational noise levels from the AP2 scheme will result in a likely significant effect, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000). The predicted operational sound and vibration levels as a result of this amendment are presented in AP2 ES Appendix SV-004-020.
- 5.9.150 The amendment increases slightly the maximum operational sound levels at the Cuttle Mill Fishery, but does not result in a new or different significant operational noise effect. The amendment does not change the operational vibration levels.
- 5.9.151 The proposed mitigation measures including noise insulation will reduce noise inside Cuttle Mill Fishery such that it will not reach a level where it will significantly affect residents.
- 5.9.152 The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects from that reported in the SES (Part 1, Section 2.3, Table 2)

### *Mitigation and residual effects*

- 5.9.153 The assessment of construction noise and vibration assumes the implementation of the principles and management processes set out in the draft CoCP, as described in Volume 2, CFA20 in the main ES. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.9.154 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.9.155 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## **Traffic and transport**

### *Scope, assumptions and limitations*

- 5.9.156 The assessment scope, key assumptions and limitations of the traffic and transport assessment are set out in Volume 1, the SMR (Volume 5: Appendix CT-0001-000/1) and the SMR Addendum (Volume 5: Appendix CT-0001-000/2) of the main ES.

### *Existing baseline*

- 5.9.157 The environmental baseline for traffic and transport is set out in Volume 2, CFA20, Section 12 of the main ES. There is no change to the existing baseline as reported in the main ES.

### *Future baseline*

#### **Construction**

- 5.9.158 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA20, Section 12).

#### **Operation (2026 and 2041)**

- 5.9.159 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES (Volume 2, CFA20, Section 12).

### *Effects arising during construction*

- 5.9.160 The realignment of the access route to the Cuttle Mill midpoint auto-transformer station and access route to the balancing pond north of North Wood will not result in changes to the overall traffic flows compared with the original scheme. While the new access to the balancing pond near North Wood has no impact or effect on any footpath, the realignment of the access route to the Cuttle Mill auto-transformer station means that the new route will run close to Byway T179 for an additional 150m, cutting across the byway just north of the Cuttle Mill Fishery. These changes will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

- 5.9.161 There are no new or different operational effects for traffic and transport as a result of the amendment compared to those reported in the main ES.

### *Mitigation and residual effects*

- 5.9.162 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.9.163 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.9.164 Cumulative effects are reported in Section 12, Volume 2, CFA20 of the main ES. The assessment of the amendment has taken into account these cumulative effects, including planned development, by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in other areas.

## **Water resources and flood risk assessment**

### *Scope, assumptions and limitations*

- 5.9.165 The assessment scope, key assumptions and limitations for water resources and flood risk are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.9.166 Two of the elements of the North Wood area amendments are relevant to flood risk; the reduction in the width of the North Wood landscape earthworks, which will reduce the loss of floodplain; and the change to the access route at Cuttle Mill Fishery, which will cross a watercourse.

### *Existing baseline*

- 5.9.167 A tributary of the Langley Brook flows north-east from the outfall of the impounded water bodies at the Cuttle Mill Fishery. The surface water catchment area draining to this location is 3km<sup>2</sup> and there will be a baseflow contribution from the Secondary A aquifer. The flow at this location is likely to be affected by the managed operation of the impounded waterbodies upstream. The width of the 1 in 100 (1%) floodplain, allowing for climate change, at the proposed crossing is 40m.
- 5.9.168 There is a residential property at Cuttle Mill Fishery within the floodplain near to the route; this land use is categorised as more vulnerable (high value receptor).
- 5.9.169 Cuttle Mill Fishery is located within the floodplain of the tributary of Langley Brook (refer to Volume 5: Route Wide Appendix Map Books, Water Resources: Country North, Map WR-01-033).

### *Future baseline*

#### **Construction (2017)**

- 5.9.170 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

- 5.9.171 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on water resources and flood risk.

### **Operation (2026)**

- 5.9.172 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.9.173 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on water resources and flood risk.

### *Effects arising during construction*

- 5.9.174 Temporary construction works will be undertaken in accordance with the draft CoCP which incorporates river flood risk management.
- 5.9.175 The assessment carried out for the main ES showed that the original scheme had a negligible impact on the floodplain at Cuttle Mill. The amendment will result in a reduced loss of floodplain and therefore the impact will remain negligible.
- 5.9.176 The revised access route to the Cuttle Mill midpoint auto-transformer station and the balancing pond will pass around the eastern boundary of the residential receptor at Cuttle Mill Fishery, following the toe of the North Wood embankment landscape earthworks on the west side of the HS2 route. This access route passes over an existing culvert at Cuttle Mill. Construction of the amendment will not increase the length of this culvert and will not introduce a new or different impact or effect.
- 5.9.177 The amendments in the North Wood area will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

- 5.9.178 The amendments in the North Wood area will not give rise to a new or different significant operational effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.9.179 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.9.180 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.9.181 There are no new or different likely residual significant effects for water resources and FRA as a result of the amendments acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.10.1 The North Wood area amendments to access routes, landscape earthworks and planting will not result in new or different significant effects and do not change the significance of environmental effects as set out in the main ES (Volume 2, CFA20, Curdworth to Middleton).

## **5.11 Revised diversion of Footpath T17 at Bodymoor Heath Lane (AP2-020-006)**

- 5.11.1 The Bill provides for the permanent realignment of Footpath T17 at Hunts Green Farm on the west side of the HS2 route, along Brick Kiln Lane, then across the realigned Bodymoor Heath Lane and over the diverted Bodymoor Heath Lane overbridge, reconnecting with the existing route of Footpath T17 on the east side of the route near the Bodymoor Heath Training Grounds (refer to main ES maps CT-05-114 and CT-06-114, grid references C9 to E9, E8, E7, E6 to C6, Volume 2, CFA20 Map Book).
- 5.11.2 Since submission of the Bill, it has been identified that a greater length of the diverted footpath could be located off-road and a reduced length of the existing footpath will need to be stopped up. The amendment will also improve connections to other footpaths in the area.
- 5.11.3 The amendment will include Footpath T17 remaining on its existing alignment to the west of the HS2 route for a longer distance, until the intersection with the A4091 Tamworth Road. The footpath will then run southwards parallel to the A4091 Tamworth Road, in the area proposed for landscape earthworks and planting, before joining the Bodymoor Heath Lane overbridge to cross the route. East of the route, the footpath will then run north within the area proposed for landscape earthworks and planting, where it will join its existing alignment at the northern edge of the area proposed for wetland habitat creation (refer to map CT-06-114 and CT-05-114, grid references C7 to F7 and C6 to F6 in the SES and AP2 ES Volume 2, CFA20 Map Book). A fence and woodland planting will be installed between the proposed Footpath T17 alignment and the wetland edge. The amendment will result in a net increase of 280m<sup>2</sup> of land required on a temporary and permanent basis. The amendment will provide for a greater amount of the diverted Footpath T17 being provided off-road and greater connectivity to the wider footpath network to accommodate leisure and recreational users.
- 5.11.4 The overall diversion length of the amendment will be approximately 1.3km, which is greater than the diversion reported in the main ES. However, non-leisure and recreational users will be able to use an alternate footpath route with a shorter distance. This alternative route will follow the proposed route of the amendment for Footpath T17 on the western side of the HS2 route, join the Bodymoor Heath Lane overbridge to cross the HS2 route, then continue eastward along Bodymoor Heath Lane until the intersection with Footpath T20. This diversion length will be approximately 160m, which is shorter than the diversion reported in the main ES.

## Main local alternatives

- 5.11.5 An alternative proposal for diversion of Footpath T17 was also considered which would have included a footbridge over the HS2 route on the current route of the path. The footbridge would have needed to cross over the HS2 route on embankment as the route is too low for the provision of an underpass without provision of pumped drainage. As the footpath surveys indicated the path has very low usage there is no appreciable benefit to this alternative, but it would have increased the visibility of the scheme. The cost of this additional structure could not therefore be justified.

## Scope of assessment

- 5.11.6 The revised diversion of Footpath T17 is not considered to result in changes that will require a reassessment of the effects or proposed mitigation as set out in the main ES with respect to: agriculture, forestry and soils; air quality; community; land quality; landscape and visual assessment; socio-economics; sound, noise and vibration; and water resources and flood risk. However, reassessment is considered to be required in respect of cultural heritage; ecology; and traffic and transport.

## Cultural heritage

### *Scope, assumptions and limitations*

- 5.11.7 The assessment scope, key assumptions and limitations for cultural heritage are as set out Volume 1, the SMR (Volume 5: Appendix CT-001 -000) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.

### *Existing baseline*

- 5.11.8 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 heritage assets is provided in Volume 2, CFA20, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical surveys for archaeology.
- 5.11.9 Details of survey and desk-based work undertaken in this CFA since September 2013 is provided in Volume 5: Appendix CH-004-020 and Volume 5 map series CH-07; CH-09 and CH-10, where this is relevant to the assessment of a new or different significant effect.
- 5.11.10 No land is required from any heritage assets as a result of the amendment. Assets potentially affected by the amendment through changes to their setting are:
- CWM094 Pool House Farm, Kiln Lane ( not significant value);
  - CWM097 Hunts Green Farm (low value); and
  - CWM039 Coneybury Wood ancient woodland (high value).

### *Future baseline*

#### **Construction (2017)**

- 5.11.11 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.11.12 None of the identified developments affect the assessment of the AP2 scheme's likely construction impacts on cultural heritage.

#### **Operation (2026)**

- 5.11.13 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.11.14 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on cultural heritage.

### *Effects arising during construction*

- 5.11.15 The main ES reported a high adverse impact and negligible adverse effect at Pool House Farm (asset reference CWM094), a medium adverse impact and minor adverse effect at Hunts Green Farm (asset reference CWM097) and a temporary minimal impact and temporary minor adverse effect at Coneybury Wood (asset reference CWM039) These effects were all associated with impacts to setting through the construction of the HS2 route, including embankments and the realignment of the A4091 Tamworth Road, and none were significant as a result of the original scheme.
- 5.11.16 The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

- 5.11.17 The revised diversion of Footpath T17 at Bodymoor Heath Lane will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.11.18 The draft CoCP sets out the provisions that will be adopted to control effects on cultural heritage assets. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.11.19 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.11.20 There are no new or different likely significant cumulative effects for cultural heritage as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## Ecology

### *Scope, assumptions and limitations*

- 5.11.21 The assessment scope for ecology is set out in Volume 1 of the SES and AP2 ES. The key assumptions and limitations, and the methodology for determining significance of effects are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.
- 5.11.22 To address any limitations in data, a precautionary baseline has been adopted according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. 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 AP2 scheme.

### *Existing baseline*

- 5.11.23 The ecological baseline of the land required for the amendment has been based on field data collected for the main ES, aerial photography and relevant existing information gathered from national organisations and from regional and local sources including Warwickshire Biological Records Centre.
- 5.11.24 A summary of the baseline information relevant to the assessment of the amendment is provided in the following sections. Further details of all baseline information obtained since the main ES are described in Part 1 of this report; with further details provided in Volume 5: Appendix EC-001-003. For those receptors described in the main ES, further details are provided in Volume 2, CFA20, Section 7 and in Volume 5: CFA20, maps EC-01 to EC-12.

