

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and Additional Provision 2 Environmental Statement

Volume 2 | Community forum area report

CFA15 | Greatworth to Lower Boddington

July 2015

SES and AP2 ES 3.2.1.15



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Department
for Transport

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Contents

Structure of the HS2 Supplementary Environmental Statement and Additional Provision 2 Environmental Statement	1
Structure of this report	3
1 Introduction	5
Part 1: Supplementary Environmental Statement	7
2 Summary of changes	7
2.1 New environmental baseline information	7
2.2 Changes to the design or construction assumptions not requiring a change to the Bill	8
2.3 Corrections to the main ES	11
2.4 Topics included in the SES assessment	17
3 Assessment of changes	18
3.1 Agriculture, forestry and soils	18
3.2 Cultural heritage	20
3.3 Ecology	27
3.4 Traffic and transport	30
Part 2: Additional Provision 2 Environmental Statement	34
4 Summary of amendments	34
5 Assessment of amendments	40
5.1 Additional powers required over an access track to enable widening to be carried out (AP2-015-001)	40
5.2 Greatworth Hall revisions to earthworks, land drainage and access (AP2-015-002)	40
5.3 Summary of new or different likely residual significant effects as a result of the amendment	52
5.4 Realignment of temporary diversion of Footpath AN4 (AP2-015-003)	53
5.5 Additional land required for environmental mitigation at Lower Thorpe (AP2-015-004)	53
5.6 Provision of access to Lower Thorpe viaduct satellite compound (AP2-015-005)	54
5.7 Summary of new or different likely residual significant effects as a result of the amendment	67
5.8 Provision of turning heads on Banbury Lane (AP2-015-006)	67

5.9	Summary of new or different likely residual significant effects as a result of the amendment	71
5.10	Relocation of drainage infrastructure at Culworth Mill (AP2-015-007)	71
5.11	Summary of new or different likely residual significant effects as a result of the amendment	79
5.12	Reconfiguration of the Warwick Road and Banbury Road junction (AP2-015-008)	79
5.13	Summary of new or different likely residual significant effects as a result of the amendment	95
5.14	Provision of a Chipping Warden bypass (AP2-015-009)	96
5.15	Summary of new or different likely residual significant effects as a result of the amendment	123
5.16	Addition of information on footpaths AA7 and AE17 to maps (AP2-015-010)	125
5.17	Additional land for the relocation of Chipping Warden midpoint auto-transformer station (AP2-015-011)	125
5.18	Summary of new or different likely residual significant effects as a result of the amendment	136
6	Combined effects of amendments in this CFA due to changes in traffic flows	137

List of figures

Figure 1:	Locations of design changes not requiring a change to the Bill in CFA15	9
Figure 2:	Locations of amendments in CFA15	39
Figure 3:	Likely groundwater divides around Chipping Warden	121

List of tables

Table 1:	Summary of design changes to the design or construction not requiring a change to the Bill in CFA15	8
Table 2:	Summary of corrections to the main ES in CFA15	12
Table 3:	Additions to Volume 5, Appendix CH-002-015, Cultural heritage	23
Table 4:	Additions to Volume 5, Appendix CH-003-015, Cultural heritage	25
Table 5:	Summary of amendments in CFA15	35

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 - CFA15, Greatworth to Lower Boddington

- 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, geophysical and walk-over surveys for cultural heritage and Water Framework Directive (WFD) surveys undertaken since the submission of the Bill;
- 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;

SES and AP2 ES Volume 2 - CFA15, Greatworth to Lower Boddington

- 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 design change assessed within this SES relates to the re-grading of the permanent landscape mitigation earthworks between Highfurlong Brook and Cedars Farm.
- 1.1.5 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.
- 1.1.6 The purpose of the SES is to provide an assessment of any new or different likely significant environmental effects arising from the changes described.
- 1.1.7 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.
- 1.1.8 The amendments assessed within the AP2 ES for this CFA include:
- access arrangements: amendments to the locations, alignments and/or the width of some access tracks proposed by the original scheme;
 - roads and Public Rights of Way (PRoW): changes to the locations of temporary diversions or permanent realignments;
 - mitigation provision: the provision of additional or alternative mitigation, such as landscape planting and open space, placing proposed mitigation in a different location to that proposed within the original scheme and the reduction or removal of proposed mitigation where it is no longer required;

- the provision of a Chipping Warden bypass; and
- the relocation of Chipping Warden auto-transformer station.

- 1.1.9 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.
- 1.1.10 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.
- 1.1.11 It should be noted that, since submission of the Bill, the scheme design has been revised by SES design changes, amendments described in the AP1 ES (AP1 amendments) and amendments described in the AP2 ES (AP2 amendments). 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 revised 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 surveys have been undertaken in this CFA following completion of the main ES (September 2013).
- 2.1.2 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 sites in the vicinity of the route that are not currently listed on the ancient woodland inventory.
- 2.1.3 Details of survey and desk-based work undertaken in this CFA since production of the main ES (September 2013) are provided in SES and AP2 ES Volume 5: Appendix CH-004-015 and Volume 5 map series SES and AP2 ES CH-07; CH-09 and CH-10, where this is relevant to the assessment of a new or different significant effect.
- 2.1.4 A summary of supplementary cultural heritage information from these sources that is relevant to the SES assessment is provided in Section 3 under 'Cultural heritage'.

Ecology

- 2.1.5 Surveys for bats, amphibians, hazel dormouse and otter have been undertaken in this area since September 2013. In addition habitat surveys have been undertaken at selected woodland locations to assist in determining if these areas represent ancient woodland.
- 2.1.6 Details of all survey work and desk-study information gathered since September 2013 which is relevant to this area are provided in SES and AP2 ES Volume 5: Appendix EC-001-002 (Baseline data appendix) and SES and AP2 ES Volume 5 map series EC-04; EC-05; EC-06; EC-11 and EC-12.
- 2.1.7 A summary of supplementary ecological information that is relevant to the SES assessment is included within Section 3 under 'Ecology'. This includes details of all changes relating to the status of ancient woodland.
- 2.1.8 SES and AP2 ES Volume 5: Appendix EC-002-002 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. SES and AP2 ES Volume 5: Appendix EC-003-002 identifies additional local/parish level effects which occur as a consequence of SES changes but are not significant.

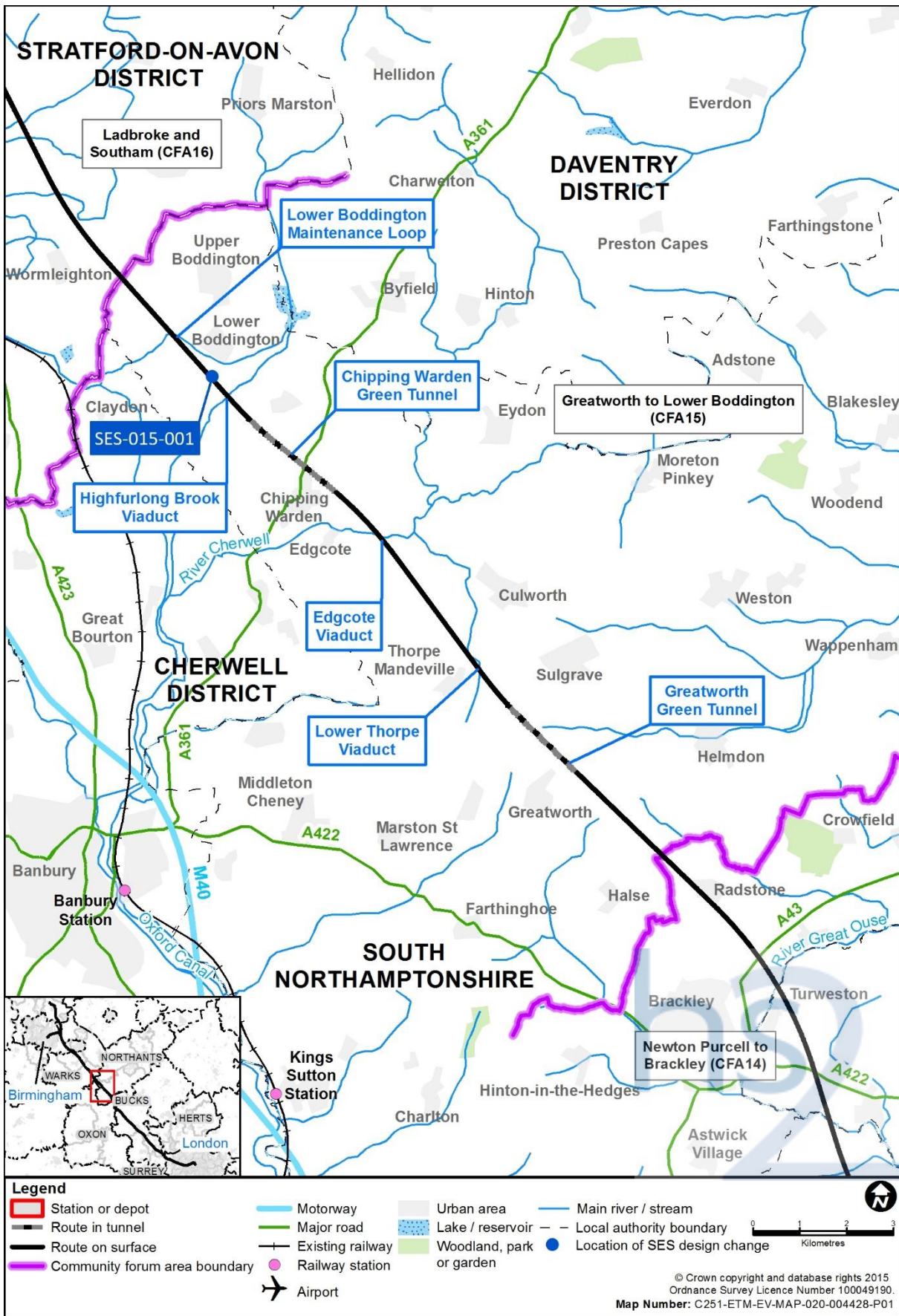
2.2 Changes to the design or construction assumptions not requiring a change to the Bill

2.2.1 Table 1 provides a summary of the design or construction assumptions not requiring a change to the Bill which will result in new or different significant effects in the Greatworth to Lower Boddington CFA (CFA15). Figure 1 shows the location.

Table 1: Summary of design changes to the design or construction not requiring a change to the Bill in CFA15

Name of design change of construction assumption	Description of the original scheme	Description of the SES scheme
Lower Boddington earthworks SES-015-001	The Bill provides for permanent landscape earthworks to the east and west of the HS2 route from Highfurlong Brook to the sewage works on Banbury Road in the west. The earthworks will integrate the cutting/embankment into the landscape and provide sound mitigation for properties to the east and visual screening to the west of the HS2 route.	The permanent landscape mitigation earthworks between Highfurlong Brook and Cedars Farm will be carried out on the same footprint as the original scheme, but will have a shallower gradient to allow farm operations on the regraded area. The reduction in the earthwork quantities in comparison to the original scheme will reduce the volume of material that will need to be transported by road.

Figure 1: Locations of design changes not requiring a change to the Bill in CFA15



Description of changes to the design or construction assumptions

Lower Boddington earthworks (SES-015-001)

- 2.2.2 The Bill provides for permanent landscape earthworks to the east and west of the HS2 route from Highfurlong Brook to the sewage works on Banbury Road to integrate the cutting/embankment into the landscape and provide noise mitigation for properties to the east and visual screening to the west. The height of the earthworks to the south of Claydon Road will be approximately 5.5m and north of Claydon Road will be approximately 4m, shaped with a large plateau and 1 in 8 slopes (refer to maps CT-05-077, CT-06-077, CT-05-078 and CT-06-078 in the main ES Volume 2, CFA15 Map Book).
- 2.2.3 Since submission of the Bill, it has been decided to regrade the permanent landscape mitigation earthworks between Highfurlong Brook and Cedars Farm as a result of revisions to quantities of excavated materials and to better integrate the earthworks into the surrounding landscape. The earthworks will be carried out on the same footprint as the original scheme, but will have a shallower gradient of approximately 1 in 20. The shallower gradient will reduce the earthwork quantities and the volume of material that will need to be transported by road, in comparison with the original scheme (refer to maps CT-05-077, CT-06-077, CT-05-078 CT-06-078 in the SES and AP2 ES Volume 2, CFA15 Map Book).
- 2.2.4 Modelling was carried out in relation to the gradient of the earthworks, including grading from the top of the bund to remove the plateau and the 1 in 8 slope. The SES scheme will require less fill and reduce construction traffic movements in this area associated with the import of fill materials from other areas of the project. The design change avoids the introduction of a landform with a large plateau as proposed in the original scheme, which would contrast with the gently undulating landscape setting in the Boddington area.
- 2.2.5 The original scheme (1 in 8 gradient) required approximately 47ha of land temporarily, and this is the same for this design change. The land affected by this design change will be restored to agriculture. The estimated duration of construction is the same as in the original scheme outlined in the main ES. The land required for this design change is within the original limits of the Bill and therefore no amendment to the Bill is required.
- 2.2.6 The Lower Boddington earthworks are not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: air quality; community; cultural heritage; ecology; land quality; landscape and visual assessment; socio-economics; sound, noise and vibration; and water resources and flood risk assessment. However, there were changes where reassessment was considered to be required in respect of: agriculture, forestry and soils; and traffic and transport.

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

- 2.2.7 Design changes in other CFAs, in particular, the sustainable placement area at Hunt's Green Farm in CFA10 (SES-010-001), in combination with the reduction in landscape earthworks at Lower Boddington in this CFA (SES-015-001) have altered the movement of excavated material by heavy goods vehicle (HGV) in this CFA.

Consequently, traffic flows on roads in CFA15 will differ in comparison to the original scheme. The assessment in relation to this is presented in Section 3: 'Assessment of changes' under Traffic and transport.

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 the Greatworth to Lower Boddington area because of the potential to alter the significance of 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 CFA15

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
<p>Construction of the Proposed Scheme Paragraph 2.3.90, Volume 2, CFA15 of the main ES</p> <p>and</p> <p>Agriculture, forestry and soils</p> <p>Paragraph 3.4.28, Table 7 in Volume 2, CFA15 of the main ES</p>	<p>The description of the construction of the Proposed Scheme reported that the grain store, at holding reference CFA15/22 Old House Farm, would be demolished.</p> <p>This was incorrectly reported, as the grain store is outside of Bill limits and will not be demolished as correctly indicated on map CT-05-077 and Parliamentary Bill Plan 2-87.</p>	<p>Paragraph 2.3.90:</p> <p>Demolition of one building will be required: a commercial property (outbuilding associated with Old House Farm) at Claydon Road (also known as Boddington Road).'</p> <p>Paragraph 3.4.28:</p> <p>Infrastructure column in table:</p> <p>'Grain store demolished. High'</p> <p>Scale of effect column in table:</p> <p>'Major/moderate adverse due to the demolition of grain store</p>	<p>Paragraph 2.3.90</p> <p>(Paragraph removed with no replacement text.)</p> <p>Paragraph 3.4.28:</p> <p>(This row should be removed from Table 7 with no replacement text.)</p>	<p>Yes</p> <p>Within the agriculture, forestry and soils topic, the overall effect on the holding will change from major/moderate adverse, which is significant, to negligible, which is not significant (see Section 3.1).</p> <p>No mitigation is required</p>
<p>Ecology</p> <p>Paragraph 7.3.20 Table 8 and Paragraph 7.4.23 in Volume 2, CFA15 of the main ES</p>	<p>Reporting inconsistency related to bat roosts at Lower Thorpe. Table 8 in the main ES states that there are confirmed roosts within land required for construction of the original scheme. These roosts are outside of the land required as confirmed in the Assessment of Impacts and effects Section (paragraph 7.4.23).</p>	<p>In Volume 2, paragraph 7.3.20, Table 8, the text states 'The maternity roost and one of the summer/transient roosts are within land required for the construction of the Proposed Scheme'. However in the impact assessment paragraph 7.4.23 it states 'No significant effects are expected on the bats that utilise Culworth Grounds Farm or other building near Lower Thorpe. The brown long-eared bat maternity roost and transient roosts, the common pipistrelle bat roosts (one of which is likely to be a maternity roost) and the Natterer's bat transient roost will be retained.</p>	<p>Table 8 the text should state:</p> <p>The maternity roost and one of the summer/transient roosts are adjacent to land required for the construction of the Proposed Scheme.</p>	<p>No</p>
<p>Sound, noise and vibration</p>	<p>Effect reported on Banbury Lane; however this should say Banbury Road</p>	<p>Construction traffic is likely to cause adverse noise effects on residential receptors along Banbury Lane where it passes through Thorpe</p>	<p>Construction traffic is likely to cause adverse noise effects on residential receptors along</p>	<p>No</p>

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Paragraph 11.3.14, Volume 2, CFA15 of the main ES		Mandeville (CSV15-Co1) ...	Banbury Road where it passes through Thorpe Mandeville (CSV15-Co1) ...	
Traffic and transport: Paragraph 12.4.13, Volume 2, CFA15 of the main ES	A moderate adverse effect during construction is reported for the junction of the A422 with the A361 (M40 junction 11), with regard to delay and congestion to vehicle users. This should have been reported as a major adverse effect.	First bullet: A422 with A361 (M40 junction 11) (moderate adverse effect)	First bullet : The A422 with the A361 (M40 junction 11) (major adverse effect)	Yes Junction of the A422 with the A361 (M40 junction 11) Moderate adverse to major adverse in relation to congestion and delay to vehicle users. See Section 3 for assessment No mitigation is required
Traffic and transport: Paragraph 12.4.13, Volume 2, CFA15 of the main ES	A minor adverse effect during construction is reported for the junction of the A422 with the B4525 Banbury Lane (Middleton Cheney), with regard to delay and congestion to vehicle users. This should have been reported as a moderate adverse effect.	Second bullet: A422 with B4525 Banbury Lane (Middleton Cheney) (minor adverse effect)	Second bullet : The A422 with the B4525 Banbury Lane (Middleton Cheney) (moderate adverse effect)	Yes Junction of the A422 with the B4525 Banbury Lane Minor adverse to moderate adverse in relation to congestion and delay to vehicle users. See Section 3 for assessment No mitigation is required
Traffic and transport: Paragraph 12.4.13, Volume 2, CFA15 of the main ES	A moderate adverse effect during construction is reported for the junction of the A361 with Welsh Road, with regard to delay and congestion to vehicle users. This is an assessment error, as the traffic flow on the road link between the alignment and the junction of the A361 with Welsh Road was assessed as being the same either side of the Chipping Warden green tunnel main compound. The	Third bullet: A361 with Welsh Road (moderate adverse effect)	Third bullet: The A361 with Welsh Road (minor adverse effect)	Yes Junction of the A361 with Welsh Road Moderate adverse to minor adverse in relation to congestion

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
	section of the A361 Byfield Road north of the Chipping Warden green tunnel main compound should not have contained traffic relating to the movement of excavated material.			and delay to vehicle users. See Section 3 for assessment No mitigation is required
Traffic and transport: Paragraph 12.4.17, Volume 2, CFA15 of the main ES	A significant effect was not identified at Culworth Road in the main ES. A moderate adverse effect on this road in relation to traffic-related severance ¹ for non-motorised users should have been reported at this location in the main ES.	No text exists in the main ES for this correction	New bullet: Culworth Road (moderate adverse effect) due to an increase in HGV as well as all traffic flows	Yes Culworth Road: Not significant to moderate adverse with regard to traffic-related severance for non-motorised users. See Section 3 for assessment No mitigation is required
Traffic and transport: Paragraph 12.4.17, Volume 2, CFA15 of the main ES	A major adverse effect during construction is reported for the A361 Byfield Road, between Welsh Road and the A422/M40. However this is incorrect as the A361 Byfield Road is affected differently north and south of the Chipping Warden green tunnel main compound. The major adverse effect is on the A361 Byfield Road between Chipping Warden green tunnel main compound and the A422/M40. There is a moderate adverse effect on A361 Welsh Road between Welsh Road and Chipping Warden green tunnel main compound.	Sixth bullet: A361 Byfield Road, between Welsh Road and A422/M40 (major adverse effect) due to an increase in HGV flow as well as all traffic flow	Sixth bullet: The A361 Byfield Road, between Chipping Warden green tunnel main compound and the A422/M40 (major adverse effect) due to an increase in HGV traffic flow as well as all traffic flow New bullet: The A361 Byfield Road, between Welsh Road and Chipping Warden green tunnel main compound (moderate adverse effect) due to an	Yes The A361 Byfield Road, between Chipping Warden green tunnel main compound and the A422/M40. Major adverse effect with regard to traffic-related severance for non-motorised users. and The A361 Byfield Road, between Welsh Road and Chipping Warden green tunnel main compound.

¹ In the context of this traffic and transport section, 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.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
			increase in HGV traffic flow as well as all traffic flow	Moderate effect with regard to traffic-related severance for non-motorised users. See Section 3 for assessment No mitigation is required
Traffic and transport: Paragraph 12.4.17, Volume 2, CFA15 of the main ES	A significant effect was not identified at the B4525 Welsh Road between Greatworth green tunnel satellite compound and Banbury Lane in the main ES. A moderate adverse effect in relation to traffic-related severance should have been reported at this location in the main ES.	No text exists in the main ES for this correction	New bullet: The B4525 Welsh Road between Greatworth green tunnel satellite compound and Banbury Lane (moderate adverse effect) due to an increase in HGV flow	Yes Not significant to moderate adverse effect with regard to traffic-related severance for non-motorised users. See Section 3 for assessment No mitigation is required
Traffic and transport: Paragraph 12.4.24 Volume 2, CFA15 of the main ES	A significant effect during construction was not identified at Footpath AN13 or Footpath AC2. A minor adverse effect in relation to increased travel distance for non-motorised users should have been reported at both these locations in the main ES.	There will be minor adverse effects on non-motorised users due to increased travel distance from 11 PRoW and eight road diversions, at Banbury Road, Claydon Road (also known as Boddington Road) and AC1 (footpath), AA8 (footpath), Appletree Lane, A361 Byfield Road, AE12 Jurassic Way, AE21 (footpath), AE20 Macmillan Way, Banbury Lane, Sulgrave Road, AN40 (footpath), AN42 (footpath), B4525 Welsh Road, AN4 (footpath), Helmdon Road, AN14 (bridleway), AN19 (footpath), AN22 (footpath) and AG10 (bridleway). These diversions are between 100 and 300m in length, apart from the diversions at Appletree Lane and AA8 (footpath) being approximately 400m, AN40 (footpath) approximately 500m, Banbury Lane 600m and AN42 (footpath) 1.4km.	Paragraph 12.4.24: There will be minor adverse effects on non-motorised users due to increased travel distance from 14 PRoW and eight road diversions, at Banbury Road, Claydon Road (also known as Boddington Road), AC1 (footpath), AC2 (footpath), AA8 (footpath), Appletree Lane, A361 Byfield Road, AE12 Jurassic Way, AE21 (footpath), AE20 Macmillan Way, Banbury Lane, Sulgrave Road, AN40 (footpath), AN42 (footpath), B4525 Welsh Road, AN4 (footpath), Helmdon Road, AN13 (footpath), AN14 (bridleway), AN19 (footpath),	Yes Footpath AN13 Not significant to minor adverse effect during construction with regard to increased travel distance for non-motorised users. Footpath AC2 Not significant to minor adverse effect during construction with regard to increased travel distance for non-motorised users. See Section 3 for assessment No mitigation is required

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
			AN22 (footpath) and AG10 (bridleway). These diversions are between 100 and 300m in length, apart from the diversions at Appletree Lane), AC2 (footpath), AN13 (footpath) and AA8 (footpath) being approximately 400m, AN40 (footpath) approximately 500m, Banbury Lane 600m and AN42 (footpath) 1.4km.	
<p>Traffic and transport:</p> <p>Paragraph 12.5.10 Volume 2, CFA15 of the main ES</p>	<p>A minor adverse effect in operation was identified at Footpath AN13 in the main ES in relation to increased travel distance for non-motorised users. A significant effect should not have been reported in this location.</p>	<p>Paragraph 12.5.10:</p> <p>There will be minor adverse effects on non-motorised road users as a result of severance from increased travel distance due to the permanent realignment of five PRoW and two roads at Banbury Road, AC2 (footpath), Culworth Road, AE5 (footpath), AN13 (footpath), AN28 (footpath) and AN37 (footpath). The majority of realignments are between approximately 200 and 250m in length, apart from AN28 (footpath) and Culworth Road at approximately 400m and AC2 (footpath) at approximately 500m</p>	<p>Paragraph 12.5.10:</p> <p>There will be minor adverse effects on non-motorised road users as a result of severance from increased travel distance due to the permanent realignment of four PRoW and two roads at Banbury Road, AC2 (footpath), Culworth Road, AE5 (footpath), AN28 (footpath) and AN37 (footpath). The majority of realignments are between approximately 200 and 250m in length, apart from AN28 (footpath) and Culworth Road at approximately 400m and AC2 (footpath) at approximately 500m</p>	<p>Yes</p> <p>Footpath AN13</p> <p>Minor adverse effect in operation to not significant effect with regard to increased travel distance for non-motorised users. See Section 3 for assessment</p> <p>No mitigation is required</p>

2.4 Topics included in the SES assessment

- 2.4.1 The changes described in Sections 2.1 to 2.3 result in new or different significant effects in respect of: agriculture, forestry and soils; cultural heritage; ecology; and traffic and transport only.

3 Assessment of changes

3.1 Agriculture, forestry and soils

Introduction

- 3.1.1 This section of the report describes the environmental baseline in relation to agriculture, forestry and soils that is relevant to the assessment. It then identifies any new or different likely residual significant environmental effects as a result of the changes introduced in Section 2, compared to the original scheme and also compared to any relevant AP1 amendments.

Scope, assumptions and limitations

- 3.1.2 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.

Changes of relevance to this assessment

- 3.1.3 The correction relating to the grain store at Old House Farm (see Table 2 for the summary of corrections) is relevant to this assessment. The grain store was reported and assessed in the main ES as being demolished, however it will not be affected. The land affected by the correction extends to 48.7ha and is owned by Old House Farm.

Environmental baseline

Existing baseline

- 3.1.4 As described in the main ES, Old House Farm is an arable and beef farm extending to some 500ha with non-agricultural interests including a pheasant shoot and a bed-and-breakfast enterprise.

Future baseline

Construction (2017)

- 3.1.5 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).
- 3.1.6 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.
- 3.1.7 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)

- 3.1.8 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).

Effects arising during construction

Avoidance and mitigation measures

- 3.1.9 No avoidance and mitigation measures are required.

Assessment of impacts and effects

Temporary effects

- 3.1.10 The temporary effect of the original scheme for Old House Farm was assessed as moderate adverse due to the removal of approximately 48.7ha of land, or 10% of the farm, during construction, which was significant. As the area of land affected remains the same for this correction, the temporary effect will remain as previously reported, and is significant.

Permanent effects

- 3.1.11 The overall effect of construction on Old House Farm was reported in the main ES as significant due to the demolition of a grain store. However, the grain store that was previously reported as needing to be demolished will now not be affected. This reduces the overall effect on the holding from major/moderate adverse, which is significant to negligible, which is not significant.

Other mitigation measures

- 3.1.12 No additional mitigation measures are required.

Cumulative effects

- 3.1.13 There are no new or different likely significant cumulative effects for agriculture, forestry and soils as a result of the SES changes acting in combination with other SES or AP1 changes, or as a result of any relevant committed development interacting with the SES scheme.

Summary of likely residual significant effects

- 3.1.14 The correction at Old House Farm will give rise to a different residual significant effect as the grain store will now not be demolished. This will change the level of significance of the effects reported in the main ES from major/moderate adverse, which is significant to negligible, which is not significant.

Effects arising from operation

- 3.1.15 The SES change will not give rise to a new or different significant effect on agriculture, forestry and soils during operation and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

3.2 Cultural heritage

3.2.1 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 effects as a result of the changes introduced in Section 2, compared to the original scheme. Consideration is given to effects upon the value of heritage assets, including through changes to their setting, as a result of the SES changes.

Scope, assumptions and limitations

3.2.2 The assessment scope, key assumptions and limitations for cultural heritage are set out in Volume 1, the SMR (Volume 5: Appendix CT001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

Changes of relevance to this assessment

3.2.3 The identification of Fox Covert (Glynn Davies Wood) (asset reference GLB211²) as likely to be added to the ancient woodland inventory and identification of four new non-designated heritage assets, three new areas of potential settlement activity (asset reference GLB235, GLB236 and GLB214) at Costow House and a further potential settlement area (asset reference GLB237) adjacent to Cedars Farm, Lower Boddington are relevant to this assessment.

Environmental baseline

Existing baseline

3.2.4 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 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 and walk-over 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 likely to be added to the ancient woodland inventory.

3.2.5 A summary of the baseline information relevant to the assessment of new or different effects is provided in this section. Further details of additional baseline information obtained since the main ES is provided in SES and AP2 ES, Volume 5: Appendix CH-004-015. 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.

Designated assets

3.2.6 Fox Covert (Glyn Davies Wood) (asset reference GLB211) has been identified as likely to be added to the ancient woodland inventory. The asset has already been identified as an asset of moderate value in the main ES for its archaeology, cropmarks of a

² Cultural heritage assets are identified with a unique reference code, LBSXXX; further detail on these assets can be found in the gazetteer in Volume 5 of the main ES: Appendix CH-002-015.

curvilinear enclosure and other features. However, the likely designation changes the heritage value of this asset from moderate to high. Further details can be found in Table 3.

Non-designated assets

- 3.2.7 Additional geophysical surveys have been undertaken within CFA15 at Costow House, Lower Thorpe Mandeville and Lower Boddington. These surveys identified three new areas of potential settlement activity (asset references GLB235, GLB236 and GLB237) at Costow House and a further potential settlement area (asset reference GLB238) adjacent to Cedars Farm, Lower Boddington. These new heritage assets are of potentially of late prehistoric or Roman date and are of low heritage value. Further detail can be found in SES and AP2 ES, Volume 5: Appendix CH-004-015.

