

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and Additional Provision 2 Environmental Statement

Volume 2 | Community forum area report

CFA14 | Newton Purcell to Brackley

July 2015

SES and AP2 ES 3.2.1.14



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

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

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

- 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 and additional cultural heritage and ecology data relating to ancient woodlands 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;
 - effects arising during construction;

- effects arising from operation; and
- mitigation and residual effects, and
- a summary of any new or different likely residual significant effects as a result of each proposed amendment.

1 Introduction

- 1.1.1 The Bill for High Speed Rail between London and the West Midlands was submitted to Parliament together with the main ES in November 2013. The AP1 ES, which was submitted in September 2014, contained generally minor amendments to the design of the original scheme (i.e. the scheme submitted in November 2013). The Bill and associated Additional Provisions to the Bill, if enacted by Parliament, will provide the powers to construct, operate and maintain Phase One of HS2.
- 1.1.2 Since the submission of the main ES and AP1 ES, a number of changes or updates to environmental information and scheme design or assumptions have occurred, which may lead to new or different significant effects. These effects, depending on the type of change, are reported in the SES (Part 1) or AP2 ES (Part 2) of this document.
- 1.1.3 The SES contains updated environmental baseline information and scheme information relating to changes that have occurred within the current limits and powers of the Bill, and therefore do not require an Additional Provision to the Bill. This includes:
- additional environmental baseline information;
 - changes to the design or construction assumptions which do not require changes to the Bill; and
 - corrections to the main ES.
- 1.1.4 The changes are described in Part 1 under a series of sub-headings and assessed on a topic by topic basis using the same approach adopted in the main ES.
- 1.1.5 The purpose of the SES is to provide an assessment of any new or different likely significant environmental effects arising from the changes described.
- 1.1.6 The AP2 ES reports the likely significant effects of amendments to the design of the scheme, which require the use of land outside the original limits of the Bill, additional access rights, or other extensions to the powers conferred by the Bill, making it necessary to submit an Additional Provision to the Bill.
- 1.1.7 The amendments assessed within the AP2 ES include:
- 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; and
 - other changes to HS2 infrastructure or operations.
- 1.1.8 The AP2 ES assesses each amendment separately for all relevant topics. The purpose of the AP2 ES is to provide an assessment of any new or different likely significant environmental effects arising from the amendments.

- 1.1.9 The standard measures that will be used to mitigate likely significant adverse environmental effects during construction and operation of the scheme are described in the main ES, Volume 1, Section 9 and the draft Code of Construction Practice (CoCP) submitted in support of the Bill. Implementation of these measures has been assumed in this SES and AP2 ES.
- 1.1.10 It should be noted that, since submission of the Bill, the scheme design has been revised by 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 A further review of the ancient woodland inventory published by Natural England has been carried out to identify woodlands that have been added to the inventory since production of the main ES (September 2013). In addition, a further review of historic mapping and other available historic data sources has been carried out to verify the status of a number of sites in the vicinity of the HS2 route that the Woodland Trust believes to be ancient woodland, but which are not currently listed on the ancient woodland inventory.
- 2.1.2 A summary of the supplementary cultural heritage information from these sources that is relevant to the SES assessment are provided in Section 3.1 under 'Cultural heritage'.

Ecology

- 2.1.3 Surveys for bats, great crested newt, hazel dormouse and otter have been undertaken in this area since September 2013. In addition, a review of the ancient woodland inventory has been undertaken to identify woodland that have been added to the inventory since production of the main ES. Habitat surveys have been undertaken at selected woodland locations to assist in determining if these areas represent ancient woodland.
- 2.1.4 Details of all survey work and desk-study information gathered since September 2013 that is relevant to this area are provided in SES and AP2 ES Volume 5, Appendix EC-001-002 and SES and AP2 ES Volume 5 map series EC-04, EC-05, EC-06, EC-11 and EC-12.
- 2.1.5 A summary of the supplementary ecological information that is relevant to the SES assessment are included within Section 3.2 under 'Ecology'. This includes details of all changes relating to the status of ancient woodland.
- 2.1.6 SES and AP2 ES Volume 5, Appendix EC-002-002 provides a summary of additional baseline survey data collected since September 2013 that have 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 that will occur as a consequence of SES changes but which are not significant.

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

- 2.2.1 There are no changes to the design or construction assumptions in the Newton Purcell to Brackley area (CFA14) not requiring a change to the Bill that result in a new or different significant effect.

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

- 2.2.2 As a result of design changes in other CFAs, in particular the removal of the sustainable placement area at Hunt's Green in CFA10 and the reduction of landscape earthworks at Lower Boddington in CFA15, there are changes to the movement of excavated material that alter heavy goods vehicle (HGV) traffic flows on roads in CFA14 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 1 provides a list of those instances where there has been a need to correct the Volume 2 CFA report for Newton Purcell to Brackley 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 1: Summary of corrections to the main ES in CFA14

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
<p>Landscape and visual</p> <p>Viewpoint 187.2.001 'View looking east from Radstone Road adjacent to the residential property north of Hall Farm', Table 3: Visual Assessment Matrix, Part 3 Assessment matrices, Volume 5 Technical Appendices, CFA14 Landscape report (LV-001-014) Landscape and visual assessment</p>	<p>The construction effects on viewpoint 187.2.001 were omitted from the main ES.</p>	<p>Construction effects (winter and night-time) - No further assessment required.</p>	<p>Existing vegetation along Radstone Road and field boundary vegetation will generally be removed to enable construction. Temporary material stockpiles will assist in filtering and screening views of construction activity. The residential property at Hall Farm will experience views of construction activities in the foreground and middle ground including those of Radstone Road realignment over the route (Radstone Road overbridge and Footpath AX7 realignment approximately 400m away) and a PRoW overbridge (Footpath AX15 overbridge approximately 250m away), in combination with more general construction activity and earthworks. Given the substantial changes in close proximity to the viewpoint and its associated receptors, the magnitude of change is likely to be high. The high magnitude of change assessed alongside the high sensitivity of the receptor will result in a major adverse effect, which is significant.</p> <p>At night, continuous lighting is proposed at the Radstone Road overbridge satellite compound. Given the close proximity of some of the viewpoint receptors to the compound, the magnitude of change to this receptor at night is likely to be high, resulting in a major adverse effect, which is significant.</p>	<p>Yes.</p> <p>There will be major adverse residual effects on viewpoint 187.2.001 during construction (see map LV-03-055 in SES and AP2 ES, Volume 2, CFA14 Map Book). These temporary effects are significant and are in addition to those reported in the main ES.</p> <p>To further reduce the significant effect described above, consideration of where planting can be established early in the construction programme will be given during the detailed design stage. This may include consideration of early planting in ecological mitigation sites that would have the additional benefit of providing some visual screening. However, not all landscape and visual effects can be practicably mitigated due to the visibility of construction activity and the sensitivity of surrounding receptors.</p>
<p>Sound, noise and vibration</p> <p>CFA14, Volume 2, Section 11, after clause 11.4.15</p>	<p>Sundale House, Northampton Road was omitted from the assessment.</p> <p>This property should have been identified as being predicted to qualify for noise insulation.</p>	<p>Text omitted from main ES.</p>	<p>The assessment has identified an additional residential building where the daytime forecast noise level does not exceed the threshold set in the Regulations but the forecast night-time noise level would exceed the World Health Organisation's Interim Target of 55dB, or the maximum noise level (dependent on the number of train passes) as a train passes exceeds the criterion. It is therefore estimated that this building will be offered noise insulation.</p> <p>This building is shown on SES and AP2 ES Map series SV-05 (Volume 5, Sound, Noise and Vibration Map Book):</p>	<p>Yes.</p> <p>One additional residential building is identified as being subject to a significant adverse effect, and is consequently estimated to be likely to qualify for noise insulation (see map SV-05-033 in SES and AP2 ES, Volume 2, CFA14 Map Book).</p> <p>The mitigation measures, including noise insulation will reduce noise inside all dwellings such that it will not reach a level where it would</p>

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
			- Sundale House, Northampton Road (See SES and AP2 Map series SV-02, SV-04 and SV-05 for assessment location and Volume 5 SV-004-014 for predicted operational sound, noise and vibration levels.)	significantly affect residents.
Traffic and transport Paragraph 12.4.15, Volume 2, CFA14 of the main ES	A significant effect was not identified for Turweston Farm Track/Oatleys Road in the main ES. A minor adverse effect on this road in relation to traffic-related severance ¹ for non-motorised users should have been reported in the main ES.	Text omitted from main ES.	Turweston Farm Track/Oatleys Road (minor adverse effect) due to an increase in vehicle flow.	Yes. A minor adverse effect, during construction, on traffic-related severance for non-motorised users has been identified for Turweston Farm Track/Oatleys Road. This is a new significant effect (see map TR-03-058 in SES and AP2 ES, Volume 5, Traffic and Transport Map Book. The implementation of the draft CoCP in combination with the framework travel plan and the construction workforce travel plan will, to some degree, mitigate the effect. However, a significant residual effect will remain during construction.

¹ In the context of traffic and transport, severance is used to relate to a change in ease of non-motorised users due to, for example, a change in travel distance or travel time or a change in traffic levels on a route that makes it harder for non-motorised users to cross. A reference to severance does not imply a route is closed to access.