### **Designated sites**

- 5.11.25 There is one designated site, Coneybury Wood LWS, located approximately 300m from the land required permanently for the amendment. It is ancient semi-natural woodland that appears to have been replanted as a lime coppice but has now largely reverted to Valley Fen Woodland. Due to its LWS and ancient woodland status, this woodland is of county/metropolitan value.

### **Habitats**

- 5.11.26 The area of land required for the amendment is within arable fields and largely comprises heavily managed fields with negligible value as reported in the main ES.
- 5.11.27 There are hedgerow boundaries within the arable landscape. Due to the wildlife corridors created by hedgerows, the hedgerow network is considered to be of district/borough value.
- 5.11.28 The wetland area of Middleton Hall Farm Quarry is adjacent to this amendment. The quarry contains open water habitats and bare sands/gravels containing many habitat features and assemblage types associated with brownfield land and is of county/metropolitan value.

### **Protected and/or notable species**

- 5.11.29 As part of the main ES, initial bat roosting potential assessments of 13 trees were undertaken. These trees were mainly located near to Middleton Hall Farm Quarry. Four of these trees were deemed to have medium or high potential for roosting bats. No confirmed bat roosts were recorded.
- 5.11.30 Breeding bird surveys were undertaken within the Middleton Hall Farm Quarry to support the main ES. Several notable species, such as oystercatcher (breeding population is of county/metropolitan value), sand martin (breeding population is of district/borough value), and little ringed plover (a Schedule 1 species - breeding population is of county/metropolitan value) were recorded.
- 5.11.31 Within the main ES, the quarry site was identified as containing nationally scarce (Red Data Book) bees, wasps and beetles and other bare ground associated invertebrates. The invertebrate assemblage was identified as being of county/metropolitan value.

### *Future baseline*

#### **Construction (2017)**

- 5.11.32 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.11.33 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on ecology.

#### **Operation (2026)**

- 5.11.34 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.11.35 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on ecology.

### *Effects arising during construction*

#### **Avoidance and mitigation measures**

- 5.11.36 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES), which includes translocation of protected species where appropriate.

#### **Designated sites**

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

## Habitats

- 5.11.38 The main ES reported that there will be loss of arable land and species poor hedgerows, resulting in an effect at a local/parish level. There will be a reduction of 0.36ha of land required as part of the amendment, however, as the habitat is of low ecological value, the amendment will result in no change to the significant effects on habitats reported in the main ES.

## Protected and/or notable species

- 5.11.39 The main ES reported that there will be habitat loss within the groundwater filled Middleton Hall Farm Quarry, as a result of the graded false cuttings near to the proposed A4091 Tamworth Road overbridge. This will result in the loss of approximately 4ha of open water habitats and bare sands/gravels. These impacts will result in an adverse effect on the terrestrial invertebrate assemblage and the breeding bird assemblage using the site; both of which have been identified as being significant at a county/metropolitan level. However, there will be no further habitat loss to the quarry as part of the amendment and consequently the amendment will result in no change to the significant effects on species reported in the main ES.
- 5.11.40 It is unlikely that any other effects on habitats/species of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: Appendix EC-003-003.

## *Cumulative effects*

- 5.11.41 There are no new or different likely residual significant effects for ecology as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## *Mitigation and residual effects*

### Other mitigation measures

- 5.11.42 No additional mitigation measures (i.e. in addition to those identified in the main ES) are required.

### Summary of likely residual effects

- 5.11.43 No new or different residual effects on ecological receptors will occur during construction as a consequence of the amendment. The significant residual effects of the AP2 scheme in this area are therefore unchanged from those reported in the main ES.

## *Effects arising from operation*

### Avoidance and mitigation measures

- 5.11.44 No avoidance and mitigation measures additional to those reported in the main ES are required.

### **Designated sites**

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

### **Habitats**

- 5.11.46 The amendment will not give rise to a new or different significant effect on habitats and will not change the level of significance of the effects reported in the main ES.

### **Protected and/or notable species**

- 5.11.47 As part of the main ES, the disturbance to bird populations was considered to have no significant effect due to the existing Footpath T17 route being a considerable distance from the wetland area. On the eastern side of the HS2 route, the footpath runs north along the foot of the North Wood embankment between a hedgerow and the western edge of the wetland area before returning to its existing alignment. The potential for regular disturbance of birds using the wetland area is high, as birds may be disturbed by ramblers and dog walkers. Little ringed plover is known to breed in this area and its status as a Schedule 1 species affords it additional protection from disturbance during the breeding season. The amendment will result in a change in the alignment of Footpath T17 bringing users closer to the wetland area than the route of the footpath in the original scheme; however, where this occurs there will be a fence and woodland planting between the footpath and wetland edge which will provide some visual screening from the footpath users. It is therefore unlikely that there will be any adverse effect on bird populations utilising the wetland area during operation.
- 5.11.48 It is unlikely that any other effects on habitats/species of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: Appendix EC-003-003.

### *Cumulative effects*

- 5.11.49 There are no new or different likely residual significant effects for ecology as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

### *Mitigation and residual effects*

#### **Other mitigation measures**

- 5.11.50 No additional mitigation measures (i.e. in addition to those identified in the main ES) are required.

#### **Summary of likely residual effects**

- 5.11.51 No new or different residual effects on ecological receptors occur during operation as a consequence of the amendment. The significant residual effects of the AP2 scheme in this area are therefore unchanged from those reported in the main ES.

## Traffic and transport

### *Scope, assumptions and limitations*

- 5.11.52 The assessment scope, key assumptions and limitations of the traffic and transport assessment are set out in Volume 1, the SMR (Volume 5: Appendix CT-0001-000/1) and the SMR Addendum (Volume 5: Appendix CT-0001-000/2) of the main ES.

### *Existing baseline*

- 5.11.53 The environmental baseline for traffic and transport is set out in Volume 2, CFA20, Section 12 of the main ES.
- 5.11.54 There were no users of Footpath T17 recorded during surveys conducted at a location between the eastern side of the A4091 Tamworth Road and the Bodymoor Heath Training Ground, indicating low usage of this route.

### *Future baseline*

#### **Construction**

- 5.11.55 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA20, Section 12.3).

#### **Operation (2026 and 2041)**

- 5.11.56 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES (Volume 2, CFA20, Section 12.3).

### *Effects arising during construction*

- 5.11.57 This amendment has no material impacts during construction and consequently will not give rise to any new or significant effect and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

- 5.11.58 The main ES reported a minor adverse significant effect on users due to increased travel distances for the permanent realignment of Footpath T17.
- 5.11.59 The change in the alignment of Footpath T17 from the amendment will not give rise to a new or significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.11.60 The amendment will enable access to be maintained between Footpath T17 and the wider footpath network. It will also enable most of the footpath diversion to be off-road in the AP2 scheme as compared with the original scheme. However, these proposed changes will not give rise to a new or different effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.11.61 No changes to the mitigation measures reported in Volume 2, CFA20 of the main ES are required.
- 5.11.62 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.11.63 Cumulative effects are reported in Section 12, Volume 2, CFA20 of the main ES. The assessment has taken into account these cumulative effects, including planned development by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in neighbouring areas.

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

- 5.12.1 The revised diversion of Footpath T17 at Bodymoor Heath Lane will not result in new or different significant effects and does not change the significance of the environmental effects as set out in the main ES (Volume 2, CFA Report 20, Curdworth to Middleton).

## **5.13 Middleton area amendments (AP2-020-007)**

- 5.13.1 It has been identified that a section of the scheme from Park Lane, Middleton continuing northwards into CFA21 (Drayton Bassett, Hints and Weeford) up to the A453 Sutton Road could be lowered to reduce the environmental impact of the scheme. The lowering of the route within CFA21 is addressed within SES and AP2 ES Volume 2, CFA21, Section 5 (AP2-021-001 amendment). This section of the report considers only the section of the lowering within CFA20 (i.e. from Park Lane, Middleton to the CFA21 boundary).

### **Lowering of the HS2 route northwards from Middleton**

- 5.13.2 The Bill provides for the route between Park Lane, Middleton and the CFA21 (Drayton Bassett, Hints and Weeford) boundary to alternate between cutting and embankment. Key features of this section of the route included (from south to north) (refer to main ES, Volume 2: CFA20 Map Book, Maps CT-06-114, CT-06-115, CT-06-116a):
- a cutting approximately 630m long (Middleton Pool cutting) with an average depth of approximately 4m, with raised earthworks on both sides of the railway to provide visual and noise screening;
  - an embankment approximately 50m long (Middleton Pool embankment) with a height up to approximately 5m;
  - a five span viaduct approximately 90m long over Langley Brook (Langley Brook viaduct) with a 3m noise barrier on the west side of the viaduct;
  - an embankment approximately 120m long (Church Lane embankment) with a height of approximately 5m, with raised earthworks on the west side to provide visual and noise screening;
  - a cutting approximately 430m long (Coppice Lane cutting) with an average depth of approximately 2m, with raised earthworks on both sides of the railway to provide visual and noise screening;

- an embankment approximately 1.1km long (Trickley Coppice embankment) of varying height extending just past Gallows Brook, with raised earthworks on both sides of the railway to provide visual and noise screening. The south arm of Gallows Brook will be culverted below the railway embankment, with an associated diversion along the western edge of the route, south of the Drayton Bassett viaduct which is located in CFA21 (Drayton Bassett, Hints and Weeford);
- two balancing ponds would be constructed in this area at the location of Gallows Brook. These would connect to a drainage system alongside the route, connecting to outfalls at Langley Brook;
- a flood compensation area is provided upstream of the Langley Brook viaduct to mitigate the increase in flood levels associated with the construction of the embankments and viaduct across the Langley Brook floodplain.
- the A4091 Tamworth Road would be realigned to the west of the existing line, crossing over the route on a new overbridge and crossing Langley Brook on a new bridge;
- Church Lane would be permanently realigned over a length of approximately 720m to cross the railway cutting 30m north of its current location;
- a new bridge would be provided to carry Footpath T15 over the railway and provide farm accommodation access to the north-east of Middleton; and
- planting would also be undertaken throughout this section, adjacent to the railway, the diverted highways and on associated earthworks on both sides of the railway.