Future baseline

Construction (2017)

- 3.2.8 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Operation (2026)

- 3.2.9 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Effects arising during construction

Avoidance and mitigation measures

- 3.2.10 Measures of avoidance and mitigation with regard to cultural heritage are provided in the draft CoCP as part of the main ES (Volume 5: Appendix CT-003-000).

Assessment of impacts and effects

Temporary effects

- 3.2.11 The new baseline will not give rise to new or different significant temporary effects and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Permanent effects

- 3.2.12 Fox Covert (Glyn Davies Wood) (asset reference GLB211) is partially within the land required for the original scheme. The land required is approximately 1.9ha which is 58% of the total woodland. In addition to this is the removal of 20% of the cropmarks as reported in the main ES. This will result in the loss of a significant area of the asset which will noticeably alter the value of the asset. The main ES reported a medium adverse impact with a moderate adverse effect. The increase in the value of the asset from moderate to high will result in a high adverse impact with a major adverse significant effect.
- 3.2.13 Three potential late prehistoric/Roman settlements (asset references GLB235, GLB236 and GLB237) have been identified at Costow House, Thorpe Mandeville. These are located wholly within the land required for the construction of the SES scheme. The construction of the SES scheme will result in the permanent loss and/or

truncation of the three low value assets. This will give rise to three new significant effects that were not reported in the main ES. The impact of the SES scheme on each of the three assets from the survey at Costow House (asset references GLB235, GLB236 and GLB237) is a high adverse impact, with moderate adverse significant effect.

- 3.2.14 The potential late prehistoric/Roman settlement (asset reference GLB238) located at Cedar Farm, Lower Boddington is located wholly within the land required for the construction of the SES scheme. The construction of the SES scheme will result in the permanent loss and/or truncation of the low value asset. This will give rise to a new significant effect than that was not reported in the main ES. The impact on the asset will result in high adverse impact, with a moderate adverse significant effect.

Other mitigation measures

- 3.2.15 There are no additional mitigation measures over and above those as set out in the draft CoCP as part of the main ES (Volume 5: Appendix CT-003-000).

Cumulative effects

- 3.2.16 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 SES or in AP1, or as a result of any relevant committed development interacting with the SES scheme.

Summary of likely residual significant effects

- 3.2.17 As Fox Covert (Glyn Davies Wood) (asset reference GLB211) is likely to be added to the ancient woodland inventory, the land required for the SES scheme will give rise to a different residual significant effect, as its heritage value has increased from moderate to high. This will change the level of significance of the effects reported in the main ES from moderate adverse to major adverse.
- 3.2.18 The construction of the SES scheme will give rise to new residual significant effects due to the permanent loss of cultural heritage assets within the land required for the SES scheme. The identification of three potential prehistoric/Roman settlements (asset references GLB235, GLB236 and GLB237) at Costow House Thorpe Mandeville and the potential late prehistoric/Roman settlement (asset reference GLB238) at Cedar Farm, Lower Boddington will give rise to new moderate adverse permanent residual significant effects on these four assets.

Effects arising from operation

- 3.2.19 There are no new or different significant operational effects for cultural heritage identified as a result of the new baseline information.

Volume 5 amendments

- 3.2.20 Table 3 sets out the additions to the main ES, Volume 5, Appendix CH-002-015 (gazetteer of heritage assets).
- 3.2.21 Table 4 sets out the additions to the main ES, Volume 5, Appendix CH-003-015 (impact assessment tables).

Table 3: Additions to Volume 5, Appendix CH-002-015, Cultural heritage

Unique identification	Map reference	Asset type	Name	Description	Period	Designation	Grade	Significance/value	National Heritage List reference	Historic Environment Record reference
GLB211		Likely to be added to the ancient woodland inventory/archaeology	Fox Covert (Glyn Davies Wood)	<p>Ancient and semi-ancient woodland. Its value lies in its potential for well-preserved archaeological remains of woodland management and industries typical of woodland such as wood banks, saw pits, quarries and small settlements.</p> <p>Cropmarks of a curvilinear enclosure and other features at Fox Covert. The value of this asset lies principally in the evidential interest inherent in the buried archaeology which it contains and which can inform on the archaeological and historical development of the locality, potentially most likely the prehistoric and Roman periods.</p> <p>The setting of the woodland is not a contributing factor to the value as ancient woodland is nearly always a surviving fragment of a much larger, since lost, landscape hence the non-wooded surrounds are rarely contemporaneous with the woodland.</p>	Unknown	Likely to be added to the ancient woodland inventory	N/A	High	N/A	9732
GLB235	CH10-075	Settlement	Potential	Potential late prehistoric or	Prehistoric,	N/A	N/A	Low	N/A	N/A

Unique identification	Map reference	Asset type	Name	Description	Period	Designation	Grade	Significance/value	National Heritage List reference	Historic Environment Record reference
			settlement, north-west of Costow House, Thorpe Mandeville	Roman enclosure and settlement identified during geophysical survey. Adjacent to (GLB072) deserted medieval village (see main ES, Volume 5: CH-002-015).	Roman					
GLB236	CH10-075	Settlement	Potential settlement, west of Costow House, Thorpe Mandeville	Potential late prehistoric or Roman settlement identified during geophysical survey. Adjacent to (GLB072) deserted medieval village (see main ES, Volume 5: CH-002-015).	Prehistoric, Roman	N/A	N/A	Low	N/A	N/A
GLB237	CH10-075	Settlement	Potential settlement, west of Costow House, Thorpe Mandeville	Potential late prehistoric or Roman settlement identified during geophysical survey. North of (GLB060) prehistoric settlement and boundary/enclosure features (see main ES, Volume 5: CH-002-015).	Prehistoric, Roman	N/A	N/A	Low	N/A	N/A
GLB238	CH10-082	Settlement	Potential settlement, west of Cedar Farm, Lower Boddington	Potential late prehistoric or Roman settlement identified during geophysical survey. Located within an area of medieval ridge and furrow (GLB199) (see main ES Volume 5: CH-002-015).	Prehistoric, Roman	N/A	N/A	Low	N/A	N/A

Table 4: Additions to Volume 5, Appendix CH-003-015, Cultural heritage

Unique identification	Name	Designation(s)	Value	Construction impact			Operation impact			New or different environmental effect from that reported in the main ES or the Additional Provision (AP ₁) ES
				Nature of impact including mitigation	Scale of impact	Effect	Nature of impact including mitigation	Scale of impact	Effect	
GLB 211	Fox Covert/Glyn Davies Wood)	Likely to be added to the ancient Woodland inventory	High	The woodland lies partially within the land required for the original scheme. This will result in 1.9ha, approximately 60% of the woodland being removed and 20% of the cropmarks altering the value of the asset.	High adverse	Major adverse	The construction effect remains and there will be no further impact	No change	Neutral	This is a new effect as the woodland has been identified as ancient woodland since the original ES.
GLB235	Potential settlement, north west of Costow House, Thorpe Manderville	N/A	Low	The potential prehistoric/Roman settlement site is located wholly within land required for construction. Construction will involve the demolition and/or truncation of the asset.	High Adverse	Moderate adverse	The construction effect remains and there will be no further impact	No change	Neutral	This is a new effect as the asset has been identified since the original ES.
GLB236	Potential settlement, west of Costow House, Thorpe Manderville	N/A	Low	The potential prehistoric/Roman settlement site is located wholly within land required for construction. Construction will involve the demolition and/or truncation of the asset.	High Adverse	Moderate adverse	The construction effect remains and there will be no further impact	No change	Neutral	This is a new effect as the asset has been identified since the original ES.
GLB237	Potential settlement, west of Costow House, Thorpe	N/A	Low	The potential prehistoric/Roman settlement site is located wholly within land required for construction. Construction will	High Adverse	Moderate adverse	The construction effect remains and there will be no further	No change	Neutral	This is a new effect as the asset has been identified since the

Unique identification	Name	Designation(s)	Value	Construction impact			Operation impact			New or different environmental effect from that reported in the main ES or the Additional Provision (AP ₁) ES
				Nature of impact including mitigation	Scale of impact	Effect	Nature of impact including mitigation	Scale of impact	Effect	
	Manderville			involve the demolition and/or truncation of the asset.			impact			original ES.
GLB238	Potential settlement, west of Cedar Farm, Lower Boddington	N/A	Low	The potential prehistoric/Roman settlement site is located wholly within land required for construction. Construction will involve the demolition and/or truncation of the asset.	High Adverse	Moderate adverse	The construction effect remains and there will be no further impact	No change	Neutral	This is a new effect as the asset has been identified since the original ES.

3.3 Ecology

Introduction

- 3.3.1 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 that may result from the changes introduced in Section 2 compared to the original scheme. Consideration is given to the potential for impacts on habitats, species and sites designated on the basis of their importance for nature conservation.

Scope, assumptions and limitations

- 3.3.2 The assessment scope 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.
- 3.3.3 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

- 3.3.4 The change in baseline relating to ancient woodland is relevant to this assessment.

Environmental baseline

Existing baseline

- 3.3.5 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 from regional and local sources. A full list of data sources that informed the main ES is provided in Volume 2, CFA15, Section 7.1.
- 3.3.6 The assessment also takes into account additional desk-study and survey information collected since September 2013.
- 3.3.7 In addition, the WFD assessment has been updated. Details of the revised assessment are presented in Volume 5: Appendix WR-001-000 (WFD Appendix and associated Annexes) of the SES and AP2 ES.
- 3.3.8 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 SES and AP2 ES, Volume 5: Appendix EC-001-002. For those receptors described in the main ES, further details are provided in Volume 2, CFA15, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 3.3.9 Further survey and a review of historic documents undertaken since publication of the main ES has identified that Fox Covert (Glyn Davies Wood) is likely to be ancient and is likely to be added to the ancient woodland inventory. For the purposes of assessment it is considered as ancient woodland.

Habitats

- 3.3.10 The main ES identified Fox Covert (Glyn Davies Wood) as being of district/borough value. Since submission of the main ES, it has been identified that it is likely to be ancient. As an uncommon habitat in the wider landscape and on a precautionary basis the value of the receptor has been increased to county/metropolitan.

Protected and/or notable species

- 3.3.11 There has been no change to the baseline information relating to species receptors as set out in Volume 2, CFA11 of the main ES which generate new or different significant effects.

Future baseline

Construction (2017)

- 3.3.12 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Operation (2026)

- 3.3.13 The future baseline operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

- 3.3.14 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

- 3.3.15 The new baseline data 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 in CFA15.

Habitats

- 3.3.16 The main ES reported that the loss of woodland at Fox Covert (Glyn Davies Wood) would result in an adverse effect on the conservation status which would be significant at the district/borough level. Since the main ES Fox Covert (Glyn Davies Wood) has been identified as likely to be ancient. On a precautionary basis the value of the receptor has been increased to county/metropolitan level. While the extent of the land required has not changed, due to the updated information relating to ancient

woodland, the scheme will now result in the loss of approximately 1.9ha of ancient woodland. This is a different significant effect on the conservation status of broadleaved woodland and a new effect on ancient woodland. This will result in effects that will be significant at the county/metropolitan level.

- 3.3.17 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 the SES and AP2 ES Volume 5: Appendix EC-002-002.

Protected and/or notable species

- 3.3.18 It is unlikely that the SES changes will result in any 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 SES changes are listed in SES and AP2 ES Volume 5: Appendix EC-002-002.

Cumulative effects

- 3.3.19 There are no new or different likely cumulative effects for ecology as a result of the SES changes acting in combination with AP1 amendments, or as a result of any relevant committed development.

Other mitigation measures

- 3.3.20 Ancient woodland is irreplaceable. Ancient woodland soil from the 1.9ha of ancient woodland lost at Fox Covert (Glyn Davies Wood) will (where appropriate) be salvaged and translocated with its associated seed bank to the compensation areas either side of the realigned Stoneton Lane. These areas are adjacent to Fox Covert (Glyn Davies Wood). 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 ecological principles of mitigation (main ES Volume 5: Appendix CT-001-000/2).
- 3.3.21 In addition, the original scheme also includes approximately 4ha of woodland planting between the realigned Wormleighton Road and the HS2 route, and large areas of additional planting further north within CFA16.
- 3.3.22 While not replicating the ancient woodland that will be lost, the large increase in woodland extent will maintain the conservation status of woodland. The area of woodland creation will provide sufficient mitigation for the loss of breeding and terrestrial habitat for a population of great crested newt in the vicinity of Fox Covert (Glyn Davies Wood).
- 3.3.23 No additional mitigation measures (i.e. in addition to those identified in the main ES) are required.

Summary of likely residual significant effects

- 3.3.24 The loss of 1.9ha ancient woodland at Fox Covert (Glyn Davies Wood) will result in a new adverse residual effect that is significant at the county/metropolitan level which was not reported in the main ES. Ancient woodland is an irreplaceable resource.

Effects arising from operation

- 3.3.25 There are no new or different operational effects for ecology as a result of new baseline information.

3.4 Traffic and transport

Introduction

- 3.4.1 This section of the report describes the environmental baseline in relation to traffic and transport 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.

Scope, assumptions and limitations

- 3.4.2 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.
- 3.4.3 The assessment on the following roads was reported in CFA15 and CFA16 of the main ES:
- the A423 Southam Road north of Banbury; and
 - the A422 Hennef Way in Banbury between the A423 Southam Road and the M40 junction 11.
- 3.4.4 The assessment on these roads is now only reported in CFA16 of the SES and AP2 ES.

Changes of relevance to this assessment

- 3.4.5 SES changes in the Greatworth to Lower Boddington area (CFA15) and other CFAs have resulted in changes to HGV movements in this CFA. These include:
- removal of the sustainable placement area at Hunt's Green Farm in CFA10 (SES-010-001); and
 - reduction of earthworks near Lower Boddington in CFA15 (SES-015-001).
- 3.4.6 These SES scheme changes have resulted in changes to forecast HGV traffic flows within CFA15 during construction in comparison to those reported in the main ES for the original scheme.
- 3.4.7 The main traffic and transport changes associated with the SES changes are:
- an increase in HGV flows on the A361, between the A422/M40 and Chipping Warden green tunnel main compound associated with the movement of excavated material; and
 - reductions in HGV traffic flows associated with the movement of excavated material along the B4525 Banbury Lane (south west of Thorpe Mandeville), Banbury Lane (at Thorpe Mandeville) and Banbury Road, between Banbury lane and Thorpe Mandeville cutting satellite compound.

- 3.4.8 There are a number of changes to the significant effects reported in the main ES as identified in the corrections table (Table 2). These are in relation to congestion and delays to vehicle users; traffic-related severance for non-motorised users; and increased travel distance for non-motorised users of PRow.

Environmental baseline

Existing baseline

- 3.4.9 The existing baseline for traffic and transport remains the same as set out in the main ES (Volume 2, CFA15, Section 12.3).

Future baseline

Construction

- 3.4.10 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 12.3)

Operation (2026 and 2041)

- 3.4.11 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES Volume 2, CFA15, Section 12.3).

Effects arising during construction

Avoidance and mitigation measures

- 3.4.12 Avoidance and mitigation measures are set out in Volume 2, CFA15, Section 12 of the main ES and these remain unchanged.

Assessment of impacts and effects

Temporary effects

- 3.4.13 The changes associated with corrections to the main ES (see Table 2) will give rise to different significant effects changing the reported level of significance, in relation to congestion and delays to vehicle users at the following junctions:
- the A422 with the A361 (M40 junction 11) - major adverse effect (moderate adverse effect reported in the main ES);
 - the A422 with the B4525 Banbury Lane (Middleton Cheney) - moderate adverse effect (minor adverse effect reported in the main ES); and
 - the A361 with Welsh Road - minor adverse effect (moderate adverse effect reported in the main ES).
- 3.4.14 The changes associated with corrections to the main ES (see Table 2) will also give rise to new and different significant effects in relation to traffic-related severance for non-motorised users, at the following locations:
- Culworth Road - moderate adverse effect (not identified in the main ES);
 - the A361 Byfield Road, between Chipping Warden green tunnel compound and the A422/M40 - major adverse effect (major adverse effect in the main ES under the description 'A361 Byfield Road, between Welsh Road and the

A422/M40');

- the A361 Byfield Road, between Welsh Road and Chipping Warden green tunnel main compound - moderate adverse effect (major adverse effect in the main ES under the description 'A361 Byfield Road, between Welsh Road and the A422/M40'); and
- the B4525 Welsh Road between Greatworth green tunnel satellite compound and Banbury Lane - moderate adverse effect (not identified in the main ES).

3.4.15 The changes associated with the corrections to the main ES (see Table 2) will give rise to new significant effects in relation to increased travel distance for non-motorised users at the following locations:

- Footpath AN13 - minor adverse effect (not identified in the main ES); and
- Footpath AC2 - minor adverse effect (not identified in the main ES).

3.4.16 As a result of changes to the movement of excavated material, HGV flows have increased on the A361, between the A422/M40 and Chipping Warden green tunnel main compound, compared to the original scheme. Traffic flows have decreased on the B4525 Banbury Lane (south west of Thorpe Mandeville), Banbury Lane (at Thorpe Mandeville) and Banbury Road, between Banbury Lane and Thorpe Mandeville cutting satellite compound, compared to the original scheme. However, the amended HGV flows will not give rise to a new or different significant effect and will not alter the level of significance of the effects reported in the main ES.

Permanent effects

3.4.17 Permanent effects of construction on traffic and transport are reported in the 'Effects arising from operation' section.

Other mitigation measures

3.4.18 Other mitigation measures are set out in Volume 2, CFA15, Section 12 of the main ES. No further traffic and transport avoidance or mitigation measures during construction are required.

Cumulative effects

3.4.19 Cumulative effects are reported in Volume 2, CFA15 (Section 12) 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 other areas.

Summary of likely residual significant effects

3.4.20 Corrections to the main ES in relation to congestion and delays to vehicle users will give rise to different residual significant effects, where the level of significance reported has changed, resulting in:

- a major adverse effect at the A422 with the A361 (the M40 junction 11) (moderate adverse effect in the main ES);
- a moderate adverse effect at the A422 with the B4525 Banbury Lane (minor

adverse effect in the main ES); and

- a minor adverse effect at the A361 with Welsh Road (moderate adverse effect in the main ES).

3.4.21 Corrections to the main ES in relation to the reporting of traffic-related severance for non-motorised users will give rise to new and different residual significant effects where the level of significance reported has changed, resulting in:

- a moderate adverse effect at Culworth Road (not identified in the main ES);
- a major adverse effect at the A361 Byfield Road, between Chipping Warden green tunnel compound and the A422/M40 (major adverse effect in the main ES under the description 'A361 Byfield Road, between Welsh Road and the A422/M40');
- a moderate adverse effect at A361 Byfield Road, between Welsh Road and Chipping Warden green tunnel main compound (major adverse effect in the main ES under the description 'A361 Byfield Road, between Welsh Road and the A422/M40'); and
- a moderate adverse effect at the B4525 Welsh Road between Greatworth green tunnel satellite compound and Banbury Lane (not identified in the main ES).

3.4.22 Corrections to the main ES have also resulted in new minor adverse significant residual effects in relation to increased travel distance for non-motorised users at Footpath AN13 and Footpath AC2.

3.4.23 The significant effects that result from construction of the scheme are shown on SES and AP2 ES Map Series TR-03 (Volume 5, Traffic and Transport Map Book).

Effects arising from operation

3.4.24 Apart from the removal of the significant effect with respect to Footpath AN13 and increased travel distance for non-motorised users incorrectly reported in the main ES and included in Table 2, the SES changes will not change the operation of the scheme and will not give rise to any new or different significant effects nor will they not change the level of significance of the effects reported in the main ES.

Part 2: Additional Provision 2 Environmental Statement

4 Summary of amendments

- 4.1.1 Table 5 provides a summary of the amendments in the Greatworth to Lower Boddington CFA (CFA15). 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 revised scheme as a whole. See Volume 3, Section 19 of the SES and AP2 ES for further information.

Table 5: Summary of amendments in CFA15

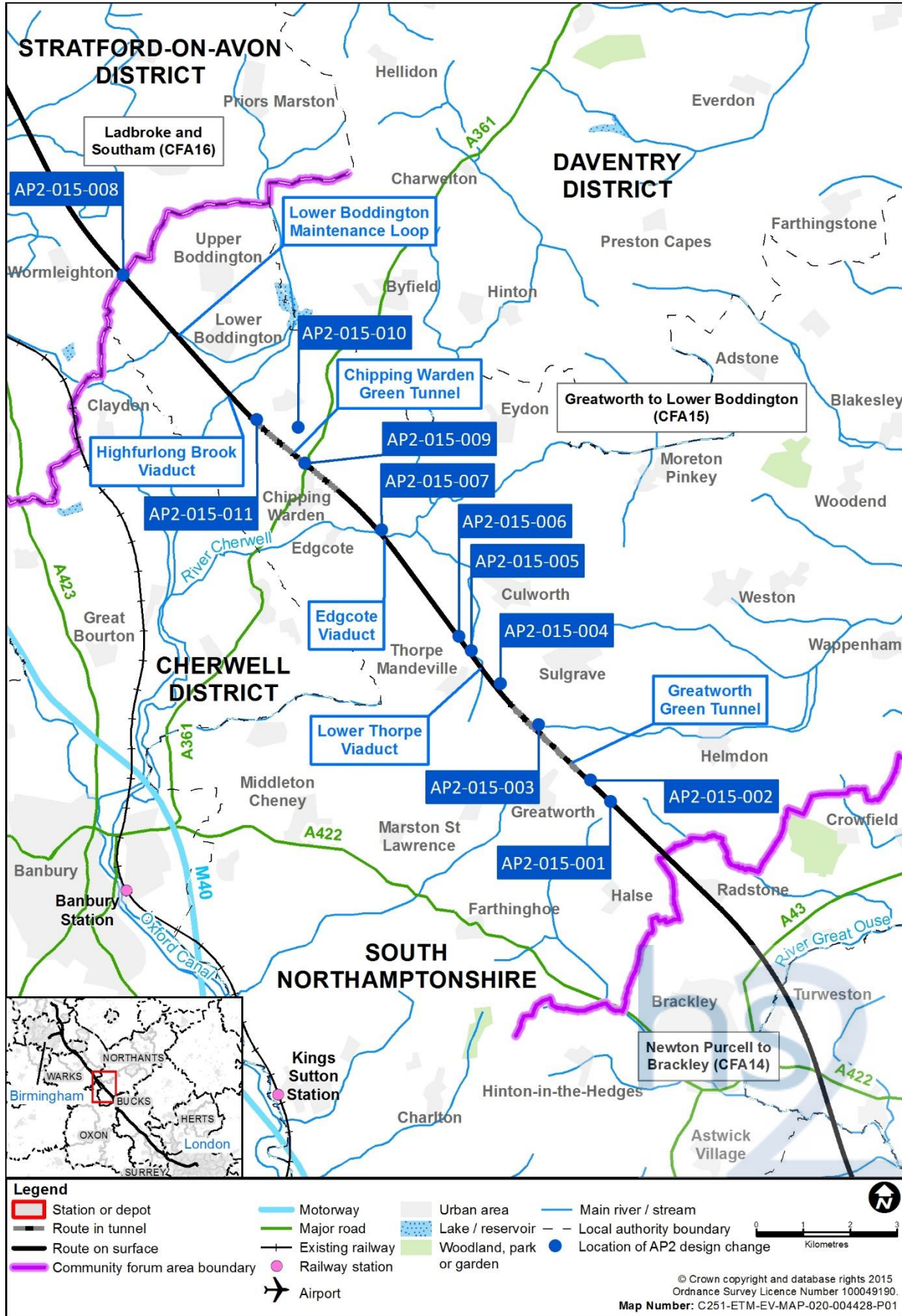
Name of amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 revised scheme
<p>Additional powers to enable the permanent widening of the existing access track</p> <p>AP2-015-001</p>	<p>A permanent access along an existing track on the east side of the HS2 route off the B4525 Welsh Road, Greatworth.</p>	<p>An addition to Bill powers to enable the permanent widening of the existing access track on the east side of the HS2 route of the B4525 Welsh Road, Greatworth.</p>
<p>Greatworth Hall revisions to earthworks, land drainage area and access</p> <p>AP2-015-002</p>	<p>Permanent planted landscape bunds provided along both sides of the HS2 route for landscape integration and visual screening to mitigate visual impacts on Greatworth, Greatworth Hall and users of Footpath AN13. The bund includes a gap near Greatworth Hall to allow for access across the HS2 route along the route of a disused railway.</p> <p>Two land drainage areas and maintenance access tracks were provided on the eastern side of the HS2 route.</p>	<p>The landscape bund will be permanently extended to close the gap near Greatworth Hall.</p> <p>The replacement of the two land drainage areas on the eastern side of the HS2 route with a single land drainage area; and a reshaped landscape bund around the new single land drainage area layout.</p> <p>Access arrangements will be revised.</p>
<p>Realignment of temporary diversion of Footpath AN4</p> <p>AP2-015-003</p>	<p>The temporary closure of two footpaths, Footpath AN4 and Footpath AN4o, for up to two years while the phased construction of the green tunnel is undertaken. Footpath AN4 was diverted at a location approximately 150m north of Greatworth village west across a field in Greatworth Park for approximately 300m until it meets Footpath AN4o. Footpath AN4o is stopped up at this location in a north easterly direction.</p>	<p>The temporary diversion of Footpath AN4 along the field boundary in Greatworth Park to avoid diversion across the field. In the AP2 revised scheme, Footpath AN4 travels north for approximately 150m from Helmdon Road along the existing route through Greatworth Park. The diverted footpath then turns west across a field boundary for approximately 150m before turning south, then west following the field boundary until it meets Footpath AN4o.</p> <p>Additional land will be required temporarily for the rerouted footpath which extends the footpath by approximately 40m, which is an increase from the original scheme. The additional land is outside the original limits of the Bill.</p>
<p>Additional land required for environmental mitigation at Lower Thorpe</p> <p>AP2-015-004</p>	<p>The Bill provides for land required for the Thorpe Mandeville cutting satellite compound and for the construction of Banbury Road overbridge.</p>	<p>Two parcels of land just south of Banbury Road on either side of the HS2 route were identified as missing on the original Bill plans in the main ES. These parcels of land are required for ecological mitigation and landscape mitigation. The land parcels will be incorporated into the AP2 revised scheme.</p> <p>Additional land will be required permanently and this is</p>

Name of amendment	Description of the original scheme or AP ₁ revised scheme	Description of the AP ₂ revised scheme
		outside the original limits of the Bill.
Provision of access to Lower Thorpe viaduct satellite compound AP2-015-005	Banbury Lane, north of Thorpe Mandeville, will be used to service the Lower Thorpe viaduct satellite compound. Access will be required for the purpose of constructing the maintenance access to the balancing pond located south of Banbury Lane and west of the HS ₂ route.	A new temporary construction access road is proposed adjacent to the HS ₂ route from Banbury Lane to the Lower Thorpe viaduct satellite compound. This change is proposed to reduce traffic levels on Banbury Lane. Additional land will be required temporarily and this is outside the original limits of the Bill.
Provision of turning heads on Banbury Lane AP2-015-006	Banbury Lane, at Lower Thorpe, between Thorpe Mandeville and Culworth, will be temporarily closed due to works associated with the construction of the Lower Thorpe viaduct. A temporary alternative route will be provided via Banbury Road then the existing alignment will be reinstated along the existing alignment.	The provision of temporary turning heads to be added along Banbury Lane east and west of the HS ₂ route, while it is temporarily closed during construction. The turning heads will allow vehicles to turn at the end of the stopped up Banbury Lane. Additional land will be required temporarily for the turning head on the western side of the HS ₂ route. This land is outside the original limits of the Bill.
Relocation of drainage infrastructure at Culworth Mill AP2-015-007	A permanent railway balancing pond is proposed on the east side of the HS ₂ route at Osierbed Spinney. The outfall from the proposed pond would be carried southwards via a new ditch to discharge into the River Cherwell.	The permanent railway balancing pond will be relocated approximately 50m to the north-west of the balancing pond location within the original scheme, to the north-west corner of the same field to minimise disruption to farming operations. The outfall will be to the west, into Osierbed Spinney culvert. Additional land will be required permanently and this is outside the original limits of the Bill.
Reconfiguration of the Warwick Road and Banbury Road junction AP2-015-008	A permanent 1.3km cutting; maintenance loops; and new permanent road realignments between Lower Boddington and Wormleighton. The road arrangements include: <ul style="list-style-type: none"> • realignment of approximately 1km of Banbury Road (from Claydon Road) between the existing junction of Wormleighton Road and Stoneton Lane; • junction rearrangements so Banbury Road joins with 	The reconfiguration of the junction at the intersection of Warwick Road and Banbury Road to reflect the dominant traffic movement through the junction. The revised through-route priority is changed from Lower Boddington to Wormleighton, to Upper Boddington to Wormleighton. The amendment comprises the following permanent changes to the original scheme:

Name of amendment	Description of the original scheme or AP ₁ revised scheme	Description of the AP ₂ revised scheme
	<p>Wormleighton Road and Warwick Road and connects via T-junction into the rearranged Banbury Lane/Stoneton Lane;</p> <ul style="list-style-type: none"> • a new Banbury Road/Wormleighton Road overbridge over the HS2 route west of Hill Farm; • provision of an access road to Hill Farm from the realigned Banbury Road, rather than the existing Warwick Road; and • tree planting will be carried out on both sides of the HS2 route from Culworth Road to the proposed Boddington auto-transformer station (ATS) south of Wormleighton 	<ul style="list-style-type: none"> • realignment of Banbury Road to follow the existing alignment closer to the HS2 route between Claydon Road and Warwick Road and connect to Warwick Road. Banbury Road will be upgraded; • altering the Warwick Road/Banbury Road junction to allow priority traffic flow along Warwick Road to continue across the overbridge over the HS2 route and connect to Wormleighton Road; • provision of Stoneton Lane green overbridge, a single span structure with an overall length of 150m, across the HS2 route. The originally proposed realignment of Stoneton Lane through Fox Covert (Glyn Davies Wood) will no longer be required, the removal of this realignment will necessitate a temporary diversion of Banbury Road from near the existing junction with Stoneton Lane to near the proposed new permanent junction with Stoneton Lane; • provision of an access road to Hill Farm from the upgraded Warwick Road; • relocation of Boddington ATS closer to Stoneton Lane; • additional mitigation planting along the CFA15/CFA16 boundary to the west of the realigned Wormleighton Road/Banbury Road to link into existing hedgerows; • removal of the Stoneton Lane link to Banbury Road to the north-east of the proposed route; and • alteration of the Banbury Road crossing so it is no longer a green bridge. <p>The proposed change will reduce the area of land permanently required by 2.66ha and temporarily required by 0.81ha compared to the original scheme.</p>
Provision of a Chipping Warden bypass	The Bill provides for the temporary realignment of the A361 Byfield Road to the north. The road will then be permanently	The temporary realignment of the A361 Byfield Road is to be made permanent and the road will be extended southwards, to the west of Chipping Warden. The approximate 1.3km

Name of amendment	Description of the original scheme or AP ₁ revised scheme	Description of the AP ₂ revised scheme
AP2-015-009	reinstated along its existing alignment.	<p>realignment will divert construction traffic around rather than through the village and will be retained following construction to become a permanent bypass of Chipping Warden.</p> <p>Additional land will be required permanently and this is outside the original limits of the Bill.</p>
<p>Addition of information on footpaths AA7 and AE17 to maps</p> <p>AP2-015-010</p>	<p>The main ES assessed the impacts and effects of construction on Footpath AA7 and AE17, however the footpath alignment and map labels for these footpaths are not shown on the maps and Bill plans for construction.</p> <p>Footpath AE17 connects to the A361 Byfield Road and runs around the eastern edge of Chipping Warden (disused) Airfield near Aston le Walls. Approximately 880m of Footpath AE17 will be temporarily stopped up during construction. Footpath AE17 adjoins Footpath AA7 at the edge of Chipping Warden (disused) Airfield and runs north through the adjacent farm to Appletree Lane and into Aston le Wells.</p>	<p>The amendment is a correction to the Bill plans to stop up footpaths AE17 and AA7 temporarily within Bill limits.</p> <p>The missing 'Footpath AA7' label has been added on to the AP2 revised scheme construction map.</p> <p>The missing footpath alignment for 'Footpath AA7' and labels for 'Footpath AE17' and 'Footpath AA7' have been added on to parliamentary plan number 2-86.</p> <p>The environmental effects of stopping up these footpaths have already been reported in the main ES.</p>
<p>Additional land for the relocation of Chipping Warden mid-point auto-transformer station</p> <p>AP2-015-011</p>	The Bill provides for a permanent ATS, portal building and associated access tracks on the east side of the HS2 route.	<p>The ATS, portal building and associated access track from Appletree Lane will be permanently relocated to the west side of the HS2 route. The Chipping Warden tunnel north portal satellite compound will be relocated from the east to the west of the HS2 route.</p> <p>Additional land will be required permanently and this is outside the original limits of the Bill.</p>

Figure 2: Locations of amendments in CFA15



5 Assessment of amendments

5.1 Additional powers required over an access track to enable widening to be carried out (AP2-015-001)

- 5.1.1 The Bill provides for an access track on the east side of the HS2 route off the B4525 Welsh Road, Greatworth leading to Greatworth Reservoir (refer to map CT-06-069 in the main ES Volume 2, CFA15 Map Book).
- 5.1.2 Since submission of the Bill, the need for additional powers within the Bill has been identified to enable the permanent widening of the existing access track within existing Bill limits. No additional land is required for this amendment.
- 5.1.3 The additional Bill powers for widening of the access track are not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to any environmental topics.