2.4 Topics included in the SES assessment

- 2.4.1 The changes described above in Sections 2.1 and 2.3 result in new or different significant effects in respect of cultural heritage, ecology, and traffic and transport only.

3 Assessment of changes

3.1 Cultural heritage

Introduction

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

Scope, assumptions and limitations

- 3.1.2 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

- 3.1.3 The following changes are relevant to the assessment:
- the designation of Mossycorner Spinney as ancient woodland; and
 - the identification of Fox Covert (Whitfield) as likely to be ancient woodland.

Environmental baseline

Existing baseline

- 3.1.4 The cultural heritage baseline for the assessment takes into account information collected for the main ES. This included walk-over survey, geophysical survey, remote-sensing data, and data from national and local registers. A full list of heritage assets is provided in Volume 2, Section 6.3 of the main ES. The baseline has been updated following a review of the ancient woodland inventory published by Natural England to identify woodlands that have been added to the inventory since production of the main ES. 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 the Woodland Trust believes to be ancient woodland, but which are not currently listed on the ancient woodland inventory.
- 3.1.5 A summary of the baseline information relevant to the assessment of new or different effects is provided below. 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, CH-02 and CH-03.

Designated assets

- 3.1.6 Mossycorner Spinney (asset reference² NPB102), which is a fragment of a much larger, now lost, ancient woodland, has been included on the Natural England ancient

² Asset references refer to the gazetteer of heritage assets in Volume 5 of the main ES.

woodland inventory since production of the main ES. Ancient woodland has a high heritage value. Further information is provided in Table 2.

- 3.1.7 Part of Fox Covert (Whitfield) (asset reference NPB103) has been identified as likely to be ancient woodland since production of the main ES. Ancient woodland has a high heritage value. Further information is provided in Table 2.

Future baseline

Construction (2017)

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

Operation (2026)

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

Effects arising during construction

Avoidance and mitigation measures

- 3.1.10 Measures to avoid or mitigate significant effects on cultural heritage are provided in the draft CoCP (main ES, Volume 5: Appendix CT-003-000).

Assessment of impacts and effects

Temporary effects

- 3.1.11 The identification of additional ancient woodland will not give rise to a new or different temporary significant effect and will not change the level of significance of the effects reported in the main ES.

Permanent effects

- 3.1.12 Mossycorner Spinney (asset reference NPB102) lies partially within the land required for the original scheme. This would result in approximately 2ha of the woodland being removed. The land required for the SES scheme is identical to that required for the original scheme. However, the woodland has been identified as ancient since production of the main ES. Approximately 0.3ha of ancient woodland, and approximately 1.7ha of non-ancient woodland, are located within the land required for the scheme. The removal of the ancient woodland will result in a high adverse impact and major adverse effect, which is a new significant effect. Further information is provided in Table 3.
- 3.1.13 Approximately 0.6ha of Fox Covert (Whitfield) (asset reference NPB102) has been identified as likely to be ancient woodland. The area of likely ancient woodland lies outside the land required for the scheme. Therefore, the identification of the likely ancient woodland 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.

Other mitigation measures

- 3.1.14 Ancient woodland is irreplaceable. No further mitigation for the loss of ancient woodland is practicable.

Cumulative effects

- 3.1.15 There are no new or different likely significant cumulative effects for cultural heritage as a result of the SES changes acting in combination with AP1.

Summary of likely residual significant effects

- 3.1.16 Approximately 2ha of Mossycorner Spinney (asset reference NPB102) is required permanently for the scheme. The inclusion of 0.3ha of this area of Mossycorner Spinney on the ancient woodland inventory since production of the main ES will result in a high adverse impact and major adverse effect on this asset. This is a new residual significant effect.

Effects arising from operation

- 3.1.17 The identification of Mossycorner Spinney and Fox Covert (Whitfield) as ancient woodland will not give rise to a new or different significant effect on cultural heritage during operation and will not change the level of significance of the effects reported in the main ES.

Volume 5 amendments

- 3.1.18 Table 2 sets out the additions to the main ES, Volume 5, Appendix CH-002-014. Table 3 sets out the additions to the main ES, Volume 5, Appendix CH-003-014.

Table 2: Additions to Volume 5, Appendix CH-002-014, Cultural Heritage - gazetteer of heritage assets

Unique ID	Map reference	Asset type	Name	Description	Period	Designation	Grade	Significance/ value	NHL reference	HER reference
NPB102	CH-01-045	Ancient Woodland	Mossycorner Spinney	Ancient and semi-ancient woodland. 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 ancient woodland.	Post medieval	Ancient Woodland	N/A	High	N/A	N/A
NPB103	CH-01-047a	Ancient Woodland	Fox Covert (Whitfield)	Ancient and semi-ancient woodland. 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 ancient woodland.	Post medieval	N/A Likely to be added to the ancient woodland inventory	N/A	High	N/A	N/A

Table 3: Additions to Volume 5, Appendix CH-003-014, Cultural Heritage - impact assessment tables

Unique ID	Name	Designation(s)	Value	Construction impact			Operation impact			New or different environmental effect from that reported in the main ES or the Additional Provision (AP1) ES
				Nature of impact including mitigation	Scale of impact	Effect	Nature of impact including mitigation	Scale of impact	Effect	
NPB102	Mossycorner Spinney	Ancient woodland	High	The woodland lies partially within the land required for the original scheme. This will result in approximately 0.32ha (50%) of the woodland being removed, 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 submission of the main ES.
NPB103	Fox Covert (Whitfield)	N/A	High	The ancient woodland portion of Fox Covert (Whitfield) lies outside of the land required, temporarily or permanently, for construction of the scheme and will not be affected.	No change	Neutral	No impact on value.	No change	Neutral	None.

3.2 Ecology

Introduction

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

Scope, assumptions and limitations

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

Changes of relevance to this assessment

- 3.2.4 The following changes are relevant to the assessment:
- new baseline surveys relating to great crested newt, bats, hazel dormouse and badger; and
 - additional ecological baseline data relating to ancient woodland.

Environmental baseline

Existing baseline

- 3.2.5 The ecological baseline for the assessment takes into account baseline information collected for 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 Appendix EC-001-002, EC-002-002, EC-003-002 and EC-004-002 of the main ES.
- 3.2.6 The assessment also takes into account additional desk-study and survey information collected since September 2013. A range of further bat surveys were conducted in the vicinity of Radstone during 2014 to establish how the Natterer's bat population associated with the Church of St Lawrence utilise the local area. The 2014 survey work included additional bat trapping, radio tracking and static detector surveys. Full details of the methodologies used and results obtained are provided in SES and AP2 ES, Volume 5, Appendix EC-001-002 and EC-004-002(2). Other supplementary information relevant to the assessment in this CFA includes: additional survey work for great crested newt, bats, hazel dormouse and badger, and additional information

relating to woodland that has been added, or is likely to be added, to the Natural England ancient woodland inventory.

- 3.2.7 A summary of the baseline information relevant to the assessment is provided below. Further details of all baseline information obtained since September 2013 are provided in SES and AP2 ES Volume 5, Appendix EC-001-002 and SES and AP2 ES Volume 5 map series EC-04, EC-05, EC-06, EC-11 and EC-12. For those receptors described in the main ES, further details are provided in Volume 2, CFA14, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 3.2.8 Since submission of the main ES, approximately 0.6ha of Mossycorner Spinney has been identified as semi-natural ancient woodland, and has been added to Natural England's ancient woodland inventory. Part of this area is within the land required for the SES scheme.
- 3.2.9 Approximately 0.6ha of Fox Covert (Whitfield) has been identified as likely to be ancient woodland. For the purposes of this assessment it is assumed that it will be added to the ancient woodland inventory. The ancient woodland element at Fox Covert (Whitfield) is outside the land required for the scheme.

Habitats

- 3.2.10 The main ES reported that woodland at Mossycorner Spinney was of local/parish value and was unlikely to qualify as a habitat of principal importance. Further habitat survey undertaken since publication of the main ES has identified that the area is likely to qualify as habitat of principal importance and local Biodiversity Action Plan (BAP) habitat. In addition the area has been added to the ancient woodland inventory. Woodland habitat at Mossycorner Spinney is now considered to be of district/borough value, an increase from that reported in the main ES. Some 0.3ha of ancient woodland, and approximately 1.7ha of the non-ancient woodland are located within the land required for the scheme.

Protected and/or notable species

- 3.2.11 Since the submission of the main ES, radio tracking surveys of the Natterer's bat population roosting in the Church of St Lawrence and an adjacent residential property in Radstone have recorded a higher proportion of bats commuting south towards the route in comparison with the 2013 surveys. While this change is relevant to the assessment of the effects of the scheme, the regional value of this assemblage remains unchanged from that reported in the main ES. Details of the methodologies used for the additional bat surveys and the results of those surveys are provided in SES and AP2 ES, Volume 5, Appendix EC-001-002.
- 3.2.12 Since submission of the main ES, five additional bat roosts have been identified. All were recorded in trees: two Daubenton's bat roosts, one soprano pipistrelle roost, one *Myotis* species roost and one noctule bat roost. These are associated with the bat assemblage using the Old LNER Railway District Wildlife Site (DWS)³ for commuting

³ The Old London and North Eastern railway (LNER) is the name provided to a series of former connected railway lines and includes the Former Greater Central Main Line, which is discussed in the Waddesdon and Quainton area (CFA12) and the Calvert, Steeple Claydon, Twyford and Chetwode area (CFA13).

and foraging between Finmere Quarry and Mixbury. The main ES reported that this assemblage is of county/metropolitan value. The additional roosts do not change the valuation in the main ES.