5.13.3

Since submission of the Bill, it has been identified that the section of route between Park Lane, Middleton and the CFA21 (Drayton Bassett, Hints and Weeford) boundary could be lowered to reduce visual intrusion and noise. From south to north the changes to the route include (refer to map CT-06-115 and CT-05-116a in the SES and AP2 ES Volume 2, CFA20 Map Book):

- the lowering of the route will commence at the northern end of the Middleton Pool cutting at Park Lane. The extent of the lowering will generally increase as the route travels northwards towards the CFA21 (Drayton Bassett, Hints and Weeford) area;
- at the A4091 Tamworth Road overbridge location, the route will be lowered by 0.2m, with the A4091 Tamworth Road overbridge reduced by the same height;
- the viaduct over Langley Brook will be lowered and shortened to 40m long. The route will be lowered by approximately 0.75m at the southern end of the Langley Brook viaduct. The balancing pond on the west side of the route will be moved slightly southwards. The access track will be reconfigured so that the area available for floodplain compensation regrading will be increased;

- at the Church Lane embankment, the route will be lowered by approximately 1.1m and the Church Lane overbridge lowered by approximately 2.1m. This will also enable the tie-in of the new and existing Church Lane to be moved further to the east, preventing the road realignment works from extending substantially into the village of Middleton. The embankments immediately north of the Church Lane overbridge will be reduced in length from approximately 130m to 60m on the west side of the route and from 100m to 5m on the east side;
- at the Coppice Lane cutting, the route will be lowered by approximately 1.6m;
- at the Footpath T15 accommodation overbridge location, the route will be lowered by approximately 2.3m, with the Footpath T15 accommodation overbridge lowered by the same amount. The length of the embankments immediately north of the overbridge will be reduced from approximately 100m to 70m on the west side and 120m to 50m on the east side;
- along the Trickle Coppice embankment, the route will be lowered by approximately 2m at the southern end of the embankment to a maximum lowering of approximately 3.3m. At the location of the Gallows Brook culvert, the route will be lowered by approximately 2.5m;
- to the north of the Langley Brook viaduct area, the lowering of the route will allow the false cutting embankments to generally be reduced in width, leading to an overall reduction in the land and earthmoving activities required; and
- the lowering continues northwards into the CFA21 (Drayton Bassett, Hints and Weeford) area and merges with the AP2-021-001 amendment.

### **Relocation of Church Lane overbridge satellite compound and balancing pond**

- 5.13.4 The Bill provides for the Church Lane overbridge satellite compound to the west of the route on the south side of the existing Church Lane. The compound was proposed to the east of the village of Middleton and immediately adjacent to the Middleton Sewage Treatment Works (refer to main ES maps CT-05-115 and CT-06-115, grid references D7 and E7, Volume 2, CFA20 Map Book). Access to the construction compound was proposed from the existing and realigned Church Lane. A balancing pond was to be provided to the east of the route.
- 5.13.5 Since submission of the Bill, it has been identified that the Church Lane overbridge satellite compound could be relocated away from the village of Middleton. The amendment includes relocation of the satellite construction compound to the east side of the route, south of Church Lane. The balancing pond will be redesigned to accommodate the relocated construction compound. The access road from Church Lane to the balancing pond will provide access to both the revised Church Lane overbridge satellite compound and balancing pond (refer to map CT-05-115, grid references D5 and E5 in the SES and AP2 ES Volume 2, CFA20 Map Book).

## Revision to planting to the south of Gallows Brook, west of the HS2 route

- 5.13.6 The Bill provided for the route at Gallows Brook to be on embankment with raised earthworks on both sides of the route to provide visual and noise screening. The south arm of Gallows Brook was proposed to be culverted, with an associated diversion along the western edge of the route. A false cutting with extended embankments and woodland planting was proposed as mitigation (refer to main ES maps CT-05-116a and CT-06-116a, grid reference G7).
- 5.13.7 Since submission of the Bill, it has been identified that the shape of the remaining land form to the west of the route will be difficult to farm productively. The amendment includes a revision to the shape of planting just to the south of Gallows Brook on the west side of the route (refer to map CT-05-116a, grid reference G7 in the SES and AP2 ES Volume 2, CFA20 Map Book) to make the land more useable for agricultural purposes. Straight field boundaries will be created that relate more closely to the existing field boundaries whilst continuing to achieve the landscape design intentions of incorporating the route into the surrounding landscape.
- 5.13.8 The revised planting design will continue to abut Gallows Brook (and the historic parish boundary) and hedgerows in this area will be removed as described in the main ES. The ecological mitigation proposed to the north of Gallows Brook, as described in the main ES, will be implemented.
- 5.13.9 The design of this element of the amendment is part of the larger revision to earthworks and landscape planting being undertaken in conjunction with the lowering of the HS2 route in this area.

### Scope of assessment

- 5.13.10 The Middleton area amendments will result in a net reduction of 3.1ha of land required on a temporary basis and a net reduction of 0.15ha of land required on a permanent basis, primarily as a result of the lowering of the route allowing the false cutting embankments to be reduced in width and revisions to planting.
- 5.13.11 The amendment is not considered to result in changes that will require a reassessment of the effects or proposed mitigation as set out in the main ES with respect to socio-economics and land quality. However, there are changes where reassessment is considered to be required in respect of: agriculture, forestry and soils; air quality; community; cultural heritage; ecology; landscape and visual assessment; sound, noise and vibration; traffic and transport; and water resources and FRA.

### Agriculture, forestry and soils

#### *Scope, assumptions and limitations*

- 5.13.12 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

### *Existing baseline*

- 5.13.13 Bedrock of the Mercia Mudstone Group underlies the whole of the study area. The area of the amendment is covered partly by superficial glacial outwash sands and gravels, and some alluvium.
- 5.13.14 The characteristics of the soils are described by the Soil Survey of England and Wales and shown on the National Soil Map. The soils are grouped into associations which are groups of soils of similar types.
- 5.13.15 Extensive soils in deep reddish light and medium loamy drift occur through most of the Middleton parish in the Clifton association. They have sandy clay loam and medium clay loam topsoils and, where slowly permeable, are seasonally waterlogged (WC III to IV). Locally, they are associated with deep light loamy soils affected by groundwater. Some similar reddish medium clay loam topsoils and subsoils with only slight seasonal waterlogging occur on naturally better draining land (WC II). These soils are mainly limited by soil wetness to Subgrade 3a or Subgrade 3b.
- 5.13.16 The main ES reported that agricultural land required for constructing and operating the original scheme in CFA20 is predominantly in the best and most versatile (BMV) category (91%), i.e. mainly in Subgrade 3a (47%) and the remainder of Grade 2 classification (44%).
- 5.13.17 The amendment affects five agricultural holdings, which are (south to north): Upper House Farm (CFA20/9), Parkwood House Farm (CFA20/11), Crowberry Stables (CFA20/12), Bullock End Farm (CFA20/13), and Church Farm (CFA20/14). Holdings CFA20/9 (128.1ha) and CFA20/11 (55.4ha) are arable farms, while holding CFA20/12 (8.1ha) is an equestrian enterprise. All of these holdings are assessed as being of medium sensitivity. Holdings CFA20/13 (307.6ha) and CFA20/14 (80.9ha) produce crops which are irrigated, and they are assessed as being of high sensitivity.

### *Future baseline*

#### **Construction (2017)**

- 5.13.18 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.19 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on agriculture, forestry and soils.
- 5.13.20 Most existing environmental stewardship agreements will expire in 2015 and be replaced by a new environmental land management scheme (countryside stewardship) which is voluntary but competitive. It is more targeted than previous schemes, with its priorities being to protect and enhance biodiversity and water quality.
- 5.13.21 The widespread basic environmental management associated with entry level stewardship will be replaced by a new concept of greening introduced by Common Agricultural Policy reform, which will now be the main means by which farmers will provide environmental benefits in return for their direct support payments. Greening will encourage the retention of permanent grasslands, greater crop diversification and

the creation of Ecological Focus Areas. These changes will affect the detailed management of individual farm holdings but are not expected to change fundamentally the baseline circumstances described.

### **Operation (2026)**

- 5.13.22 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.23 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on agriculture, forestry and soils.

### *Effects arising during construction*

- 5.13.24 The area of best and most versatile agricultural land (in this case Subgrade 3a) required permanently by the amendment is reduced slightly by 0.1ha compared to the area stated in the main ES. However, this will not change the level of significance of the effect on the best and most versatile agricultural land reported in the main ES.
- 5.13.25 The amendment will result in an additional permanent requirement of 0.1ha (0.1%) from holding CFA20/9, 0.7ha (1.3%) from holding CFA20/11, and 0.1ha (1.2%) from holding CFA20/12. However, these changes will not change the level of significance of the effects reported in the main ES or the AP1 ES.
- 5.13.26 The amendment will result in a decrease in the amount of land required from holding CFA20/13 (0.5ha or 0.2%) and holding CFA20/14 (1.0ha or 1.2%). As above, these changes will not change the level of significance of the effects reported in the main ES or the AP1 ES.

### *Effects arising from operation*

- 5.13.27 The amendment will not give rise to a new or different significant effect during operation and will not change the level of significance of the operational effects reported in the main ES and the AP1 ES.

### *Mitigation and residual effects*

- 5.13.28 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.13.29 The amendment will not result in new or different significant effects or change the level of significance of the residual effects reported in the main ES.

### *Cumulative effects*

- 5.13.30 There are no new or different likely residual significant effects for agriculture, forestry and soils as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## **Air quality**

### *Scope, assumptions and limitations*

- 5.13.31 The assessment scope, key assumptions and limitations for air quality are set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES as amended by the SMR Addendum 2 (Volume 5: Appendix CT-001 -000/3).

### *Existing baseline*

- 5.13.32 The baseline conditions are as described in Volume 2, CFA20 of the main ES with regard to air quality.
- 5.13.33 Receptors that could be affected by changes in air quality due to this amendment include residential properties; on Church Lane, Middleton; and at Parkgate Farm, A4091 Tamworth Road, Middleton.
- 5.13.34 There is one statutory designated site that could be affected by changes in air quality as a result of the Middleton area amendments. This is the Middleton Pool Site of Special Scientific Interest (SSSI), which is located to the east of the A4091 Tamworth Road.
- 5.13.35 There are no non-statutory designated sites that could be affected by changes in air quality as a result of the Middleton area amendments.

### *Future baseline*

#### **Construction (2017)**

- 5.13.36 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.37 None of the identified developments affect the assessment of the AP2 scheme's likely construction impacts on air quality.

#### **Operation (2026)**

- 5.13.38 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.39 None of the identified developments affect the assessment of the AP2 scheme's likely operational impacts on air quality.

### *Effects arising during construction*

- 5.13.40 An assessment has been undertaken for receptors identified as relevant to the Middleton area amendments to determine any changes to the impact of construction on air quality at these receptors.
- 5.13.41 The construction dust assessment has taken into consideration changes to the magnitude of dust emissions for the construction activities and the sensitivity of the area surrounding the amendment in terms of the receptors present and the distance of the receptors from the construction activities. The differences of relevance to air

quality for the AP2 scheme are associated with earthworks and construction activities due to the lowering of the HS2 route northwards of Middleton.

- 5.13.42 The amendment does not change the magnitude of the earthworks or construction activity in terms of dust generating potential from that in the main ES. The distance of earthworks and construction activities relative to the relevant receptors does not change sufficiently from that in the main ES to result in any new or different effects.
- 5.13.43 The construction traffic changes in the area of the amendment were not sufficient to require an assessment in the main ES and this remains the case for the AP2 scheme.
- 5.13.44 The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Effects arising from operation*

- 5.13.45 There are no new or different operational effects for air quality as a result of the amendment.

#### *Mitigation and residual effects*

- 5.13.46 Emissions to the atmosphere will be controlled and managed during construction through the route-wide implementation of the draft CoCP. The assessment of this amendment has assumed that the general measures detailed in Section 7 of the draft CoCP (Volume 5: Appendix CT-003-000) in the main ES will be implemented.
- 5.13.47 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.13.48 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Cumulative effects*

- 5.13.49 There are no new or different likely significant cumulative effects for air quality as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 scheme.