5.2 Greatworth Hall revisions to earthworks, land drainage and access (AP2-015-002)

- 5.2.1 The Bill provides for permanent planted landscape bunds along both sides of the HS2 route to provide landscape integration and visual screening to mitigate visual impacts on Greatworth, Greatworth Hall and users of Footpath AN13. The bund was to have a gap at Greatworth Hall to allow for access across the HS2 route along the route of the disused railway. Two land drainage areas were provided on the east of the HS2 route either side of the disused railway, each being approximately 0.3ha in size. Maintenance access tracks were provided on the eastern side of the HS2 route (refer to maps CT-05-069, CT05-070, CT-06-069 and CT-06-070 in the main ES Volume 2, CFA15 Map Book).
- 5.2.2 Since submission of the Bill, the following permanent design changes have been identified to minimise disruption on farming operations:
- revised access arrangements to the land drainage area to be taken from the tunnel portal access track, and routed between the realigned Helmdon Road and rear of the tunnel portal and over the landscape bund. The maintenance access and tunnel portal/pond access road on the west side of the HS2 route will be shared with the landowner for farm use by combining a farm access track to Greatworth Hall farm with construction and operation access. The road will be widened and two passing points will be added;
 - extension of the landscape bund on the east of the HS2 route and west of Greatworth Hall. The bund will be extended across the gap in the bund that was part of the original scheme near Greatworth Hall. The gap in the bund is no longer needed due to the revised access arrangements and will provide increased visual and noise mitigation to Greatworth Hall;
 - replacement of the two land drainage areas east of the HS2 route and on either side of the disused railway with a single land drainage area north of the disused railway, approximately 1ha in size; and

- reshaping of the landscape bund around the western edge of the new single land drainage area layout (refer to maps CT-05-069, CT05-070, CT-06-069 and CT-06-070 in the SES and AP2 ES Volume 2, CFA15 Map Book).

- 5.2.3 No additional land is required, however the access tracks will be extended within Bill limits which requires a change to Bill powers.
- 5.2.4 The revisions to earthworks, land drainage and access is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: air quality; community; ecology; land quality; socio-economics; and traffic and transport. However, there were changes where reassessment was considered to be required in respect of: agriculture, forestry and soils; cultural heritage; landscape and visual assessment; sound, noise and vibration; and water resources and flood risk assessment.

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.2.5 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

- 5.2.6 As described in the main ES (Volume 2, CFA15, Section 3.3) the land that will be affected has soils in the Aberford, Denchworth and Ragdale associations. The Aberford soils comprise fine loamy, permeable soils of Wetness Class I and are generally classified as BMV in Subgrade 3a quality. The Denchworth and Ragdale soils are typically stoneless, wet and clayey in texture and are classified as lower quality in Subgrade 3b.
- 5.2.7 Greatworth Hall (CFA15/5) is an arable and sheep farm of approximately 165ha that is managed in conjunction with other owned, rented and contract farmed land; in total some 350ha is farmed. Non-agricultural diversification includes converted barns that are let as office space and for other business uses.

Future baseline

Construction (2017)

- 5.2.8 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).
- 5.2.9 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.
- 5.2.10 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)

- 5.2.11 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).

Effects arising during construction

- 5.2.12 The amendment is mainly associated with revisions to earthworks, drainage and access at Greatworth Hall and will not give rise to new or different significant land requirements or severance effects; it will not change the level of significance of agricultural, forestry or soils effects reported in the main ES or the AP1 ES. The minor amendment to access to the west of the AP2 revised scheme will improve agricultural access, but overall is not a new or different effect and therefore will not alter the overall significance of effect.
- 5.2.13 The temporary impact of the original scheme for Greatworth Hall was assessed in the main ES as a major/moderate significant effect due to the area and proportion of the holding required (70.1ha or 43%) and severance. This amendment will not alter the temporary effect which will remain as previously reported, i.e. a major/moderate significant effect.
- 5.2.14 There will not be any change to the effect on best and most versatile (BMV) agricultural land in this CFA. This was assessed as a moderate adverse effect of the original scheme, which is significant.
- 5.2.15 The permanent effect of the original scheme for Greatworth Hall was assessed as moderate adverse with the permanent requirement for 19.5ha (12%) of the holding, which is significant. This will remain unaltered by this amendment.

Effects arising from operation

- 5.2.16 The amendment associated with revisions to earthworks, drainage and access at Greatworth Hall 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 or the AP1 ES.

Mitigation and residual effects

- 5.2.17 No mitigation measures in addition to those identified in the main ES are required. The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.2.18 There are no new or different likely significant cumulative effects for agriculture, forestry and soils as a result of the amendment acting in combination with 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

- 5.2.19 The assessment scope, key assumptions and limitations for cultural heritage are set out in Volume 1, the SMR (Volume 5: Appendix CT001-000) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.

Existing baseline

- 5.2.20 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 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 and walk-over surveys for archaeology.
- 5.2.21 Details of survey and desk-study undertaken in this CFA since September 2013 are provided in SES and AP2 ES Volume 5: Appendix CH-004-015 and SES and AP2 ES 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.
- 5.2.22 The revisions to the earthworks, land drainage and access are located over the disused line of the Northampton and Banbury Junction Railway (asset reference GLB024). The line was used to serve the iron and stone quarries in Banbury and can be considered an asset of low heritage value. Its setting does not contribute to its value.
- 5.2.23 The Grade II listed Greatworth Hall (asset reference GLB022), an asset of moderate heritage value, is adjacent to the north-east of the amendment. Greatworth Hall is a good example of a large farmhouse constructed shortly after the landscape enclosure as a result of changing agricultural processes. The setting of the 17th century landscape enclosure (asset reference GLB220) contributes to the value of the asset. There are areas of ridge and furrow (asset reference GLB217 and asset reference GLB218) which are immediately south-west and south-east of Greatworth Hall, both are of low heritage value.
- 5.2.24 The amendment is within the landscape of 17th century enclosures around Greatworth (asset reference GLB220). Two historic hedgerows (asset reference GLB025 and asset reference GLB026) which form part of this landscape are 300m to the north-west and south-west of the amendment. The 17th century landscape (asset reference GLB220) and associated hedgerows (asset reference GLB025 and asset reference GLB026) are of moderate heritage value.
- 5.2.25 Approximately 170m south-west of the amendment is a medieval hunting park pale marking the edge of the hunting park at Greatworth (asset reference GLB003). This predates the 17th century landscape enclosure. The asset is of low heritage value.

Future baseline

Construction (2017)

- 5.2.26 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Operation (2026)

- 5.2.27 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Effects arising during construction

- 5.2.28 The extension to the landscape bund will alter the setting of Greatworth Hall (asset reference GLBo22) when compared to the original scheme, further changing views to and from the Hall to the surrounding landscape. However the original scheme already had a temporary and permanent high adverse impact and a temporary and permanent major adverse effect, which is significant. The construction of the new bund will also remove part of the disused line of the Northampton and Banbury Junction Railway. However the line will still be visible within the landscape and the amendment will not appreciably affect the value of the asset as set out in the main ES.
- 5.2.29 The proposed extension to the landscape bund or other works under this amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

- 5.2.30 The extension to the landscape bund will result in a limited increase in screening to Greatworth Hall (asset reference GLBo22), with a related reduction in noise and visible movement of trains. However this change is not enough to reduce the overall medium adverse scale of impact and moderate adverse effect, which remains significant, as set out in the main ES.
- 5.2.31 The proposed extension to the landscape bund or other works under this amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.2.32 The amendment will result in no change in mitigation or in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.2.33 There are no new or different likely significant cumulative effects for cultural heritage assets 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.

Landscape and visual assessment

Scope, assumptions and limitations

- 5.2.34 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

- 5.2.35 The area of land required for the Greatworth Hall revisions to earthworks, land drainage and access, is located within the Tove Catchment Undulating Claylands landscape character area (LCA) as described in the main ES (Volume 2 CFA15, Section 9.3). The LCA is characterised by a gently undulating topography, agricultural land use and limited tree cover. The Tove Catchment Undulating Claylands LCA is of medium tranquillity and local value, therefore it is considered to be of medium sensitivity to change.
- 5.2.36 Views from the following locations are also located in close proximity to the area and are described in the main ES (Volume 2, CFA15, Section 9) :
- Greatworth Hall, looking south-west (viewpoint 196.2.001);
 - PRoW north-east of Greatworth, looking south, south-west (viewpoint 196.3.001); and
 - residential properties on the eastern edge of Greatworth, looking north, north-east (viewpoint 195.2.001).
- 5.2.37 Due to the residential and recreational nature of the viewpoints, all receptors are considered to have a high sensitivity to change (Volume 5: Appendix LV-001-015 of the main ES for baseline descriptions of the visual receptors).

Future baseline

Construction (2017)

- 5.2.38 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 9.3).

Operation (2026)

- 5.2.39 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 9.3).

Effects arising during construction

Landscape assessment

- 5.2.40 The Tove Catchment Undulating Claylands LCA was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse effect during construction due to the removal of trees and hedgerows, loss of agricultural land and the introduction of construction plant into the rural landscape.
- 5.2.41 The amendment will include moving the landscape earthworks to the north-west of Greatworth Hall approximately 70m north-west of its original position and an extension of the HS2 lineside bund to the west of Greatworth Hall, but will not vary the general association of construction operations required to construct the earthworks.

- 5.2.42 The amendment to the extent and form of earthworks in the vicinity of Greatworth Hall 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

- 5.2.43 Viewpoint 196.2.001: Greatworth Hall, looking south-west, was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a major adverse effect during construction due to visibility of earthworks grading operations.
- 5.2.44 The amendment will modify the extent and form of landscape earthworks in the vicinity of Greatworth Hall (viewpoint 196.2.001). This will include moving the landscape earthworks landform to the north-west of Greatworth Hall approximately 70m north-west of its original position. This will also include an extension of the HS2 lineside bund across the line of sight to the west of Greatworth Hall to within approximately 50m of the viewpoint.
- 5.2.45 The amendment to earthworks in the vicinity of Greatworth Hall will give rise to different major adverse significant visual effects arising from the change in the extent and height of earthworks grading. However, this will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

Landscape assessment

- 5.2.46 The Tove Catchment Undulating Claylands LCA was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse effect during year 1 of operation due to the presence of rail infrastructure, landform, bridges and trains, reducing to a minor adverse effect for year 15 and for year 60.
- 5.2.47 The amendment will modify the extent and form of landscape earthworks in the vicinity of Greatworth Hall. The extension of the landscape bund along the eastern side of the HS2 route will cut across the shallow valley that coincides with the route of a disused railway. As HS2 already severs this linear feature, the extension of landscape earthworks will not further affect landscape character.
- 5.2.48 The extent of landscape earthworks within the original scheme, shaped to form a broad landform to the north-west of Greatworth Hall, will be reduced in scale to accommodate an ecological mitigation pond. Ponds are not characteristic of the area but the proposed water body will be discretely contained by surrounding landform and vegetation.
- 5.2.49 The inclusion of an additional access road passing around the head of the Greatworth green tunnel portal and extending along the eastern side of the HS2 route will largely be contained by landform within the operational HS2 corridor, thereby limiting its influence to a localised area.
- 5.2.50 The amendment will result in localised change to earthworks in the vicinity of Greatworth Hall and inclusion of an additional access road passing around the head of the Greatworth green tunnel portal and extending along the eastern side of the HS2

route. However, the amendment will not give rise to a new or different significant effect and will not change the moderate adverse effect during year 1 of operation reducing to a minor adverse effect for year 15 and for year 60 as reported in the main ES.

Visual assessment

- 5.2.51 Viewpoint 196.2.001: Greatworth Hall, looking south-west, was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse effect during both winter and summer of year 1 of operation due to visibility of trains, overhead line equipment, landscape earthworks and noise barriers.
- 5.2.52 The extension of the landscape bund and associated planting along the eastern side of the HS2 route will contribute to the screening of oblique views of the scheme from Greatworth Hall. This amendment will screen views of trains and HS2 route infrastructure from viewpoint 196.2.001, including potential views along the HS2 route towards the Greatworth ATS/Greatworth green tunnel portal. The assessment acknowledges that whilst the landform contributes a positive effect to screening there is also an inherent adverse effect arising from loss of view from Greatworth Hall.
- 5.2.53 The amendment to landscape earthworks in the vicinity of Greatworth Hall will give rise to different significant effects. These differences will primarily arise from change in the relative extents of landscape earthworks landform, including the positive benefit this has on the screening of views from Greatworth Hall. However this amendment will not change the moderate adverse effect during both winter and summer of year 1 of operation or the non-significant effect by year 15 and beyond to year 60 of operation reported in the main ES.
- 5.2.54 Viewpoint 196.3.001: PRoW north-east of Greatworth, looking south, south-west, was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a major adverse effect during both winter and summer of year 1 of operation due to visibility of trains, overhead line equipment, landscape earthworks and noise barriers. By year 15 and beyond to year 60 of operation the main ES reported a moderate adverse effect.
- 5.2.55 The amendment includes an additional access road passing around the head of the Greatworth green tunnel portal and extending along the eastern side of the HS2 route. The additional road access track will be visible from Footpath AN13 (viewpoint 196.3.001), but typically viewed in the context of the more prominent Greatworth green tunnel portal views along the HS2 route. The extension of proposed planting part way around the head of the Greatworth green tunnel portal will screen views along the HS2 route corridor from Helmdon Road.
- 5.2.56 The proposed additional access road will give rise to different significant effects in terms of an additional built component within the extent of view, but in the context of the much broader visual influence of HS2 will not change the major adverse effect during both winter and summer of year 1 of operation and the moderate adverse effect by year 15 and beyond to year 60 of operation as reported in the main ES.

Mitigation and residual effects

- 5.2.57 The amendment to earthworks in the vicinity of Greatworth Hall (viewpoint 196.2.001) will give rise to different significant major adverse visual effects during construction arising from a change in the extent and height of earthworks grading. However, this will not change the level of significance of the effects reported in the main ES.
- 5.2.58 On Viewpoint 196.3.001: PRow north-east of Greatworth, looking south, south-west, the main ES reported a residual moderate adverse visual effect during by year 15 and beyond to year 60 of operation. The amendment will give rise to a different significant effect, although the level of residual significant effect will remain as reported in the main ES.

Cumulative effects

- 5.2.59 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

Sound, noise and vibration

Scope, assumptions and limitations

- 5.2.60 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.
- 5.2.61 Local assumptions and limitations for sound, noise and vibration are set out in main ES Volume 2 CFA15 report.

Existing baseline

- 5.2.62 The baseline sound, noise and vibration information for CFA15 is described in the main ES (Volume 5: Appendix SV-002-015). Baseline sound levels representative of the assessment locations affected by this change have been used in both the construction and operational assessments.

Future baseline

Construction (2017)

- 5.2.63 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 11.2).

Operation (2026)

- 5.2.64 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 11.2).

Effects arising during construction

- 5.2.65 The closest sensitive receptors to the amendment are the residential properties and non-residential uses of Greatworth Hall and associated buildings, located approximately 30m to the north-east of the amendment. In the main ES, construction

noise at two dwellings, The Old Dairy and Greatworth Hall, was forecast to be higher than the noise insulation trigger levels as defined in the draft CoCP. The mitigation measures described in the main ES, including noise insulation, will reduce noise inside these dwellings such that it does not reach a level where it would significantly affect residents. A temporary significant construction noise effect was also identified at commercial buildings at Greatworth Hall.

- 5.2.66 The works associated with the amendment do not represent a substantial intensification of the works reported in the main ES; therefore, the outcomes of the assessment reported in the main ES remain unchanged.
- 5.2.67 The amendment will not give rise to a new or different significant effect in comparison with the effects reported in the main ES or the AP1 ES.

Effects arising from operation

- 5.2.68 The main ES identified two dwellings that were estimated to qualify for noise insulation as described in the avoidance and mitigation measures section in the main ES (Volume 2, CFA15, Section 11). The two dwellings, represented by assessment location 273039, are The Old Dairy and the dwelling at Greatworth Hall, Greatworth, marked as OSV15-Do1 in the main ES Appendix Sv-004-015, and with the appropriate symbol in main ES Map Series SV-01, SV-02 and SV-05. These dwellings are also identified as being likely to qualify for noise insulation as a consequence of construction noise as described in the main ES (Volume 2, CFA15, Section 11). The mitigation measures described in the ES, including noise insulation, will reduce noise inside these dwellings such that it does not reach a level where it would significantly affect residents.
- 5.2.69 The main ES identified a major airborne noise effect on the acoustic character around the offices at Greatworth Hall, and a risk of disturbing activities inside the offices buildings due to the operation of train services. Greatworth Hall offices were identified, on a precautionary basis, as being subject to a significant adverse effect denoted by OSV15-No1, in main ES Map Series SV-01.
- 5.2.70 The amendment alters the earthwork barriers to remove a gap in the mitigation, as shown on maps CT-06-069 and CT-06-070 in the SES and AP2 ES Volume 2, CFA15.
- 5.2.71 An assessment has been undertaken to determine whether operational noise levels from the amendment would 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 the SES and AP2 ES Appendix SV-004-015.
- 5.2.72 The amendment reduces the operational airborne noise levels to an extent that the residential dwellings at The Old Dairy and Greatworth Hall are no longer estimated to be likely to qualify for noise insulation from operational noise. Any qualification for noise insulation from construction noise for these dwellings would be unaffected by this.

- 5.2.73 Whilst the amendment reduces the operational airborne noise levels at the Greatworth Hall offices by 1dB $L_{pAeq,T}^3$. The reduction is not sufficient to remove the likely significant airborne noise effect identified in the main ES at Greatworth Hall offices.
- 5.2.74 The amendment does not alter the predicted operational ground-borne noise or vibration levels presented in the main ES.

Mitigation and residual effects

- 5.2.75 The noise barriers in the form of earthwork bunds are proposed to be altered as a result of this amendment. The mitigation proposed is in addition to the mitigation identified within the main ES (Volume 2, CFA15, Section 11).
- 5.2.76 The amendment reduces the operational airborne noise levels to an extent that the residential dwellings at The Old Dairy and Greatworth Hall are no longer estimated to be likely to qualify for noise insulation from operational noise.
- 5.2.77 There are no other changes to the residual significant construction and operational noise effects identified in the main ES as a result of this amendment.

Cumulative effects

- 5.2.78 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

Water resources and flood risk assessment

Scope, assumptions and limitations

- 5.2.79 The assessment scope, key assumptions and limitations for the water resources and flood risk assessment are as set out 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.
- 5.2.80 The assessment reviews the potential impact of proposed changes to the Greatworth Hall landscape bunds and associated land drainage on surface water receptors and nearby springs.

Existing baseline

- 5.2.81 The baseline water resources and flood risk information for CFA15 is described in the main ES (Volume 2, CFA Report 15, Section 13).
- 5.2.82 The amendment passes within 150m of an unnamed tributary of the River Great Ouse. The unnamed tributary is not designated under the WFD, and the WFD status is assumed from the downstream River Great Ouse (Ouse (Beds)) water body (WFD water body reference GB 105033037950). The River Great Ouse (Ouse (Beds)) water body has a WFD status of Moderate potential, with the objective for 2027 as Good potential.

³ The quoted change in $L_{pAeq,T}$ applies to both daytime (07:00 to 23:00) and night-time (23:00 to 07:00) sound levels.

- 5.2.83 The site is underlain by the Great Oolite Group, specifically the Taynton Limestone (classified as a Principal aquifer), Horsehay Sand Formation (Secondary A aquifer), and Northampton Sand Formation (Secondary A aquifer) overlying the Whitby Mudstone Formation (unproductive strata). The current overall status⁴, under the WFD, for the Upper Bedford Ouse Oolite Secondary water body is Good status, while the objective for 2027 is Good status.
- 5.2.84 There is one licensed surface water abstraction within the study area (as detailed in Volume 5: Appendix WR-002-015 of the main ES).
- 5.2.85 There is one set of issues within 1km of the area of the amendment, located 300m south-west of Greatworth Hall and approximately 100m south of the AP2 revised scheme. The groundwater flow feeding these issues is likely to be from the north-east.
- 5.2.86 The amendment incorporates works immediately upstream of the issues of an unnamed tributary of the River Great Ouse. Flood Zones are present approximately 1.5km downstream of the amendment along the unnamed tributary of the River Great Ouse. Land use in the floodplain is undeveloped until the stream passes through Brackley.
- 5.2.87 The amendment is located within an area at risk of flooding in the 1 in 30 year return period (3.3% annual probability) rainfall event according to the latest Environment Agency updated Flood Map for Surface Water (uFMfSW). The area of risk lies along the base of the dry valley upstream of the issues of the unnamed tributary of the River Great Ouse.

Future baseline

Construction (2017)

- 5.2.88 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Operation (2026)

- 5.2.89 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Effects arising during construction

- 5.2.90 The extension to the bund at Greatworth Hall is underlain by the Whitby Mudstone Formation (unproductive strata). As a result, it will not affect the issues to the south of the HS2 route. Overall, there is considered to be no pathway for this amendment to impact on groundwater, springs or surface water features.
- 5.2.91 The amendment does not result in any alteration in the flood mechanisms or mitigation measures in comparison with the scheme presented in the main ES. No significant temporary adverse effects on flood risk have been identified within the assessment.

⁴ Environment Agency (2009), *River Basin Management Plan, Thames River Basin District*.

- 5.2.92 The amendment to make revisions to earthworks, land drainage and access at Greatworth Hall will not give rise to new or different temporary or permanent significant construction effects for water resources and flood risk, and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

- 5.2.93 The amendment to the earthworks, land drainage and access at Greatworth Hall will not give rise to a new or different significant operation effect for water resources and flood risk and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

- 5.2.94 The assessment assumes implementation of the draft CoCP. The general approach to mitigation is set out in Volume 1, Section 9 of the main ES.
- 5.2.95 All drainage on the AP2 revised scheme has been designed to reduce the rate and volume of run-off from the railway and prevent an increase in flood risk. Associated access roads and hardstandings will be designed to match peak runoff rates to existing rates through use of sustainable drainage system (SuDS) techniques. The SuDS balancing ponds provided in the current design are shown on maps CT-06-069 and CT-06-070 (SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.2.96 Generic examples of design, management and operation measures that will mitigate impacts so that there will be no significant adverse effects on the quality and flow characteristics of surface watercourses, groundwater bodies or flood risk during operation and management of the AP2 revised scheme are described in Volume 1 and in the operation and maintenance plan for water resources and flood risk included in Volume 5 Appendix WR-001-000 of the main ES.
- 5.2.97 No other mitigation measures are envisaged for surface water, groundwater or for reducing flood risk.
- 5.2.98 The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.2.99 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.3.1 The amendment to earthworks in the vicinity of Greatworth Hall (viewpoint 196.2.001) will give rise to different major adverse significant visual effects during construction arising from a change in the extent and height of earthworks grading. However, this will not change the level of significance of the effects reported in the main ES.

- 5.3.2 On Viewpoint 196.3.001: PRoW north-east of Greatworth, looking south, south-west, the main ES reported a residual moderate adverse visual effect by year 15 and beyond to year 60 of operation. The amendment will give rise to a different significant effect, although the level of residual significant effect will remain as reported in the main ES.
- 5.3.3 The amendment reduces the operational airborne noise levels to an extent that the residential dwellings at The Old Dairy and Greatworth Hall are no longer estimated to be likely to qualify for noise insulation from operational noise.

5.4 Realignment of temporary diversion of Footpath AN₄ (AP2-015-003)

- 5.4.1 The Bill provides for the temporary closure of two footpaths, Footpath AN₄ and Footpath AN₄₀, for up to two years while the phased construction of the Greatworth green tunnel is undertaken. Footpath AN₄ was diverted at a location approximately 150m north of Greatworth village west across a field in Greatworth Park for approximately 300m until it meets Footpath AN₄₀. Footpath AN₄₀ is stopped up at this location in a north-easterly direction (refer to map CT-05-070 in the main ES Volume 2, CFA15 Map Book).
- 5.4.2 Since submission of the Bill, the alignment of the temporary diversion has been reviewed and Footpath AN₄ will be temporarily diverted along the field boundary in Greatworth Park to avoid diversion across the field. Footpath AN₄ travels north for approximately 150m from Helmdon Road along the existing route through Greatworth Park. The diverted footpath then turns west across a field boundary for approximately 150m before turning south, then west following the field boundary until it meets Footpath AN₄₀ (refer to map CT-05-070 in the SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.4.3 Approximately 340m² of additional land is required temporarily for the rerouted footpath which extends the footpath by approximately 40m, which is an increase from the original scheme. The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 5.4.4 The realignment of the temporary diversion of Footpath AN₄ is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to any environmental topics.

5.5 Additional land required for environmental mitigation at Lower Thorpe (AP2-015-004)

- 5.5.1 The Bill provides for land permanently required for the Thorpe Mandeville cutting satellite compound and for the construction of Banbury Road overbridge (refer to maps CT-05-071 and CT-06-071 in the main ES Volume 2, CFA15 Map Book).
- 5.5.2 Since submission of the Bill, two parcels of land (approximately 380m² in total) just south of Banbury Road on either side of the HS2 route were identified as missing from the original Bill plans in the main ES, although they were taken into account in the assessment of the original scheme. The eastern parcel of land is required for the provision of part of an area of grassland habitat creation, approximately 100m from the HS2 route, for ecological mitigation. This ecological mitigation is for the loss of semi-improved lowland meadow from fields to the north-west of Lower Thorpe Farm

and semi-improved neutral grassland at Costows Field proposed wildlife site. The western parcel of land is required for landscape mitigation planting and is approximately 70m from the HS2 route (refer to map CT-05-071 in the SES and AP2 ES Volume 2, CFA15 Map Book).

- 5.5.3 The two parcels of land for environmental mitigation have been assessed in the main ES and there is no change in the assessment as a result of this amendment. This Bill correction to add the two parcels of land onto the Bill plans is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to any environmental topics.

5.6 Provision of access to Lower Thorpe viaduct satellite compound (AP2-015-005)

- 5.6.1 The Bill provides for the use of Banbury Lane, north of Thorpe Mandeville, to service the Lower Thorpe viaduct satellite compound for construction. In addition the access would be required for the purpose of constructing the maintenance access to the balancing pond located south of Banbury Lane and west of the HS2 route (refer to maps CT-05-072 in the main ES Volume 2, CFA15 Map Book).
- 5.6.2 Since submission of the Bill, a review of the number of vehicles using Banbury Lane during construction has been undertaken. A new temporary 300m long construction access road will be constructed adjacent to the HS2 route from Banbury Road to the Lower Thorpe viaduct satellite compound, to reduce traffic levels on Banbury Lane (refer to map CT-05-072 in the SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.6.3 The works to construct the access road are estimated to take up to one month to complete. Approximately 0.1ha of additional land needed to meet this requirement is not included within the Bill limits, hence the need for this amendment.
- 5.6.4 The provision of a new temporary access road is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: community; land quality; landscape and visual assessment; and socio-economics. However there were changes where reassessment was considered to be required in respect of: agriculture, forestry and soils; air quality; cultural heritage; ecology; sound, noise and vibration; traffic and transport; and water resources and flood risk assessment.