- 3.2.13 A previously unrecorded, medium size class great crested newt population was identified in a pond on the eastern edge of Mossycorner Spinney. This population was not identified as a receptor or assessed in the main ES. It is of county/metropolitan value.
- 3.2.14 Evidence indicating the likely presence of hazel dormouse was recorded between Mixbury and Radstone. One hibernation nest and four summer nests indicative of this species were recorded. Using the precautionary principle, a population of hazel dormice is assumed to be present in areas of suitable habitat between Mixbury and Radstone. This assumed population was not identified as a receptor in the main ES. It is of up to county/metropolitan value.

Future baseline

Construction (2017)

- 3.2.15 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 3.2.16 None of the identified developments affect the assessment of the SES scheme's likely construction impacts on ecology.

Operation (2026)

- 3.2.17 Volume 5: Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 3.2.18 None of the identified developments affect the assessment of the SES scheme's likely operational impacts on ecology.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Designated sites

- 3.2.20 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.

Habitats

- 3.2.21 The main ES reported that the loss of woodland at Mossycorner Spinney was not significant, and only of relevance at the local/parish level. There is no change in extent

of land required. Based on the updated baseline information, the scheme will require approximately 0.3ha of ancient woodland at Mossycorner Spinney and approximately 1.7ha of the non-ancient woodland. This will result in an adverse effect on the conservation status of woodland at Mossycorner Spinney that is significant at the district/borough level. This is a new significant effect that was not reported in the main ES.

- 3.2.22 It is unlikely that the SES changes will result in any other new or different significant effects on habitat receptors of relevance at more than the local/parish level. Additional local/parish level effects (i.e. in addition to those identified in the main ES) arising from SES changes are listed in Volume 5, Appendix EC-003-002.

Protected and/or notable species

- 3.2.23 Surveys in 2014 recorded greater numbers of Natterer's bats from the population present at Radstone flying along Helmdon Disused Railway Site of Special Scientific Interest (SSSI) than was reported in the main ES. The southern part of the disused railway will be crossed by the route and it is, therefore, likely that a greater proportion of this population will be affected by habitat fragmentation than was previously reported. The main ES reported that there would be no adverse effects on the conservation status of the population from habitat fragmentation. The new data indicate that there will be an adverse effect on the conservation status that is significant at the regional level. This is a new significant effect that was not reported in the main ES.
- 3.2.24 The SES scheme will not directly affect the pond associated with the great crested newt population at Mossycorner Spinney. However, construction of the SES scheme will result in the loss of terrestrial habitat associated with this population. There will be a loss of 1.3ha of suitable great crested newt habitat within 250m of the pond. There will be a new permanent adverse effect on the conservation status of this population that will be significant at county/metropolitan level.
- 3.2.25 A small area of habitat suitable for hazel dormouse is located within the land required for the construction of the SES scheme. However, the majority is situated outside the land required. Construction will result in the fragmentation of habitat suitable for hazel dormouse. There will be a new permanent adverse effect on the conservation status of the population of hazel dormouse that will be significant at up to county/metropolitan level.
- 3.2.26 It is unlikely that the SES changes 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-003-002.

Cumulative effects

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

Other mitigation measures

- 3.2.28 Appropriate mitigation and compensation measures for the new significant effects on Mossycorner Spinney are being brought forward through an AP2 amendment (AP2-014-003). See Part 2, Section 5.4, for a full description of the measures proposed and the reporting of the revised effects taking the proposed measures into account.
- 3.2.29 There is a requirement for additional mitigation to address the effects of the scheme on the Natterer's bat population. Appropriate measures are being brought forward through an AP2 amendment (AP2-014-006). See Part 2, Section 5.10, for a full description of the measures proposed and the reporting of the revised effects taking the proposed measures into account.
- 3.2.30 Appropriate mitigation and compensation measures for the new significant effects on great crested new are being brought forward through an AP2 amendment (AP2-014-003). See Part 2, Section 5.4, for a full description of the measures proposed and the reporting of the revised effects taking the proposed measures into account.
- 3.2.31 Appropriate measures to address the effects on hazel dormice during construction will be provided in accordance with the Ecological Principles of Mitigation provided in main ES, Volume 5, Appendix CT-001-000/2. The planting of the Turweston green overbridge, as stated in the main ES, will provide connectivity across the route sufficient to maintain the conservation status of the population of hazel dormouse. The significant effects of the SES scheme in this area are, therefore, unchanged from those reported in the main ES.

Summary of likely residual significant effects

- 3.2.32 Without mitigation there would be a new residual effect on the Natterer's bat population at Radstone that is significant at the regional level. However, this effect will reduce to a level where it is not significant if the mitigation/compensation proposed under amendment AP2-014-006 (see Section 5.10) is brought forward.
- 3.2.33 The change in value and loss of ancient woodland at Mossycorner Spinney will result in a new adverse residual effect that is significant at the district/borough level, as shown on map EC-01-033 in the SES and AP2 ES, Volume 5, Ecology Map Book. This effect was not reported in the main ES. Ancient woodland is an irreplaceable resource. Compensation is being brought forward through amendment AP2-014-003 (see Section 5.3) but will not remove the significant effect.
- 3.2.34 The newly identified great crested newt population on the eastern edge of Mossycorner Spinney will be affected by the scheme. This will result in a new adverse residual effect that is significant at the county/metropolitan level. This effect was not reported in the main ES. However, this effect will reduce to a level where it is not significant if the mitigation proposed under amendment AP2-014-003 (see Section 5.3) is brought forward.

Effects arising from operation

Avoidance and mitigation measures

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

Assessment of impacts and effects

- 3.2.36 The main ES reports a likely adverse significant effect on the conservation status of the Natterer's bat population at Radstone through an increased risk of mortality and injury that would be significant at the regional level. New baseline data show that a greater proportion of the Natterer's bat population associated with the Church of St Lawrence fly along the route of Helmdon disused railway, increasing the risk of collisions with passing trains. This will give rise to a different significant operational effect on the bat population. However, this will not change the level of significance of the effects reported in the main ES, where prior to mitigation, it was acknowledged that there was a potential for an adverse effect significant at the regional level.

Cumulative effects

- 3.2.37 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 developments.

Other mitigation measures

- 3.2.38 The main ES included provision for a physical barrier to be constructed either side of the route as it crosses the Helmdon Disused Railway SSSI. This would force Natterer's bats to fly up and over the route, avoiding passing trains and associated catenary. Due to the increased proportion of bats flying along the route of the Helmdon disused railway there is a requirement for different mitigation to address the effects of the scheme on the Natterer's bat population. Appropriate measures are being brought forward through an AP2 amendment (AP2-014-006). See Part 2, Section 5.10 for a full description of the measures proposed and the reporting of the revised effects taking the proposed measures into account.

Summary of likely residual significant effects

- 3.2.39 Without mitigation there would be a residual effect on the Natterer's bat population at Radstone significant at the regional level. However, this effect will reduce to a level where it is not significant if the mitigation/compensation proposed under amendment AP2-014-006 (see Section 5.10) is brought forward.

3.3 Traffic and transport

Introduction

- 3.3.1 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 traffic and transport environmental effects as a result of the changes introduced in Section 2, compared to the original scheme.

Scope, assumptions and limitations

- 3.3.2 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.

Changes of relevance to this assessment

- 3.3.3 Changes in 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
 - changes to landscape earthworks near Lower Boddington in CFA15 (SES-015-001).
- 3.3.4 Whilst originating in other CFAs, these SES scheme changes have resulted in changes to forecast HGV traffic flows within the Newton Purcell and Brackley area during construction in comparison to those under the original scheme.
- 3.3.5 The main traffic and transport changes resulting from the SES changes will affect the:
- A421, which will no longer be used in CFA14 for the movement of excavated material, resulting in reduced HGV flows on this road in this CFA;
 - A43 between the A422 and M40, which will be used for the movement of a reduced amount of excavated material, resulting in reduced HGV flows on these sections of road compared to the original scheme; and
 - A4421 Buckingham Road between A421 and A41, which will now be used for the movement of excavated material, resulting in increased HGV flows on this road.
- 3.3.6 These changes have been assessed since they are considered to have the potential to result in new or different significant effects on traffic and transport.

Environmental baseline

Existing baseline

- 3.3.7 The existing baseline for traffic and transport remains unchanged from that reported in Volume 2, CFA14, Section 12 of the main ES.

Future baseline

Construction

- 3.3.8 The future baseline for construction remains unchanged from that reported in Volume 2, CFA14, Section 12 of the main ES.

Operation (2026 and 2041)

- 3.3.9 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in Volume 2, CFA14, Section 12 of the main ES.

Effects arising during construction

Avoidance and mitigation measures

- 3.3.10 Avoidance and mitigation measures are unchanged from those set out in Volume 2, CFA14, Section 12 of the main ES.