### **Community**

#### *Scope, assumptions and limitations*

- 5.13.50 The assessment scope, key assumptions and limitations for the community assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

#### *Existing baseline*

- 5.13.51 The existing baseline for the area is described in Volume 2, CFA20 of the main ES. The relevant community receptors for this amendment are five residential properties at Church Lane and Crowberry Lane, Middleton. These are Ashley, Woodard, Priors Revel and the Spinney at Church Lane together with Horse Shoes on Crowberry Lane.

### *Future baseline*

#### **Construction (2017)**

- 5.13.52 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.53 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on community.

#### **Operation (2026)**

- 5.13.54 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.55 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on community.

### *Effects arising during construction*

- 5.13.56 During construction, the main ES concluded that the five residential properties along Church Lane and Crowberry Lane, Middleton would be subject to noise and visual disturbance as a result of the construction works to realign Church Lane and build the Church Lane overbridge (refer to main ES map SV-03-058, grid reference E7, Volume 5, CFA20 Map Book). This would lead to a change in amenity for some of the properties and residents, resulting in a moderate adverse temporary residual effect.
- 5.13.57 The construction activities in the vicinity of these five properties have been moved further to the east, reducing noise levels and removing the significant noise effect reported in the main ES. This will remove the significant amenity effect identified in the main ES (refer to SES and AP2 ES, Volume 5: Appendix CM-001-020 and map series CM-01-116).

### *Effects arising from operation*

- 5.13.58 The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.13.59 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.13.60 The amendment will change the effects reported in the main ES for the five properties along Church Lane and Crowberry Lane. The construction activities in the vicinity of these properties have been moved further to the east, reducing noise levels, which removes the significant noise effect during construction reported in the main ES. This will remove the significant amenity residual effect identified in the main ES.

### *Cumulative effects*

- 5.13.61 There are no new or different likely significant cumulative effects for community facilities as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

### **Cultural heritage**

#### *Scope, assumptions and limitations*

- 5.13.62 The assessment scope, key assumptions and limitations for cultural heritage are as set out Volume 1, the SMR (Volume 5: Appendix CT-001-000) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.

#### *Existing baseline*

- 5.13.63 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 heritage assets is provided in Volume 2, CFA20, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical surveys for archaeology. A further review of historic mapping and other available historic data sources has also been carried out to verify the status of a number of woodlands in the vicinity of the route which are being considered for inclusion on the ancient woodland inventory.
- 5.13.64 Details of survey and desk-based work undertaken in this CFA since September 2013 is provided in Volume 5: Appendix CH-004-020 and Volume 5 map series CH-07; CH-09 and CH-10, where this is relevant to the assessment of a new or different significant effect.
- 5.13.65 Heritage assets potentially affected by the amendment through physical change or changes to their setting are:
- CWM100 Middleton Hall historic building complex (high value);
  - CWM149 Walker's Spinney (high value); and
  - CWM105 Upper House Farm (moderate value) and associated barn (CWM106) (low value).

#### *Future baseline*

##### **Construction (2017)**

- 5.13.66 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.67 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on cultural heritage.

### **Operation (2026)**

5.13.68 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

5.13.69 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on cultural heritage.

#### *Effects arising during construction*

5.13.70 The main ES reported a temporary low adverse impact and moderate adverse effect and permanent low adverse impact and moderate adverse effect on the setting of Middleton Hall historic building complex (asset reference CWM100). The amendment to lower the route will not change the temporary impacts associated with construction of the scheme, and while the lowering potentially reduces the permanent impacts on designed views this will not change the level of significance of the effects reported in the main ES.

5.13.71 The SES (Part 1, Section 3) reported a low adverse impact and moderate adverse effect on Walker's Spinney, a woodland likely to be added to the ancient woodland inventory (asset reference CWM149). The lowering of the Church Lane embankment does not require any additional land to be taken from the woodland and the amendment does not materially alter the setting impacts associated with the original scheme. The amendment will not give rise to a new or different significant effect on this asset and will not change the level of significance of the effects reported in the SES.

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

#### *Effects arising from operation*

5.13.73 The main ES reported a low adverse impact and moderate adverse effect on Middleton Hall (asset reference CWM100) as a result of the changes to the setting of this asset during operation. Although the route will be lowered by the amendment, trains will remain visible in views from the asset and surrounding parkland and the operational effects reported in the main ES will remain unchanged.

5.13.74 The main ES reported a medium adverse impact and moderate adverse effect at Upper House Farm (asset reference CWM105) and a medium adverse impact and minor adverse effect at the Barn associated with Upper House Farm (asset reference CWM106) as a result of the changes to the setting of these assets. The lowering of the Trickleby Coppice embankment will reduce the visibility of the HS2 route during operation. However, the route will remain visible and there will still be an increase in noise affecting the assets' setting, as reported in the main ES.

5.13.75 Overall, the lowering of the HS2 route northwards from Middleton will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.13.76 The draft CoCP sets out the provisions that will be adopted to control effects on cultural heritage assets. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.13.77 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.13.78 There are no new or different likely significant cumulative effects for cultural heritage as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## **Ecology**

### *Scope, assumptions and limitations*

- 5.13.79 The assessment scope for ecology is as set out in Volume 1 of the SES and AP2 ES. The key assumptions and limitations, and the methodology for determining significance of effects are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.
- 5.13.80 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. This constitutes a 'reasonable worst-case' basis for the subsequent assessment. The precautionary approach to the assessment identifies the likely significant ecological effects of the AP2 scheme.

### *Existing baseline*

- 5.13.81 The ecological baseline of the land required for the amendments has been based on field data collated for the main ES, aerial photography and relevant existing information gathered for the main ES from national organisations and regional and local sources including Warwickshire Biological Records Centre and Warwickshire Wildlife Trust.
- 5.13.82 A summary of the baseline information relevant to the assessment of the amendment is provided in the next section. Further details of all baseline information obtained since the main ES are described in Part 1 of this report; with further details provided in Volume 5: Appendix EC-001-003. For those receptors described in the main ES, further details are provided in Volume 2, CFA20, Section 7 and in Volume 5: CFA20, maps EC-01 to EC-12 of the main ES.

## **Designated sites**

- 5.13.83 There are three designated sites between Park Lane at Middleton and Gallows Brook within 500m of the amendment. Middleton Pool SSSI and Middleton Pool Local Nature Reserve (LNR), which share the same boundary, are located 300m east of the land required for the amendment. Coneybury Wood LWS is located 450m south-east of the amendment.

- 5.13.84 Middleton Pool SSSI/LNR (300m east of the amendment) is an artificial 16th century lake supporting 46 species of breeding birds. The site is fed by the Langley Brook, which the route of the AP2 scheme will cross. The SSSI/LNR is surrounded by a high diversity of plant communities including aquatic swamp and tall herb fen, neutral grassland and wet woodland. The SSSI is of national value and the LNR is of district/borough value.
- 5.13.85 Coneybury Wood LWS (450m south-east of the amendment) is an ancient semi-natural woodland that appears to have been replanted as a lime coppice but has now largely reverted to Valley Fen Woodland. Due to its LWS and ancient woodland status, this woodland is of county/metropolitan value.

### Habitats

- 5.13.86 The area of land required for the amendment is within an area of arable fields and largely comprises heavily managed large fields with negligible value. There are hedgerow boundaries within the arable landscape. Due to the wildlife corridors created by hedgerows, the hedgerow network was identified in the main ES as being of district/borough value.
- 5.13.87 Coneybury Wood (450m south east of the amendment) is a broadleaved deciduous woodland, a habitat of principal importance identified in Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006).
- 5.13.88 As reported in the SES, Walker's Spinney (adjacent to Church Lane overbridge amendment) is likely to be added to the ancient woodland inventory. The woodland is now considered as being of district/borough value.
- 5.13.89 The Langley Brook, near Middleton, is a fast-flowing stream with gravel bed and locally dominant patches of river water-crowfoot, which is a Warwickshire notable plant. Reed sweet-grass has developed on raised silty shelves and branched bur-reed is present in deeper water. The riverbanks are shaded with overhanging mature alder and crack willow, with a dense understorey containing common nettle and Himalayan balsam (an invasive species listed under Schedule 9 of the Wildlife and Countryside Act, 1981 as amended<sup>6</sup> below) with occasional wild garlic and dog's mercury. The riverbank is dominated by alder woodland. The Langley Brook feeds Middleton Pool SSSI and LNR, downstream of the route. Due to the range of habitats supported by the Langley Brook, and its importance in maintaining Middleton Pool SSSI/LNR, it is assessed as being of district/borough value in the main ES.
- 5.13.90 Gallows Brook, north-east of Middleton, is a significantly modified channel (i.e. the physical dimensions or materials of the channel have been artificially altered or changed) with low flow and poor plant and substrate diversity. However, the watercourse is considered to provide a wildlife corridor and therefore is assessed in the main ES as being of local/parish value.

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<sup>6</sup> Wildlife and Countryside Act 1981, Schedule 9 Part 2 Plants (HMSO).

### **Protected and/or notable species**

- 5.13.91 Field survey confirmed otters to be present on the Langley Brook. However, no holts or potential holts were identified. It is likely that otters use the connecting tributaries and water bodies associated with this watercourse for commuting, refuge and foraging. Otter is a species of principal importance with a large home range and has increasing populations nationally and in Warwickshire. The population of otter using Langley Brook is identified in the main ES as being of district/borough value.
- 5.13.92 Langley Brook was identified in the main ES as being of moderate and good habitat quality for juvenile and spawning salmonid and coarse fish and is identified within the main ES as being up to district/borough value.
- 5.13.93 River water-crowfoot was recorded during field survey of the Langley Brook located at the crossing point of this amendment. This plant is scarce within Warwickshire and is identified as being of district/borough value in the main ES.
- 5.13.94 A diverse assemblage of bats including; common pipistrelle, soprano pipistrelle, *Myotis* species and noctule were recorded foraging and commuting along field boundaries, water bodies, tree lines and Langley Brook. Leisler's activity was confirmed during static surveys, a rare species within England and Warwickshire. The assemblage which covers foraging and commuting habitats that lie east and west of the A4091 Tamworth Road, including Langley Brook west of Middleton Park, and Coneybury Wood is identified as being of district/borough value in the main ES.

### *Future baseline*

#### **Construction (2017)**

- 5.13.95 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.96 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on ecology.

#### **Operation (2026)**

- 5.13.97 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.98 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on ecology.

### *Effects arising during construction*

#### **Avoidance and mitigation measures**

- 5.13.99 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES), which includes translocation of protected species where appropriate.
- 5.13.100 The Langley Brook viaduct will retain ecological corridors for species such as otter, white-clawed crayfish and bats as described in the main ES.

### **Designated sites**

- 5.13.101 No new or different residual effects on ecological receptors occur as a consequence of the amendment. The significant residual effects of the AP2 revised scheme in this area are therefore unchanged from those reported in the main ES.