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.6.5 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

- 5.6.6 As described in the main ES (Volume 2, CFA15, Section 3) all the land that will be affected has soils in the Denchworth association that are characterised by stoneless, clayey, wet and poorly drained soils of Wetness Class IV. The quality of the agricultural land is of a moderate Subgrade 3b quality.

- 5.6.7 Costow Farm (CFA15/8) is a tenanted arable farm extending to some 186ha. Manor Farm and Magpie Farm (CFA15/9) was a holding of approximately 96ha that was let for equestrian grazing. Since the publication of the main ES it is known that some land has been sold, but the full extent of the sale has not been established.
- 5.6.8 Lower Thorpe Farm (CFA15/10) is a 10ha grassland holding as reported in the main ES.

Future baseline

Construction (2017)

- 5.6.9 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).
- 5.6.10 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.
- 5.6.11 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)

- 5.6.12 The future baseline for operation in 2026 remains unchanged from that reported in the main ES.

Effects arising during construction

- 5.6.13 The additional 0.1ha of land that is required is lower quality agricultural land in Subgrade 3b and will not change the significance of effect on BMV agricultural land in this CFA. This was assessed as a moderate adverse effect of the original scheme, which is significant.
- 5.6.14 There will be no additional effects arising for either Costow Farm or Manor Farm and Magpie Farm as the access road is to be constructed within land already required for the construction of the original scheme.
- 5.6.15 An additional 0.1ha will be required from Lower Thorpe Farm during the construction phase. In total, approximately 2.9ha will be required from this holding and this remains a moderate adverse effect, which is significant, due to the high proportion of the holding required combined with the low sensitivity of the holding.
- 5.6.16 There are no permanent effects arising as this amendment is associated with construction only.

- 5.6.17 The amendment to provide a new access to Lower Thorpe viaduct satellite compound from Banbury 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 or the AP1 ES.

Effects arising from operation

- 5.6.18 The amendment to provide a new construction access 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 or the AP1 ES.

Mitigation and residual effects

- 5.6.19 No mitigation measures additional to those identified in the main ES are required. The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

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

Air quality

Scope, assumptions and limitations

- 5.6.21 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 SMR Addendum 2 (SES and AP2 ES, Volume 5: Appendix CT-001-000/3).

Existing baseline

- 5.6.22 The baseline conditions with regard to air quality have been updated from those reported in the main ES, in terms of updated background maps released by the Department for Environment, Food & Rural Affairs (Defra).
- 5.6.23 There are no relevant air quality monitoring sites near the amendment. Defra background concentrations maps⁵ provide estimates of background concentrations of NO₂, PM₁₀ and PM_{2.5} for 1km grid squares across the UK. The 2010 maps were used as the basis for the assessment reported in the main ES. The 2011 maps have been used as the basis for the assessment reported in the SES and AP2 ES. The Defra maps indicate that the average background pollutant concentrations across the area of the amendment are better than the relevant air quality standards.
- 5.6.24 There are no statutory or non-statutory designated sites for nature conservation near the amendment that could potentially be affected by changes in air quality as a result of the amendment.

⁵ Defra (2014), *2011 Based Background Maps for NO_x, NO₂, PM₁₀ and PM_{2.5}*; <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011.html>; Accessed March 2015.

Future baseline

Construction (2017)

- 5.6.25 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 4.3).

Operation (2026)

- 5.6.26 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 4.3).

Effects arising during construction

- 5.6.27 The amendment will reduce overall vehicle numbers on Banbury Lane but will give rise to increased dust emissions through HGV movements on the new access road. The dust impact will not result in a significant effect.
- 5.6.28 The amendment to provide a new compound access to Lower Thorpe viaduct satellite compound from Banbury 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 or the AP1 ES.

Effects arising from operation

- 5.6.29 The amendment to provide a new compound access to Lower Thorpe viaduct satellite compound from Banbury 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 or the AP1 ES.

Mitigation and residual effects

- 5.6.30 Emissions to the atmosphere will be controlled and managed during construction through the route-wide implementation of the draft CoCP. The assessment of the 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. No additional avoidance and mitigation measures are proposed for the amendment during construction in relation to air quality.
- 5.6.31 As reported in the main ES no mitigation measures are proposed during operation in relation to air quality.
- 5.6.32 The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.6.33 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

Cultural heritage

Scope, assumptions and limitations

- 5.6.34 The assessment scope, key assumptions and limitations for cultural heritage are 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

- 5.6.35 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 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 and walk-over surveys for archaeology.
- 5.6.36 The new land required for the satellite compound access is within the wider Thorpe Mandeville and Lower Thorpe landscape (asset reference GLB224), which is of moderate heritage value. The satellite compound is within a system of medieval ponds to the north east of Lower Thorpe (asset reference GLBo85), an asset of moderate heritage value. These form a component part of the Thorpe Mandeville and Lower Thorpe Mandeville historic landscape.
- 5.6.37 Immediately to the north-west of the land required for the amendment is the hamlet of Lower Thorpe (asset reference GLBo86), which is the focus of settlement within the wider Thorpe Mandeville and Lower Thorpe landscape (asset reference GLB224). There is a potential for archaeological remains associated with the development of Lower Thorpe, approximately 20m north-west of the amendment, which may have originated in the medieval period. There are also potential archaeological remains associated with the site of a mill and a system of ponds (asset reference GLBo85). The hamlet grouping also includes the Grade II listed Lower Thorpe farmhouse (asset reference GLBo86), which is approximately 20m west of the amendment.
- 5.6.38 Approximately 150m to the east is the possible bowl barrow at Lower Thorpe (asset reference GLBo83), a scheduled monument of high heritage value. This indicates there may be associated prehistoric archaeological remains in the surrounding landscape.

Future baseline

Construction (2017)

- 5.6.39 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Operation (2026)

- 5.6.40 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Effects arising during construction

- 5.6.41 The amendment will result in additional groundworks in an area with a high potential for archaeological remains. However the main ES has already reported a high impact

and major adverse effect, which is a significant effect, on the Thorpe Mandeville and Lower Thorpe landscape (asset reference GLB224), system of medieval ponds (asset reference GLBo85) and hamlet of Lower Thorpe (asset reference GLBo86).

- 5.6.42 The proposed satellite compound access 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

- 5.6.43 The construction effects remain, but there are no new or different operational effects for cultural heritage. The proposed satellite compound access 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.

Mitigation and residual effects

- 5.6.44 The amendment will result in no change in mitigation or in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.6.45 There are no new or different likely significant cumulative effects for cultural heritage assets 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.

Ecology

Scope, assumptions and limitations

- 5.6.46 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.
- 5.6.47 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 AP2 revised scheme.

Existing baseline

- 5.6.48 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 from September 2013 to September 2014, and aerial photography.
- 5.6.49 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant new or updated baseline information provided in SES and AP2 ES Volume 5: Appendix EC-001-002. For those receptors described in the main ES, further details are provided in Volume 2, CFA15, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.6.50 No designated sites of nature conservation value described in the main ES are relevant to the construction of the temporary access road.

Habitats

- 5.6.51 The land required for the new temporary access road comprises semi-improved neutral grassland, scattered trees, a pond and amenity grassland. All of these are of local/parish value as stated in the main ES.

Protected and/or notable species

- 5.6.52 An otter population present on the Culworth Brook is relevant to this amendment. A single, active otter holt was recorded approximately 240m north-east of the land required for the amendment and a potential otter holt was recorded at Lower Thorpe 125m south-east of the amendment area. The otter population is of county/metropolitan value, as reported in the main ES.
- 5.6.53 As reported in the main ES, maternity colonies of brown long-eared bat and common pipistrelle bat are present near Lower Thorpe. The building containing the maternity roosts is located approximately 30m south-west of the land required for the temporary access road and the building containing the day roost is located 80m south-west of the land required for the temporary access road. The population of bats using both of these roosts is likely to utilise the trees located along Banbury Lane both within and adjacent to the amendment area, for foraging and commuting. This population is of county/metropolitan value as reported in the main ES.
- 5.6.54 As reported in the main ES, a medium metapopulation⁶ of great crested newt is located in ponds at Thorpe Mandeville approximately 470m from land required for the new temporary access road. A second medium metapopulation of great crested newt is located in ponds at Culworth Grounds Farm approximately 420m from land required for the new temporary access road. Both metapopulations are of county/metropolitan value, as stated in the main ES.
- 5.6.55 As identified in the main ES, a medium population of grass snake is present at Thorpe Mandeville and grass snakes were recorded in habitat directly adjacent to the amendment area. This grass snake population is of district/borough value, as reported in the main ES.

Future baseline

Construction (2017)

- 5.6.56 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Operation (2026)

- 5.6.57 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

⁶ A set of local populations within some larger area, where typically migration from one local population to at least some other patches is possible.

Effects arising during construction

Avoidance and mitigation measures

- 5.6.58 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

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

Habitats

- 5.6.60 The amendment will involve the temporary removal of an additional 0.1ha of habitats to that reported in the main ES comprising areas of semi-improved neutral grassland, scattered trees, a pond and amenity grassland. The main ES reported that it was unlikely that any effects on habitat receptors in the vicinity of the amendment would occur at more than the local/parish level. The additional habitat loss is not considered a material change, therefore will not give rise to new or different significant effects on habitat receptors and will not change the level of significance of the effects reported in the main ES.

Protected and/or notable species

- 5.6.61 The main ES reports that the population of otter utilising the Culworth Brook will be affected by the original scheme. Construction works will remove water-margin vegetation either side of the holt and therefore isolate it. These impacts will isolate the holt, which as a precaution is assumed to be a breeding holt, and therefore fragment the breeding territory. This will result in a temporary adverse effect on the conservation status of otters that will be significant at the county/metropolitan level. The location of the temporary access road is approximately 30m west and 25m east of a tributary connected to Culworth Brook and will remove part of a large pond which otter may use for foraging. The compound access will therefore result in a different significant effect on the otter population. However, there will be no change the level of significant of the effects reported in the main ES.
- 5.6.62 It is unlikely that the amendment will result in any other 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 SES changes are listed in SES and AP2 ES Volume 5: Appendix EC-002-002.

Cumulative effects

- 5.6.63 There are no new or different likely cumulative effects for ecology as a result of the amendment acting in combination with another amendment in AP2, or in AP1.

Mitigation and residual effects

Other mitigation measures

- 5.6.64 The main ES includes temporary measures to maintain important movement corridors for otter during the construction of the Lower Thorpe viaduct and adjacent Lower

Thorpe south embankments and cuttings during the approximately 18 month construction period. These measures will also address disturbance caused by the temporary access road. They will be provided in accordance with the ecological principles of mitigation as set out in Volume 5: Appendix CT-001-000/2.

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

Summary of likely residual effects

- 5.6.66 With the implementation of the mitigation measures proposed in the main ES the different ecological effects arising from the AP2 revised scheme in this area are reduced to a level where they are not significant. The significant effects of the AP2 revised scheme in this area are therefore unchanged from those reported in the main ES.

Effects arising from operation

- 5.6.67 As the temporary access road will be removed on completion of construction, there are no operational impacts or effects.

Sound, noise and vibration

Scope, assumptions and limitations

- 5.6.68 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) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.
- 5.6.69 Local assumptions and limitations for the assessment of operational sound, noise and vibration are as described in the main ES (Volume 2, CFA15, Section 11).

Existing baseline

- 5.6.70 The baseline sound, noise and vibration information for CFA15 will not change as a result of this amendment. The baseline is described in the main ES (Volume 5: Appendix SV-002-0015).

Future baseline

Construction (2017)

- 5.6.71 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 11.2).

Operation (2026)

- 5.6.72 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 11.2).

Effects arising during construction

- 5.6.73 The closest sensitive receptors to the works are residential and non-residential properties located within Thorpe Mandeville.
- 5.6.74 The changes in traffic along Banbury Lane and Banbury Road associated with the amendment do not represent a substantial change for sound, noise and vibration

compared with those reported in the main ES. As such, the outcomes of the assessment reported in the main ES remain unchanged.

- 5.6.75 The new access to Lower Thorpe viaduct compound will not give rise to a new or different significant effect in comparison with the effects reported in the main ES or the AP1 ES.

Effects arising from operation

- 5.6.76 As there are no changes during operation, as such, the new access to Lower Thorpe viaduct compound will not give rise to a new or different significant effect in comparison with the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

- 5.6.77 No mitigation measures in addition to those identified in the main ES are required. The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.6.78 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

Traffic and transport

Scope, assumptions and limitations

- 5.6.79 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

- 5.6.80 The environmental baseline for traffic and transport is set out in Volume 2, CFA15 (Section 12) of the main ES. There is no change to the existing baseline as reported in the main ES.

Future baseline

Construction

- 5.6.81 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 12.3).

Operation (2026 and 2041)

- 5.6.82 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES Volume 2, CFA15, Section 12.3).

Effects arising during construction

- 5.6.83 The AP2 revised scheme has resulted in a decrease in all vehicle and HGV traffic flows on Banbury Lane, between Banbury Road (Thorpe Mandeville) and Banbury Road

(Culworth) and also, in combination with the SES scheme, on Banbury Road, between Banbury Lane and Thorpe Mandeville cutting satellite compound. The amended traffic flows on these roads do not give rise to new or different significant effects compared to those reported in the main ES and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

- 5.6.84 There are no traffic and transport changes in operation as a result of the amendment. 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 and the SES.

Mitigation and residual effects

- 5.6.85 No mitigation measures in addition to those identified in the main ES are required. The amendment will result in no change to the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.6.86 Cumulative effects are reported in Volume 2, CFA15 (Section 12) 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 other areas.

Water resources and flood risk assessment

Scope, assumptions and limitations

- 5.6.87 The assessment scope, key assumptions and limitations for the water resources and flood risk assessment are as set out 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.
- 5.6.88 The assessment reviews the potential impact of the new access road on flood risk, surface water receptors and groundwater and surface water interactions. Specifically, the effect of the construction of a temporary access road on the local Cherwell tributary streams and on groundwater flows is considered.

Existing baseline

- 5.6.89 The baseline water resources and flood risk information for the Greatworth to Lower Boddington area is described in the main ES (Volume 2, CFA Report 15, Section 13).
- 5.6.90 The scheme passes close to five unnamed source streams of the River Cherwell (part of the Cherwell (Ashby to Cropredy) water body). These watercourses are classified as ordinary watercourses. According to Environment Agency records, the River Cherwell (Ashby to Cropredy) (WFD water body reference GB10639037350) has been classified as Poor status under the WFD. The objective for 2027 is Good status.
- 5.6.91 The site is underlain by the Great Oolite Group, specifically the Whitby Mudstone (classified as unproductive strata) overlain in places by the Northampton Sand Formation and Horsehay Sand Formation (classified as a Secondary A aquifer). The Great Oolite is part of the Byfield Jurassic groundwater body (WFD water body

reference GB40602G604200) in this area which has a current status⁷, under the WFD, overall of Good. The objective for 2027 is also Good status. There are no superficial deposits in this area.

- 5.6.92 According to Environment Agency records, there is one licensed groundwater abstraction (reference GWA14 as set out in Volume 5: Appendix WR-002-015 of the main ES) in this area. There is also one reported private, unlicensed groundwater abstraction (reference UGA216 as set out in main ES Volume 5: Appendix WR-002-010) in this area.
- 5.6.93 At Lower Thorpe hamlet and Lower Thorpe Farm there are residential properties within the Environment Agency Flood Zone 3 (including Twin Oaks, Water End and Manor Cottages). The watercourse was hydraulically modelled as part of the main ES to more accurately determine the extent of fluvial flooding. The temporary access road passes alongside the viaduct for the full extent within Flood Zones 2 and 3. The flood risk assessment in Volume 5: Appendix WR-003-015 of the main ES provides further details on the river flooding baseline in this area.

Future baseline

Construction (2017)

- 5.6.94 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Operation (2026)

- 5.6.95 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Effects arising during construction

- 5.6.96 Construction of the temporary access road will require a new crossing of the unnamed watercourse leading to a pond (CFA15-SWCo4 as set out in Volume 5, Water Resources and Flood Risk Assessment Map Book of the main ES).
- 5.6.97 During construction of the temporary access road, implementation of measures included in the draft CoCP will mitigate the potential deterioration in water quality from routine discharges from the roadway or spills. Access road drainage will be discharged via a balancing pond before outfall to the watercourse to restrict runoff rates and mitigate effects on water quality.
- 5.6.98 Part of the new temporary access road will be close to a location where the unnamed watercourse passes underground. The construction of the temporary access road will be above ground only, with no work taking place below ground. Therefore the road will not interrupt any flow of water from the unnamed watercourse beneath the ground in this location.
- 5.6.99 Due to mitigation included in the draft CoCP, no significant temporary adverse effects on flood risk have been identified within the assessment.

⁷ Environment Agency (2009), *River Basin Management Plan, Thames River Basin District*.

- 5.6.100 The amendment to provide an access road for the Lower Thorpe viaduct satellite compound will not give rise to new or different significant construction effects for water resources and flood risk and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

- 5.6.101 The amendment relates to a temporary access road for construction purposes, and therefore the proposed Lower Thorpe viaduct satellite compound access amendment will not give rise to new or different operational effects for water resources and flood risk and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

- 5.6.102 The assessment assumes implementation of the draft CoCP. The general approach to mitigation is set out in Volume 1, Section 9 of the main ES.
- 5.6.103 All surface water crossings will be designed in consultation with the Environment Agency to seek to meet their objectives with respect to flood risk, ecology and hydromorphology. Where reasonably practicable, the channel diversions will be constructed in advance to meet the requirements of the Environment Agency in terms of flow capacity. Permanent impacts on the surface watercourse flood risk, flow and hydromorphology will not be significant following the incorporation of design features aligned with WFD objectives (for example, the use of soft engineering, and inclusion of natural forms such as meanders, riffles and pools in watercourse diversions).
- 5.6.104 To minimise potential adverse effects on flood risk, all culverts (including temporary culverts) will be designed to convey the 1 in 100 year return period (1% annual probability) flow, and any watercourse diversions will be designed with at least equal capacity to the existing system to ensure no loss of conveyance.
- 5.6.105 Replacement floodplain storage will be provided to mitigate for loss of floodplain storage associated with components of the AP2 revised scheme including land raising for the access road. Appropriate replacement floodplain storage will be provided prior to the construction of volumetrically significant permanent built structures within the floodplain.
- 5.6.106 Generic examples of design, management and operation measures that will mitigate impacts, so that there will be no new or different adverse effects on the quality and flow characteristics of surface watercourses, groundwater bodies and flood risk during operation and management of the AP2 revised scheme are described in Volume 1 of the main ES.
- 5.6.107 No other mitigation measures are envisaged for water resources and flood risk. The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.6.108 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.7.1 The provision of access to Lower Thorpe viaduct satellite compound from Banbury Lane does not cause any new or different residual significant effects or change the significance of the environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA15, Greatworth to Lower Boddington).

5.8 Provision of turning heads on Banbury Lane (AP2-015-006)

- 5.8.1 The Bill provides for temporary closure of Banbury Lane at Lower Thorpe, between Thorpe Mandeville and Culworth, with a temporary alternative route via Banbury Road, for a period of approximately one to two months during construction. This will allow construction associated with the Lower Thorpe viaduct. Banbury Lane will then be permanently reinstated along its existing alignment (refer to map CT-05-072 in the main ES Volume 2, CFA15 Map Book).
- 5.8.2 Since submission of the Bill, the design of the temporary closure has been reviewed and turning heads will be added to Banbury Lane when it is temporarily closed during construction, east and west of the HS2 route. The turning heads will allow vehicles to turn safely at the end of the stopped up Banbury Lane. Following construction, the turning heads will be removed and the land will be restored to the existing use (refer to map CT-05-072 in the SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.8.3 Approximately 400m² of additional land is temporarily required for the turning head on the western side of the HS2 route. The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 5.8.4 The provision of turning heads on Banbury Lane is not considered to make changes that require a reassessment of the environmental 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; and traffic and transport. However there were changes where reassessment was considered to be required in respect of cultural heritage; and water resources and flood risk assessment.

Cultural heritage

Scope, assumptions and limitations

- 5.8.5 The assessment scope, key assumptions and limitations for cultural heritage are set out in Volume 1, the SMR (Volume 5: Appendix CT001-000) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.

Existing baseline

- 5.8.6 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 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 and walk-over surveys for archaeology.

- 5.8.7 The turning heads are located in an area of ridge and furrow (asset reference GLBo82), an asset of moderate value, which forms part of the wider Thorpe Mandeville and Lower Thorpe landscape (asset reference GLB224), also an asset of moderate value.
- 5.8.8 Approximately 40m to the south of the amendment is the hamlet of Lower Thorpe (asset reference GLBo86), which is the focus for the wider Thorpe Mandeville and Lower Thorpe landscape (asset reference GLB224). Much of Lower Thorpe's moderate heritage value lies in the potential for buried archaeological remains associated with the development of the settlement, possible mill and its connection with the system of ponds (asset reference GLBo85) which are approximately 100m south of the amendment. The hamlet grouping also includes the Grade II listed Lower Thorpe farmhouse.
- 5.8.9 Banbury Lane (asset reference GLB230), a low value heritage asset which runs along the south-east edge of the amendment, is part of a medieval drover's route linking the Cotswolds with Northampton.
- 5.8.10 Approximately 150m to the east is the possible bowl barrow at Lower Thorpe (asset reference GLBo83), a scheduled monument of high heritage value. This indicates there may be associated prehistoric archaeological remains in the surrounding landscape.

Future baseline

Construction (2017)

- 5.8.11 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Operation (2026)

- 5.8.12 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Effects arising during construction

- 5.8.13 The amendment will result in additional groundworks in an area with a high potential for archaeological remains. However the main ES has already reported a high impact and major adverse effect on the Thorpe Mandeville and Lower Thorpe landscape (asset reference GLB224) and hamlet of Lower Thorpe (asset reference GLBo86).
- 5.8.14 The proposed turning heads on Banbury 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.

Effects arising from operation

- 5.8.15 The construction effects remain, but there are no new or different operational effects for cultural heritage. The proposed turning heads on Banbury 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

- 5.8.16 The amendment will result in no change in mitigation or in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.8.17 There are no new or different likely significant cumulative effects for cultural heritage assets 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.

Water resources and flood risk assessment

Scope, assumptions and limitations

- 5.8.18 The assessment scope, key assumptions and limitations for the water resources and flood risk assessment are as set out 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.
- 5.8.19 The assessment reviews the potential impact of the proposed turning heads on the interactions between surface water and groundwater. Specifically, the effect of the turning heads on the Culworth Brook is considered.

Existing baseline

- 5.8.20 The baseline water resources and flood risk information for the Greatworth to Lower Boddington area is described in the main ES (Volume 2, CFA15, Section 13).
- 5.8.21 The AP2 revised scheme passes very close to three source streams of the River Cherwell, the largest of which is referred to as the Culworth Brook. These watercourses are classified as ordinary watercourses. The River Cherwell (Ashby Brook to Cropredy) watercourse (Water body ref GB 106039037350) has a current WFD status of Poor. The objective for 2027 is Good status. This water body is therefore assessed to be a high value receptor.
- 5.8.22 The turning heads lie within Flood Zone 3 of the Culworth Brook and an area shown to be at risk of flooding on the uFMfSW.
- 5.8.23 The area is underlain by the Great Oolite Group, specifically the Whitby Mudstone (classified as Unproductive strata) overlain in places by the Northampton Sand Formation and Horsehay Sand Formation (classified as a Secondary A aquifer). The Great Oolite is part of the Byfield Jurassic groundwater body (GB 40602G604200) which has a current overall status⁸ under the WFD of Good status, and the objective for 2027 is Good status. There are no known superficial deposits in this area.
- 5.8.24 According to Environment Agency records, there is one licensed groundwater abstraction (reference number GWA14, as set out in Volume 5: Appendix WR-002-012 of the main ES) within 1km of the AP2 revised scheme. There is also one reported private, unlicensed groundwater abstraction (reference number UGA216).

⁸ Environment Agency (2009), *River Basin Management Plan, Thames River Basin District*.

- 5.8.25 The current baseline information on springs and issues is set out in Volume 5: Appendix WR-002-012 of the main ES. There are three sets of springs and issues within 1km of the AP2 revised route, located south-west of Magpie Farm, east of Costow House, and feeding Culworth Brook.

Future baseline

Construction (2017)

- 5.8.26 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Operation (2026)

- 5.8.27 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Effects arising during construction

- 5.8.28 Construction of the turning heads could cause a temporary deterioration in water quality from routine discharges from the roadway or spills. Drainage will be discharged via a balancing pond before outfall to the watercourse to restrict runoff rates and limit effects on water quality.
- 5.8.29 The turning head to the west of the HS2 route will be close to a location where the Culworth Brook passes underground into sinks. That is, where the surface water feature flows back into the ground. The location may be linked with the channel on the other side of Banbury Lane. The link between the channels on either side of the road may be man-made, or there may possibly be a natural sub-surface channel in this area. The construction of the turning head could potentially interrupt the flow of water from the Culworth Brook in this location, which could lead to flooding and the loss of flow in the surface watercourse downstream.
- 5.8.30 If preliminary construction works indicate that the turning heads could intercept the flow then a temporary bypass pipe will be installed beneath the turning head for the period of construction. With the temporary bypass pipe in place there will be a negligible impact leading to a neutral effect.
- 5.8.31 The turning head to the east of the HS2 route will pass directly over the Culworth Brook where it passes along the side of Banbury Lane. A temporary culvert will be provided beneath the turning head.
- 5.8.32 To minimise potential adverse effects on flood risk, all culverts (including temporary culverts) will be designed to convey the 1 in 100 year return period (1% annual probability) flow, and any watercourse diversions will be designed with at least equal capacity to the existing system to ensure no loss of conveyance. It is assumed that the turning heads will be removed at the end of construction and the route returned to its natural state. This may potentially include the replacement of a channel if construction of the turning head west of the HS2 route intercepts flow in this area. Assuming that the channel is returned to the pre-construction condition, there are no permanent construction effects.

- 5.8.33 With the temporary bypass pipe and culvert in place (if required) the amendment will not give rise to new or different significant construction effects for water resources and flood risk and will not change the effects reported in the main ES and the AP1 ES.

Effects arising from operation

- 5.8.34 The amendment to provide turning heads on Banbury Lane will not give rise to new or different significant operation effects and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

- 5.8.35 The assessment assumes implementation of the draft CoCP. The general approach to mitigation is set out in Volume 1, Section 9 of the main ES.
- 5.8.36 The southern turning head may intercept the flow where the Culworth Brook crosses Banbury Lane. Investigations will be carried out before construction. If the turning head is likely to intercept the below ground route of this brook, a temporary bypass pipe will be installed beneath the turning head, if necessary, to allow uninterrupted flow.
- 5.8.37 The northern turning head will cross an open channel of the Culworth Brook and a culvert will be provided.
- 5.8.38 The turning heads will be removed at the end of construction and the land returned to its existing use. This may potentially include the replacement of a channel if construction of the turning head intercepts the flow in this area.
- 5.8.39 The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.8.40 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.9.1 The provision of turning heads on Banbury Lane does not cause any new or different residual significant effects or change the significance of the environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA15).

5.10 Relocation of drainage infrastructure at Culworth Mill (AP2-015-007)

- 5.10.1 The Bill provides for a permanent railway balancing pond providing a storage capacity of approximately 4,150m³, on the east of the HS2 route. The outfall from the pond would be carried southwards towards a new ditch and would discharge into the River Cherwell. Access to the pond would be from Welsh Road along a new access track and turning head (refer to maps CT-05-074 and CT-06-074 in the main ES Volume 2, CFA15 Map Book).

- 5.10.2 Since submission of the Bill, the location of the permanent railway balancing pond has been reviewed and it will be relocated approximately 50m to the north-west of its original location, at the north-west corner of the same field to minimise disruption to farming operations. The proposed access to the balancing pond from Welsh Road is now approximately 190m north of the location under the original scheme, along the south side of a row of trees. The size and capacity of the pond will remain the same as in the original scheme. The outfall will be to the west, into Osierbed Spinney culvert (refer to maps CT-05-074 and CT-06-074 in the SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.10.3 Approximately 500m² of additional land is permanently required. The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 5.10.4 The relocation of the railway balancing pond is not considered to make changes that require a reassessment of the environmental 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 traffic and transport. However there were changes where reassessment was considered to be required in respect of: cultural heritage; ecology; and water resources and flood risk assessment.

Cultural heritage

Scope, assumptions and limitations

- 5.10.5 The assessment scope, key assumptions and limitations for cultural heritage are 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

- 5.10.6 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 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 and walk-over surveys for archaeology.
- 5.10.7 The relocated drainage infrastructure is located within Blackgrounds (asset reference GLB144), an area of high potential for Iron Age, Roman and early medieval archaeology. This is an area of land around Blackgrounds Farm (asset reference GLB145) and the scheduled monument Edgcote Villa (asset reference GLB138) where Roman and Iron Age artefacts have been recovered during field walking and metal detecting surveys. This suggests that there is a wider historic settlement around the scheduled monument. As such, Blackgrounds (asset reference GLB144) is directly related to the scheduled monument and is of high heritage value. Edgcote Villa Scheduled Monument (asset reference GLB138), an asset of high value, is approximately 300m to the west of the amendment. Blackgrounds Farm (asset reference GLB145) is approximately 350m north-west of the amendment and is a low value asset where the agricultural setting contributes to its value.