Assessment of impacts and effects

Temporary effects

- 3.3.11 The SES scheme will result in increased HGV traffic flows compared to the original scheme on the A4421 Buckingham Road. The increased HGV flows will increase delays to vehicle users and congestion, resulting in new likely minor adverse significant effects at the following junctions:
- A4421 with Stratton Audley Road;
 - A4421 with Stoke Lyne Road and access to Stratton Audley;
 - A4421 with Bicester Road;
 - A4421 with Thompson Drive;
 - A4421 with Skimmingdish Lane; and
 - A4421 with Southwold Lane.
- 3.3.12 The increased HGV flows will also result in a new likely major adverse significant effect on traffic-related severance for non-motorised users on A4421 Buckingham Road, between A421 and the A41.
- 3.3.13 The reduced HGV flows on the A43 and the A421 will remove significant effects on traffic-related severance for non-motorised users that were reported in the main ES for the following locations:
- A43 Oxford Road, between A421 London Road and the A43 Oxford Road/A422 Brackley Road junction (reported in the main ES as moderate adverse);
 - A43 Oxford Road, between A422 Brackley Road (west) and A422 Brackley Road (east) (reported in the main ES as moderate adverse); and
 - A421 London Road between the A43 and the A4421 (reported in the main ES as major adverse).

Permanent effects

- 3.3.14 The permanent effects of construction on traffic and transport are reported under 'Effects arising from operation'.

Other mitigation measures

- 3.3.15 No changes to the mitigation measures reported in Volume 2, CFA14 of the main ES are required.

Cumulative effects

- 3.3.16 Cumulative effects are reported in Section 12, Volume 2, CFA14 of the main ES. The above assessment has taken into account these cumulative effects, including committed developments 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 effects

- 3.3.17 Increased flows on the A4421 Buckingham Road will give rise to new minor significant adverse residual effects, on delays to vehicle users and congestion at: A4421 with Stratton Audley Road; A4421 with Stoke Lyne Road and access to Stratton Audley; A4421 with Bicester Road; A4421 with Thompson Drive; A4421 with Skimmingdish Lane; and A4421 with Southwold Lane. The increased HGV flows will also result in a new major adverse significant residual effect on traffic-related severance for non-motorised users on A4421 Buckingham Road between A421 and the A41.
- 3.3.18 Reduced flows on the A43 and A421 will result in the removal of the significant adverse residual effects on traffic-related severance for non-motorised users that were reported in the main ES for: A43 Oxford Road, between A421 London Road and the A43 Oxford Road/A422 Brackley Road junction (reported in the main ES as moderate adverse); A43 Oxford Road, between A422 Brackley Road (west) and A422 Brackley Road (east) (reported in the main ES as moderate adverse); and A421 London Road between the A43 and the A4421 (reported in the main ES as major adverse).
- 3.3.19 The significant effects that result from the construction of the SES scheme and from the correction identified in Table 1 are shown on maps TR-03-058 and TR-03-059 in the SES and AP2 ES, Volume 5, Traffic and Transport Map Book.

Effects arising from operation

- 3.3.20 The SES scheme results in no changes to operation and consequently there will be no new or different significant operational effects and the level of significance of the effects reported in the main ES will not change.

Part 2: Additional Provision 2 Environmental Statement

4 Summary of amendments

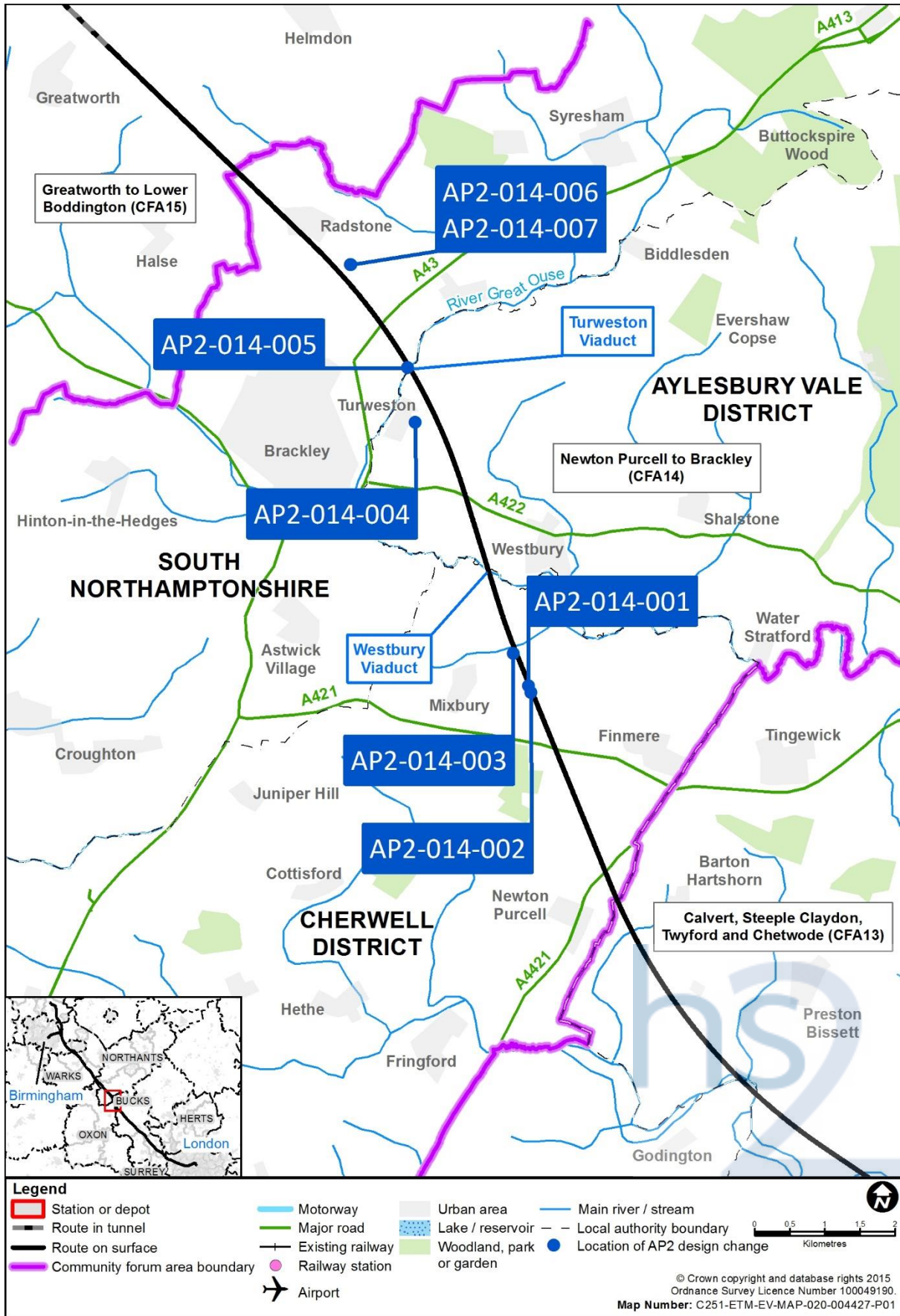
- 4.1.1 Table 4 provides a summary of the amendments in the Newton Purcell to Brackley CFA (CFA14) and Figure 1 shows the locations.

Table 4: Summary of amendments in CFA14

Name of amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 amendment
<p>Temporary diversion of Featherbed Lane and relocation of Featherbed Lane overbridge satellite compound</p> <p>AP2-014-001</p>	<p>The temporary closure of Featherbed Lane (Fulwell Lane) during construction, with a diversion via the A421 London Road. The Featherbed Lane overbridge satellite construction compound would be located north of Featherbed Lane, bordering the road.</p>	<p>The temporary provision of a diversion along a new section of road to enable Featherbed Lane to remain open. This will require the relocation of the Featherbed Lane overbridge satellite construction compound to the south-east with an access road onto the diverted Featherbed Lane. Additional land outside the original limits of the Bill is required permanently.</p>
<p>Realignment of Footpath 303/7</p> <p>AP2-014-002</p>	<p>The permanent diversion of Footpath 303/7 along the eastern side of the route and across Featherbed Lane overbridge.</p>	<p>The permanent diversion of the footpath will be amended to avoid the crash barriers at its intersection with Featherbed Lane. The diverted footpath will turn east from the route along a new access track to meet Featherbed Lane. The footpath will then continue west over Featherbed Lane overbridge. The land required is within the original limits of the Bill. However, the Bill powers will need to be amended to change the route of the diversion.</p>
<p>Mossycorner Spinney ancient woodland ecological avoidance and mitigation</p> <p>AP2-014-003</p>	<p>The temporary provision of an approximately 350m long stockpile parallel to the route, east of Tibbetts Farm, partially within Mossycorner Spinney. Part of Mossycorner Spinney would also be required permanently for the route.</p>	<p>Since submission of the Bill, part of Mossycorner Spinney has been identified by Natural England as ancient semi-natural woodland. Part of the temporary stockpile will be relocated to avoid the ancient woodland. Part of Mossycorner Spinney is required permanently for the HS2 route, including 0.32ha of the ancient woodland. The significant effects on the ancient woodland are reported in the SES. The amendment consists of two areas of woodland planting, comprising a total area of 2.9ha, to be provided either side of the route to compensate for the loss of ancient woodland. Additional land outside of Bill limits will be required permanently for the woodland planting.</p>
<p>Turweston replacement playing fields</p> <p>AP2-014-004</p>	<p>The temporary requirement for land at Turweston playing fields, Oatleys Road, to accommodate the construction of Turweston cutting and the diversion of an overhead power line. Following these works, the majority of the land at the playing fields would be returned to its previous use, with some being required permanently for the original scheme.</p>	<p>The permanent provision of replacement playing fields to the west of, and adjacent to, Turweston Glebe. The replacement playing fields will accommodate all of the facilities currently provided by the existing playing fields site. The additional land required at Turweston Glebe is not within the original limits of the Bill.</p>
<p>Realignment of Footpath BD8</p> <p>AP2-014-005</p>	<p>The temporary diversion of Footpath BD8 to the east for a period of approximately six months, adding an additional 800m. The permanent diversion of the footpath, following construction, alongside the route and under Turweston viaduct, adding an</p>	<p>A revised temporary and permanent diversion of Footpath BD8 to the west of the route. The diversion will link with Bridleway BD10. Additional land outside of Bill limits will be required permanently.</p>