### **Habitats**

- 5.13.102 The amendment will result in the viaduct over Langley Brook being lowered and shortened to 40m long. However, there will still be habitat connectivity along the floodplain as three openings will remain of sufficient height to be used by bats. Consequently, as the function of the habitat has not changed, there will not be a change in the significant effects on habitats reported in the main ES.
- 5.13.103 Gallows Brook is a significantly modified channel (i.e. the physical dimensions or materials of the channel have been artificially altered or changed) with low flow and poor plant and substrate diversity north-east of Middleton. Fish habitat surveys identified poor habitat quality for fish species. However, the watercourse is considered to provide a wildlife corridor and therefore is assessed as being of local/parish value. At the location of the Gallows Brook culvert the route will be lowered by approximately 3.2m but the function of the habitat has not changed. Consequently, there will be no change in the significant effects on habitats reported in the main ES.
- 5.13.104 As reported in the SES, Walker's Spinney is likely to be added to the ancient woodland inventory and the loss as part of the original scheme will result in an adverse effect that is significant at a district/borough level. This is a new significant effect which is reported in the SES. The amendment does not cause any additional habitat loss and does not give rise to any new or different significant effects in comparison with the SES..

### **Protected and/or notable species**

- 5.13.105 The assemblage of bats using foraging and commuting habitats within the Langley Brook area, including east and west of the A4091 Tamworth Road, Langley Brook west of Middleton Park, and Coneybury Wood, is identified in the main ES as being of district/borough value. As part of the amendment, the viaduct over Langley Brook will be lowered and shortened to 40m long. However, there will still be habitat connectivity along the floodplain as three openings will remain of sufficient height to be used by bats. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES as amended by the SES.
- 5.13.106 It is unlikely that any other effects on habitats/species of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: Appendix EC-003-003.

## **Cumulative effects**

- 5.13.107 There are no new or different likely residual significant effects for ecology as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

## **Mitigation and residual effects**

### *Other mitigation measures*

- 5.13.108 The amendment will include grading/reduction of earthworks to mirror the existing field boundaries in the areas of Gallows Brook. However, the ecological mitigation area to the south of Gallows Brook will not be reduced in size and will remain the same as reported within the main ES. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.

### *Summary of likely residual effects*

- 5.13.109 No new or different residual effects on ecological receptors occur as a consequence of the amendment. The significant residual effects in this area are therefore unchanged from those reported in the main ES, and updated in the SES.

### *Effects arising from operation*

- 5.13.110 There are no new or different operational effects for ecology as a result of the Middleton area amendments.

## **Landscape and visual assessment**

### *Scope, assumptions and limitations*

- 5.13.111 The assessment scope, key assumptions and limitations for the landscape and visual assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES. An update to the methodology for the landscape and visual assessment is also described in Volume 1 of the AP1 ES.

### *Existing baseline*

- 5.13.112 The amendment is located on the borders of two LCAs. It will mainly occur within the Middleton to Curdworth Tame Valley Farmlands LCA with a very small overlap into the Lowland Village Farmlands LCA, which is located in CFA21 (Drayton Bassett, Hints and Weeford). The landscape baseline is as described in Volume 2, CFA20, Section 9.3 of the main ES.
- 5.13.113 The following viewpoints are also located in close proximity to the area and are described in the main ES (Volume 2, CFA20, Section 9):
- 329.2.001 (Views north-east from properties on the north-eastern edge of Middleton);
  - 328.3.009 (View south from PRow Footpath (T5) looking toward Church Lane, Middleton);
  - 327.2.001 (View north-east from properties on the corner of Church Lane and

Crowberry Lane, Middleton);

- 327.3.004 and 327.3.003 (View east from the PRoW Footpaths (T15 and T6) near Roger's Coppice and views east from PRoW Footpath (T15) between Roger's Coppice and Park Lane);
- 327.4.002 (View east from Park Lane, near Middleton);
- 328.4.006 (View west from Church Lane, Middleton);
- 328.2.008 (View west from Park Gate House and Park Gate Farm on the corner of Church Lane and the A4091 Tamworth Road);
- 328.3.002 (View south-west from PRoW Footpath (T22) on the grounds of Middleton Hall); and
- 328.3.001 (View west from Middleton Hall).

### *Future baseline*

#### **Construction (2017)**

- 5.13.114 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.115 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on landscape and views.

#### **Operation (2026)**

- 5.13.116 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.117 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on landscape and views.

### *Effects arising during construction*

#### **Landscape assessment**

- 5.13.118 Middleton to Curdworth Tame Valley Farmland LCA is of fair condition, low tranquillity, of regional value and therefore it is considered to be of medium sensitivity to change. The main ES reported a major adverse effect to the Middleton to Curdworth Tame Valley Farmland LCA.
- 5.13.119 The nature of the construction activity associated with the peak construction phase of the amendment is not expected to change relative to the original scheme reported in the main ES. Whilst the amendment will shorten the length of the Langley Brook viaduct to 40m, reduce the width of the landscape earthworks, lower the route by up to 3.3m and relocate the Church Lane overbridge satellite construction compound, this will not give rise to a new or different significant effect on landscape and will not change the level of significance of the effects reported in the main ES with regard to the landscape assessment.

## Visual assessment

- 5.13.120 There are 10 viewpoints relevant to the area of the amendment. The main ES reported a major or moderate adverse effect during construction (refer to Volume 2, CFA20, Section 9 of the main ES for individual viewpoint assessments).
- 5.13.121 Viewpoint 327.4.002 (View east from Park Lane, near Middleton): the main ES reported views of the realignment of the A4091 Tamworth Road, the new overbridge of the diversion of Park Lane and the junction of Crowberry Lane plus the A4091 Tamworth Road overbridge satellite construction compound visible in the foreground. A moderate adverse effect to this viewpoint was reported in the main ES.
- 5.13.122 The amendment would result in changes to the construction activity visible from this viewpoint including the adjusted part of a balancing pond and access track. Overall, these are minor changes to the view which will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.
- 5.13.123 Viewpoints 327.3.004 and 327.3.003 (View east from the PRoW Footpaths (T15 and T6) near Roger's Coppice and views east from PRoW Footpath (T15) between Roger's Coppice and Park Lane): The main ES reported views of the construction activities at the Langley Brook viaduct, the A4091 Tamworth Road overbridge and the A4091 Tamworth Road and Church Lane construction compounds visible in the middle ground. A major adverse effect was reported at these viewpoints in the main ESs.
- 5.13.124 The amendment would result in changes to construction activities visible from these viewpoints including the relocation of the Church Lane construction compound, a shortened and lowered Langley Brook viaduct and increased embankment lengths. This will result in a general improvement to the views compared to the original scheme, however a large number of construction activities will remain visible in the middle ground. This will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.
- 5.13.125 Viewpoint 327.2.001 (View north-east from properties on the corner of Church Lane and Crowberry Lane, Middleton): the main ES reported views of the clearance of extensive vegetation as well as views of construction activities and construction traffic relating to the Church Lane overbridge visible in the foreground and middle ground. A major adverse effect was reported to this viewpoint in the main ES.
- 5.13.126 The amendment would result in a general improvement to the view from this location due to the relocation of the Church lane overbridge satellite construction compound, the reduced height of the Church Lane overbridge and reduced embankment footprints. However a large number of construction activities will remain visible in the foreground and middle ground which will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.
- 5.13.127 Viewpoint 329.2.001 (Views north-east from properties on the north-eastern edge of Middleton): the main ES reported views in the middle ground of the extensive removal of hedgerows, construction of the Church Lane overbridge, as well as extensive

earthworks at the Trickle Coppice embankment and Gallows Brook culvert. A major adverse effect was reported to this viewpoint in the main ES.

- 5.13.128 The changes to construction activities visible from this viewpoint associated with the amendment include the reduction in embankment heights and extents, as well as the lowered footbridge and approach ramps to the Footpath T15 overbridge. However a large number of construction activities will remain visible in the middle ground which will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.
- 5.13.129 Viewpoint 328.3.009 (View south from PRow footpath (T5) looking toward Church lane, Middleton): the main ES reported views of tree and hedgerow loss around Walkers Spinney and Church Lane, with close views of the construction of the Church lane overbridge, plus views of the construction of earthworks at the Coppice Lane cutting and Trickle Coppice embankment. A major adverse effect was reported in the main ES.
- 5.13.130 The changes to construction activities visible from this viewpoint as a result of the amendment include the reduction in the scale of the earthwork operations to the Trickle Coppice embankment. However the large number of construction activities remaining visible in the foreground means that this amendment will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.
- 5.13.131 Viewpoint 328.4.006 (View west from Church Lane, Middleton): the main ES reported a view of noticeable loss of mature vegetation along Langley Brook, opening up views of the Church Lane embankment and the T15 Accommodation overbridge, as well as the Coppice Lane cutting and the Trickle Coppice embankment, resulting in major adverse effects.
- 5.13.132 The changes to construction activity visible from this viewpoint as a result of the amendment will include the relocated Church Lane overbridge satellite construction compound, reductions to earthworks at the Langley Brook viaduct, as well as the shortened and lowered Langley Brook viaduct. Individual elements of the amendment will result in both improvements and worsening of the views. However, overall the amendment will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.
- 5.13.133 Viewpoint 328.2.008 (View west from Park Gate Farm House and Park Gate Farm on the corner of Church Lane and the A4091 Tamworth Road): the main ES reported views of the construction of Church Lane overbridge and the (T15) Accommodation overbridge as well as views of extensive earthworks of the Trickle Coppice embankment in the middle ground. The main ES reported a major adverse effect.
- 5.13.134 The changes to construction activity from this viewpoint as a result of the amendment include the relocated Church Lane overbridge satellite construction compound, reductions to earthworks at the Langley Brook viaduct, and the shortened and lowered Langley Brook viaduct. Individual elements of the amendment will result in both improvements and worsening of the views. However, overall the amendment will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.

- 5.13.135 Viewpoint 328.3.002 (View south-west from PRow Footpath (T22) on the grounds of Middleton Hall): the main ES reported views of the removal of some trees along the A4091 Tamworth Road which will partially open up views of the Langley Brook viaduct. The A4091 Tamworth Road and Church Lane construction routes will increase views of HGVs along the parkland perimeter resulting in moderate adverse effects.
- 5.13.136 The changes to construction activity visible from this viewpoint as a result of the amendment include the shortening and lowering of the Langley Brook viaduct construction and the increased embankments either side as well as the relocated Church Lane overbridge satellite construction compound. However, overall a large number of construction activities will remain visible and the amendment will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.
- 5.13.137 Viewpoint 328.3.001 (View east from Middleton Hall): the main ES reported views of vegetation clearance which will open up views of the construction of the A4091 Tamworth Road overbridge and the Middleton Pool cutting, resulting in a major adverse effect.
- 5.13.138 There will be no discernible changes to the construction activity visible from this viewpoint as a result of the amendment. The amendment will not give rise to a new or different significant effect on visual amenity and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

#### **Landscape assessment**

- 5.13.139 Middleton to Curdworth Tame Valley Farmland LCA is of fair condition, low tranquillity, of regional value and therefore it is considered to be of medium sensitivity to change. The main ES reported a moderate adverse effect on this LCA in year 1 of operation, reducing to non-significant in years 15 and 60.
- 5.13.140 The amendment is considered to be small in scale in comparison to the overall scale of the landscape character areas within in which it is located. The amendment will shorten the length of the Langley Brook viaduct to 40m, reduce the width of the landscape planting, and lower the route by up to 3.3m. This will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES with regard to the landscape assessment.