- 5.10.8 Approximately 250m to the south-west of the amendment are two assets of high heritage value, Edgcote Battlefield (asset reference GLB108), a registered battlefield, and Edgcote House Park (asset reference GLB134). An area of ridge and furrow (asset reference GLB129) 500m to the south of the amendment is associated with the battlefield and is also of high heritage value.
- 5.10.9 The Trafford Bridge historic landscape (asset reference GLB226) is approximately 250m to the north-west of the amendment. This is an asset of moderate heritage value. In the wider landscape 450m east of the amendment is the deserted medieval village at Trafford, also of moderate value. Trafford Bridge, a Grade II listed structure of moderate heritage value, is 450m to the south-east of the amendment.
- 5.10.10 The baseline resources are described in the main ES (see Volume 2, CFA15, Section 6 and Volume 5 Appendix CH-001-015).

Future baseline

Construction (2017)

- 5.10.11 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Operation (2026)

- 5.10.12 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Effects arising during construction

- 5.10.13 The amendment will result in additional groundworks in an area of high archaeological potential and there is the likelihood that archaeological remains will be removed. However the main ES has already reported a significant effect, with a high impact and major adverse effect on Blackgrounds (asset reference GLB144) therefore the additional removal of archaeological remains will not increase the overall effect.
- 5.10.14 The relocation of drainage infrastructure 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

- 5.10.15 There are no new or different operational effects for cultural heritage assets as a result of the relocation of drainage infrastructure. 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

- 5.10.16 The amendment will result in no change in mitigation or in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.10.17 There are no new or different likely significant cumulative effects for cultural heritage assets 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.

Ecology

Scope, assumptions and limitations

- 5.10.18 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.
- 5.10.19 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 AP2 revised scheme.

Existing baseline

- 5.10.20 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 from September 2013 to March 2015, and aerial photography.
- 5.10.21 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant new or updated baseline information provided in SES and AP2 ES Volume 5: Appendix EC-001-002. For those receptors described in the main ES, further details are provided in Volume 2, CFA15, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.10.22 Trafford Bridge Marsh non-statutory Local Wildlife Site (LWS) is approximately 180m south of the land required for the balancing pond and access. This site is designated for semi-improved grassland, swamp and lowland fen and is of county/metropolitan value as reported in the main ES. No other designated sites are relevant to the amendment. The designated sites and valuations reported in the main ES remain unchanged.

Habitats

- 5.10.23 The land required for the balancing pond and access track comprises semi-improved neutral grassland. A predominantly wooded unnamed tributary of the River Cherwell is adjacent to the western boundary of the amendment. These habitat types are of up to local/parish value.

Protected and/or notable species

- 5.10.24 There is aquatic and terrestrial habitat suitable for water vole along the River Cherwell and the tributary that flows along the western boundary of the land required for the amendment. As part of the precautionary assessment it is assumed that a population of water voles may be present in low numbers. This potential population is of up to county/metropolitan value as reported in the main ES.

- 5.10.25 The main ES reported the presence of a possible assemblage of bats associated with habitats at Trafford Bridge. The River Cherwell and its riparian woodland provide good foraging habitat for bats and the old farm buildings in the area have the potential to support roosting bats. There are three trees present with moderate potential for roosting bats in the woodland belt to the north of the land required for the access track. As reported in the main ES, the bat assemblage at this location is considered to be of up to county/metropolitan value.
- 5.10.26 As reported in the main ES, an otter population was recorded using habitat along the River Cherwell for foraging and commuting across the area and suitable terrestrial habitat for otter was recorded along the unnamed tributary immediately south of the land required for the amendment. This otter population using the River Cherwell is reported in the main ES as being of district/borough value.
- 5.10.27 Locations of species records are illustrated in the main ES on maps EC-01 to EC-12, Volume 5, Ecology Map Book.

Future baseline

Construction (2017)

- 5.10.28 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Operation (2026)

- 5.10.29 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

- 5.10.30 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

- 5.10.31 There has been no change to the effects during construction relating to designated sites as set out in Volume 2, CFA15 of the main ES.

Habitats

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

Protected and/or notable species

- 5.10.33 The main ES reports that the Edgcote viaduct will cross habitat that may be used by water vole. Vegetation clearance would remove habitat suitable for foraging and sheltering. As part of the precautionary assessment, it is assumed that loss of these habitats would result in a permanent adverse effect on conservation status that is significant up to the county/metropolitan level. Construction of the balancing pond

will remove habitat that is suitable for water vole along a 50m length of the unnamed tributary of the River Cherwell. The amendment will therefore result in a different significant effect on the assumed water vole population, however, this will not change the level of significance of the effects reported in the main ES.

- 5.10.34 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 SES and AP2 ES Volume 5: Appendix EC-002-002.

Cumulative effects

- 5.10.35 There are no new or different likely significant cumulative effects for ecology as a result of the amendment acting in combination with another amendment in AP2, or in AP1.

Mitigation and residual effects

Other mitigation measures

- 5.10.36 The removal of an approximately 50m length of habitat suitable for water vole along the tributary of the Cherwell is of sufficiently limited extent to be adequately mitigated by mitigation measures for water vole proposed in the main ES. This involves planting along the diverted sections of the River Cherwell near the Edgcote viaduct, which is approximately 230m from the habitat affected by the amendment. All planting will be designed and implemented in accordance with the principles of mitigation (Volume 5: Appendix CT-001-000/2).
- 5.10.37 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.

Summary of likely residual effects

- 5.10.38 No new or different likely significant residual effects on ecological receptors will 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.

Effects arising from operation

- 5.10.39 The amendment will not result in any new or different significant operational effects on ecological receptors.

Water resources and flood risk assessment

Scope, assumptions and limitations

- 5.10.40 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.
- 5.10.41 The assessment considers the impact of the proposed amended balancing pond location on flood risk and discharge from the Culworth Mill Pond on surface water flow and quality.

Existing baseline

- 5.10.42 The baseline water resources and flood risk information for the Greatworth to Lower Boddington area is described in the main ES (Volume 2, CFA15, Section 13).
- 5.10.43 There are two watercourses within 1km of the amendment: The River Cherwell and tributary (Ashby to Cropredy) which is classified as a main river; and a tributary of the River Cherwell, classified as an ordinary watercourse. Under the WFD, the River Cherwell (Ashby to Cropredy) water body (WFD water body reference GB 106039037350) has a current status of Poor, predicted to be Good status by 2027. The tributary of the River Cherwell is not classified under the WFD and is therefore assumed to have the same status as the River Cherwell (Ashby to Cropredy) water body, as set out above.
- 5.10.44 The site is underlain by the Lias Group, specifically the Charmouth Mudstone Formation (classified as unproductive strata) overlain by the Dyrham Formation (interbedded siltstone and mudstone classified as a Secondary undifferentiated aquifer), the Marlstone Rock Formation (classified as a Secondary A aquifer) and the Whitby Mudstone Formation (classified as unproductive strata). The Whitby Mudstone Formation forms part of the Byfield Jurassic groundwater body (WFD water body reference GB 40602G604200) which has a current overall WFD status⁹ of Good (the objective for 2027 remaining as Good status). The other formations are part of the Banbury Jurassic groundwater body (WFD water body reference GB 40602G600200) which has a current overall WFD status of Good (the objective for 2027 remaining as Good status).
- 5.10.45 Bedrock in the valley of the River Cherwell is overlain by Alluvium superficial deposits. These superficial deposits are classified as a Secondary A aquifer and are likely to contain groundwater.
- 5.10.46 There is one licensed surface water abstraction within the study area (as detailed in Volume 5: Appendix WR-002-015).
- 5.10.47 There are two springs within 250m of the area of the amendment; one located 100m south-east of the route (north of Osierbed Spinney) and one located 100m north-east of the route (on the edge of Osierbed Spinney).
- 5.10.48 The proposed balancing pond will be adjacent to the eastern edge of Flood Zones 2 and 3 of the Osierbed Spinney tributary of the River Cherwell. The pond is located immediately adjacent to the mapped extent of Flood Zone 2.
- 5.10.49 Detailed hydraulic modelling of the River Cherwell at Edgcote was undertaken as part of the main ES for the original scheme. Near where the route will cross the River Cherwell on the Edgcote viaduct there is one residential property in Flood Zone 2 (Culworth Mill) and two in Flood Zone 3 (Edgcote Mill and Home Farm). Otherwise the land use within the flood zones is agricultural (less vulnerable) or water-compatible.

⁹ Environment Agency (2009), *River Basin Management Plan, Thames River Basin District*.

Future baseline

Construction (2017)

- 5.10.50 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Operation (2026)

- 5.10.51 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Effects arising during construction

- 5.10.52 The amendment will result in the discharge of track drainage to the River Cherwell tributary at Osierbed Spinney via a railway balancing pond and culvert, rather than directly to the River Cherwell as in the original scheme. Application of the draft CoCP will ensure that works in or near the watercourse will be designed so that sediment mobilisation is managed, the potential for contamination from fuel spills is minimised and, where practicable, the works are timed to minimise the impact on water quality and water dependent habitats and species. Therefore, the impact of construction on surface water features is assessed to be negligible, with a neutral effect and is not significant.
- 5.10.53 The outfall from the balancing pond will discharge into the River Cherwell tributary. The pond will provide mitigation to ensure that run-off from the route will be released in a controlled manner to the receiving watercourse reducing the potential for adverse impact on the water quality and flow of the receiving watercourse. Therefore, the impact is assessed to be negligible, with neutral effect and therefore not significant.
- 5.10.54 Replacement floodplain storage will be provided to mitigate for loss of floodplain storage associated with the amendment. All replacement floodplain storage will be provided prior to the construction of volumetrically significant permanent built structures within the floodplain. As a result, the risk of flooding from the Osierbed Spinney tributary will not be affected.
- 5.10.55 The assessment has shown that effects on the risk of river flooding to local receptors will not be significant.
- 5.10.56 The proposed amended balancing pond will be constructed on the Charmouth Mudstone Formation, Dyrham Formation and Marlstone Rock Formation. The change in location of the pond will not change the impact or effects of construction since the proposed new pond location will remain in the same geological strata as the original scheme. Therefore, the amendment of the Culworth Mill balancing pond will give rise to no new or additional significant effects on the groundwater bodies from construction of the AP2 revised scheme.
- 5.10.57 The proposed Culworth Mill balancing pond will not give rise to a new or different significant effect for water resources and flood risk and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

- 5.10.58 The proposed Culworth Mill balancing pond will not give rise to a new or different significant operational effect for water resources or flood risk and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

- 5.10.59 The assessment assumes implementation of the draft CoCP. The general approach to mitigation is set out in Volume 1, Section 9 of the main ES.
- 5.10.60 All drainage on the AP2 revised scheme has been designed to reduce the rate and volume of run-off from the railway and prevent an increase in flood risk. Associated access roads and hardstandings will be designed to match peak runoff rates to existing rates through use of SuDS techniques. The SuDS balancing ponds provided in the AP2 revised scheme design are shown on maps CT-06-68 to CT-06-79 (Volume 2, CFA15 Map Book of the main ES).
- 5.10.61 Generic examples of design, operation and management measures are described in Volume 1 of the main ES. These will mitigate impacts so that there will be no significant adverse effects on the quality and flow characteristics of surface watercourses, groundwater bodies and flood risk.
- 5.10.62 The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.10.63 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.11.1 The relocation of drainage infrastructure at Culworth Mill does not cause any new or different residual significant effects or change the significance of the environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA15).

5.12 Reconfiguration of the Warwick Road and Banbury Road junction (AP2-015-008)

- 5.12.1 The Bill provides for:
- a 1.3km cutting;
 - maintenance loops;
 - the permanent realignment of approximately 1km of Banbury Road (from Claydon Road) and Wormleighton Road with alteration of the Banbury Road/Warwick Road junction;
 - a new green overbridge over the HS2 route; and .

- the permanent realignment of Banbury Road between the existing junction of Wormleighton Road and Stoneton Lane to the east of Wormleighton (as shown in map CT-06-079a in the main ES Volume 2, CFA15 Map Book and map CT-06-079b in the main ES Volume 2, CFA16 Map Book).
- 5.12.2 This amendment includes changes in both CFA15 (Greatworth to Lower Boddington) and CFA16 (Ladbroke and Southam).
- 5.12.3 Following deposit of the Bill, a requirement has been identified to amend the original scheme junction priority at the intersection of Warwick Road and Banbury Road to reflect the dominant traffic movement through the junction. The revised through-route priority is changed from Lower Boddington to Wormleighton, to Upper Boddington to Wormleighton. This change re-provides the existing through-route and will require additional land outside of Bill limits (see maps CT-05-079b and CT-06-079b in the SES and AP2 ES Volume 2, CFA 15 Map Book).
- 5.12.4 The amendment involves permanent alteration of the Warwick Road/Banbury Road junction to allow priority traffic flow along Warwick Road across the overbridge passing over the HS2 route and will connect to Wormleighton Road. The changes are as follows:
- Banbury Road will follow its current alignment closer to the HS2 route between Claydon Road and Warwick Road and connect to Warwick Road; and
 - an access road to Hill Farm from Warwick Road will be provided.
- 5.12.5 The diversion of Stoneton Lane will be rerouted from its original scheme location on the north-east side of the HS2 route, to cross Boddington cutting on a green highway bridge perpendicular to a junction with Banbury Road to the south-west of the cutting. This overbridge (Stoneton Lane green overbridge) will comprise a single-span structure with an overall length of 150m across the HS2 route.
- 5.12.6 The original highway realignment of Stoneton Lane is no longer required. Banbury Road overbridge was a green bridge in the original scheme and will now be a standard highway overbridge as habitat connectivity will now be provided across the cutting by the Stoneton Lane green overbridge.
- 5.12.7 The removal of the Stoneton Lane diversion through Fox Covert (Glyn Davies Wood) will necessitate a temporary diversion of Banbury Road during construction. The temporary diversion will comprise the realignment of Banbury Road from near the existing junction of Banbury Road with Stoneton Lane to near the proposed new permanent junction of Banbury Road with Stoneton Lane.
- 5.12.8 The Boddington ATS will be located closer to Stoneton Lane. Additional mitigation planting will be included along the CFA15/16 boundary west of the realigned Wormleighton/Banbury Road to improve connectivity of hedgerows.
- 5.12.9 This amendment will reduce the area of land permanently required by 2.66ha and the area of land temporarily required by 0.81ha compared to the original scheme.
- 5.12.10 The works are currently planned to start in 2018 and are expected to take approximately four years and 10 months to complete.

Scope of assessment

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

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.12.12 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

- 5.12.13 As described in the main ES (main ES, Volume 2, CFA15 and CFA16, Section 3) the majority of the land that will be affected has soils in the Denchworth association that are characterised by stoneless, clayey, wet and poorly drained soils of Wetness Class (WC) IV. The quality of the agricultural land is of a moderate Subgrade 3b quality.
- 5.12.14 The farms affected by the revised highway alignments in the vicinity of Wormleighton and Lower Boddington include:
- Three Shires Farm and Hill Farm (CFA15/25) which is an arable farm approximately 154ha in size;
 - Spella House (CFA15/30) which is an arable holding approximately 10ha in size; and
 - Fox Covert (Glyn Davies Wood) (CFA15/31) which is approximately 3ha of conservation woodland.

Future baseline

Construction (2017)

- 5.12.15 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).
- 5.12.16 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.
- 5.12.17 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)

- 5.12.18 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).

Effects arising during construction

- 5.12.19 Each of the farms will be temporarily affected during construction of the scheme in terms of the land required and by severance:

- Three Shires Farm and Hill Farm are approximately 154ha and construction of the original scheme would have required 20.8ha of land (14% of the holding). This amendment will reduce the area of land required to approximately 20.2ha but this still represents 13% of the holding and remains a moderate adverse effect, which is significant. There will be no severance impact as the farms are already severed by Warwick Road/Banbury Road;
- Spella House is approximately 10ha and construction of the original scheme would have required 3.6ha of land (35% of the holding). This amendment will reduce the area of land required to approximately 1.4ha (14% of the holding), and will reduce the magnitude of impact from high to medium and the significance of effect from major/moderate to moderate adverse effect, which remains significant; and
- Fox Covert (Glyn Davies Wood) is approximately 3ha and construction of the original scheme would have required 1.9ha (63% of the holding). The amendment will reduce the area of land required by 0.6ha to approximately 1.3ha (43% of the holding). As this is still more than 20% of the holding, it remains a moderate adverse effect, which is significant.

- 5.12.20 As the land affected by the amendment is all lower quality agricultural land in Subgrade 3b, there will be no change to the permanent effect on BMV agricultural land, which was assessed as moderate adverse and remains significant.

- 5.12.21 The permanent effects on the holdings are:

- Three Shires Farm and Hill Farm, where approximately 18.3ha of land would have been required under the original scheme (12% of the holding). The land required for this amendment is approximately 17.7ha, which is 0.6ha less than the original scheme, but this still represents 12% of the holding and remains an impact of medium magnitude, leading to a moderate adverse effect, which is significant;
- Spella House, where the original scheme would have required approximately 2.3ha (23%) of the holding. The amendment requires approximately 1.4ha (14% of the holding) of agricultural land. The magnitude of impact reduces from high to medium, reducing the effect on the holding from major/moderate adverse to moderate adverse, but which is still significant; and
- Fox Covert (Glyn Davies Wood), where approximately 1.9ha (63% of the

holding) of land would have been required by the original scheme. The amendment will reduce the amount of land required by approximately 0.6ha to approximately 1.3ha (43% of the holding), which reduces the magnitude of impact from high to moderate, and the permanent effect from moderate adverse to minor adverse, which is not significant.

Effects arising from operation

- 5.12.22 There are no significant new or different operational effects for agriculture, forestry and soils as a result of the AP2 revised scheme.

Mitigation and residual effects

- 5.12.23 No additional mitigation measures are proposed.
- 5.12.24 The amendment is likely to give rise to different temporary and permanent significant effects on Spella House. This will change the magnitude of impacts from high to medium and the significance of effects from major/moderate adverse to moderate adverse.
- 5.12.25 The amendment will give rise to a different residual significant effect on Fox Covert (Glyn Davies Wood). There will be a reduction in land required permanently by approximately 0.6ha. This will change the magnitude of impact from high to moderate, and the significance of effect from moderate adverse to a minor adverse, which is not significant.

Cumulative effects

- 5.12.26 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, the SES or in AP1, or as a result of any relevant committed development interacting with the SES and AP2 revised scheme.

Community

Scope, assumptions and limitations

- 5.12.27 The assessment scope, key assumptions and limitations of the community infrastructure assessment 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).

Existing baseline

- 5.12.28 The village of Lower Boddington is located to the north-west of Aston le Walls. Approximately 2.1km north of Lower Boddington is Glyn Davies Wood, which is a designated nature reserve (part of Fox Covert). This is a 3ha site located on Banbury Road, which is managed by the Banbury Ornithological Society (BOS) and used by BOS members for the enjoyment of wildlife and bird watching. BOS has approximately 120 members in the region.

Future baseline

Construction (2017)

- 5.12.29 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 5.3).

Operation (2026)

- 5.12.30 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 5.3).

Effects arising during construction

- 5.12.31 In the main ES (Volume 2, CFA15) a moderate adverse significant temporary effect was assessed for Glyn Davies Wood. This was because approximately a third of the area managed by BOS was permanently required for the scheme and the entrance to the nature reserve and lay-by on Banbury Road (used for parking), were both within the land required for construction. Without an alternative entrance and parking facilities, access to the nature reserve would not be possible for approximately one year and the nearest alternative site (Grimsbury Plantation Reserve) is approximately 15km from Glyn Davies Wood. The effect was considered moderate adverse and significant.
- 5.12.32 The amendment generates a different significant community effect, because the amount of land required at Glyn Davies Wood will be reduced. However, this does not change the level of significance of the effect in the main ES because the site will still be inaccessible for approximately one year during the construction period, before the layby and associated access are re-provided off Stoneton Lane.

Effects arising from operation

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

Mitigation and residual effects

- 5.12.34 The amendment generates a different significant community effect, as the amount of land required at Glyn Davies Wood will be reduced. However, this does not change the level of significance of the effect in the main ES (moderate adverse). No further mitigation measures have been identified.

Cumulative effects

- 5.12.35 There are no new or different likely significant cumulative effects for community as a result of the proposed 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

- 5.12.36 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.

Existing baseline

- 5.12.37 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which included geophysical surveys, remote-sensing data, and data from national and local registers. A full list 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 and walk-over surveys for archaeology. 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 sites in the vicinity of the route, which the Woodland Trust believe to be ancient woodland, that are not currently listed on the ancient woodland inventory.
- 5.12.38 The land required for the revised highway alignment includes an area of ridge and furrow earthworks (asset reference GLB206) of low heritage value, which is a part of the Upper Boddington medieval open fields.
- 5.12.39 As described in the SES (Section 3.3) since the main ES, Fox Covert (Glyn Davies Wood) (asset reference GLB211) has been identified as likely to be designated as ancient woodland. This has increased the heritage value of the woodland to high. The area of potentially prehistoric or Roman cropmarks within Fox Covert (Glyn Davies Wood) (asset reference GLB211) identified in the main ES contributes to the heritage value of the asset.
- 5.12.40 Approximately 190m south-west of the land required for the amendment and within the land required for the original scheme is an area of cropmarks and linear features (asset reference GLB208). These features suggest the presence of a prehistoric or later settlement and are of moderate heritage value.
- 5.12.41 The baseline resources are described in the main ES (Volume 2, CFA15 and CFA16, Section 6 and Volume 5 appendices CH-001-015 and CH-001-016).

Future baseline

Construction (2017)

- 5.12.42 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Operation (2026)

- 5.12.43 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Effects arising during construction

- 5.12.44 The amount of land required for the amendment, when compared to the original scheme, will be reduced in the area of ridge and furrow earthworks (asset reference GLB206) and in Fox Covert (Glyn Davies Wood) (asset reference GLB211), which is

likely to be added to the ancient woodland inventory. However, the road realignment will still require land within both assets, therefore the significant effect to Fox Covert (Glyn Davies Wood) and the cropmarks within the woodland remains as major adverse as reported in the SES (Part 1 of this document).

- 5.12.45 The junction reconfiguration will give rise to a different significant effect on both an area of ridge and furrow earthworks and at Fox Covert (Glyn Davies Wood) as less land is required for the AP2 revised scheme. However, this will not change the level of (i.e. major adverse) significance of the effects reported in the SES (Part 1 of this document).

Effects arising from operation

- 5.12.46 There are no new or different operational effects arising for cultural heritage. The proposed road realignment 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

- 5.12.47 Measures of avoidance and mitigation with regard to cultural heritage are provided in the draft CoCP as part of the main ES (Volume 5: Appendix CT-003-000).
- 5.12.48 During construction the junction reconfiguration will give rise to a different significant effect with respect to an area of ridge and furrow earthworks and Fox Covert as less land is required for the AP2 revised scheme. However, this will not change the level of significance of the effects reported in the SES (major adverse significant effect).
- 5.12.49 The AP2 revised scheme will result in no change in mitigation or in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.12.50 There are no new or different likely significant cumulative effects for cultural heritage as a result of the AP2 revised scheme acting in combination with another amendment in AP2, or in AP1 or any relevant committed development.

Ecology

Scope, assumptions and limitations

- 5.12.51 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.
- 5.12.52 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 AP2 revised scheme.

Existing baseline

- 5.12.53 The ecological baseline of the land required for the AP2 revised scheme has been based on field data collated for the main ES, aerial photography and relevant existing information gathered from national organisations and from regional and local sources including: Northamptonshire Wildlife Trust; Northamptonshire Biodiversity Records Centre; Northamptonshire Bat Group; Warwickshire County Council (Warwickshire Biological Records Centre) and Warwickshire Wildlife Trust.
- 5.12.54 The assessment also takes into account additional survey work for bats and great crested newt undertaken from September 2013 to September 2014 in CFA15 and from April 2014 to September 2014 in CFA16.
- 5.12.55 A summary of the baseline information relevant to the assessment of the AP2 revised scheme is provided. This takes account of any new or updated baseline information provided in SES and AP2 ES Volume 5: Appendix EC-001-002. For those receptors described in the main ES, further details are provided in Volume 2, CFA16, Section 7 and CFA15, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.12.56 As reported in the SES, since the main ES, Fox Covert (Glyn Davies Wood) in CFA15 has been identified as ancient woodland and is likely to be included on the ancient woodland inventory. The woodland is located 85m east of the Stoneton Lane realignment and green overbridge.
- 5.12.57 There are no designated sites within 500m of the AP2 revised scheme within CFA16. Statutory and non-statutory designated sites in CFA15 are described in the main ES, Volume 2, CFA15, Section 7 and are shown on maps EC-01-035b to EC-01-041a, Volume 5, Ecology Map Book.

Habitats

- 5.12.58 The land required for the Stoneton Lane realignment and the Stoneton Lane green overbridge within CFA15 comprises primarily arable land of negligible ecological value. A small area of Fox Covert (Glyn Davies Wood) is also required. This woodland is likely to be added to the ancient woodland inventory and is assumed to be ancient for the purposes of this assessment. It has been valued as being of county/metropolitan value since the main ES (see the SES, Section 3.4 in Part 1 of this document). Where the overbridge joins the realigned Wormleighton Road (to be realigned as part of the original scheme) there is a small area of broadleaved trees of local/parish value. There are a five water bodies within 250m of this area including one pond within Fox Covert (Glyn Davies Wood). No ponds will be lost as a result of the AP2 revised scheme. Within CFA16, land required for the Stoneton Lane realignment and overbridge comprises primarily arable land of negligible value and roadside and field boundary hedges of local/parish value.
- 5.12.59 The land required for the Warwick Road/Banbury Road realignment within CFA15 comprises primarily arable land of negligible value. Sections of hedgerow will be lost at Hill Farm, to the north and south of Banbury Road and to the north and south of Warwick Road. There are three water bodies within 250m of this area, two ponds and one ditch. No ponds will be lost as a result of the amendment.

- 5.12.60 For CFA15, habitats surrounding the land required for the AP2 revised scheme are described in the main ES, Volume 2, CFA15, Section 7 and are shown on maps EC-02-35b to EC-02-41a, Volume 5, Map Book Ecology. For CFA16, they are described in Volume 2, CFA16, Section 7 and are shown on maps EC-02-040b to EC-02-044a, Volume 5, Map Book Ecology.

Protected and/or notable species

- 5.12.61 The main ES for CFA15 identified three bat populations/assemblages which may be utilising the habitats in and around the land required for the amendment:
- a noctule bat population comprising a maternity roost within Fox Covert (Glyn Davies Wood) which is part of a population reported in the main ES as being of county/metropolitan value;
 - a common pipistrelle bat roost (likely to be a summer/transient roost) is located within Fox Covert (Glyn Davies Wood) and is part of a population of local/parish value; and
 - low to moderate levels of commuting and foraging brown long-eared bats were recorded within and around Fox Covert (Glyn Davies Wood). This activity is associated with a population that is reported to be of local/parish value in the main ES.
- 5.12.62 Bat surveys undertaken in CFA16 since the main ES have identified a new confirmed transitional or day pipistrelle bat roost in a barn at Church Farm to the north-east of Wormleighton, within the land required for construction of the original scheme. In addition, trees with high and moderate potential to support bat roosts were identified during 2014 survey work. Both the barn and trees are part of habitat used by an assemblage described in the main ES as the bat assemblage associated with roosting, foraging and commuting habitat around Stoneton and Wormleighton. The assemblage was reported in the main ES as being of district/borough value.
- 5.12.63 The land required for the AP2 revised scheme is likely to contain suitable reptile habitat along arable field margins. The main ES reports assumed populations of common reptile species are of local/parish value.
- 5.12.64 Breeding willow tits in Fox Covert (Glyn Davies Wood) are reported in the main ES as being of county/metropolitan value, as numbers recorded represent more than 1% of the county population. The willow tits may utilise the land required for the amendment for foraging.
- 5.12.65 The badger population in the area is of local/parish value as reported in the main ES.

Future baseline

Construction (2017)

- 5.12.66 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15 and CFA16, Section 7.3).

Operation (2026)

- 5.12.67 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15 and CFA16, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

- 5.12.68 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

- 5.12.69 There will be no change to the effects on designated sites during construction reported in Volume 2, CFA15 or CFA16 of the main ES.

Habitats

- 5.12.70 The SES reports a loss of woodland at Fox Covert (Glyn Davies Wood) for the scheme, which will result in a permanent adverse effect which is significant at county/metropolitan level. The AP2 revised scheme reduces the total habitat loss within Fox Covert (Glyn Davies Wood), by 0.6ha to approximately 1.3ha. The AP2 revised scheme will give rise to a different significant effect, but this does not change the level of significance of the effects reported in the SES.
- 5.12.71 The AP2 revised scheme will result in the loss of arable land, improved grassland and roadside and field boundary hedgerows. The overall amount of habitat lost is similar to that lost as a result of the original scheme. The AP2 revised scheme will not give rise to any new or different effects and will not change the level of significant effects on these habitats reported in the main ES.
- 5.12.72 It is unlikely that the AP2 revised scheme will result in any additional effects on habitats of relevance at more than the local/parish level. Additional local/parish level effects to those identified in the main ES amended by the SES arising from survey data collected since the main ES are listed in SES and AP2 ES Volume 5: Appendix EC-002-002, ES 3.5.2.7-15.5.

Protected and/or notable species

- 5.12.73 The main ES reports that construction of the original scheme would result in the loss of the noctule maternity roost in Fox Covert (Glyn Davies Wood), which would result in a permanent adverse effect significant at county/metropolitan level. The AP2 revised scheme will result in a reduction in the area of habitat loss from the woodland, however this will not give rise to any new or different significant effects or change the level of significance of the effects reported in the main ES, as the roost will still be lost.
- 5.12.74 The main ES reports that there would be no significant effects on the common pipistrelle and brown long-eared populations using Fox Covert (Glyn Davies Wood). The common pipistrelle roost will be retained, and the AP2 revised scheme will result in a reduced area of habitat loss within the woodland for those pipistrelles utilising the roost, and for foraging and commuting brown long-eared bats. The reduction in habitat loss will increase the overall remaining habitat available for foraging and will

maintain habitat connectivity to the north towards Berryhill Plantation and Lodge Spinney. Overall, the amendment will not give rise to any new or different significant effects and will not change the level of significance of the effects reported in the main ES.