Name of amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 amendment
	additional 700m to the length of the footpath.	
<p>Provision of green bridge at Radstone, changes to environmental mitigation and realignment of PRoW</p> <p>AP2-014-006</p>	<p>The permanent provision of approximately 7ha of lowland calcareous grassland and scrub in an ecological mitigation area. This would be provided as mitigation for impacts on the Helmdon Disused Railway SSSI which is crossed by the route of the original scheme.</p>	<p>The permanent provision of a green bridge at Radstone. The green bridge will follow the route of the Helmdon Disused Railway SSSI to enable bats to fly safely over the HS2 route. The location and extent of the ecological and landscape mitigation have been revised.</p> <p>The Footpath AX15 overbridge proposed in the original scheme will be removed and the footpath diverted along a field boundary adjacent to Hall Farm and over the green bridge. Footpath AX7 will be combined with Footpath AX15 and permanently diverted over the green bridge at Radstone. The existing bridge that carries Bridleway AX14 over the Helmdon Disused Railway will be demolished. Brackley culvert will also be enlarged to make it suitable for use as a bat route. Additional land outside the original limits of the Bill is required permanently for the green bridge. Some of the land included in the original scheme for mitigation is no longer required and will be removed from the Bill.</p>
<p>Realignment of Footpath AX7</p> <p>AP2-014-007</p>	<p>The permanent diversion of Footpath AX7, following construction. The footpath would be diverted along a field boundary close to Manor Farm, adding 300m to the footpath length.</p>	<p>The permanent diversion of Footpath AX7, following construction. The footpath will be diverted across a field along the existing alignment of Footpath AX7 taking it further from Manor Farm. It will then follow the base of the embankment and join Footpath AX15 to the east and divert south over the proposed green bridge, adding 500m to the footpath length. The land required is within the original limits of the Bill. However, the Bill powers will need to be amended to change the route of the diversion.</p>

Figure 1: Locations of amendments in CFA14



5 Assessment of amendments

5.1 Temporary diversion of Featherbed Lane and relocation of Featherbed Lane overbridge satellite compound (AP2-014-001)

- 5.1.1 The Bill provides for the temporary closure of Featherbed Lane (Fulwell Lane) and diversion via the A421 London Road, for a period of approximately nine months to one year, with permanent reinstatement along its existing alignment. The Featherbed Lane overbridge satellite construction compound would be located north of Featherbed Lane, bordering the road (refer to map CT-06-062 in main ES Volume 2, CFA14 Map Book).
- 5.1.2 Since submission of the Bill, a requirement for Featherbed Lane to remain open to traffic during construction has been identified. A diversion along a temporary new section of road adjacent to Featherbed Lane will be provided. This will require the relocation of Featherbed Lane overbridge satellite construction compound to the south-east with an access road onto the diverted Featherbed Lane. The primary means of access to the compound will be via a dedicated construction access road along the eastern side of the route with a new temporary access off the A421 London Road (refer to map CT-05-062 in the SES and AP2 ES Volume 2, CFA14 Map Book).
- 5.1.3 The estimated duration of construction is three months, which will be within the one year programme identified in the main ES for Featherbed Lane overbridge. The area of the satellite construction compound in the revised location will be identical to the original scheme (approximately 0.6ha). The majority of the temporary road diversion is within Bill limits, with 1.8ha outside of Bill limits.
- 5.1.4 The use of the diversion during construction and relocation of the satellite construction compound 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; community; 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: air quality; cultural heritage; and traffic and transport.

Air quality

Scope, assumptions and limitations

- 5.1.5 The assessment scope, key assumptions and limitations for air quality 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, and the SMR Addendum 2 (Appendix CT-001-000/3) of the SES and AP2 ES.

Existing baseline

- 5.1.6 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 Department for Environment, Food and Rural Affairs (Defra).

5.1.7 Defra background concentrations maps⁴ 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.

5.1.8 The Defra background concentrations maps indicate average background concentrations in the Newton Purcell to Brackley area that are relevant to the amendment. Average background concentrations are better than the relevant air quality standards. There are no relevant air quality management areas within the Newton Purcell to Brackley area.

Future baseline

Construction (2017)

5.1.9 The future baseline for construction in 2017 has been updated from that reported in the main ES, to account for the more recent Defra mapping data.

Operation (2026)

5.1.10 The future baseline for operation in 2026 has been updated from that reported in the main ES, to account for the more recent Defra mapping data.

Effects arising during construction

5.1.11 The main ES reported no significant effects on air quality during construction. The temporary diversion of Featherbed Lane and relocation of Featherbed Lane overbridge satellite compound will reduce vehicle numbers in the surrounding area. Therefore, the changes in traffic flows will not be sufficient to give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

5.1.12 The main ES reported no significant effects on air quality during operation. 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

5.1.13 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 Section 7 of the draft CoCP (Volume 5, Appendix CT-003-000) in the main ES will be implemented.

5.1.14 No additional avoidance and mitigation measures are required for the amendment during construction or operation in relation to air quality.

5.1.15 The amendment will result in no change in the likely significant effects reported in the main ES.

⁴ Department for Environment, Food and Rural Affairs (Defra) (2014) Defra background maps 2011; <http://laqm.defra.gov.uk/maps/maps2011.html>; Accessed: March 2015.

Cumulative effects

- 5.1.16 There are no new or different likely significant cumulative effects for air quality 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

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

Existing baseline

- 5.1.18 The cultural heritage baseline for the assessment takes into account information collected for the main ES. This 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.
- 5.1.19 There are two high value assets approximately 800m to the west of the temporary diversion and relocated satellite compound: Beaumont Castle (asset reference NPBo25), a scheduled monument; and Mixbury Conservation Area (asset reference NPBo24), which includes 4 Grade II listed and one Grade II* listed building.

Future baseline

Construction (2017)

- 5.1.20 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.1.21 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on cultural heritage.

Operation (2026)

- 5.1.22 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.1.23 None of the identified developments affect the assessment of the AP2 revised scheme's likely operation impacts on cultural heritage.

Effects during construction

- 5.1.24 No significant effects on these assets were reported in the main ES. The temporary diversion of Featherbed Lane and relocation of Featherbed Lane overbridge satellite compound will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES with respect to cultural

heritage. This is because it will not encroach onto any of the heritage assets previously identified or alter their settings.

Effects arising from operation

- 5.1.25 The temporary diversion of Featherbed Lane and relocation of Featherbed Lane overbridge satellite compound will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.1.26 There will be no change to the mitigation and residual effects reported in the main ES.

Cumulative effects

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

Traffic and transport

Scope, assumptions and limitations

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

Existing baseline

- 5.1.29 The environmental baseline for traffic and transport remains as reported in Volume 2, CFA14, Section 12 of the main ES.

Future baseline

Construction

- 5.1.30 The future baseline for traffic and transport is as described in Volume 2, CFA14, Section 12 of the main ES. There is no change to the future baseline for construction as reported in the main ES.

Operation (2026 and 2041)

- 5.1.31 The future baselines for traffic and transport are set out in Volume 2, CFA14, Section 12 of the main ES. There are no changes to the future baselines for operation as reported in the main ES.

Effects arising during construction

- 5.1.32 Featherbed Lane will remain open to traffic during the construction of the AP2 revised scheme, via a temporary offline diversion to the south of the existing alignment. The AP2 revised scheme therefore no longer results in the temporary traffic diversion of approximately 7.6km included in the original scheme. The main ES reported a moderate adverse significant effect on road users of Featherbed Lane due to this diversion. The amendment will result in the removal of this significant effect.

- 5.1.33 The closure of Featherbed Lane in the original scheme and the associated temporary traffic diversion via Fulwell Road, Valley Road, Mere Road, Sandpit Hill and A421 London Road would increase all vehicle flows along this route. This would result in a moderate adverse significant effect on traffic-related severance for non-motorised users of Fulwell Road due to the additional traffic. The amendment will result in a smaller increase in all vehicle flows on Fulwell Road compared to the original scheme. This will result in a minor adverse significant effect, reducing the level of significance of the moderate adverse significant effect reported in the main ES.
- 5.1.34 The removal of the diversion will also result in a lower increase in traffic on the A421 London Road compared to that reported for the SES scheme. The SES scheme results in the removal of the significant effect on this road that was reported in the main ES. The amendment does not change this conclusion.