#### **Visual assessment**

- 5.13.141 There are 10 viewpoints in the area of this amendment. The main ES reported a mixture of moderate and major adverse effects to these viewpoints during operation reducing to non-significant in some cases in year 60 (refer to Volume 2, CFA20, Section 9 of the main ES for individual viewpoint assessments).
- 5.13.142 Viewpoint 327.4.002 (View east from Park Lane near Middleton): the main ES reported views of the original scheme visible in the foreground where the realigned A4091 Tamworth Road crosses the Middleton pool cutting on overbridge. The highway embankments along Crowberry Lane will also be visible resulting in major adverse effects at year 1, reducing to moderate adverse in years 15 and 60.

- 5.13.143 The reduction to the slope, the minor changes to planting and the adjusted position of the balancing pond and access track in this area as a result of the amendment will give rise to a minor visual improvement in comparison to the original scheme. However, this is not sufficient to result in a reduction in the significance of effects reported in the main ES. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES with.
- 5.13.144 Viewpoint 327.3.003 (views east from PRow Footpath (T15) between Roger's Coppice and Park Lane): the main ES reported views of the Langley Brook viaduct in the background. Hedgerow trees along Crowberry Lane will filter views of the southern approach after which the scheme will enter Middleton Pool cutting and not be visible. The northern embankment of the realigned A4091 Tamworth Road will be partially visible. Views of the overbridge and southern embankment will be filtered by field boundary vegetation around Hunts Green. A broad swath of trees will have been removed allowing views of the viaduct and realigned A4091 Tamworth Road resulting in major adverse effects in year 1 reducing to moderate in years 15 and 60.
- 5.13.145 The view from this position as a result of the amendment will contain the repositioned balancing pond and shortened and lowered Langley Brook viaduct with increased lengths of planted embankment either side. Filtered views of the realigned A4091 Tamworth Road overbridge will remain. The lowered route will result in a slight improvement to the view reducing the level of visual intrusion but the new elements will still represent a significant change to existing conditions. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.13.146 Viewpoint 327.3.004 (View east from the PRow Footpaths (T15 and T6) near Roger's Coppice): the main ES reported noise fence barriers at the Langley Brook viaduct that will be visible in close proximity and the realigned A4091 Tamworth Road will be visible on higher ground. The Langley Brook viaduct overhead line equipment and trains will be clearly visible as the central focus in direct views from the footpath; traffic on the realigned A4091 Tamworth Road will also be noticeable. This will result in a major adverse effect in year 1, reducing to moderate in years 15 and 60.
- 5.13.147 The amendment will shorten the length of the Langley Brook viaduct, reduce the width of the associated embankments and lower the heights. However, the length of these embankments will be extended which will restrict views past the viaduct to the wider landscape beyond. The amendment provides a relative visual improvement for local receptors in comparison to the original scheme; however, this is not sufficient to result in a reduction in the significance of effects reported in the main ES. This will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.13.148 Viewpoint 327.2.001 (View north-east from properties on the corner of Church Lane and Crowberry Lane, Middleton): the main ES reported views of the false cuttings along Coppice Lane and the Church Lane overbridge in the foreground. Ground levels in the vicinity will be raised restricting longer distance views across the rural landscape. The loss of mature hedgerows along Church Lane will open up views from the properties to the original scheme including overhead line equipment and noise

fence barriers. The loss of views and close proximity to the original scheme will result in major adverse effects at year 1 reducing to moderate in years 15 and 60.

- 5.13.149 The reduction in height of the embankments and reduced embankment widths will lead to an improvement in the views in this location but the proximity of the HS2 route is still likely to prevent longer distance views across the rural landscape beyond. The amendment will therefore not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.13.150 Viewpoint 329.2.001 (Views north-east from properties on the north-eastern edge of Middleton): the main ES reported views of the original scheme including the Church Lane overbridge and Coppice Lane cutting. There are likely to be views of the Trickley Coppice embankment and the Footpath (T15) Accommodation overbridge from upper story windows, with views of the noise fence barrier and overhead line equipment. There will also be views from properties along Church Lane toward the Drayton Basset viaduct resulting in major adverse effects in year 1 reducing to moderate in years 15 and 60 with matured planting.
- 5.13.151 The view of the AP2 revised scheme from this location during year 1 and year 15 is illustrated on the photomontages shown in Volume 2: CFA20 Map Book, Map LVo1-135 and LVo1-253. The reduction in height of the embankments and reduced embankment widths as a result of the amendment will lead to an improvement in the views in this location but it will still represent a significant change to the existing view. The amendment will therefore not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.13.152 Viewpoint 328.3.009 (View south from PRow Footpath (T5) looking toward Church Lane, Middleton): the main ES reported views of the original scheme crossing the flat valley floor on Trickley Coppice embankment. Wide sweeping views across a rural landscape will be replaced with close up views of a false cutting over which the noise fence barriers and overhead line equipment will be visible. A footbridge providing a crossing point for the PRow will dominate the foreground with oblique views of the realigned Church Lane where it crosses the route in the middle ground, resulting in major adverse effects in years 1, 15 and 60.
- 5.13.153 The reduction in height and widths of embankments as part of the amendment will improve the views in this location but the proximity of the HS2 route and loss of sweeping views across the rural landscape will remain. The amendment will therefore not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

- 5.13.154 Viewpoint 328.4.006 (View west from Church Lane, Middleton): the main ES reported views of the original scheme in the middle ground crossing the valley north of Middleton on the Tricklely Coppice embankment as far as the Drayton Basset viaduct. The wide sweeping views towards Middleton will be interrupted by embankments, false cuttings, a footbridge, as well as noise fence barriers and overhead line equipment. There will be close range views towards the Langley Brook viaduct and the Church Lane embankment with the revised balancing pond and access track in the foreground, resulting in major adverse effects at year 1 reducing to moderate in years 15 and 60 with matured planting.
- 5.13.155 The reduction in height and widths of embankments as a result of the amendment will improve the views in this location but the proximity of the HS2 route and loss of sweeping views towards Middleton will remain. The shortened length of the Langley Brook viaduct will be replaced by planted embankments restricting views to the landscape beyond. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.13.156 Viewpoint 328.2.008 (View west from Park Gate House and Park Gate Farm on the corner of Church Lane and the A4091 Tamworth Road): the main ES reported views of the original scheme on embankment (in a false cutting) in the middle ground with overhead line equipment passing trains, with the Footpath (T15) Accommodation overbridge visible from the rear of both properties. The realignment of Church Lane and the introduction of an overbridge will also be visible in the foreground. Views towards the Langley Brook viaduct will generally be screened by intervening vegetation resulting in moderate adverse effects at year 1, 15 and 60.
- 5.13.157 Although the reduction in heights and widths of the embankment in this area and modifications to the balancing pond planting will slightly improve the views, many of the new visible elements associated with the HS2 route, including the Church Lane overbridge, in the foreground will remain. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.13.158 Viewpoint 328.3.002 (View south-west from PRoW Footpath (T22) on the grounds of Middleton Hall): the main ES reported views of the original scheme in the background on embankment in front of Walker's Spinney before crossing Langley Brook on viaduct of which there will be partial views including approach embankments, noise fence barriers and trains in the middle ground. These views will be filtered by parkland planting along its perimeter and avenue trees resulting in moderate adverse effects at year 1, reducing to non-significant in years 15 and 60.
- 5.13.159 The amendment will result in the reduction of the heights and widths of the embankment in this area as well as the shortening and lowering of the Langley Brook viaduct. Modifications to the balancing pond planting will also occur. Whilst this will lead to improvements in the view, a noticeable deterioration from existing conditions at year 1 will remain, with many new elements remaining visible, including widespread embankments, noise fence barriers and passing trains. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES with regard to the visual assessment.

- 5.13.160 Viewpoint 328.3.001 (View west from Middleton Hall): the main ES reported views of the original scheme in the middle ground with views of trains and overhead line equipment largely screened by existing mature trees and the false cutting. The loss of some existing boundary trees will foreshorten the existing views and the introduction of new elements will result in major adverse effects at year 1, reducing to moderate in summer year 1 and non-significant in years 15 and 60.
- 5.13.161 Although the views onto the shortened and reduced height viaduct will be reduced as part of the amendment, they will be replaced by extended planted embankments and the introduction of new elements will remain visible including the loss of boundary vegetation. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES with regard to the visual assessment.

#### *Mitigation and residual effects*

- 5.13.162 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.13.163 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

#### *Cumulative effects*

- 5.13.164 There are no new or different likely significant cumulative effects for landscape and visual as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

### **Sound, noise and vibration**

#### *Scope, assumptions and limitations*

- 5.13.165 The assessment scope, key assumptions and limitations for the sound, noise and vibration assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.13.166 Local assumptions and limitations for sound, noise and vibration are set out in Volume 2, CFA20 of the main ES.

#### *Existing baseline*

- 5.13.167 The baseline sound, noise and vibration information for the area is described in the main ES (Volume 5: Appendix SV-002-020). Baseline noise levels representative of the assessment locations affected by the AP2 scheme have been used in the construction and operational assessments.

### *Future baseline*

- 5.13.168 In the absence of the HS2 scheme, existing sound levels in this area are likely to increase gradually over time. This is primarily due to road traffic growth on the existing road network. Changes in car technology may offset some of the expected sound level increases due to traffic growth on low speed roads. On higher speed roads, tyre sound dominates overall levels and hence the expected growth in traffic is likely to continue to increase ambient sound levels.

### **Construction (2017)**

- 5.13.169 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.170 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on sound, noise and vibration.

### **Operation (2026)**

- 5.13.171 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.172 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on sound, noise and vibration.

### *Effects arising during construction*

- 5.13.173 The main ES reported a likely significant effect during construction at a group of five properties at Church Lane, Middleton, due to noise from road construction activities associated with the realignment of Church Lane and the Church Lane overbridge (refer to main ES map SV-03-058, grid reference E7, Volume 5, CFA20 Map Book).
- 5.13.174 The amendment will move construction activities further away from receptors in Middleton. An assessment has been undertaken to determine whether construction noise levels from the AP2 scheme will result in a new or different likely significant effect, using the methodology and significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000). Table 4 sets out the changes to the main ES, Volume 5: Appendix SV-003-020, Construction assessment, Sound, noise and vibration for residential and non-residential receptors.
- 5.13.175 The assessment indicates that the amendment will remove the significant effect identified in the main ES at the group of five properties on Church Lane.

### *Effects arising from operation*

- 5.13.176 The main ES did not identify any individual residential, community or non-residential properties in the vicinity of Middleton which are subject to likely significant operational sound, noise or vibration effects.

- 5.13.177 An assessment has been undertaken to determine whether operational noise levels from the AP2 scheme are likely to result in a significant effect, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000). The predicted operational sound and vibration levels as a result of this amendment are presented in AP2 ES Appendix SV-004-020.
- 5.13.178 The assessment indicates that the amendment reduces the operational sound levels at the properties in the vicinity of the route. However, the amendment will not change the level of significance of the effects reported in the main ES. The amendment does not change the operational vibration levels.

#### *Mitigation and residual effects*

- 5.13.179 The assessment of construction noise and vibration assumes the implementation of the principles and management processes set out in the draft CoCP. No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.13.180 The amendment will give rise to a different residual significant effect by reducing construction noise for a group of five properties on Church Lane, Middleton. This amendment will remove the significant effect reported in the main ES. Mapping for the sound, noise and vibration assessment is included in SES and AP2 ES Map series SV-01, SV-02, SV-03, SV-04 and SV-05.