- 5.12.75 The effects on the bat assemblage associated with roosting, foraging and commuting habitat around Stoneton and Wormleighton of the loss of trees with high and moderate potential to support rarer bat roosts, as a result of the original scheme, is of significance at a district/borough level. The AP2 revised scheme will not result in any new or different significant effects and will not change the level of significance of the effects reported in the main ES.
- 5.12.76 The main ES reports the construction of the original scheme would remove the pond containing great crested newts and surrounding woodland within Fox Covert (Glyn Davies Wood). These impacts would result in a permanent adverse effect on the conservation status of the great crested newt population at Fox Covert (Glyn Davies Wood) that would be significant at a district/borough level. The AP2 revised scheme will reduce the amount of terrestrial habitat loss from the woodland by 0.6ha. This represents a different significant effect. However, the level of significance of effects is unchanged from those reported in the main ES.
- 5.12.77 It is unlikely that the AP2 revised scheme will result in any additional effects (i.e. in addition to those identified in the main ES as amended by the SES) on species of relevance at more than the local/parish level. Additional local/parish level effects arising from survey data collected since the main ES are listed in SES and AP2 ES Volume 5: Appendix EC-002-002, ES 3.5.2.7-15.5.

Cumulative effects

- 5.12.78 There are no new or different likely cumulative effects for ecology as a result of the AP2 revised scheme acting in combination with another amendment in AP2, or in AP1 or any relevant committed development.

Mitigation and residual effects

Other mitigation measures

- 5.12.79 No additional mitigation or compensation (i.e. beyond that included in the main ES and SES) is required to address the different effects on ecological receptors that occur as a result of the AP2 amendment.
- 5.12.80 The revised SES scheme identifies that Fox Covert (Glyn Davies Wood) is likely to be ancient woodland, and the AP2 amendment reduces the extent of woodland loss by 0.6ha, to 1.3ha. The compensation areas on either side of the realigned Stoneton Lane which are identified in the SES as receptors for ancient woodland soils are consolidated into one area due to the road realignment that forms part of this grouped amendment. Therefore, under the AP2 revised scheme ancient woodland soils from Fox Covert (Glyn Davies Wood) will be translocated to a single adjacent receptor area. The compensatory planting described for the SES scheme in Part 1 remains unchanged in extent.

Summary of likely residual effects

- 5.12.81 The AP2 revised scheme will result in the loss of 1.3ha of ancient woodland at Fox Covert (Glyn Davies Wood). This is a reduction from that described in the SES, therefore a different adverse residual effect to that reported in the SES. However, the residual adverse effect on the conservation status of ancient woodland remains significant at the county/metropolitan level, as reported in the SES.

Effects arising from operation

- 5.12.82 There are no new or different operational effects for ecology as a result of the AP2 revised scheme.

Landscape and visual assessment

Scope, assumptions and limitations

- 5.12.83 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.
- 5.12.84 The amendment is located within both CFA15 and CFA16, however only effects on landscape character and visual receptors within CFA15 have been considered in this assessment.

Existing baseline

- 5.12.85 The area of land required for the reconfiguration of the Warwick Road and Banbury Road junction, is located largely within the Boddington Broad Unwooded Vale LCA, with localised overlap into the western fringe of the Boddington Low Pastoral Hills LCA (see Volume 2 CFA15, Section 9.3 of the main ES for a baseline description of the LCAs). The Boddington Broad Unwooded Vale LCA, and Boddington Low Pastoral Hills LCA are both of medium tranquillity and local value, therefore are considered to be of medium sensitivity to change.
- 5.12.86 Views from the following locations are also located in close proximity to the area and are described in the main ES (Volume 2, CFA15, Section 9):
- Viewpoint 222.2.001: Looking south-west from Hill Farm; and
 - Viewpoint 222.2.002: Looking south-west from Spella House.
- 5.12.87 Both receptors are considered to have a high sensitivity to change (see Volume 5: Appendix LV-001-015 of the main ES for baseline descriptions of the visual receptors).

Future baseline

Construction (2017)

- 5.12.88 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 9.3).

Operation (2026)

- 5.12.89 No committed developments have been identified in this local area that will materially alter the baseline conditions in 2026.

Effects arising during construction

Landscape assessment

- 5.12.90 The Boddington Low Pastoral Hills LCA was assessed as being affected by the original scheme and will continue to be affected by the reconfiguration of the Warwick Road and Banbury Road junction (AP2-015-008). The main ES reported a moderate adverse significant effect during construction due to the removal of trees and hedgerows, loss of agricultural land and the introduction of construction plant into the rural landscape.
- 5.12.91 The amendment will result in realignment of Stoneton Lane to cross over the route of HS2 (within the adjacent extents of CFA16), rather than running parallel to HS2, and will involve reconfiguration of the Banbury Road and Warwick Road junction, but will not result in significant change in the extent or type of construction. 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.
- 5.12.92 The Boddington Broad Unwooded Vale LCA was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect during construction due to the removal of trees and hedgerows, loss of agricultural land and the introduction of construction plant into the rural landscape.
- 5.12.93 The amendment will result in a change to the Banbury Road overbridge structure from a green overbridge to a standard overbridge and will also involve change in the alignment of Banbury Road to bring it closer to HS2 where it ties in with the junction with Warwick Road. This will not result in notable change in the extent or type of construction. The proposed 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.
- 5.12.94 The amendment will result in reconfiguration of Stoneton Lane to cross over the HS2 route and the construction of Stoneton Lane green overbridge. The construction of the overbridge will involve the use of cranes for installation in variation to the original scheme, however within the context of surrounding extensive and substantial cutting earthworks 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.

Visual assessment

- 5.12.95 Viewpoint 222.2.001: Looking south-west from Hill Farm, was assessed as being affected by the original scheme and will continue to be affected by this amendment. The main ES reported a major adverse significant effect during construction due to visibility of cutting earthworks, highway realignment and Banbury Road overbridge.
- 5.12.96 The reconfiguration of Banbury Road and Warwick Road junction in combination with the realignment of Stoneton Lane will reduce the amount of highways construction work in the immediate foreground of Viewpoint 222.2.001. The change in the Banbury

Road overbridge structure from a green overbridge to a standard overbridge will not result in significant change in the extent or type of construction. The construction of Stoneton Lane green overbridge (within the adjacent extents of CFA16) will be viewed in the context of extensive and substantial cutting earthworks. The reconfiguration of the Warwick Road and Banbury Road junction, 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.

- 5.12.97 Viewpoint 222.2.002: Looking south-west from Spella House, was assessed as being affected by the original scheme which will remain the case with this amendment. The main ES reported a major adverse significant effect during construction due to visibility of cutting earthworks, highway realignment and the Banbury Road overbridge satellite compound.
- 5.12.98 The realignment of Banbury Road closer to HS2 where Banbury Road ties in with the junction with Warwick Road will not give rise to a new or different significant effect on this viewpoint and will not change the level of significance of the effects reported in the main ES.
- 5.12.99 The amendment will not give rise to new or different significant effects in relation to highways reconfiguration or overbridge structures and will not change the level of significance of the effects in CFA 15 reported in the main ES.

Effects arising from operation

Landscape assessment

- 5.12.100 The amendment will result in an amended Stoneton Lane highway layout with an additional green overbridge, a revised Banbury Road overbridge structure, an amended landscape mitigation planting layout and a remodelled Banbury Road and Warwick Road junction.
- 5.12.101 The Boddington Low Pastoral Hills LCA was assessed as being affected by the original scheme which will remain the case with this amendment. The main ES reported a moderate adverse significant effect during year 1 of operation due to the presence of rail infrastructure, landform, bridges and trains, reducing to a minor adverse non-significant effect for year 15 and for year 60. The stopping up of Banbury Road adjacent to Hill Farm and realignment of the route of Stoneton Lane to a position north of its location in the original scheme will reduce the extent of highway within the LCA. 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.
- 5.12.102 The Boddington Broad Unwooded Vale LCA was assessed as being affected by the original scheme which will remain the case with this amendment. The main ES reported a moderate adverse significant effect during year 1 of operation due to the presence of rail infrastructure, landform, bridges and trains, reducing to a minor adverse non-significant effect for year 15 and for year 60. The reconfiguration of the Banbury Road/Warwick Road junction will locally modify the highway and landscape mitigation planting layout. Banbury Road will be realigned thereby reducing the extent of change to agricultural fields on the eastern side of the HS2 route. The amendment will not give rise to new or different significant effects and will not change the level of significance of the effects reported in the main ES.

Visual assessment

- 5.12.103 Viewpoint 222.2.001: Looking south-west from Hill Farm, was assessed as being affected by the original scheme which will remain the case with this amendment. The main ES reported a major adverse significant effect during year 1 of operation due to visibility of trains, overhead line equipment and landscape earthworks, reducing to a moderate adverse significant effect for year 15 and for year 60. Stoneton Lane green overbridge, within the adjacent extents of CFA16, will be visible in oblique views and the changed Banbury Road overbridge (from a green bridge to a standard overbridge) will be visible in direct views. 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 due to the influence of the cutting and the presence of Banbury Road overbridge within the original scheme.
- 5.12.104 The reconfiguration of the Banbury Road/Warwick Road junction will also be visible from viewpoint 222.2.001 and in views experienced by road users travelling along the junction approach extents of Banbury Road and Warwick Road. Views from the immediate setting of Hill Farm will change as a result of the simplified highway arrangement, but more extensive views experienced by road users will not notably change as a result of the amendment. 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.
- 5.12.105 Viewpoint 222.2.002: Looking south-west from Spella House, was assessed as being affected by the original scheme which will remain the case with this amendment. The main ES reported a major adverse significant effect during year 1 of operation due to visibility of trains, overhead line equipment and landscape earthworks, reducing to a moderate adverse significant effect for year 15 and for year 60. The realignment of Banbury Road to bring it closer to HS2 where it ties in with the junction with Warwick Road will be visible in oblique views from Spella House and in views experienced by road users travelling along Banbury Road. 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.
- 5.12.106 The amendment will not give rise to new or different significant effects in relation to highways reconfiguration or overbridge structures and will not change the level of significance of the effects in CFA15 reported in the main ES.

Mitigation and residual effects

- 5.12.107 There are no new or different residual construction or operational effects or mitigation measures required for landscape and visual as a result of the amendment in comparison with the main ES.

Cumulative effects

- 5.12.108 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

Traffic and transport

- 5.12.109 There are no new or different significant traffic and transport effects in CFA15 as a result of the amendment. Assessment of new or different traffic and transport effects in CFA15 is reported in the SES and AP2 ES Volume 2 CFA16 document.

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

- 5.13.1 The reconfiguration of the Warwick Road and Banbury Road junction and associated changes will result in a reduction by approximately 2.2ha of agricultural land required temporarily during construction at Spella House (an arable holding approximately 10ha in size). The original scheme required 3.6ha and the AP2 revised scheme requires approximately 1.4ha of agricultural land, this is considered to be a different residual significant effect. The amendment will reduce the magnitude of impact from high to medium and the significance of effect from major/moderate adverse to a moderate significant adverse effect.
- 5.13.2 In addition, there will be a different permanent effect on Spella House as the amendment requires approximately 1.4ha of agricultural land. The magnitude of impact reduces from high to medium, reducing the effect on the holding from major/moderate adverse to moderate, which is still significant.
- 5.13.3 Also in relation to agriculture, forestry and soils, the amendment will reduce the amount of land required at Fox Covert (Glyn Davies Wood) from 1.9ha (63% of the holding) to approximately 1.3ha (43% of the holding). This is a different significant effect. The amendment will reduce the magnitude of impact from high to moderate, and the permanent effect from moderate adverse to minor adverse, which is not significant.
- 5.13.4 The amendment generates a different significant community effect during construction, due to a reduction in the amount of land required at Glyn Davies Wood. However, this does not change the level of significance of the effect in the main ES (moderate adverse).
- 5.13.5 The junction reconfiguration will give rise to a different significant cultural heritage construction effect on both an area of ridge and furrow earthworks and at Fox Covert (Glyn Davies Wood) as less land is required for the AP2 revised scheme. However, this will not change the level of significance of the effects reported in the SES (i.e. major adverse).
- 5.13.6 The amendment will give rise to a different permanent adverse residual effect on the conservation status of ancient woodland at Fox Covert (Glyn Davies Wood), with losses of ancient woodland reduced to 1.3ha. The residual effect remains significant at county/metropolitan level, which is unchanged from that reported in the SES.
- 5.13.7 A summary of new or different significant effects and mitigation for traffic and transport in the Ladbrooke and Southam area (CFA16) as a result of the reconfiguration of the Warwick Road and Banbury Road junction and associated changes is provided in the SES and AP2 ES, Volume 2, CFA16 report.

5.14 Provision of a Chipping Warden bypass (AP2-015-009)

- 5.14.1 The Bill provides for a temporary realignment of the A361 Byfield Road, east of Chipping Warden, to approximately 150m north for a period of approximately three years whilst the Chipping Warden green tunnel is built. The road would then be permanently reinstated along its existing alignment over the green tunnel (refer to maps CT-05-075, CT-05-075-L1, CT-06-075 and CT-06-075-L1 in the main ES Volume 2, CFA15 Map Book).
- 5.14.2 Since submission of the Bill, it has been decided to provide a permanent bypass. It is now proposed to extend the temporary realignment of the A361 Byfield Road, included in the original scheme, southwards, to the west of Chipping Warden. This is to divert construction traffic around rather than through the village. The approximately 1.3km realignment will be retained following construction to become a permanent bypass of Chipping Warden. Noise mitigation will be provided in the form of noise fence barriers along the east of the Chipping Warden bypass (refer to maps CT-05-075, CT-05-075-L1, CT-06-075 and CT-06-075-L1 in the SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.14.3 The Chipping Warden bypass will be constructed in two stages. Stage 1 would be completed during the first year of the construction programme, in advance of the main works. This would extend from the A361 Byfield Road from a point just to the north of Hogg End, to a point north of Long Barrow but south of Stone House. The connection to the A361 at the northern point will be a temporary connection until Stage 2 is completed. Construction of Stage 2 will commence once the section of the Chipping Warden green tunnel, over which the bypass would be routed, has been constructed. Once Stage 2 is completed, the temporary connection to the A361 will be reconfigured to suit the permanent road layout. The overall programme will remain as in the original scheme.
- 5.14.4 Approximately 0.2ha of additional land will be required temporarily and approximately 6.3ha of additional land will be permanently required. The additional land needed is not included within the Bill, hence the need for this amendment.
- 5.14.5 The provision of the Chipping Warden bypass is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: land quality and socio-economics. However there were changes where reassessment was 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 flood risk assessment.

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.14.6 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.
- 5.14.7 The provision of a new alignment to the A361 Byfield Road to west of Chipping Warden will permanently require an additional 6.3ha of agricultural land.

Approximately 600m² of the land required will be restored to agriculture following construction. One farm holding (Warden Farms, CFA15/16) that is already affected by the original scheme will be further affected by the amendment. It is assumed that there are up to two, other holdings that will be affected to a minor degree, immediately to the west of Chipping Warden, but ownership of these holdings has not been established.

Existing baseline

- 5.14.8 As described in the main ES (Volume 2, CFA15, Section 3) the greater part of the land that will be affected has soils in the Denchworth association that are characterised by stoneless, clayey, wet and poorly drained soils of Wetness Class (WC) IV. The quality of the agricultural land is of a moderate Subgrade 3b quality. To the south and the north of the A361 Byfield Road are soils of the Banbury association. These soils comprise coarse loamy, permeable soils of WC I that are classified as BMV in Subgrade 3a.
- 5.14.9 Warden Farms is an arable farm of approximately 800ha in size. Warden Farms has diversified interests, with uses including composting on the disused Chipping Warden runway and an art studio.

Future baseline

Construction (2017)

- 5.14.10 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).
- 5.14.11 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.
- 5.14.12 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)

- 5.14.13 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 3.3).

Effects arising during construction

- 5.14.14 The temporary effect of the original scheme on Warden Farms was assessed in the main ES as a moderate adverse effect due to severance and the removal of some 52.3ha of land during construction, which was significant. There is a requirement for a

further 6.3ha for the construction of this amendment, however, this does not result in a new or different effect and does not alter the level of significance of the effect.

- 5.14.15 Approximately half the additional area of land that will be required permanently is classified as BMV, in Subgrade 3a. As noted in the main ES, the requirement for 29.1ha BMV land in the Greatworth to Lower Boddington area is significant (moderate adverse effect), due to the scarcity of such land in the area. Therefore this additional land requirement gives rise to a different increased significant effect. Although more BMV land is required, this amendment will not change the level of significance of the effects reported in the SES or the AP1 ES.
- 5.14.16 The area of land permanently required at Warden Farms will increase from 8.7ha to 15ha. This still represents less than 5% of the holding and is not significant.
- 5.14.17 The effect on the one or two holdings to the west of Chipping Warden cannot be assessed as there is no data available regarding the size and operation of the holdings. However, the areas of land involved are small, being approximately 400m² and 800m² respectively, and the permanent effect on the holdings affected will be minimal, which is not significant.

Effects arising from operation

- 5.14.18 The amendment to provide a new bypass at Chipping Warden 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 or the AP1 ES.

Mitigation and residual effects

- 5.14.19 The land required temporarily for construction will be restored to its former agricultural use once the works are completed. The soil handling will involve stripping, storing and reinstating topsoils on land required for the temporary works, following best practice guidance for handling soil set out in the draft CoCP.
- 5.14.20 Overall, the amendment will result in an increase in the area of BMV agricultural land that would be permanently required, but would not change the likely residual significant effect reported in the main ES (moderate adverse effect).

Cumulative effects

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

Air quality

Scope, assumptions and limitations

- 5.14.22 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

- 5.14.23 The baseline conditions with regard to air quality have been updated from those reported in the main ES, in terms of updated background maps released by Defra.
- 5.14.24 There are no relevant air quality monitoring sites near the amendment. Defra background concentrations maps¹⁰ provide estimates of background concentrations of NO₂, PM₁₀ and PM_{2.5} for 1km grid squares across the UK. The 2010 maps were used as the basis for the assessment reported in the main ES. The 2011 maps have been used as the basis for the assessment reported in the SES and AP2 ES. The maps indicate that the average background pollutant concentrations are low across the amendment area and better than the relevant air quality standards.
- 5.14.25 There are no statutory or non-statutory designated sites for nature conservation near the amendment that could potentially be affected by changes in air quality as a result of the amendment.

Future baseline

Construction (2017)

- 5.14.26 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 4.3).

Operation (2026)

- 5.14.27 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 4.3).

Effects arising during construction

- 5.14.28 The amendment to provide a permanent Chipping Warden bypass will not change the impact reported within the main ES and will not result in significant effects. Slight adverse impacts remain predicted at a small number of receptors assessed for NO₂, with negligible impacts predicted at the remaining identified receptors. Negligible impacts remain predicted at all receptors for PM₁₀. The supporting assessment for this conclusion can be found in the SES and AP2 ES, Volume 5: Appendix AQ-001-015.

Effects arising from operation

- 5.14.29 The amendment to make the Chipping Warden bypass permanent has the potential to give rise to a new effect compared to that reported in the main ES, upon assessment, this effect was determined to be not significant. Imperceptible impacts will be predicted at identified receptors near to the Chipping Warden bypass. Improvements in NO₂ and PM₁₀ are however, predicted at identified receptors on the existing A361 Byfield Road. The supporting assessment for this conclusion can be found in in SES and AP2, Volume 5: Appendix AQ-001-015.

¹⁰ Defra (2014), 2011 Based Background Maps for NO_x, NO₂, PM₁₀ and PM_{2.5}; <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011>; Accessed March 2015.

Mitigation and residual effects

- 5.14.30 Emissions to the atmosphere will be controlled and managed during construction through the route-wide implementation of the CoCP. The assessment of the 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. No additional avoidance and mitigation measures are required for the amendment during construction in relation to air quality.
- 5.14.31 As reported in the main ES no mitigation measures are required during operation in relation to air quality.
- 5.14.32 The main ES reported no residual significant effects on air quality during construction and operation and there is no change from the main ES for the amendment.

Cumulative effects

- 5.14.33 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

Community

Scope, assumptions and limitations

- 5.14.34 The assessment scope, key assumptions and limitations for community 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

- 5.14.35 Chipping Warden is a large village centred on the A361 Byfield/Banbury Road to the north-west of Edgcote. There is a range of community facilities located in the village.
- 5.14.36 Chipping Warden (Academy) Primary School¹¹, which contains Chipping Warden Kindergarten, is on the A361 Byfield Road.

Future baseline

Construction (2017)

- 5.14.37 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 5.3).

Operation (2026)

- 5.14.38 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 5.3).

¹¹ Chipping Warden Primary School gained academy status on 1 September 2013.

Effects arising during construction

Temporary effects

- 5.14.39 The main ES reported a major adverse temporary effect on residential amenity for approximately ten residential properties along the eastern edge of the A361 Byfield Road in Chipping Warden. Combined HGV traffic effects and visual effects were predicted to arise as a result of construction activities co-ordinated by several different construction compounds. The effect was therefore considered to be significant.
- 5.14.40 The construction of the bypass will alter the combined effects experienced by residential properties in this location, giving rise to a different significant amenity effect although this will not change the level of significance of the effect reported in the main ES. That is, ten residential properties on the A361 Byfield Road are predicted to experience in-combination effects associated with the construction of the scheme and the Chipping Warden bypass (see SES and AP2 ES Volume 5: Appendix CM-001-015). These effects are:
- significant visual effects due to works associated with the green tunnel (as reported in the main ES) and also due to direct views of earthworks disruption, realignment of the airfield perimeter road, removal of trees and construction of the route of the bypass (due to the amendment); and
 - significant effects due to increases in movements of HGVs along the A361 Byfield Road during stage 1 of the construction programme.
- 5.14.41 These in-combination effects will be experienced for approximately one year until the main works of the bypass are completed, after which time all vehicle and HGV construction traffic will no longer need to pass along the A361 so the amenity effect will be removed. The duration of the in-combination effects is less than that reported in the main ES; however, given that the effect will be experienced for approximately one year, the temporary effect on residential amenity is still considered to be major adverse and remains significant.
- 5.14.42 The main ES reported a major adverse temporary amenity effect for Chipping Warden Primary School on the A361 Byfield Road. In-combination HGV traffic effects, visual and noise effects were predicted to arise as a result of construction activities co-ordinated by several different construction compounds. The effect was therefore considered to be significant.
- 5.14.43 The construction of the bypass will alter the combined effects experienced by Chipping Warden Primary School, giving rise to a different significant amenity effect. However, this different significant amenity effect will not change the level of significance of the effect (major adverse) as reported in the main ES.
- 5.14.44 The school is predicted to experience in-combination effects associated with the construction of the Chipping Warden bypass in-combination with Chipping Warden green tunnel. These effects are:
- significant visual effects due to direct views of earthworks disruption to existing fields, realignment of the airfield perimeter road, construction of the route of the bypass and part removal of trees within the Chipping Warden

(disused) Airfield;

- a significant daytime noise effect associated with the construction of the Chipping Warden bypass and Chipping Warden green tunnel; and
- significant effects due to increases in movements of HGVs along the A361 Byfield Road during stage 1 of the construction programme.

- 5.14.45 These in-combination effects will be experienced for approximately one year until the main works of the bypass are completed after which time all vehicle and HGV construction traffic will no longer need to pass along the A361 so the HGV effect will be removed. The duration of these three combined effects is less than that reported in the main ES; however, given that the effect will be experienced for approximately one year, there remains a major adverse amenity effect which is significant.
- 5.14.46 During stage 2 of construction of the Chipping Warden bypass, Chipping Warden Primary School will continue to experience combined significant visual and noise effects for one year, resulting in a moderate adverse amenity effect, which is significant.

Effects arising from operation

- 5.14.47 The amendment to provide the Chipping Warden bypass 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 or the AP1 ES.

Mitigation and residual effects

- 5.14.48 Mitigation measures are as reported in the main ES, Volume 2, CFA15.
- 5.14.49 During construction of the Chipping Warden bypass, ten residential properties on the A361 Byfield Road are predicted to experience in-combination effects during one year until the main works of the bypass are completed. This will give rise to a different significant amenity effect, although this will not change the level of significance of the effect reported in the main ES.
- 5.14.50 During construction of the bypass, Chipping Warden Primary School will experience in-combination effects for approximately one year until the main works of the bypass are completed, after which time all vehicle and HGV construction traffic will no longer need to pass along the A361 so the HGV effect will be removed. The duration of these combined effects is less than that reported in the main ES; however, given that the effect will be experienced for approximately one year, there remains a major adverse amenity effect which is significant.
- 5.14.51 During stage 2 of construction, Chipping Warden Primary School will continue to experience combined significant visual and noise effects for one year, resulting in a moderate adverse amenity effect, which is significant.

Cumulative effects

- 5.14.52 There are no new or different likely significant cumulative effects for community 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

- 5.14.53 The assessment scope, key assumptions and limitations for cultural heritage are 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

- 5.14.54 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 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 and walk-over surveys for archaeology.
- 5.14.55 Part of the additional land permanently required for the bypass is an area of approximately 2.2ha located within part of the disused Chipping Warden airfield (asset reference GLB162). This is a World War II airfield of moderate heritage value, which is now used for agriculture.
- 5.14.56 Approximately 265m of the historic route of the Banbury to Daventry Road (asset reference GLB160), which follows the current route of the A361, is within the land required for the amendment. This is part of a major medieval or possibly earlier route from the south-west to the Midlands. The route is of low heritage value.
- 5.14.57 Approximately 15m to the north-west of the land required for the bypass is an area of potential prehistoric activity (asset reference GLB165), of moderate heritage value.
- 5.14.58 On the eastern side, adjacent to the land required, is the Chipping Warden Conservation Area which includes a scheduled monument, one Grade I listed building, one Grade II* listed building and 29 Grade II listed buildings (asset reference GLB151). This is a heritage asset of moderate value. The views in the historic core of the village are internalised to the local streetscape. The agricultural landscape, in which the asset sits, is predominantly post-medieval, however there are some remaining medieval features including earthworks of moated sites and fishponds around the southern and south-western margins of the settlement.
- 5.14.59 Approximately 90m to the west of the land required for the amendment is the scheduled monument of Arbury Banks (asset reference GLB152) an asset of high heritage value. Arbury Banks is a probable Bronze Age or Iron Age hill fort positioned to overlook the headwaters of the Cherwell valley. The views south towards the River Cherwell contribute to its value, as does the evidential interest of its buried archaeology.

Future baseline

Construction (2017)

- 5.14.60 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Operation (2026)

- 5.14.61 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 6.3).

Effects arising during construction

- 5.14.62 The main ES has assessed the impact on Chipping Warden airfield (asset reference GLB162) as being medium adverse on an asset of a moderate value, which results in a moderate adverse effect due to approximately 50% of the area of the disused airfield being removed during construction. The construction of the Chipping Warden bypass will remove a further 2.2ha, approximately 1% of the total airfield. The increase in the percentage of land to be removed from the airfield from 50% to 51% does not cause a new or different significant effect and does not change the level of significance of the effects reported in the main ES.
- 5.14.63 The main ES has assessed the temporary construction impact on the Chipping Warden Conservation Area (asset reference GLB151) as low adverse with a significant moderate adverse effect. This was due to the use of the A361, which runs through the historic core, for construction traffic. Construction traffic will continue to use the A361 through stage 1 of the construction of the original scheme and as such this temporary effect remains unchanged. The main ES has assessed the permanent construction impact as minimal adverse, with a negligible effect. The removal of the traffic from the conservation area due to the construction of the Chipping Warden bypass will be beneficial however, there will be a different effect with the noise from the bypass altering the soundscape within the village. As such the level of permanent construction effect will remain unchanged and is not significant.
- 5.14.64 The proposed construction of the Chipping Warden bypass will not give rise to a new or different significant effect with regard to the temporary construction effect on the Chipping Warden Conservation Area (asset reference GLB151) and will not change the level of significance of the effects reported in the main ES or the AP1 ES.
- 5.14.65 There are no effects from the amendment on the other heritage assets described in the baseline section above.

Effects arising from operation

- 5.14.66 The Chipping Warden bypass will not give rise to a new or different significant operation effect and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

- 5.14.67 The amendment will result in no change in mitigation or in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.14.68 There are no new or different likely significant cumulative effects for cultural heritage assets 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.

Ecology

Scope, assumptions and limitations

- 5.14.69 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.
- 5.14.70 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 AP2 revised scheme.

Existing baseline

- 5.14.71 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 from September 2013 to September 2014, surveys in the land required for this amendment in March 2015, and aerial photography.
- 5.14.72 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant new or updated baseline information provided in the SES and AP2 ES Volume 5: Appendix EC-001-002. For those receptors described in the main ES, further details are provided in Volume 2, CFA15, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.14.73 The nearest non-statutory Local Wildlife Site is over 900m from the land required for the construction of the bypass and is not relevant to the amendment. The designated sites and valuations reported in the main ES remain unchanged.

Habitats

- 5.14.74 Approximately 500m of hedgerow habitat is present in the area of land required for the bypass of which approximately 370m qualifies as important under the Hedgerows Regulations 1997¹². Owing to the presence of established and important hedgerows, and to the habitat connectivity that they provide in an arable-dominated landscape, the hedgerow network is of district/borough value, as stated in the main ES.
- 5.14.75 Approximately 0.1ha of broadleaved woodland habitat is present on the land required for this amendment. The main ES reports that woodland is not a habitat of principal importance and is of local/parish value.
- 5.14.76 The remainder of the land required for this amendment (approximately 5.3ha) is arable land and improved grassland but approximately 0.2ha of allotments and 0.4ha of semi improved grassland are also present. As stated in the main ES, these habitats do not exceed local/parish value.

¹² *The Hedgerows Regulations 1997 (1997 No. 1160)*. London, Her Majesty's Stationery Office.