Effects arising from operation

- 5.1.35 Featherbed Lane will be reinstated in operation. Consequently 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

- 5.1.36 No changes to the mitigation described in the main ES (Volume 2 CFA14, Chapter 12) and in Volume 5 Part 7 (TR-001-000) are required.
- 5.1.37 The amendment results in the removal of the moderate adverse residual effect reported in the main ES for Featherbed Lane with regard to the increase in journey length for traffic due to temporary road closures and the associated diversion.
- 5.1.38 The amendment will also result in a decrease in traffic flows on Fulwell Road compared to the original scheme. The level of significance of the residual effect on traffic-related severance for non-motorised users of Fulwell Road will change from moderate adverse, as reported in the main ES, to minor adverse, which is still significant.
- 5.1.39 The significant effects are shown on map TR-03-058 in the SES and AP2 ES, Volume 2, CFA14 Map Book.

Cumulative effects

- 5.1.40 Cumulative effects are reported in Section 12, Volume 2, CFA14 of the main ES. The assessment includes the cumulative effects of planned development by taking this into account within the background traffic growth. The assessment also considers in combination effects by taking into account traffic and transport movements from other areas.

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

- 5.2.1 The amendment results in the removal of the moderate adverse residual effect reported in the main ES for Featherbed Lane with regard to the increase in journey length for traffic due to temporary road closures and the associated diversion.

- 5.2.2 The amendment will also result in a decrease in traffic flows on Fulwell Road compared to the original scheme. The level of significance of the residual effect on traffic-related severance for non-motorised users of Fulwell Road will change from moderate adverse, as reported in the main ES, to minor adverse, which is still significant.
- 5.2.3 The amendment does not change the significant residual environmental effects or mitigation as set out in the main ES (Volume 2, CFA14) for any other topic.

5.3 Realignment of Footpath 303/7 (AP2-014-002)

- 5.3.1 The Bill provides for the diversion of Footpath 303/7 on the eastern side of the route over Featherbed Lane overbridge. A temporary alternative route for Footpath 303/7, to the north for a period of approximately nine months to one year would be provided, adding 100m to the length of the footpath. It would then be permanently diverted across Featherbed Lane overbridge adding 100m to the length of the footpath (refer to CT-05-062 and CT-06-062 in main ES Volume 2, CFA14 Map Book).
- 5.3.2 Since submission of the Bill, the diversion of the footpath has been amended to avoid the crash barriers where the proposed diversion meets Featherbed Lane. The footpath diversion will be amended to turn east from the route proposed in the original scheme along a new access track to meet Featherbed Lane, further east than was proposed in the original scheme. It will then continue west over Featherbed Lane overbridge (refer to CT-05-062 and CT-06-062 in the SES and AP2 ES Volume 2 Map Book).
- 5.3.3 The land required is within the original limits of the Bill. However, the Bill powers will need to be amended to change the route of the diversion.
- 5.3.4 The minor diversion of the footpath is not considered to make changes that require a reassessment of the effects or proposed mitigation as set out in the main ES with respect to any environmental topics.

5.4 Mossycorner Spinney ancient woodland ecological avoidance and mitigation (AP2-014-003)

- 5.4.1 The Bill provides for the location of a temporary stockpile approximately 350m long parallel to the route, east of Tibbetts Farm, partially within Mossycorner Spinney, a 7.4ha area of woodland. The route passes through Mossycorner Spinney and the Bill also provides for the permanent use of part of the woodland (refer to maps CT-05-063 and CT-06-063 in main ES Volume 2, CFA14 Map Book).
- 5.4.2 Since submission of the Bill, Natural England has identified part of Mossycorner Spinney as semi-natural ancient woodland covering an area of approximately 0.6ha. The original scheme would remove approximately 0.3ha of the ancient woodland.
- 5.4.3 The amendment comprises relocating an area of approximately 400m² of the temporary stockpile to another location within the limits of the Bill to avoid the ancient woodland (refer to grid reference H8 on map CT-05-063 in the SES and AP2 ES Volume 2, CFA14 Map Book). In addition, approximately 2.9ha of mixed deciduous woodland will be provided as compensation for the loss of ancient woodland at Mossycorner Spinney (refer to map CT-06-063 in the SES and AP2 ES Volume 2, CFA14 Map Book). The additional land for the compensation planting is outside the

limits of the Bill, hence the need for this amendment. The mixed deciduous woodland will be planted at two locations adjacent to Mossycorner Spinney south-west and north-east of the route.

- 5.4.4 The Mossycorner Spinney ancient woodland ecological avoidance and mitigation 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; 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: agriculture, forestry and soils; cultural heritage; ecology; and water resources and flood risk assessment.

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.4.5 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

- 5.4.6 Land in the area has soil types of the Aberford association, which are typically well-drained, fine loamy soils overlying limestone as described in the main ES (Volume 2, CFA14, Section 3). These soils are of Wetness Class (WC) I. The quality of the agricultural land is good (i.e. it is land of best and most versatile (BMV) agricultural quality) in Subgrade 3a.
- 5.4.7 Tibbetts Farm (main ES reference CFA14/5) would be affected by the original scheme. It is an arable farm extending to some 405ha.

Future baseline

Construction (2017)

- 5.4.8 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.4.9 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on agriculture, forestry and soils.
- 5.4.10 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.
- 5.4.11 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)

- 5.4.12 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.4.13 None of the identified developments affect the assessment of the AP2 revised scheme's likely operation impacts on agriculture, forestry and soils.

Effects arising during construction

- 5.4.14 The proposed planting of a further 2.9ha of mixed deciduous woodland will marginally increase the effect on agricultural land. The permanent requirement for approximately 104.2ha of BMV quality land in this area was already assessed as an impact of high magnitude. The main ES reported a major adverse effect, which is significant. The further change of use from agriculture of 2.9ha 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.
- 5.4.15 The temporary effect of the original scheme on Tibbetts Farm was reported in the main ES as moderate adverse, which is significant, due to the proportion of the holding removed. The total area of land removed from the holding including from this amendment during the construction period will be 44.9ha. This represents 11% of the holding, as compared with 10% in the main ES. This does not represent a material change and the impact remains as of medium magnitude with a moderate adverse effect, which is significant.
- 5.4.16 The permanent effect of the original scheme on Tibbetts Farm was reported in the main ES as minor adverse, which is not significant. The impact of the amendment on Tibbetts Farm will be to increase the area of land permanently required from the farm to 24.3ha. As this still represents less than 10% of the holding, the magnitude of impact remains low, and the overall level of effect on the holding remains minor adverse, which is not significant.

Effects arising from operation

- 5.4.17 The Mossycorner Spinney ancient woodland ecological avoidance and mitigation will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.4.18 No additional mitigation measures are proposed for this amendment. The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

- 5.4.19 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

- 5.4.20 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

- 5.4.21 The cultural heritage baseline for the assessment takes into account information collected for 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. The baseline has been updated following a review of the ancient woodland inventory published by Natural England to identify woodlands that have been added to the inventory since production of the main ES (September 2013). Historic mapping and other available historic data sources have also been reviewed to verify the status of a number of sites in the vicinity of the route that the Woodland Trust believes to be ancient woodland, but which are not currently listed on the ancient woodland inventory.
- 5.4.22 Details of survey and desk based work undertaken in this CFA since September 2013 is provided in section 3.1 and SES and AP2 ES Volume 5 map series CH-01, where this is relevant to the assessment of a new or different significant effect.
- 5.4.23 The land required for the amendment includes a number of heritage assets. These include Mossycorner Spinney ancient woodland (asset reference NPB102), which was designated after submission of the main ES and was not therefore assessed as part of the original scheme (see SES Section 3.1). Mossycorner Spinney (asset reference NPB102) is a surviving fragment of a much larger, now lost, ancient woodland and is of high value.
- 5.4.24 Hollow Barn (asset reference NPBo27) is adjacent to the land required for the amendment. It is adjacent to the southern end of the north-eastern area of proposed mitigation planting. This is an asset of low value considered to have interest as a 19th century agricultural building. Its setting within a post-medieval agricultural landscape contributes to its value.
- 5.4.25 The very north-eastern end of the mitigation planting will be within the Fulwell deserted medieval village (asset reference NPBo29), an asset of moderate value. This asset includes medieval settlement earthworks, although no legible elements of medieval landscape survive in the immediate locality beyond the village earthworks.
- 5.4.26 The disused line of the Great Central Railway (asset reference NPBo03), a low value asset, will be adjacent to the south-western areas of mitigation planting. This line was the last great Victorian mainline to be constructed and ran between Sheffield and London.

- 5.4.27 Two high-value assets are located approximately 700m to the south-west of the amendment at its closest point: Beaumont Castle scheduled monument (asset reference NPBo25) and Mixbury Conservation Area (asset reference NPBo24). The conservation area includes one Grade II* listed building and four Grade II listed buildings. Glebe Farm (asset reference NPBo26), an asset of low value, is adjacent to Beaumont Castle and 530m from the land required for the amendment.

Future baseline

Construction (2017)

- 5.4.28 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.4.29 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on cultural heritage.