#### *Cumulative effects*

- 5.13.181 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of the amendment acting in combination with another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

#### **Volume 5 amendments**

- 5.13.182 Table 4 sets out the additions to the main ES, Volume 5: SV-003-020. Explanation of the information within this table is provided in the main ES (Volume 5: Appendix SV-003-020).

Table 4: Assessment of construction noise at residential receptors and non-residential receptors

Assessment location		Impact criteria			Significance criteria								Significant effect	
ID	Area represented	Typical/highest monthly outdoor $L_{pAeq}$ [dB] at the facade [Assessment category A/B/C]			Construction activity resulting in highest forecast noise levels	Type of effect	Number of impacts represented	Type of receptor	Receptor design	Existing environment	Unique feature	Combined impact		Impact duration [months]
		Day 0700- 1900	Evening 1900- 2300	Night 2300- 0700										
157635	Church Lane, Middleton, Tamworth	51/60 [C]	-	-	Road construction	NA	2	R	T	-	-	-	-	-

Relevant portions of the legend from the main ES, Volume 5: SV-003-020:

R Type of receptor - residential

T Receptor design - typical

## Traffic and transport

### *Scope, assumptions and limitations*

- 5.13.183 The assessment scope, key assumptions and limitations of the traffic and transport assessment are set out in Volume 1, the SMR (Volume 5: Appendix CT-0001-000/1) and the SMR Addendum (Volume 5: Appendix CT-0001-000/2) of the main ES.

### *Existing baseline*

- 5.13.184 The environmental baseline for traffic and transport is as set out in Volume 2, CFA20, Section 12 of the main ES.
- 5.13.185 The baseline surveys showed that traffic flows on the A4091 Tamworth Road in the area of the amendment are 10,700 vehicles per day and on Church Lane are 900 per day.

### *Future baseline*

#### **Construction**

- 5.13.186 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA20, Section 12).

#### **Operation (2026 and 2041)**

- 5.13.187 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES (Volume 2, CFA20, Section 12).

### *Effects arising during construction*

- 5.13.188 The changes to the cuttings and embankments included in this amendment alter the number of HGVs required to move material. However, the access point for earthworks affected by this amendment is located within CFA21 (Drayton Bassett, Hints and Weeford). Once HGV traffic enters the access point for the earthworks, vehicle trips are off-highway and will use the HS2 construction haul routes.
- 5.13.189 There are no new or different significant effects during construction for traffic and transport as a direct result of the amendment in isolation as compared to those reported in the main ES.
- 5.13.190 The impact of traffic resulting from this amendment in CFA21 (Drayton Bassett, Hints and Weeford) is considered together with other amendments in Section 6 of the CFA21 AP2 ES, Volume 2 report relating to combined effects.
- 5.13.191 The impact of traffic resulting from this and other amendments which cause indirect impacts on junctions within CFA20 (Curdworth to Middleton) is reported in Section 6 of this report relating to combined effects.

### *Effects arising from operation*

- 5.13.192 There are no new or different operational effects for traffic and transport as a result of the amendment compared to the reporting in the main ES.

### *Mitigation and residual effects*

- 5.13.193 No changes to the mitigation measures reported in Volume 2, CFA20 of the main ES are required.
- 5.13.194 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.13.195 Cumulative effects are reported in Volume 2, CFA20, Section 12 of the main ES. The above assessment has taken into account these cumulative effects, including planned development by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in other areas.

## **Water resources and flood risk assessment**

### *Scope, assumptions and limitations*

- 5.13.196 The assessment scope, key assumptions and limitations for water resources and FRA are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.13.197 The elements of the amendment that have the potential to impact on water resources and flood risk are the revisions to the Langley Brook viaduct and the balancing ponds near Middleton House Farm and adjacent to Church Lane.

### *Existing baseline*

- 5.13.198 Langley Brook flows from west to east towards the northern boundary of CFA20 (Curdworth to Middleton). The catchment area draining to this location is 16.5km<sup>2</sup> and the width of the 1 in 100 (1%) floodplain at the proposed crossing is 167m allowing for climate change. There are no residential properties within the floodplain near to the route. The land use within the floodplain between Crowberry Lane and the HS2 route includes a sewage treatment works and equine facilities, which is categorised as less vulnerable (moderate value receptor).
- 5.13.199 There are no residential properties affected that are located within the modelled 1 in 100 (1%) plus climate change floodplain. The FRA in the SES and AP2 ES Volume 5: Appendix WR-003-020 provides further details of receptors within the flood zones and their vulnerability.

### *Future baseline*

#### **Construction (2017)**

- 5.13.200 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).
- 5.13.201 None of the identified developments affects the assessment of the AP2 scheme's likely construction impacts on water resources and flood risk.

### Operation (2026)

5.13.202 SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2026, additional to those reported in the main ES (Volume 5: Appendix CT-004-000).

5.13.203 None of the identified developments affects the assessment of the AP2 scheme's likely operational impacts on water resources and flood risk.

#### *Effects arising during construction*

5.13.204 The main ES reported that there was no significant effect on flood risk during construction as a result of the scheme.

5.13.205 Construction works will be undertaken in accordance with the provisions of the draft CoCP which incorporates measures to manage water resources and flood risk.

5.13.206 The main permanent effects of the amendment relate to the revisions at Langley Brook. An assessment based on hydraulic modelling has been undertaken to determine any changes to the significance of effect for flood risk.

5.13.207 In comparison to the original scheme, the amendment to the length of the viaduct will result in an increase in upstream flood levels due to the additional loss of floodplain storage (prior to the consideration of mitigation). The impact on flood levels of the amended viaduct length has been modelled in conjunction with replacement floodplain storage (mitigation). The modelling indicates that with replacement floodplain storage included, the change in flood levels is approximately 30mm at the viaduct. This represents a minor magnitude impact on flood risk which combined with the receptor value of moderate gives rise to an effect of slight adverse, which is not significant. This impact is only present immediately upstream of the viaduct, further upstream (approximately 80m) the increase in levels will be less than 10mm and would therefore be a negligible impact giving rise to a neutral effect which is not significant, similar to the non-significant residual effect reported in the main ES for this area.

5.13.208 Another permanent effect of the amendments is the revision to balancing ponds in this stretch of the route due to changes at the Langley Brook viaduct and the Church Lane overbridge satellite compound. The drainage has been designed to reduce the rate and volume of runoff from the route and to avoid an increase in flood risk. The balancing ponds will be designed where practicable to discharge at existing runoff rates and will accommodate events up to and including the 1 in 100 annual probability (1%) including an allowance for climate change. The receiving watercourses of the discharges from the balancing ponds remain the same and the changes to the design as a result of this amendment will adhere to this approach and there will be no requirement for any further mitigation.

5.13.209 The amendments in the Middleton area will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Effects arising from operation*

- 5.13.210 The main ES reported that there was no significant effect on flood risk during operation as a result of the scheme.
- 5.13.211 The amendments in the Middleton area will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### *Mitigation and residual effects*

- 5.13.212 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.
- 5.13.213 The amendment will not give rise to a new or different residual significant effect and will not change the level of significance of the effects reported in the main ES.

### *Cumulative effects*

- 5.13.214 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 another amendment in AP2 or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.14.1 The amendment will give rise to a different significant effect for sound, noise and vibration by reducing construction noise for a group of five properties on Church Lane, Middleton. This amendment will remove the significant effect reported in the main ES. This reduction in construction noise will also remove the significant adverse amenity effect reported in the community section of the main ES.
- 5.14.2 There are no other changes to the significance of the environmental effects as set out in the main ES (Volume 2, CFA20, Curdworth to Middleton).

## 6 Combined effects of amendments in this CFA due to changes in traffic flows

### 6.1 Introduction

6.1.1 Where transport effects can be directly attributed to an amendment the effects related to such changes are reported within the Traffic and transport section under each of the relevant amendments. There are, however, amendments in this CFA and others which in combination result in changed traffic flows that cannot be directly attributed to one specific amendment. This section of the AP2 ES reports any new or different significant effects as a result of this combined assessment.

6.1.2 Traffic and transport effects are reported first, since the effects arise from changes in traffic flows. The following are affected by traffic and transport changes and are reported in the following sequence:

- air quality; and
- sound, noise and vibration.

### 6.2 Changes of relevance to this assessment

6.2.1 The following changes are relevant to this assessment:

- updated construction assumptions for A446 traffic assessment (SES-019-001);
- changes to the A446 junction as part of the alternative temporary diversion of Faraday Avenue amendment (AP-020-001); and
- changes to the movement of excavated material in this and other CFAs.

### 6.3 Traffic and transport

#### Scope, assumptions and limitations

6.3.1 The assessment scope, key assumptions and limitations for traffic and transport are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

#### Environmental baseline

##### *Existing baseline*

6.3.2 The existing baseline remains as included within the main ES (Volume 2, CFA20, Section 12) except for new data collected along the A446 Lichfield Road in 2014 which is reported in the Addendum to the Transport Assessment, (Volume 5: Appendix TR-001-000).

6.3.3 Baseline 24-hour weekday traffic flows on the main roads in the area are as follows:

- A446 (south of Marsh Lane in CFA19): 22,000 vehicles per day;
- Faraday Avenue: 16,000 vehicles per day;
- A4097 Kingsbury Road: 13,000 vehicles per day; and

- A4091 Tamworth Road: 11,000 vehicles per day.

### *Future baseline*

#### **Construction**

- 6.3.4 The future baseline for traffic and transport during construction is set out in Volume 2, CFA20, Section 12 of the main ES. The future baseline has been updated to include additional survey data.

#### **Operation (2026 and 2041)**

- 6.3.5 The future baselines for traffic and transport during operation are set out in Volume 2, CFA20, Section 12 of the main ES. The future baselines have been updated to include additional survey data.

### **Effects arising during construction**

#### *Avoidance and mitigation*

- 6.3.6 Avoidance and mitigation measures are set out in Volume 2, CFA20, Section 12 of the main ES. No further traffic and transport avoidance or mitigation measures during construction are proposed.

#### *Assessment of impacts and effects*

#### **Temporary effects**

- 6.3.7 With the AP2 revised scheme, there are wider changes relating to the transport of material brought in from other CFAs, through this CFA and to and from the roadhead located within CFA20 (Curdworth to Middleton) at Faraday Avenue. There are increases in construction traffic on the A446 Lichfield Road between the B44118 Marsh Lane and the A4091 Tamworth Road and the A446 Lichfield Road west of the A4091, compared to the main ES. There are reductions in construction traffic on the A4091 Tamworth Road between the A446 Lichfield Road and Cuttle Mill Lane, compared to the main E
- 6.3.8 Nonetheless, overall traffic volumes along the A446 Lichfield Road and Faraday Avenue are not substantially different to those associated with the original scheme. The layout of the junction of the A446 Lichfield Road and Faraday Avenue is also modified as part of the amendment to Faraday Avenue (AP2-020-001).
- 6.3.9 The original scheme led to a significant increase in delay and congestion to vehicle users at the following junctions only:
- A446 Lichfield Road/Faraday Avenue/Marsh Lane (minor adverse significant effect); and
  - A4091 Tamworth Road / A446 Lichfield Road (minor adverse significant effect)
- 6.3.10 Although there are changes in traffic volumes, with the AP2 revised scheme, as described above, they will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

- 6.3.11 The changes in traffic flows with the original scheme led to substantial increases in daily traffic that will cause increased traffic related severance<sup>7</sup> for non-motorised users, making it more difficult to cross the road along the A446 Lichfield Road and its junctions. The proposed changes will give rise to a different significant effect in traffic related severance for non-motorised users along the A446 Lichfield Road at the junction of the A4091 Tamworth Road where the minor significant adverse effect in the original scheme changes to a moderate significant adverse effect. Other significant effects reported in the main ES remain unchanged.