Protected and/or notable species

- 5.14.77 As reported in the main ES, there is a great crested newt metapopulation at Chipping Warden Manor of medium metapopulation size class, present within three ponds. This metapopulation is located 300m south-east of the Chipping Warden bypass. The main ES reports that this metapopulation is of county/metropolitan value.
- 5.14.78 As reported in the main ES, there is a potential reptile population near to Chipping Warden, which is of up to county/metropolitan value. The land required for construction of the bypass includes arable field margins and cultivated land including allotments that could provide habitat for this assumed population.
- 5.14.79 As reported in the main ES, there is a barn owl population of county/metropolitan value and a breeding bird assemblage of district/borough value south-west of Chipping Warden. Land required for the construction of the Chipping Warden bypass includes habitat suitable for this barn owl population and breeding bird assemblage.

Future baseline

Construction (2017)

- 5.14.80 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Operation (2026)

- 5.14.81 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

- 5.14.82 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

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

Habitats

- 5.14.84 The main ES reports a loss of a total of 18km of important hedgerows within CFA15 as a result of the original scheme, which is significant at district/borough level, and will result in fragmentation of the hedgerow network. The loss of an additional 370m of important hedgerow from the Chipping Warden bypass amendment will give rise to a different significant effect but will not change the level of significance of the effects reported in the main ES.
- 5.14.85 It is unlikely that the amendment 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 the amendment are listed in SES and AP2 ES Volume 5: Appendix EC-002-002.

Protected and/or notable species

- 5.14.86 The main ES reports that construction of the original scheme will result in adverse impacts on the reptile population, which is significant at up to county/metropolitan level. The bypass will remove up to 6ha of semi-improved grassland and allotments, which is likely to be suitable for reptiles. The loss of additional reptile habitat will give rise to a different significant effect but will not change the level of significance of the effects reported in the main ES.
- 5.14.87 As reported in the main ES, a barn owl nesting site and habitat suitable for foraging will be removed during the construction of the Chipping Warden green tunnel. The loss of this individual nesting site will result in a permanent adverse effect on its conservation status that is significant at the district/borough level. The amendment will remove an additional 0.24ha of semi-improved grassland as well 500m of hedgerows likely to be suitable for foraging barn owl. However, these additional losses affect the same barn owl pair that is assumed to be lost in the main ES, and are not considered a material change. Therefore, no new or different significant effects will occur.
- 5.14.88 It is unlikely that the amendment will result in 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 SES and AP2 ES Volume 5: Appendix EC-002-002.

Cumulative effects

- 5.14.89 There are no new or different likely cumulative effects for ecology as a result of the amendment acting in combination with another amendment in AP2, or in AP1.

Mitigation and residual effects

Other mitigation measures

- 5.14.90 The ecological compensation areas in this area included within the original scheme will provide suitable habitat for common reptiles and will also compensate for the additional habitat losses resulting from this amendment. Following the implementation of the measures any adverse impacts on reptiles will be reduced to a level that they will not be significant.
- 5.14.91 In accordance with the main ES, new hedgerows along the bypass will connect to existing habitat within the landscape to compensate for the losses of wildlife corridors that hedgerows provide. The hedgerow replanting will be undertaken in accordance with the ecological principles of mitigation (main ES Volume 5: Appendix CT-001-000/2). No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required. Following maturation of the planting it is anticipated that any adverse impacts on hedgerows and the wildlife corridors they provide are expected to be reduced so that effects on conservation status are not significant.
- 5.14.92 As reported in the main ES, to offset the likely loss of barn owls from the vicinity of the scheme, opportunities to provide barn owl nesting boxes in areas greater than 1.5km

from the route will be explored with local landowners. As the availability of nesting sites is a limiting factor for this species, the implementation of these measures would be likely to increase numbers of barn owls within the wider landscape and thus offset the adverse effect.

Summary of likely residual effects

- 5.14.93 With the implementation of the mitigation measures proposed, the new or different ecological effects arising from the AP2 revised scheme are reduced to a level where they are not significant. The residual significant effects of the AP2 revised scheme in this area are therefore unchanged from those reported in the main ES.

Effects arising from operation

- 5.14.94 The amendment will not result in any new or different significant operational effects on ecological receptors.

Landscape and visual assessment

Scope, assumptions and limitations

- 5.14.95 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

- 5.14.96 The area of land required for the Chipping Warden bypass is located within the Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA as described in the main ES (Volume 2, CFA15, Section 9.3). The LCA is characterised by a broad undulating landform, agricultural land use and tree and hedge lined fields and has a medium sensitivity to change. The LCA is of medium tranquillity and local value, therefore it is considered to be of medium sensitivity to change.
- 5.14.97 There is one view located in close proximity to the amendment, described in the main ES (Volume 2, CFA15, Section 9). That is, residential properties on the northern edge of Chipping Warden, including those grouped around Long Barrow and the cul-de-sac off Appletree Road, recreational users of Footpath AE17 within the extents of disused Chipping Warden airfield to the north of Chipping Warden and Footpath AE18 skirting around the northern edge of Chipping Warden, looking north-east (viewpoint 211.2.001).
- 5.14.98 The Chipping Warden bypass will introduce the following two new representative viewpoints into the area (see SES and AP2 ES, Volume 5: Appendix LV-001-015 for baseline descriptions of visual receptors).
- 5.14.99 Viewpoint 211.2.003: View looking north-west from properties on the northern edge of Chipping Warden adjacent to Chipping Warden Primary School, representative of views from the front- and side-facing aspect of residential properties on the northern edge of Chipping Warden, recreational users of Footpath AE18, pupils and staff at the Chipping Warden Primary School and Nursery and road users of the existing route of the A361 at the northern edge of Chipping Warden.

5.14.100 Viewpoint 211.2.004: View looking north-west from properties on Appletree Road on the western edge of Chipping Warden, representative of views from the rear-facing aspect of residential properties on the western edge of Chipping Warden, residential properties on the western edge of Chipping Warden on Allens Orchard, recreational users of Footpath AE19, recreational users of the allotments off Appletree Road and road users of Appletree Road at the western edge of Chipping Warden.

5.14.101 Due to the residential and recreational nature of the viewpoints, all receptors are considered to have a high sensitivity to change (see Volume 5: Appendix LV-001-015 of the main ES for baseline descriptions of the visual receptors).

Future baseline

Construction (2017)

5.14.102 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 9.3).

Operation (2026)

5.14.103 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 9.3).

Effects arising during construction

Landscape assessment

5.14.104 The Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect during construction due to the removal of trees and hedgerows, extensive earthworks operations, loss of agricultural land and the introduction of construction plant into the rural landscape.

5.14.105 The amendment will introduce additional construction activity associated with removal of existing vegetation, earthworks grading and highway construction along the route of the Chipping Warden bypass and associated junctions. This will result in the following new landscape effects in addition to the effects of the original scheme:

- partial removal of a row of poplar trees within the disused Chipping Warden airfield;
- realignment of part of the disused Chipping Warden airfield perimeter road;
- loss/severance of agricultural land on the western edge of Chipping Warden;
- partial removal of field boundary hedgerows associated with the disused Chipping Warden airfield and roadside hedgerows associated with Appletree Road and the A361 Banbury Road;
- localised changes to the layout of and access to the allotments on the western edge of Chipping Warden;
- loss of mature trees in the vicinity of the existing junction of Banbury Road and Appletree Road;

- diversion of Footpath AE17 and Footpath AE18;
- construction of road junctions intersecting the bypass and the transition of the A361 Banbury Road into a secondary loop access road through the village of Chipping Warden; and
- removal of through-traffic and HS2 construction traffic from the centre of Chipping Warden village.

5.14.106 The amendment, which will introduce additional construction activity associated with removal of existing vegetation, earthworks grading and highway construction, will give rise to different significant effects. The different effects arise from the extension of construction into an area that experienced only limited or no construction influence from the original scheme, principally affecting an area to the west of Chipping Warden. The high magnitude of change, assessed alongside the medium sensitivity of the LCA, will result in different moderate adverse significant effects. The disruption and loss of landscape features will however, be relatively localised when considered in the context of the wider extent of HS2 construction activity within the LCA and will not change the overall level of significance of the effects on the LCA reported in the main ES.

Visual assessment

- 5.14.107 Viewpoint 211.2.001: looking north-east from properties on the northern edge of Chipping Warden, was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a major adverse significant effect during construction due to the visibility of extensive green tunnel earthworks and the A361 temporary diversion.
- 5.14.108 The amendment will introduce additional construction effects along the route of the bypass across the middle ground of the view, approximately 200m from the viewpoint. There will be direct views of earthworks associated with breaking out the redundant A361, realignment of the disused airfield perimeter road, construction of the route of the bypass and the partial removal of the row of poplar trees within the disused Chipping Warden airfield. Although this is a different significant effect, this amendment will not change the overall level of significance of the effects reported in the main ES.
- 5.14.109 The effect of the amendment on new viewpoint locations is reported below:
- 5.14.110 Viewpoint 211.2.003: view looking north-west from properties on the northern edge of Chipping Warden adjacent to Chipping Warden Primary School will be affected by this amendment. The proposed Chipping Warden bypass will cross the middle ground of the view, approximately 200m from the viewpoint. There will be direct views of earthworks associated with the breaking out the redundant extents of the A361, realignment of the disused airfield perimeter road, construction of the bypass and the partial removal of the row of poplar trees within the disused Chipping Warden airfield. Views will however be partially filtered by the existing roadside hedgerow in the foreground and vegetation on the northern edge of Chipping Warden. Overall, the magnitude of change will be medium. The medium magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new major adverse significant effect.

- 5.14.111 Viewpoint 211.2.004: view looking north-west from properties on Appletree Road on the western edge of Chipping Warden would be affected by this amendment. The route of the bypass will cross the middle ground of the view, approximately 100m from the viewpoint. There will be direct, open views of the removal of existing field boundary hedgerows and earthworks, disruption to existing fields associated with the construction of the bypass and the connection with Banbury Road. Overall, the magnitude of change will be high. The high magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new major adverse significant effect.

Effects arising from operation

Landscape assessment

- 5.14.112 The Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect on the LCA for year 1 of operation due to the presence of rail infrastructure, landform and bridges, along with the presence of high speed trains. However, this effect is locally reduced in the vicinity of Chipping Warden where the rail component of the scheme is contained underground within a green tunnel. The main ES reported that effects would reduce to minor adverse non-significant in year 15 and year 60 of operation.
- 5.14.113 The amendment will introduce further road and associated infrastructure and vehicular movement along the route of the Chipping Warden bypass and associated highway junction intersections. This will result in the following changes in addition to the effects of the original scheme:
- the presence of highway infrastructure, including the road and footpath surface, 2m high noise barriers along the eastern side of the highway, boundary fencing, signage and roadside ditches;
 - tree and hedgerow planting within the highway;
 - ecological mitigation ponds adjacent to the highway; and
 - the night-time influence of vehicle headlights.
- 5.14.114 The proposed Chipping Warden bypass will give rise to new and different significant effects. The influence of the amendment will extend operational effects across a wider area than that of the original scheme in terms of its effect on the setting of Chipping Warden. The diversion of traffic away from the centre of Chipping Warden will bring localised benefits to the village centre by reducing the influence of vehicles on the village setting.
- 5.14.115 The presence of the Chipping Warden bypass within the existing agricultural fields to the west of Chipping Warden will affect a relatively small proportion of the LCA in comparison with the overall scheme and will not change the level of the significance of effects reported in the main ES.

Visual assessment

- 5.14.116 Viewpoint 211.2.001: views looking north-east from properties on northern edge of Chipping Warden was assessed as minor adverse and therefore not significantly

affected by the original scheme during winter and summer of year 1 of operation but will be significantly affected by this amendment. The line of the bypass and reconfigured Banbury Road/bypass junction, including 2m high noise barriers and moving vehicles, will be visible within the middle ground of the view, approximately 200m from properties on the northern edge of Chipping Warden.

- 5.14.117 This amendment will result in a medium magnitude of change, which assessed alongside the high sensitivity of the receptor will result in a new effect and change the level of significance of the effects reported in the main ES from minor adverse (not significant) to moderate adverse (significant) in winter and summer year 1 of operation. Effects will however remain minor adverse and not significant in year 15 and 60 as reported in the main ES.
- 5.14.118 The effect of the amendment on new viewpoint locations is considered below.
- 5.14.119 Viewpoint 211.2.003: view looking north-west from properties on the northern edge of Chipping Warden adjacent to Chipping Warden Primary School would be affected by this amendment. The route of the bypass will cross the middle ground of the view, approximately 200m from the viewpoint. There will be direct views of the bypass, 2m high noise barriers and the reconfigured Banbury Road/bypass junction, including moving vehicles. Views will be partially filtered by the existing roadside hedgerow in the foreground and the vegetation on the northern edge of Chipping Warden.
- 5.14.120 The low magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new moderate adverse significant effect in the winter of year 1.
- 5.14.121 The winter view of the proposed Chipping Warden bypass from this location during year one of operation is illustrated on the photomontage shown in Map LV-01-288 (SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.14.122 In the summer of year 1, the intervening existing roadside hedgerow and the vegetation on the northern edge of Chipping Warden will contribute to screening views of the bypass. However, there may be views from upper storeys of residential properties. Overall, the magnitude of change will be low which, when assessed alongside the high sensitivity of the receptor, will result in a new moderate adverse significant effect.
- 5.14.123 By year 15 and beyond to year 60 of operation, the hedgerow and associated hedgerow trees lining the route of the bypass will have established to a point where they afford screening of the highway and integrate the highway into the surrounding field pattern. Planting will largely screen the influence of the bypass, although the potential for glimpses of vehicles will remain. Overall, the magnitude of change will be low which, when assessed alongside the high sensitivity of the receptor, will result in a new minor adverse not significant effect.
- 5.14.124 The proposed Chipping Warden bypass will give rise to new significant effects from viewpoint 211.2.003: View looking north-west from properties on the northern edge of Chipping Warden adjacent to Chipping Warden Primary School. The amendment would be viewed as a series of components in the background of the view resulting in new moderate adverse significant effects in year 1 of operation, reducing to minor adverse and not significant effects in years 15 and 60.

- 5.14.125 Viewpoint 211.2.004: view looking north-west from properties on Appletree Road on the western edge of Chipping Warden would be affected by this amendment. The Chipping Warden bypass will cross the middle ground of the view, approximately 100m from the viewpoint. There will be direct, open views of the bypass, including views of highway fencing, 2m high noise barriers and moving vehicles.
- 5.14.126 The magnitude of change will be high which, assessed alongside the high sensitivity of the receptor, will result in a new major adverse significant effect in the winter of year 1.
- 5.14.127 The winter view of the proposed Chipping Warden bypass from this location during year one of operation is illustrated on the photomontage shown in Map LV-01-287 (SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.14.128 In the summer of year 1, the mitigation planting will provide limited screening. The magnitude of change will therefore remain high, resulting in a new major adverse significant effect.
- 5.14.129 By year 15 and beyond to year 60 of operation, the hedgerow and associated hedgerow trees lining the route of the bypass will have established and will integrate the highway route into the surrounding field pattern. The visual effects by year 15 and to year 60 will be low, resulting in a new minor adverse not significant effect.
- 5.14.130 From Viewpoint 211.2.004: view looking north-west from properties on Appletree Road on the western edge of Chipping Warden, the amendment would be a new feature that is continuously highly visible, resulting in a new major adverse significant effect in year 1, reducing to minor adverse not-significant effect in year 15 and 60.

Mitigation and residual effects

- 5.14.131 Mitigation measures proposed for the amendment include two areas of woodland planting on the eastern side of the bypass and a hedgerow with hedgerow trees along the highway boundary to both sides of the bypass. The woodland planting will contribute to screening and integration into the landscape, whilst the hedgerow will contribute to low level screening of vehicles and establish continuity with adjacent field boundary hedgerows.
- 5.14.132 The proposed landscape mitigation is shown on Maps CT-06-075 and CT-06-075-L1 (SES and AP2 ES Volume 2, CFA15 Map Book). The influence of the mitigation measures on the assessment of effects has been included in the above assessment.
- 5.14.133 During construction the Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA will be affected by this amendment. The amendment will introduce additional construction activity associated with removal of existing vegetation, earthworks grading and highway construction along the route of the Chipping Warden bypass and associated junctions. The high magnitude of change, assessed alongside the medium sensitivity of the LCA, will result in different moderate adverse significant effects.
- 5.14.134 During construction, the view looking north-east from properties on the northern edge of Chipping Warden will be affected by this amendment. The amendment will introduce additional construction effects along the route of the bypass across the middle ground of the view, approximately 200m from the viewpoint. This is a different

significant effect, but it does not change the significance of the effects reported in the main ES.

- 5.14.135 During construction the view looking north-west from properties on the northern edge of Chipping Warden adjacent to Chipping Warden Primary School (Viewpoint 211.2.003) will be affected by this amendment. There will be direct views of earthworks and construction activity associated with the bypass. Overall, the magnitude of change will be medium. The medium magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new major adverse significant effect.
- 5.14.136 During construction the view looking north-west from properties on Appletree Road on the western edge of Chipping Warden (viewpoint 211.2.004) would be affected by this amendment. There will be direct, open views of the removal of existing field boundary, earthworks, and construction activity associated with the bypass. Overall, the magnitude of change will be high. The high magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new major adverse significant effect.

Cumulative effects

- 5.14.137 There are no new or different likely significant cumulative effects on landscape character and views as a result of the proposed 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.

Sound, noise and vibration

Scope, assumptions and limitations

- 5.14.138 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) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.
- 5.14.139 Local assumptions and limitations for sound, noise and vibration are set out in main ES Volume 2 CFA15 report.

Existing baseline

- 5.14.140 The baseline sound environment for those assessment locations considered in the main ES is described in Volume 2, CFA15, Section 11 and Volume 5: Appendix SV-002-015. Baseline sound levels at these locations are representative of the assessment locations affected by this amendment have been used in both the construction and operational assessments. The existing baseline sound environment is described in the main ES.
- 5.14.141 The assessment of construction and operational sound, noise and vibration for the Chipping Warden bypass involves assessment of new locations in addition to those previously assessed in the main ES. The measurements undertaken around Chipping Warden for the main ES were considered sufficient to determine baseline sound levels for each new assessment location within this area.
- 5.14.142 In Chipping Warden and nearby areas, the dominant sound source is traffic using the A361 Byfield Road. In the village, properties situated close to this road are exposed to

relatively high daytime sound levels of around 65 to 70dB. Further back from the A361 Byfield Road, sound levels reduce to around 50dB. Other sound sources in the area include occasional overflying aircraft, intermittent local road traffic and birdsong. Sound levels are lower at night as traffic reduces, typically 60dB close to the A361 Byfield Road and 40 to 45dB at locations screened from the main traffic sound sources.

- 5.14.143 Further information on the existing baseline, including baseline sound levels and baseline monitoring results, is provided for this area in the main ES Volume 5: Appendix SV-002-015. The baseline sound levels for the new assessment locations are presented in SES and AP2 ES Volume 5: Appendix SV-002-015. No further measurements have been undertaken for this amendment.

Future baseline

- 5.14.144 Without the AP2 revised scheme, existing sound levels in this area are likely to increase slowly over time. This is primarily due to road traffic growth. 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 and hence the expected growth in traffic is likely to continue to increase ambient sound levels.

Construction (2017)

- 5.14.145 With the exception of the addition of baseline sound levels for the new assessment locations, the future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 11.2).

Operation (2026)

- 5.14.146 With the exception of the addition of baseline sound levels for the new assessment locations, the future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 11.2).

Effects arising during construction

- 5.14.147 More detailed information regarding the construction sound, noise and vibration assessment for this amendment, is available in the appendix in the AP2 Volume 5: Sound, noise and vibration construction assessment (SES and AP2 ES Volume 5: Appendix SV-003-015).

Residential receptors: direct effects - individual dwellings

- 5.14.148 In the main ES, no residential buildings within Chipping Warden were forecast to experience noise levels higher than the noise insulation trigger levels as defined in the draft CoCP. This does not change as a result of this amendment.

Residential receptors: communities

- 5.14.149 In this area, the mitigation measures reduce the effects of outdoor construction noise on the acoustic character around the local residential communities such that the adverse effects identified are considered to be not significant.
- 5.14.150 There are no new or different significant construction noise effects on residential receptors as a result of the amendment, in comparison with the main ES.

Non-residential receptors

- 5.14.151 The main ES identified a significant construction noise effect on Chipping Warden Primary School (CSV15-No3). The amendment includes construction of the Chipping Warden bypass and therefore construction works are no longer required for the Byfield Road realignment. These changes lead to an increased duration of adverse effects at the school caused by different construction activities (from 17 months in the main ES to 24 months). These changes are considered to create a different significant effect.
- 5.14.152 The significant noise and vibration effect on Chipping Warden Primary School (CSV15-No3) has been identified on a reasonably foreseeable worst-case basis due to daytime construction noise associated with the construction of the Chipping Warden bypass and Chipping Warden green tunnel that are closest to the school. The reasonable worst-case forecast noise levels at the school are up to 56dB for a total period of approximately two years starting in 2018.
- 5.14.153 The amendment including construction of the Chipping Warden bypass, and therefore no longer constructing the Byfield Road realignment, will give rise to a different significant effect at the Chipping Warden Primary School (CSV15-No3). However, this amendment will not change the identification of a significant effect on this receptor as reported in the main ES.

Effects arising from operation

- 5.14.154 An assessment has been undertaken to determine whether operational noise levels from the amendment would 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 SES and AP2 ES, Volume 5: Appendix SV-004-015.
- 5.14.155 The amendment reduces the number of road traffic vehicles passing through Chipping Warden on Byfield Road and Banbury Road to an extent that a significant beneficial airborne noise effect is identified at this residential community, identified as OSV15-Co2, in SES and AP2 ES map series SV-01, SV-02 and SV-05.
- 5.14.156 There will be no change in the likely residual adverse significant effects as a result of the operation of the railway, as reported in the main ES.

Mitigation and residual effects

- 5.14.157 The avoidance and mitigation measures in this area are presented in the main ES Volume 2, CFA15.
- 5.14.158 In addition to this mitigation, taller screening as described in the draft CoCP has been assumed along the edge of the construction site boundary adjacent to the residential communities along Allens Orchard.
- 5.14.159 The amendment includes the provision for noise mitigation in the form of noise fence barriers (see maps CT-06-075 and CT-06-075-L1 in the SES and AP2 ES Volume 2, CFA15 Map Book). The mitigation proposed is in addition to the mitigation identified within the main ES, CFA15, Volume 2, Section 11.

- 5.14.160 On a reasonable worst-case basis, noise from specific construction activities associated with the amendment has been identified as resulting in a different significant residual temporary effect on Chipping Warden Primary School. However, this amendment will not change the identification of a significant effect on this receptor as reported in the main ES. HS2 Ltd will continue to engage with the Chipping Warden Primary School in order to identify all reasonably practicable measures to further reduce or avoid these significant effects.

Cumulative effects

- 5.14.161 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme. The cumulative effects of different topics on the receptors in the area of the amendment will be considered fully within the Community sections.

Traffic and transport

Scope, assumptions and limitations

- 5.14.162 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

- 5.14.163 The existing baseline for traffic and transport remains the same as set out in the main ES (Volume 2, CFA15, Section 12.3).

Future baseline

Construction

- 5.14.164 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 12.3).

Operation (2026 and 2041)

- 5.14.165 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES (Volume 2, CFA15, Section 12.3).

Effects arising during construction

- 5.14.166 The Chipping Warden bypass will result in a different likely significant effect in relation to traffic-related severance for non-motorised users at the A361 Byfield Road through Chipping Warden.
- 5.14.167 As set out in the scheme description for the amendment, Chipping Warden bypass will be constructed in two stages. Stage 1 will be completed during the first year of the construction programme. This will be in advance of the main works and will extend from the A361 Byfield Road from a point just to the north of Hogg End, to a point north of Long Barrow but south of Stone House. The connection to the A361 at the northern point will be a temporary connection until Stage 2 is completed.

- 5.14.168 Construction of Stage 2 will commence once the section of the Chipping Warden green tunnel, over which the bypass would be routed, has been constructed. Once Stage 2 is completed, the temporary connection to the A361 will be reconfigured to suit the permanent road layout.
- 5.14.169 During construction of Stage 1 of the bypass, some construction traffic will use the A361 Byfield Road through Chipping Warden. However, Stage 1 will be complete prior to the movement of excavated material. Therefore, the flows assessed for the Stage 1 scenario are lower than those reported for the original scheme in the main ES. Consequently, during construction of Stage 1, there will be a different effect, with a change in the level of significance reported, with a moderate adverse effect at the A361 Byfield Road through Chipping Warden for the distance of the bypass. This is in relation to traffic-related severance for non-motorised users (major adverse effect under the description 'A361 Byfield Road, between Welsh Road and the A422/M40' in the main ES).
- 5.14.170 During and following construction of Stage 2 of the bypass, there will be a reduction in all vehicle and HGV traffic on the A361 Byfield Road through Chipping Warden resulting in a different effect, with a change in the level of significance reported, with a major beneficial effect (major adverse effect under the description 'A361 Byfield Road, between Welsh Road and the A422/M40' in the main ES).

Effects arising from operation

- 5.14.171 The Chipping Warden bypass will give rise to a new significant effect being a major beneficial permanent effect in relation to traffic-related severance for non-motorised users at the A361 Byfield Road through Chipping Warden, due to a reduction in all vehicles and HGV traffic, compared to both the future baseline and the main ES.

Mitigation and residual effects

- 5.14.172 Avoidance and mitigation measures, together with other mitigation measures, are set out in Volume 2, CFA15, Section 12 of the main ES. No further mitigation measures are required.
- 5.14.173 During construction of Stage 1 of the bypass, there will be a moderate adverse significant residual effect at the A361 Byfield Road through Chipping Warden in relation to traffic-related severance for non-motorised users (major adverse effect under the description 'A361 Byfield Road, between Welsh Road and A422/M40' in the main ES).
- 5.14.174 Following construction of Stage 1 of the bypass, there will be a reduction in all vehicles and HGV traffic on the A361 Byfield Road through Chipping Warden, resulting in a temporary major beneficial significant residual effect (major adverse effect under the description 'A361 Byfield Road, between Welsh Road and A422/M40' in the main ES).
- 5.14.175 During operation of the AP2 revised scheme, the bypass will result in a decrease in all vehicle and HGV flows on the A361 Byfield Road through Chipping Warden compared to the future baseline (2026 and 2041), resulting in a permanent major beneficial significant residual effect, in relation to traffic-related severance for non-motorised users.

Cumulative effects

- 5.14.176 Cumulative effects are reported in Volume 2, CFA15, Section 12 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 other areas.

Water resources and flood risk assessment

Scope, assumptions and limitations

- 5.14.177 The assessment scope, key assumptions and limitations for the water resources and flood risk assessment are as set out 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.
- 5.14.178 The assessment reviews the potential impact of the proposed road realignment on groundwater flow. The amendment does not lie within an area at risk of flooding from any source, and does not cross any watercourses. As a result, flood risk is not considered any further for this assessment.

Existing baseline

- 5.14.179 The baseline water resources and flood risk information for the Greatworth to Lower Boddington area are described in the main ES (Volume 2, CFA15, Section 13).
- 5.14.180 The site is underlain by the Great Oolite Group, specifically the Whitby Mudstone Formation, which overlies the Marlstone Rock Formation and the Dyrham Formation which outcrop in the south and east. The Chipping Warden bypass will pass over the outcrops of all three formations. There are no known superficial deposits in this area.
- 5.14.181 The Whitby Mudstone is classified as unproductive strata, the Marlstone Rock Formation as a Secondary A Aquifer and the Dyrham Formation as a Secondary (undifferentiated) Aquifer. The Whitby Mudstone Formation and Marlstone Rock Formations are part of the Byfield Jurassic groundwater body (GB 40602G604200) while the Dyrham Formation is part of the Banbury Jurassic groundwater body (GB 40602G600200). Both groundwater bodies have a current overall status, under the WFD, of Good.
- 5.14.182 There are four licensed groundwater abstractions located over 1km to the north-west of the bypass (reference GWA4a, 5a, 6a and 7a as set out in Volume 5: Appendix WR-002-012 of the main ES).
- 5.14.183 There is also one reported private, unlicensed groundwater abstraction within 1km of the amendment (reference UGA226 as set out in Volume 5: Appendix WR-002-012 of the main ES).
- 5.14.184 There is a series of small springs within 1km of the area of the AP2 revised scheme, located to the south of Chipping Warden, which all flow to the south-east into the River Cherwell. Details of the springs are set out in Volume 5: Appendix WR-002-012 of the main ES. The springs all issue from the Dyrham Formation at an elevation of between 120m and 125m AOD.