Operation (2026)

- 5.4.30 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.4.31 None of the identified developments affect the assessment of the AP2 revised scheme's likely operation impacts on cultural heritage.

Effects arising during construction

- 5.4.32 The amendment will relocate an area of approximately 400m² of temporary stockpile to another location within the limits of the Bill to avoid the ancient woodland within Mossycorner Spinney (asset reference NPBo2). This will give rise to a different construction effect for cultural heritage, but will not change the high adverse impact and major adverse significant effect reported in the SES.
- 5.4.33 The land required for the mitigation planting does not encroach on any heritage assets. The setting of Hollow Barn (asset reference NPBo27) will be altered by the change in setting from agricultural to woodland along its southern edge. However, its setting within the agricultural landscape will be retained on the northern side of the barn and in the wider landscape. The mitigation planting will not give rise to a new or different significant effect during construction and will not change the level of significance of the effects reported in the SES.

Effects arising from operation

- 5.4.34 The Mossycorner Spinney ancient woodland ecological avoidance and mitigation will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES and SES.

Mitigation and residual effects

- 5.4.35 The relocation of an area of approximately 400m² of temporary stockpile to another location within the limits of the Bill will reduce the impact on the ancient woodland at Mossycorner Spinney. This will give rise to a different construction effect for cultural

heritage, but will not change the level of significance of the effects reported in the SES. The high adverse impact and major adverse effect on this asset reported in the SES will remain, as a significant residual effect.

Cumulative effects

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

Ecology

Scope, assumptions and limitations

- 5.4.37 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-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.4.38 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 amendment.

Existing baseline

- 5.4.39 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES, additional survey work for bats and great crested newt undertaken since September 2013, aerial photography and relevant existing information gathered from national organisations and from regional and local sources including: Buckinghamshire and Milton Keynes Environmental Records Centre; Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust; Cherwell District Council; Thames Valley Environmental Records Centre; Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust; Northamptonshire Biodiversity Records Centre; Northamptonshire Bat Group; and the Oxfordshire Bat Group.
- 5.4.40 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, CFA14, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.4.41 One non-statutory designated site, a DWS, is relevant to the amendment. The Old LNER Railway DWS (5.8ha) is located to the south-west of land required for the amendment. The site was evaluated in the main ES as being of country/metropolitan value.

- 5.4.42 Mossycorner Spinney (7.4ha) is located within, and adjacent to, the area required for the amendment. Part of Mossycorner Spinney (approximately 0.6ha) is semi-natural ancient woodland and is included on the ancient woodland inventory (see SES Section 3.2).

Habitats

- 5.4.43 Mossycorner Spinney is likely to qualify as habitat of principal importance and local BAP habitat, as detailed in Section 3.2 of the SES. In addition, 0.3ha of land within the original scheme is semi-natural ancient woodland and approximately 1.7ha is non-ancient woodland. The whole of Mossycorner Spinney is of district/borough value.
- 5.4.44 A hedgerow approximately 550m long is present along the Mixbury Brook within the land required for the additional woodland habitat creation. It is part of a wider network of approximately 5.7km of the hedgerow that qualifies as a habitat of principal importance⁵. Due to the presence of established and important hedgerows, and the habitat connectivity that they provide, the hedgerow within the land required for the amendment are considered to be part of the resource of district/borough value that is identified in the main ES.
- 5.4.45 A tributary of the River Great Ouse (the Mixbury Brook) is present within the land required for the amendment. It has been over-deepened and has a shallow, slow flow over silt substrate. This watercourse is identified in the main ES as being of local/parish value.
- 5.4.46 One pond is directly adjacent to land required for the woodland habitat creation areas and temporary stockpile, at the eastern corner of Mossycorner Spinney (in improved grassland). It is known to support a medium-sized population of great crested newt and therefore qualifies as a habitat of principal importance. Based on the habitat alone, the pond was identified in the main ES as being of local/parish value.
- 5.4.47 Other habitats within the land required for the amendments are predominantly arable, scattered trees, improved grassland and semi-improved grassland. They form part of the resource of similar habitats that are identified as being of local/parish value in the main ES.

Protected and/or notable species

- 5.4.48 The assemblage of bats assumed to be present using the Old LNER Railway DWS for commuting and foraging between Finmere Quarry and Mixbury is of county/metropolitan value, as reported in the main ES. The land required for the woodland habitat creation areas and relocation of the temporary stockpile includes features such as hedgerows, woodland and mature trees that provide suitable habitat for bats, which may be utilised by this assemblage.
- 5.4.49 Surveys undertaken since the main ES have identified a medium population size class of great crested newt in a single pond located at the eastern corner of Mossycorner Spinney. The pond is adjacent to the land required for the amendment. No great crested newt populations were identified at this location in the main ES. As the

⁵ Natural Environment and Rural Communities Act, 2006.

population is of medium size, it meets criteria for county importance, and is of county/metropolitan value.

- 5.4.50 Otter populations along the River Great Ouse and its associated tributaries are relevant to the amendment. Evidence of otter presence was recorded during field surveys along the River Great Ouse and its tributaries, including Mixbury Brook. The otter populations are of county/metropolitan value, as stated in the main ES.
- 5.4.51 Water vole populations are potentially present along the River Great Ouse and its associated tributaries are relevant to the assessment. Field surveys recorded no evidence of water voles but suitable habitat was present and water voles have been recorded in low numbers in the wider area. The water vole populations are of county/metropolitan value, as stated in the main ES.
- 5.4.52 Badger populations recorded utilising land required for the amendment are of local/parish value, as reported in the main ES. Given the presence of suitable habitat within land required for the woodland habitat creation areas and relocation of the temporary stockpile, this area may also support badgers.
- 5.4.53 As identified in the main ES, there is suitable habitat in hedgerows, woodland edges and rough grassland to support foraging and hibernating reptiles. As part of a precautionary assessment, it is assumed that any reptile assemblages present would be of up to county/metropolitan value.
- 5.4.54 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)

- 5.4.55 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.4.56 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on ecology.

Operation (2026)

- 5.4.57 Volume 5: Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.4.58 None of the identified developments affect the assessment of the AP2 revised scheme's likely operational impacts on ecology.

Effects arising during construction

Avoidance and mitigation measures

- 5.4.59 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

- 5.4.60 There will be no change to the effects on designated sites during construction reported in Volume 2, CFA14 of the main ES.

Habitats

- 5.4.61 The amendment will relocate an area of approximately 400m² of temporary stockpile to another location within the limits of the Bill to avoid the ancient woodland (refer to grid reference H8 on map CT-05-063 in the SES and AP2 ES Volume 2, CFA14 Map Book). This will give rise to a different construction effect on the conservation status of woodland habitat at Mossycorner Spinney. The loss of ancient woodland habitat will reduce by 400m², but overall there will remain a loss of approximately 2ha of Mossycorner Spinney, including approximately 0.3ha of ancient woodland. Therefore, this will not change the level of significance of the effects reported in the SES.
- 5.4.62 The Mossycorner Spinney ancient woodland ecological avoidance and mitigation is unlikely to result in new or different significant effects for all other habitats that were reported in the main ES and SES.

Protected and/or notable species

- 5.4.63 The amendment is unlikely to result in any new or different significant effects on species to those reported in the main ES and SES.
- 5.4.64 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-003-002.

Cumulative effects

- 5.4.65 There are no new or different likely significant cumulative effects for ecology during construction 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.

Mitigation and residual effects

Other mitigation measures

- 5.4.66 Approximately 2.9ha of mixed deciduous woodland will be provided to compensate for the loss of woodland at Mossycorner Spinney, which includes approximately 0.3ha of ancient woodland within the land required for the scheme. 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).
- 5.4.67 While not fully replicating the ancient woodland that will be lost, the large increase in woodland extent will maintain the conservation status of woodland in the area, and when mature it will result in a separate beneficial effect that is significant at the district/borough level.
- 5.4.68 Although there will be no adverse significant effects on the great crested newt metapopulation at Mossycorner Spinney, the creation of new areas of woodland

immediately to the north of the breeding pond, as part of this amendment, will provide additional terrestrial habitat for the great crested newt metapopulation.

Summary of likely residual effects

- 5.4.69 The loss of ancient woodland at Mossycorner Spinney will be reduced by approximately 400m² due to the amendment. However, there remains a residual effect due to the loss of approximately 0.3ha of ancient woodland. The effect remains significant at the district/borough level, which is unchanged from that reported in the SES.
- 5.4.70 Provision of 2.9ha of woodland as compensation will, in the long term, provide an additional beneficial effect on the conservation status of non-ancient woodland that will be beneficial at the district/borough level.
- 5.4.71 There will be no change to the other residual effects reported in the SES (Part 1, Section 3.2 of this report).

Effects arising from operation

- 5.4.72 There are no new or different likely significant effects on ecological receptors during operation as a result of the amendment.

Water resources and flood risk assessment

Scope, assumptions and limitations

- 5.4.73 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.
- 5.4.74 It has been assumed in undertaking the assessment that replanting works will not require work within a watercourse.