### **Permanent effects**

- 6.3.12 Permanent effects of construction on traffic and transport are reported under 'Effects arising from operation'.

### *Other mitigation measures*

- 6.3.13 No changes to the mitigation measures reported in Volume 2, CFA20 of the main ES are required.

### *Cumulative effects*

- 6.3.14 Cumulative effects are reported in Volume 2, CFA20, Section 12, of the main ES. The above assessment has taken into account these cumulative effects, including planned development by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in other areas.

### *Summary of likely residual significant effects*

- 6.3.15 There will be an increase in construction traffic related severance for non-motorised users along the A446 Lichfield Road near the junction with the A4091 Tamworth Road where the minor adverse significant residual effect reported in the main ES will change to a moderate adverse significant residual effect.
- 6.3.16 The revised significant effects from the AP2 scheme are shown on Map TR-03-105 (Volume 5: Map Book Traffic and Transport).

### **Effects arising from operation**

- 6.3.17 The amendment has no impact on operation and consequently there are no new or different operational effects for traffic and transport.

## **6.4 Air quality**

### **Scope, assumptions and limitations**

- 6.4.1 There are changes in construction traffic in the CF20 (Curdworth to Middleton) area as compared to the main ES. These changes are attributed to revisions to the movement of excavated material since the main ES. There are no changes in construction traffic that are directly attributable to specific amendments or a combination of

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<sup>7</sup> In the context of traffic and transport, Severance is used to relate to a change in ease of non-motorised users due to, for example, a change in travel distance or travel time or a change in traffic levels on a route that makes it harder for non-motorised users to cross. A reference to severance does not imply a route is closed to access.

amendments. On this basis the assessment of combined effects for air quality during construction includes the movement of excavated material only.

6.4.2 There are no changes to traffic during operation from that reported in the main ES.

6.4.3 The assessment scope, key assumptions and limitations for air quality are set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES as amended by the SMR Addendum 2 (Volume 5: Appendix CT-001 -000/3).

## **Environmental baseline**

### *Existing baseline*

6.4.4 The baseline conditions with regard to air quality have not changed from those reported in the main ES.

6.4.5 Relevant receptors that could be affected by changes in air quality due to changes to the movement of excavated material include residential properties; along the A446 Lichfield Road between B4418 Marsh Lane and the A4091 Tamworth Road; the A446 Lichfield Road west of the A4091 Tamworth Road; and along the A4091 Tamworth Road between A446 Lichfield Road and Cuttle Mill Lane.

6.4.6 There is one statutory designated site within the Curdworth to Middleton area. This is the Middleton Pool SSSI, which is located to the east of the A4091 Tamworth Road. This area is not expected to be affected by changes in air quality as a result of the combined effects of changes to the movement of excavated material. Therefore, this receptor has not been included in the assessment of traffic emissions during construction.

### *Future baseline*

#### **Construction**

6.4.7 The future baseline for construction in 2017 remains unchanged from that reported in the main ES.

#### **Operation (2026 and 2041)**

6.4.8 The future baseline for operation in 2026 and 2041 remains unchanged from that reported in the main ES.

## **Effects arising during construction**

### *Avoidance and mitigation*

6.4.9 The assessment has assumed that the general measures detailed Section 7 of the draft CoCP (Volume 5: Appendix CT-003-000) in the main ES will be implemented.

### *Assessment of impacts and effects*

#### **Temporary effects**

6.4.10 An assessment has been undertaken for relevant receptors adjacent to these sections of roads to determine any changes to the impact of construction emissions on air quality.

- 6.4.11 The main ES reported that the magnitude of impact was slight adverse for NO<sub>2</sub> at receptors along the A446 Lichfield Road and negligible for receptors along the A4091 Tamworth Road. The magnitude of impact was negligible for all receptors for PM<sub>10</sub>. There is no change to the magnitude of impact for NO<sub>2</sub> or PM<sub>10</sub> for the AP2 scheme, compared to the main ES.
- 6.4.12 The revisions to the movement of excavated material will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

### **Permanent effects**

- 6.4.13 There are no permanent effects anticipated to arise during construction of the AP2 scheme.

### *Other mitigation measures*

- 6.4.14 No other mitigation measures during construction are required in relation to air quality due to the revisions to the movement of excavated material.

### *Cumulative effects*

- 6.4.15 There are no new or different likely significant cumulative effects for air quality as a result of combined effects of amendments within this CFA.

### *Summary of likely residual significant effects*

- 6.4.16 The main ES reported no residual significant effects on air quality during construction and operation and there is no change in the effect reported in the main ES.

### **Effects arising from operation**

- 6.4.17 There are no new or different operational effects for air quality as a result of AP2 scheme.

## **6.5 Sound, noise and vibration**

### **Scope, assumptions and limitations**

- 6.5.1 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 6.5.2 Local assumptions and limitations for sound, noise and vibration are set out in Volume 2, CFA20 in the main ES.

### **Environmental baseline**

#### *Existing baseline*

- 6.5.3 The existing baseline is as described in the sound, noise and vibration section of Volume 2, CFA20 and Volume 5: Appendix SV-002-020 in the main ES.

### *Future baseline*

#### **Construction**

- 6.5.4 The assessment of noise from construction traffic assumes a baseline year of 2021, representative of the middle of the construction period when the construction traffic flows are expected to be at their peak. Further information can be found in the Traffic and transport assessment of the main ES (Volume 5: Appendix TT-001-020).

#### **Operation**

- 6.5.5 The assessment is based upon the predicted change in sound levels that result from the scheme. The assessment initially considered a worst case (which would overestimate the change in levels) by assuming that sound levels will not change from the existing baseline year of 2012/2013. Where significant effects were identified on this basis, the effects have been assessed using the baseline year of 2026 to coincide with the proposed start of passenger services. The future baseline is for the sound environment that would exist in 2026 in the absence of the scheme.

### **Effects arising during construction**

#### *Avoidance and mitigation*

- 6.5.6 The measures that have been incorporated into the draft CoCP to avoid or reduce noise and vibration effects during construction remain as stated in Volume 2, CFA20, Section 11 of the main ES.

#### *Assessment of impacts and effects*

#### **Temporary effects**

- 6.5.7 No indirect significant effects due to construction traffic were reported in the main ES.
- 6.5.8 An assessment has been undertaken to determine whether construction traffic from the AP2 scheme will result in a likely significant effect using the methodology and significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000). Table 5 sets out the changes to the main ES, Volume 5: Appendix SV-003-020; construction assessment for sound, noise and vibration. A full explanation of the information within Table 5 is provided in Volume 5: Appendix SV-001-000 of the main ES, with the following additional notes:

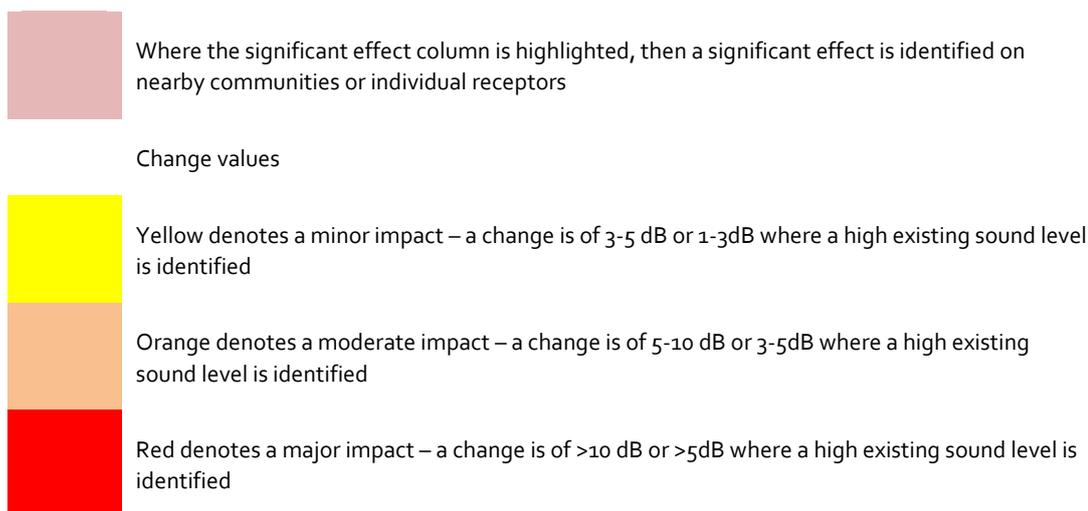


Table 5: Assessment of construction traffic noise levels

Road name	Link	Future baseline sound level (dB)	Future baseline sound level + construction traffic (dB)	Change (dB)	Significant effect
		Daytime L <sub>pAeqT</sub> 16hr 0700-23:00 free-field	Daytime L <sub>pAeqT</sub> 16hr 0700-2300 free-field		
A446 Lichfield Road	A4091 roundabout to Bassetts Pole roundabout	73.2	74.3	1.1	
A446 Lichfield Road	Jct 9 M42 motorway to the A4091 roundabout	74.1	75.2	1.1	

6.5.9 A minor impact due to construction traffic is predicted along the A446 Lichfield Road. Taking account of incorporated mitigation, the limited number of properties adjacent to this road and the predicted change in traffic noise levels, no indirect significant effects have been identified due to construction traffic.

6.5.10 The proposed changes in construction traffic from the AP2 scheme will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

**Permanent effects**

6.5.11 There are no permanent effects anticipated to arise during construction of the AP2 scheme.

*Other mitigation measures*

6.5.12 No other mitigation measures during construction are required in relation to sound, noise and vibration due to the revisions to the movement of excavated material.

### *Cumulative effects*

- 6.5.13 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of combined effects of amendments within this CFA.

### *Summary of likely residual significant effects*

- 6.5.14 There are no changes to the construction noise and vibration significant effects reported in the main ES as a result of combined effects of amendments within this CFA.

### **Effects arising from operation**

- 6.5.15 There are no changes to the operational noise and vibration significant effects reported in the main ES as a result of combined effects of amendments within this CFA.

## **6.6 Summary**

- 6.6.1 Changes to construction traffic flows will result in an increase in traffic related severance for non-motorised users along the A446 Lichfield Road near the junction of the A4091 Tamworth Road compared to the effects reported in the main ES. The minor adverse significant residual effect reported in the main ES will change to a moderate adverse significant residual effect.
- 6.6.2 There are no other changes to the significance of the environmental effects as set out in the main ES (Volume 2, CFA20, Curdworth to Middleton).

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