Future baseline

Construction (2017)

- 5.14.185 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

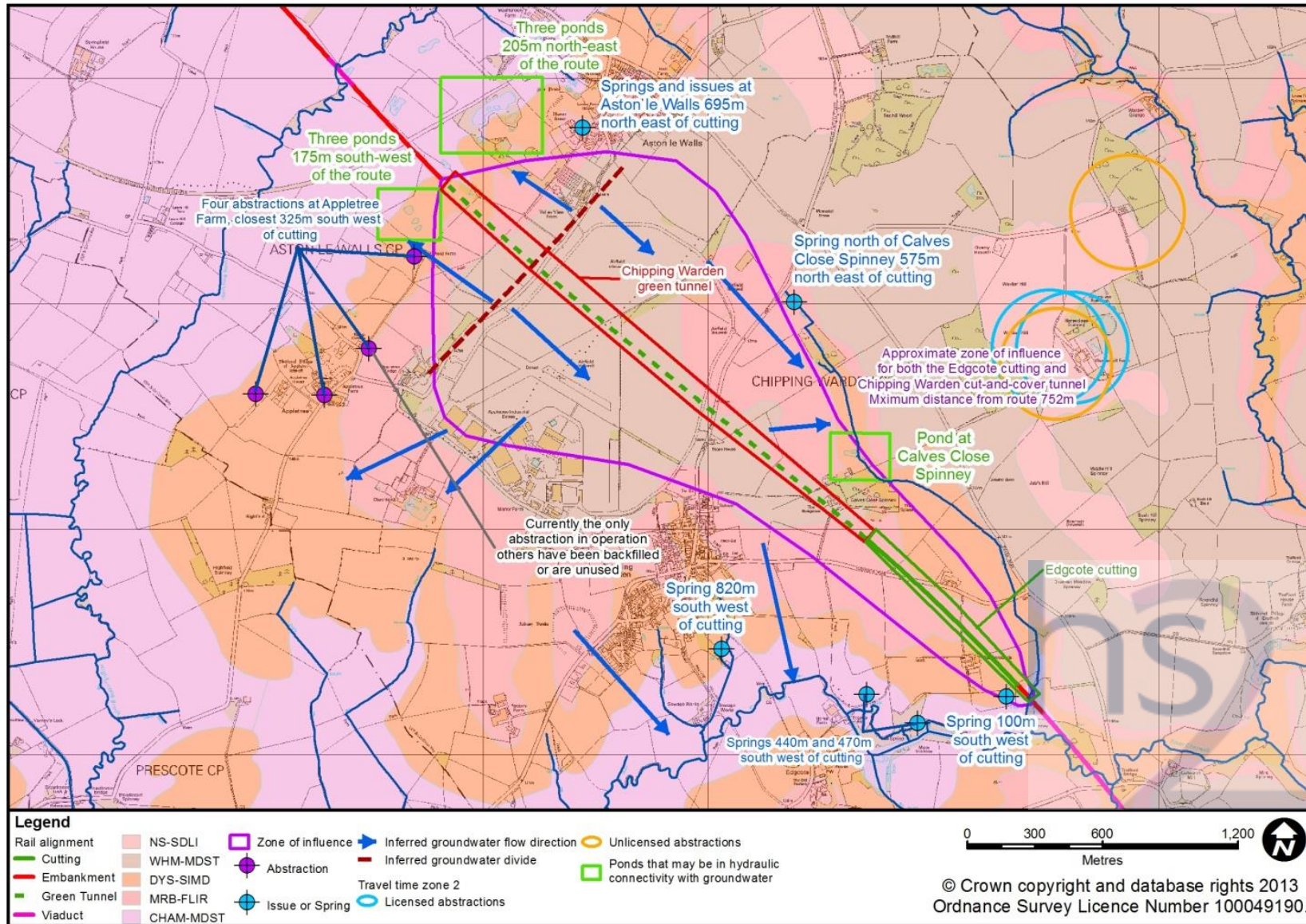
Operation (2026)

- 5.14.186 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Effects arising during construction

- 5.14.187 In the main ES Volume 5, Technical Appendices CFA15 Water Resources Assessment a conceptualisation is presented of the groundwater flow direction and groundwater divide in this area. Figure 3 shows the likely groundwater divide in the area and suggests that groundwater flow will be perpendicular to the bypass road towards the south-east. The receptors downstream of the road will therefore be the springs to the south-east of Chipping Warden which issue from the Dyrham Formation.

Figure 3: Likely groundwater divides around Chipping Warden



- 5.14.188 The bypass road and any associated drainage will largely pass over the Whitby Mudstone Formation and Marlstone Rock Formation, although the road will pass over the Dyrham Formation to the south-west of Chipping Warden. In the area where it passes over the Dyrham Formation the road has the potential to intercept groundwater that flows to the springs in the area. The road and associated drainage are not in cutting and excavation will therefore be minimal. Therefore, the road and drainage routes are assessed to have a minor impact on groundwater and spring flows, resulting in a slight effect. In the main ES the Chipping Warden green tunnel is assessed to have a moderate effect on these springs and overall there will be no change to the effect reported in the main ES.
- 5.14.189 Highways works will include the realignment of the A361 Byfield Road. Appropriate mitigation will be provided to address the risks to the receiving watercourses for both flow and water quality during the detailed design of the AP2 revised scheme. Run-off rate and water quality will be controlled in accordance with the necessary approvals.
- 5.14.190 The amendment to provide the Chipping Warden bypass will not give rise to a new or different significant effect for water resources and flood risk and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

- 5.14.191 The amendment to provide the Chipping Warden bypass will not give rise to a new or different significant effect for water resources and flood risk and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

- 5.14.192 The draft CoCP sets out the measures and standards of work that will be applied to the construction of the AP2 revised scheme (see the main ES, Volume 5, Appendix CT-003-000). These will provide effective management and control of the impacts during the construction period.
- 5.14.193 Highways works will include the realignment of the A361 Byfield Road. Appropriate mitigation will be provided to address the risks to the receiving watercourses for both flow and water quality during the detailed design of the AP2 revised scheme using the Design Manual for Roads and Bridges¹³ and CIRIA guidance¹⁴ to control the run-off rate and water quality in accordance with the necessary approvals.
- 5.14.194 Generic examples of design, operation and management measures that will mitigate impacts so that there will be no significant adverse effects on the quality and flow characteristics of surface watercourses, groundwater bodies and flood risk during operation and management of the revised scheme are described in Volume 1, Section 9 of the main ES and in the draft operation and maintenance plan for water resources and flood risk included in Volume 5: Appendix WR-001-000 of the main ES.
- 5.14.195 The amendment will result in no change in the likely residual significant effects reported in the main ES.

¹³ Department for Transport (DfT), *Design Manual for Roads and Bridges: Volume 4, Section 2*.

¹⁴ Murname, E., Heap, A. and Swain, A. (2006), *C648 Control of Water Pollution from Linear Construction Sites*, CIRIA, London, UK.

Cumulative effects

- 5.14.196 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

- 5.15.1 Overall, the amendment will result in an increase in the area of BMV agricultural land that would be permanently required, but would not change the likely residual significant effects reported in the main ES (i.e. moderate adverse effect).
- 5.15.2 The construction of the bypass will alter the combined effects experienced by ten residential properties on the A361 Byfield Road, giving rise to a different significant amenity effect although this will not change the level of significance of the effect reported in the main ES. The duration of the in-combination effect is less than that reported in the main ES; however, given that the effect will be experienced for approximately one year, the temporary effect on residential amenity is still considered to be major adverse and remains significant.
- 5.15.3 The construction of the bypass will alter the combined effects experienced by Chipping Warden Primary School, giving rise to a different significant amenity effect. These in-combination effects will be experienced for approximately one year until the main works of the bypass are completed. The duration of these combined effects is less than that reported in the main ES; however, given that the effect will be experienced for approximately one year, there remains a major adverse amenity effect which is significant. However, this will not change the level of significance of the effect (major adverse) as reported in the main ES. During Stage 2 of construction, Chipping Warden Primary School will continue to experience combined significant visual and noise effects for one year, resulting in a moderate adverse amenity effect, which is significant.
- 5.15.4 The amendment, which will introduce additional construction activity associated with removal of existing vegetation, earthworks grading and highway construction, will give rise to different significant effects. The different effects on Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA arise from the extension of construction into an area that experienced only limited or no construction influence from the original scheme, principally affecting an area to the west of Chipping Warden. The high magnitude of change, assessed alongside the medium sensitivity of the LCA, will result in different moderate adverse significant effects. The disruption and loss of landscape features will however, be relatively localised when considered in the context of the wider extent of HS2 construction activity within the LCA and will not change the overall moderate adverse level of significance of the effects on the LCA reported in the main ES.
- 5.15.5 During construction, the view looking north-east from properties on the northern edge of Chipping Warden will be affected by this amendment. The amendment will introduce additional construction effects along the route of the bypass across the middle ground of the view, approximately 200m from the viewpoint. This is a different

significant effect, but it does not change the significance of the effects reported in the main ES.

- 5.15.6 During construction the view looking north-west from properties on the northern edge of Chipping Warden adjacent to Chipping Warden Primary School (Viewpoint 211.2.003) will be affected by this amendment. There will be direct views of earthworks and construction activity associated with the bypass. Overall, the magnitude of change will be medium. The medium magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new major adverse significant effect.
- 5.15.7 During construction the view looking north-west from properties on Appletree Road on the western edge of Chipping Warden (viewpoint 211.2.004) would be affected by this amendment. There will be direct, open views of the removal of existing field boundary, earthworks, and construction activity associated with the bypass. Overall, the magnitude of change will be high. The high magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new major adverse significant effect.
- 5.15.8 The amendment including construction of the Chipping Warden bypass will give rise to a different significant effect in relation to sound, noise and vibration at the Chipping Warden Primary School (CSV15-No3). However, this amendment will not change the identification of a significant effect on this receptor as reported in the main ES.
- 5.15.9 Operation of the bypass will result in a new significant beneficial airborne noise effect due to a reduction of road traffic vehicles passing through Chipping Warden on Byfield Road and Banbury Road.
- 5.15.10 During the first year of construction (Stage 1) the traffic flows on the A361 Byfield Road will be lower than those of the original scheme in the main ES. This will reduce the major adverse effect reported in the main ES to a temporary moderate adverse significant effect in relation to traffic-related severance for non-motorised users at the A361 Byfield Road through Chipping Warden. Following Stage 1, there will be a reduction compared with the future baseline in all vehicle and HGV traffic on the A361 Byfield Road through Chipping Warden resulting in a temporary major beneficial effect. A major adverse effect was reported in the main ES.
- 5.15.11 When operational, the bypass will reduce all vehicle and HGV flows on the A361 Byfield Road through Chipping Warden compared to the future baseline (2026 and 2041), resulting in a new permanent major beneficial effect, in relation to traffic-related severance for non-motorised users.
- 5.15.12 The Chipping Warden bypass does not cause any new or different residual significant effects or change the significance of the environmental effects or proposed mitigation for any other topics as set out in the main ES (Volume 2, CFA15, Greatworth to Lower Boddington).

5.16 Addition of information on footpaths AA7 and AE17 to maps (AP2-015-010)

- 5.16.1 The main ES assessed the environmental impacts and effects of construction on Footpath AA7 and Footpath AE17, however the alignment and map labels for these footpaths are not shown on the maps and parliamentary plan 2-86. Footpath AE17 connects to the A361 Byfield Road and runs around the eastern edge of Chipping Warden (disused) Airfield near Aston le Walls. Approximately 880m of Footpath AE17 will be temporarily stopped up during construction. Footpath AE17 adjoins Footpath AA7 at the edge of disused Chipping Warden airfield and continues north through farmland to Appletree Lane and also into Aston le Walls (refer to map CT-05-076 in the main ES Volume 2, CFA15 Map Book).
- 5.16.2 Since submission of the Bill, it has been identified that these labels and the footpath alignments need to be added to the maps and Bill plans. The amendment shows a correction to the Bill plans to stop up footpaths AE17 and AA7 temporarily within Bill limits. The missing 'Footpath AA7' label has been added on to the AP2 revised scheme construction map. The missing footpath alignment for 'Footpath AA7' and labels for 'Footpath AE17' and 'Footpath AA7' have been added on to parliamentary plan number 2-86. The environmental effects of stopping up these footpaths have already been reported in the main ES.
- 5.16.3 The addition of footpath alignments and labels to maps is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to any environmental topics.

5.17 Additional land for the relocation of Chipping Warden midpoint auto-transformer station (AP2-015-011)

- 5.17.1 The Bill provides for a permanent ATS, portal building and associated access on the east side of the HS2 route at the Chipping Warden tunnel north portal (refer to maps CT-05-076, CT-05-077, CT-06-076 and CT-06-077 in the main ES Volume 2, CFA15 Map Book).
- 5.17.2 Since submission of the Bill, it has been decided that the ATS, portal building and associated access track from Appletree Lane will be permanently relocated to the west side of the HS2 route, as this will cause less disruption to farming operations. The land and railway drainage design and the pond access arrangements will also be amended to fit the new layout. The Chipping Warden tunnel north portal satellite compound will also be relocated from the east to the west of the HS2 route (refer to maps CT-05-076, CT-05-077, CT-06-076 and CT-06-077 in the SES and AP2 ES Volume 2, CFA15 Map Book).
- 5.17.3 Approximately 0.6ha of additional land is permanently required. The additional land needed to meet this requirement is not included within the Bill, hence the need for this amendment.
- 5.17.4 The relocated ATS, portal building and associated access to the west side of the HS2 route is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: agriculture, forestry and soils; air quality; community; cultural heritage; land

quality; socio-economics; and sound, noise and vibration. However there are changes where reassessment is considered to be required in respect of: ecology; landscape and visual assessment; traffic and transport; and water resources and flood risk assessment.

Ecology

Scope, assumptions and limitations

- 5.17.5 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.
- 5.17.6 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 AP2 revised scheme.

Existing baseline

- 5.17.7 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 from September 2013 to March 2015), and aerial photography.
- 5.17.8 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant new or updated baseline information provided in Volume 5: SES and AP2 EC-001-002. For those receptors described in the main ES, further details are provided in Volume 2, CFA15, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.17.9 One non-statutory site is relevant to the amendment; Aston le Walls Railway Line LWS (4.1ha) is designated for species-rich neutral grassland. A 130m section of this linear site is within land required for construction of the portal building and associated access. It is of county/metropolitan value as assessed in the main ES.

Habitats

- 5.17.10 Habitats within the land required for the portal building and associated access road are arable and semi-improved grassland, which are identified in the main ES as being of local/parish value.
- 5.17.11 Several hedgerows are within land required for the portal building and associated access, of which one qualifies as an important hedgerow (under the Hedgerows Regulations 1997¹⁵). It is located to the east of the amendment and provides connectivity between a pond and the Aston le Walls Railway Line LWS. The important

¹⁵ *The Hedgerows Regulations 1997 (1997 No. 1160)*. London, Her Majesty's Stationery Office.

hedgerow is a habitat of principal importance. These hedges are part of a resource of district/borough value, as stated in the main ES.

- 5.17.12 Ten ponds are located within 500m of the AP2 revised scheme. As stated in the main ES, these ponds are all considered to be of local/parish value. Two will be removed as part of the original scheme, none will be affected by the amendment.

Protected and/or notable species

- 5.17.13 The main ES reports that the Aston le Walls Railway Line is an important landscape feature that supports optimum habitat for commuting and foraging bats. The habitats in the land required for the amendment are immediately adjacent to the railway and are likely to be used by the bat assemblage, which is reported in the ES as being of up to county/metropolitan value.
- 5.17.14 As reported in the main ES and as part of a precautionary approach it is assumed that a breeding population of common reptiles is present to the west of Aston le Walls. The grassland, arable field margins, disused railway and water bodies present within and adjacent to, the land required for the amendment provide suitable terrestrial habitat for this species. This assumed population is reported in the main ES as being of up to county/metropolitan importance.
- 5.17.15 As reported in the main ES and as part of a precautionary approach it is assumed that a great crested newt metapopulation is present west of Aston le Walls. Several ponds are present in the vicinity of the land required for the amendment and suitable terrestrial habitat provides connectivity between these ponds and others in the wider landscape. This assumed population is assessed in the main ES as being of up to county/metropolitan importance.

Future baseline

Construction (2017)

- 5.17.16 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Operation (2026)

- 5.17.17 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 7.3).

Effects arising during construction

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

Avoidance and mitigation measures

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

Designated sites

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

Habitats

- 5.17.21 The amendment will not give rise to new or different significant effects on habitat receptors and will not change the level of significance of the effects reported in the main ES.
- 5.17.22 Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: SES and AP2 EC-002-002.

Species

- 5.17.23 The amendment will not give rise to new or different significant effects on species receptors and will not change the level of significance of the effects reported in the main ES.
- 5.17.24 Additional local/parish level effects arising from survey data collected since the main ES are listed in Volume 5: SES and AP2 EC-002-002.

Cumulative effects

- 5.17.25 There are no new or different likely cumulative effects for ecology as a result of the amendment acting in combination with another amendment in AP2, or in AP1.

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual effects

- 5.17.27 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.

Effects arising from operation

Avoidance and mitigation measures

- 5.17.28 The main ES confirms the provision of a new planted corridor over the top of the northern portal of the Chipping Warden green tunnel. It was also confirmed that vegetation will be cleared from where the Aston le Walls disused railway crosses the original scheme to encourage bats using it to use the new planting. Together these avoidance measures are designed to reduce the risk of collision or injury to bats.

Designated sites

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

Habitats

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

Protected and/or notable species

- 5.17.31 The main ES reports that the risk of bats being injured by trains is greatest where the original scheme crosses habitats that are suitable for commuting and foraging, such as Aston le Walls. However, it was reported that the planted corridor around the northern portal of the Chipping Warden green bridge and the associated vegetation clearance along the disused railway will encourage bats to fly around the portal and therefore reduce the risk of train strike. The measures reduce the effects on the bat assemblages to a level that would not result in a significant impact.
- 5.17.32 The relocation of the auto-transformer station access road from the north-eastern side of the green tunnel to the south-western will reduce the effectiveness of the new planting. The access road will sever the planted corridor at its narrowest point and create a gap over 50m wide. This fragmentation reduces the likelihood of bats using the planted corridor to cross the scheme and therefore increases the risk of bats being injured by trains. The amendment will result in an adverse effect on the conservation status of the bat assemblage at Aston le Walls that is significant at up to the country/metropolitan level. This is a new significant effect, which is not reported in the main ES and is significant at the county/metropolitan level.
- 5.17.33 The amendment will not give rise to any other new or different significant effect during operation for species receptors, and will not change the level of significance of the effects reported in the main ES.

Cumulative effects

- 5.17.34 There are no new or different likely significant cumulative effects for ecology as a result of the amendment acting in combination with another amendment in AP2 or in AP1 or any relevant committed development.

Mitigation and residual effects

Other mitigation measures

- 5.17.35 There is a requirement for additional mitigation to address the fragmentation of the planted corridor that encourages bats to fly over the top of the northern portal of the Chipping Warden green tunnel. The wide embankments of the access road to the auto transformer station will be planted with vegetation suitable to maintain the corridor as a commuting route for bats. The planting will be in accordance with the principles of mitigation (Volume 5: Appendix CT-001-001/2 of the main ES). This planting will reduce the impacts to the bat assemblage to a level that will not result in a significant adverse effect.

Summary of likely residual effects

- 5.17.36 With the implementation of the mitigation measures proposed the new ecological effects arising from the amendment are reduced to a level where they are not significant. The significant effects of the AP2 revised scheme in this area are therefore unchanged from those reported in the main ES.

Landscape and visual assessment

Scope, assumptions and limitations

- 5.17.37 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

- 5.17.38 The area of land required for the relocation of railway infrastructure and access track to the west of Chipping Warden green tunnel, is located on the boundary of the Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA and the Boddington Broad Unwooded Vale LCA as described in the main ES (Volume 2 CFA15, Section 9). The Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA to the south of the amendment is characterised by a broad undulating landform, agricultural land use and tree and hedge lined fields. The Boddington Broad Unwooded Vale LCA to the north of the amendment is characterised by a broad, flat landscape, agricultural land use and limited tree cover. The point of character transition, coincident with the location of the amendment, is delineated by a localised scarp slope landform. The main changes associated with the amendment are located within the Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA. Both LCAs are of medium tranquillity and local value and are therefore considered to be of medium sensitivity to change.
- 5.17.39 Views from the following locations are also located in close proximity to the area and are described in the main ES (Volume 2, CFA15, Section 9):
- residential properties and PRoW north-east of Appletree, looking north-east (viewpoint 215.2.001); and
 - Washbrook Farm Eventing Centre, looking south-west (viewpoint 216.7.001).
- 5.17.40 Viewpoint 215.2.001 is considered to have a high sensitivity to change based on residential use. Viewpoint 216.7.001 has a low sensitivity to change relating to its working farm status (see Volume 5: Appendix LV-001-015 of the main ES for baseline descriptions of the visual receptors).

Future baseline

Construction (2017)

- 5.17.41 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 9.3).

Operation (2026)

- 5.17.42 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 9.3).

Effects arising during construction

Landscape assessment

- 5.17.43 Both the Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA and Boddington Broad Unwooded Vale LCA were assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect during construction due to the removal of trees and hedgerows, large scale earthworks, loss of agricultural land and the introduction of construction plant into the rural landscape.
- 5.17.44 The amendment will result in increased activity and landform change to the west of the tunnel portal. The amendment will also include the relocation of Chipping Warden tunnel north portal satellite compound. The compound will be located approximately 100m west of the original scheme location, within 250m of Field Farm. The construction activity associated with tunnel portal buildings to the west of the tunnel portal and the relocation of an access road to the west of the HS2 route will also change the localised extent of specific construction activities. There are minor changes in the wider context of the construction works for the scheme and the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Visual assessment

- 5.17.45 Viewpoint 215.2.001 looking north-east from residential properties and PRow north-east of Appletree, was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect during construction due to visibility of the viaduct over Highfurlong Brook floodplain and the general extent of earthworks.
- 5.17.46 The amendment will include the relocation of Chipping Warden tunnel north portal satellite compound, approximately 100m west of its original scheme location to within 250m of Field Farm. The close proximity of Chipping Warden north portal satellite compound to the viewpoint will increase visibility of the compound but will not change the general associations of construction activity or components that will be visible within the extent of view. The amendment will not give rise to a new or different significant effect and will not change the level of significance of effects reported in the main ES.
- 5.17.47 Viewpoint 216.7.001 looking south-west from Washbrook Farm Eventing Centre, was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect during construction due to visibility of the viaduct over Highfurlong Brook floodplain and the general extent of earthworks.
- 5.17.48 The amendment will modify the extent and form of landscape earthworks in the vicinity of Chipping Warden tunnel north portal. This will be most apparent from areas down slope of the scarp landform including views experienced from viewpoint

216.7.001. However, as the overall extent of earthworks will not notably change from that of the original scheme the amendment will not give rise to a new or different significant effect and will not change the level of significance of effects reported in the main ES.

Effects arising from operation

Landscape assessment

- 5.17.49 Both the Middleton Cheney and Woodford Halse Undulating Hills and Valleys LCA and Boddington Broad Unwooded Vale LCA were assessed as being affected by the original scheme and will be further affected by this amendment. The main ES reported a moderate adverse significant effect during year 1 of operation due to the presence of rail infrastructure, landform and bridges, along with the movement and sound of trains, reducing to non-significant by year 15 and year 60 of operation.
- 5.17.50 The amendment will result in a change to the landform to the west of the tunnel portal and result in the relocation of Chipping Warden midpoint ATS from a position to the north of the rail line to a position south of the rail line. The rearrangement of scheme components will not however 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

- 5.17.51 Viewpoint 215.2.001 looking north-east from residential properties and PRoW north-east of Appletree was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect during winter and summer of year 1 of operation due to elevated views along the route of HS2 towards Lower Boddington, visibility of trains and views of Highfurlong Brook viaduct reducing to a minor adverse non-significant effect for year 15 and for year 60.
- 5.17.52 The amendment will result in a localised reconfiguration of the layout of landscape earthworks and landscape mitigation planting to the west of the tunnel portal and the movement of the Chipping Warden midpoint ATS to a location approximately 70m closer to the viewpoint. However, these are relatively minor changes and will not give rise to a new or different significant effect and will not change the level of significance of effects reported in the main ES.
- 5.17.53 Viewpoint 216.7.001 looking south-west from Washbrook Farm Eventing Centre was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect during winter and summer of year 1 of operation due to views of Highfurlong Brook viaduct and the general extents of Chipping Warden green tunnel portal and thereafter maintaining a moderate adverse significant effect for year 15 and for year 60.
- 5.17.54 The amendment will result in a localised reconfiguration of the layout of landscape earthworks and planting to the west of the tunnel portal and the movement of the Chipping Warden midpoint ATS approximately 70m further away from the viewpoint. However there are relatively minor changes and will not give rise to a new or different significant effect and will not change the level of significance of effects reported in the main ES.

Mitigation and residual effects

- 5.17.55 There are no new or different residual construction or operational effects for landscape and visual as a result of the amendment, in comparison with the main ES, the SES and the AP1 ES.

Cumulative effects

- 5.17.56 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 in AP1, or as a result of any relevant committed development interacting with the AP2 revised scheme.

Traffic and transport

Scope, assumptions and limitations

- 5.17.57 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

- 5.17.58 The environmental baseline for traffic and transport is set out in Volume 2, CFA15 (Section 12) of the main ES. There is no change to the existing baseline as reported in the main ES.

Future baseline

Construction

- 5.17.59 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 12.3).

Operation (2026 and 2041)

- 5.17.60 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES, Volume 2, CFA15, Section 12.3).

Effects arising during construction

- 5.17.61 The AP2 revised scheme has resulted in a reduction in all vehicle and HGV flows on Appletree Lane, between the route and Welsh Road, compared to the original scheme. This results in the removal of the significant effect in relation to traffic-related severance for non-motorised users at Appletree Lane (minor adverse effect reported in the main ES).
- 5.17.62 The AP2 revised scheme has also resulted in a reduction in all vehicle and HGV flows on Welsh Road, between Appletree Lane and the A361 Byfield Road, and the A361 Byfield Road between Welsh Road and Chipping Warden green tunnel main compound. However, the amended flows due to this AP2 design change do not give rise to any new or new different significant effects compared to the main ES.

Effects arising from operation

- 5.17.63 There are no traffic and transport changes in operation as a result of the amendment. 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 and the SES.

Mitigation and residual effects

- 5.17.64 No mitigation measures in addition to those identified in the main ES are required.
- 5.17.65 The AP2 revised scheme results in the removal of the residual significant effect in relation to traffic-related severance for non-motorised users, during construction, at Appletree Lane (minor adverse effect reported in the main ES).

Cumulative effects

- 5.17.66 Cumulative effects are reported in Volume 2, CFA15 (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

- 5.17.67 The assessment scope, key assumptions and limitations for the water resources and flood risk assessment 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.
- 5.17.68 This assessment reviews the potential impact of land drainage changes on surface water receptors and underlying aquifers. The amendment does not lie within an area at risk of flooding from any source and does not cross any watercourses. As a result, flood risk is not considered any further for this assessment.

Existing baseline

- 5.17.69 The baseline water resources and flood risk information for the Greatworth to Lower Boddington area is described in the main ES (Volume 2, CFA15, Section 13).
- 5.17.70 The current surface water baseline is shown on maps WR-01-022 and WR-01-024 (Volume 5, Water Resources and Flood Risk Assessment Map Book of the main ES) and all surface water features within the study area are assessed within Volume 5: Appendix WR-002-012 of the main ES.
- 5.17.71 The amendment passes within 1km of the Highfurlong Brook. This watercourse is classified as a main river. The Highfurlong Brook water body (WFD water body reference GB106039042660) has a current status, under the WFD, of Good and the objective for 2027 is also Good status. This water body is therefore assessed to be a high value receptor.
- 5.17.72 The site is underlain by the Great Oolite Group, specifically the Marlstone Rock Formation (designated as a Secondary A aquifer), Dyrham Formation (designated as a Secondary undifferentiated aquifer) and Charmouth Mudstone Formation (designated as unproductive strata). The Great Oolite group forms part of the Banbury Jurassic

groundwater body (WFD water body reference GB 40602G600200). The current overall status¹⁶, under the WFD, is Good status and the objective for 2027 is Good status.

- 5.17.73 Bedrock in the valley of the Highfurlong Brook is overlain by superficial deposits comprising Alluvium. These superficial deposits are classified as a Secondary A aquifer and are likely to contain groundwater.
- 5.17.74 According to Environment Agency records, there are two licensed groundwater abstractions within 250m of the amendment (reference GWA4a, GWA5a as set out in Volume 5, Water Resources and Flood Risk Assessment Map Book of the main ES).
- 5.17.75 There is one private licensed abstraction along the hillside at Appletree, which consists of four abstraction boreholes between 300m to 1.2km from the HS2 route (Map WR-02-015, C7 in Volume 5, Water Resources and Flood Risk Assessment Map Book of the main ES). These four boreholes are assumed to abstract from the Dyrham Formation. Of these four boreholes, only one is operational and within 1km of the amendment, located approximately 750m from the HS2 route.
- 5.17.76 There are two springs within 1km of the area of the AP2 revised scheme, located 45m north and 340m north of the HS2 route at Aston le Walls. The springs are located at approximately 130m AOD. There are also ponds at Aston le Walls (most notably at Manor Farm) which are water dependant habitats supporting high species diversity for plants, and which may support great crested newt.

Future baseline

Construction (2017)

- 5.17.77 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Operation (2026)

- 5.17.78 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA15, Section 13.3).

Effects arising during construction

- 5.17.79 Groundwater flow in this part of the Dyrham Formation is likely to be towards the south-east and parallel to the HS2 route and the abstraction is located up-gradient of the amendment. Therefore, there is not likely to be a change in impact from construction of the amendment on the groundwater abstractions compared with the original scheme.
- 5.17.80 In the amendment, the ATS compound will be moved to a location which is further away from the springs close to this area. Therefore, it is assessed that there will be no change to the significance of the impact and effect of construction on the springs.
- 5.17.81 The proposal to relocate railway infrastructure and access track to the west of Chipping Warden green tunnel, will not give rise to a new or different significant effect

¹⁶ Environment Agency (2009), *River Basin Management Plan, Thames River Basin District*.

for water resources and flood risk and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

- 5.17.82 Generic examples of design and management measures that will mitigate impacts so that there will be no significant adverse effects on the quality and flow characteristics of surface watercourses and groundwater bodies during operation and management of the AP2 revised scheme are described in Volume 1, Section 9 of the main ES and in the draft operation and maintenance plan for water resources and flood risk included in Volume 5: Appendix WR-001-000 of 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 or the AP1 ES.

Mitigation and residual effects

- 5.17.83 The assessment assumes implementation of the draft CoCP. The general approach to mitigation is set out in Volume 1, Section 9 of the main ES.
- 5.17.84 Generic examples of management measures, during operation and management of the AP2 revised scheme, are described in Volume 1, Section 9 of the main ES, and in the draft operation and maintenance plan for water resources and flood risk included in Volume 5: Appendix WR-001-000 of the main ES. The management measures will mitigate impacts in order to prevent any significant adverse effects on the quality and flow characteristics of surface watercourses and groundwater bodies.
- 5.17.85 The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.17.86 There are no new or different significant cumulative effects for water resources and flood risk 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.

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

- 5.18.1 The amendment has resulted in a reduction in all vehicle and HGV flows on Appletree Lane, between the route and Welsh Road during construction, compared to the original scheme. This results in the removal of the residual significant effect in relation to traffic-related severance for non-motorised users at Appletree Lane, during construction (minor adverse effect reported in the main ES).

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

- 6.1.1 All of the effects of the changes proposed in this CFA have been described and there are no further combined effects to report.

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