Existing baseline

- 5.4.75 The baseline water resources and flood risk information for the Newton Purcell to Brackley area is described in the main ES (Volume 2, CFA14, Section 13).
- 5.4.76 The route crosses an unnamed drain at Mixbury ('Mixbury Brook') (SWC-CFA14-03 shown in the main ES Volume 5, Water Resources and Flood Risk Assessment Map Book). Where the stream joins the River Great Ouse, approximately 1km downstream of the land required for the amendment, the Environment Agency predicts the overall ecological quality under the Water Framework Directive (WFD) by 2027 to be Good Potential, which is an improvement on the current status of Moderate Potential.
- 5.4.77 There are no water dependant habitats in this area. The small pond located adjacent to the land required for the amendment is underlain by mudstone and therefore is not likely to be groundwater fed. There are numerous springs to the west of the route around Mixbury that are within 1km of the AP2 revised scheme.
- 5.4.78 The land required for planting is located adjacent to the stream at Mixbury, which is a tributary of the River Great Ouse and is an ordinary watercourse. At the location of the amendment the stream has a catchment size of approximately 300ha, with an

associated floodplain. The land use in the floodplain immediately upstream of the crossing is woodland (Mossycorner Spinney). Aside from the floodplain associated with the Mixbury stream, no areas that have a high risk of surface water flooding were identified within the study area.

Future Baseline

Construction (2017)

- 5.4.79 The potential cumulative effects arising from committed developments in relation to water resources and flood risk have been considered as part of this assessment of the construction and operation of the AP2 revised scheme. The future baseline for construction in 2017 remains unchanged from that reported in the main ES.

Operation (2026)

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

Effects arising during construction

- 5.4.81 Replacement floodplain storage will be provided at the edge of the modelled floodplain of the stream at Mixbury to mitigate for loss of floodplain storage resulting from permanent structures in the floodplain such as embankments. The replacement floodplain storage areas provided in the original scheme are shown on map CT-06-063 (main ES Volume 2, CFA14 Map Book).
- 5.4.82 The replacement floodplain storage areas will additionally mitigate for any minor temporary loss of floodplain storage resulting from the construction works in the floodplain. The proposed woodland mitigation overlaps with the replacement floodplain storage for the Mixbury embankment. However, the degree of overlap between the two mitigation areas is small. Sufficient space within the land potentially required during construction has been provided for replacement floodplain storage to ensure that the risk of flooding will not be affected.
- 5.4.83 The Mossycorner Spinney ancient woodland ecological avoidance and mitigation will not give rise to new or different construction effects for water resources and flood risk and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

- 5.4.84 The Mossycorner Spinney ancient woodland ecological avoidance and mitigation will not give rise to new or different significant operational effects for water resources and flood risk, and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.4.85 The assessment assumes implementation of the draft CoCP. The general approach to mitigation to be applied across the entire AP2 revised scheme, including this amendment, is set out in Volume 1, Section 9 of the main ES.
- 5.4.86 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.

- 5.4.87 No additional mitigation is required for this amendment in relation to water resources and flood risk.
- 5.4.88 The Mossycorner Spinney ancient woodland ecological avoidance and mitigation will not give rise to new or different significant residual effects and will not change the level of significance of the effects reports in the main ES.

Cumulative effects

- 5.4.89 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.

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

- 5.5.1 The loss of ancient woodland at Mossycorner Spinney will be reduced by approximately 400m² due to the amendment. This will give rise to different residual significant effects for cultural heritage and ecology but will not change the level of significance of the effects reported in the SES.
- 5.5.2 Provision of 2.9ha of woodland as compensation will, in the long term, provide an additional beneficial ecological effect on the conservation status of non-ancient woodland that is beneficial at the district/borough level.
- 5.5.3 The amendment does not change the significant residual environmental effects or mitigation as set out in the main ES (Volume 2, CFA14) for any other topic.

5.6 Turweston replacement playing fields (AP2-014-004)

Introduction

- 5.6.1 The Bill provides for construction of a cutting and an overhead power line diversion which would require land from within Turweston playing fields at Oatleys Road. Approximately 8,400m² (0.84ha, 40%) of the land at Turweston playing fields would be required temporarily to accommodate the construction works. Following these works, the majority of the land at the playing fields would be returned to its previous use, with 8% of the playing fields required permanently for the original scheme (refer to map CT-06-065 in main ES Volume 2, CFA14 Map Book).
- 5.6.2 Since submission of the Bill, a replacement location for Turweston playing fields has been identified to the west of, and adjacent to Turweston Glebe (refer to CT-06-065 in the SES and AP2 ES Volume 2, CFA14 Map Book). The replacement playing fields will accommodate all of the facilities provided by the existing playing fields site, which would not have been possible in the original scheme. The land required at Turweston Glebe is not within the original limits of the Bill. Approximately 2.7ha of additional land will be required permanently.

- 5.6.3 Construction of the replacement playing fields will involve fencing, clearing and levelling the land, and the provision of the replacement facilities. The replacement playing fields will be provided once construction of the scheme in this area has been completed.

Main local alternatives

- 5.6.4 Four options for the location of the replacement playing fields were evaluated:
- Option A: the original scheme;
 - Option B: the AP2 revised scheme;
 - Option C: a field adjacent to and north of Ballabeg Stables. This field would be used during construction in the original scheme to temporarily store excavated material. It would be returned to agriculture post-construction if not used as replacement playing fields; and
 - Option D: a field east of Turweston Glebe, which is currently used as a polo pitch. This field would be used during construction in the original scheme to temporarily store excavated material. It would then be returned to its current condition post-construction if not used as replacement playing fields.
- 5.6.5 In Option A, the original scheme, the playing field would be temporarily reduced in size to accommodate a powerline diversion and permanently reduced in size due to the construction of the Turweston cutting. The size of the site after construction would not accommodate an adult size cricket or football pitch. In addition, the presence of the diverted powerline may have presented an additional constraint to recreational activities, reducing the size of the site further.
- 5.6.6 Option B is a larger site than the existing playing fields site, and is not located adjacent to the construction works and would not be adversely affected during the construction phase. However, some physical constraints exist on site, such as trees, hedgerow, ridge and furrow and possibly slopes, and would require works to make the field suitable to accommodate football and cricket.
- 5.6.7 Option C does not have any on-site constraints, such as vegetation or slopes. The site could be established prior to the partial loss of the existing playing field site, ensuring that there is no loss in provision for the village during construction. However, during construction, the site for Option C would be accessed through the construction works area, posing a constraint to users and construction crews.
- 5.6.8 The Option D site is currently used as a polo field by Oatleys Hall. It would require a permanent change of use, causing an adverse impact on the property. In addition, the site is currently traversed by powerlines that are to be realigned across the existing playing fields site. As such, the site could not be used until the realignment had been undertaken. This option would therefore result in a temporary loss of playing fields for the village during these works.
- 5.6.9 In Option B the playing fields would be located in the centre of the village, and would be conducive to children using the area. Both Options C and D are located on the opposite side of the route from the village and would not experience this benefit. For these reasons, Option B was adopted in the AP2 revised scheme.

Environmental topics

- 5.6.10 The replacement site 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; land quality; landscape and visual assessment; socio-economics; sound, noise and vibration; traffic and transport; and water resources and flood risk assessment. However, there were changes where reassessment was considered to be required in respect of: community; cultural heritage; and ecology.

Community

Scope, assumptions and limitations

- 5.6.11 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

- 5.6.12 The village of Turweston is located east of Brackley on Turweston Road. Turweston playing fields, owned by Fields in Trust, are located on the eastern edge of Turweston on Oatley's Road. The playing fields include a children's play area, junior football goals, one adult football goal, a single basketball post and net (with an associated area of hard standing) and a small storage unit. The facility is used by the public and is a well-used resource for the residents of Turweston for playing recreational football and cricket (formal matches are not played here) and other informal activities.

Future baseline

Construction (2017)

- 5.6.13 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.6.14 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on community.

Operation (2026)

- 5.6.15 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.6.16 None of the identified developments affect the assessment of the AP2 revised scheme's likely operation impacts on community.

Effects arising during construction

Temporary effects

- 5.6.17 The main ES reported a significant temporary effect at Turweston playing fields due to the original scheme requiring approximately 8,400m² (0.84ha, 40%) of the land at the playing fields to accommodate the construction of a cutting and the diversion of a

power line. The utility works will take approximately one and a half years to construct. After the utility works, the majority of the land at the playing field will be returned to use. However, approximately 3,650m² (0.37ha, 18% of the site) will be retained for construction of the cutting, which will take a further one and a half years to complete. The basketball post, football goals, cricket net and storage unit are all within the land required for construction. The main ES reported a major adverse effect since there are no alternative recreational facilities in the village, approximately 40% of the land is required for one a half years, and approximately 20% is required for three years.

- 5.6.18 Replacement playing fields will be provided in the AP2 revised scheme. These will include the same facilities as those at the existing playing fields site. However, these facilities will only be provided once construction of the scheme in this area has been completed. The community of Turweston will therefore be without these recreational facilities for approximately three years. Given the duration of the significant temporary effect, it will therefore remain major adverse, as reported in the main ES. HS2 Ltd will continue discussions with landowners to seek reasonably practicable measures to further reduce or avoid these significant effects.

Permanent effects

- 5.6.19 The main ES reported a permanent significant effect at the Turweston playing fields, since approximately 1,600m² (0.16ha, 8%) of the site would be required permanently for the original scheme. The basketball post, storage unit and part of the area that is currently used for playing recreational football and cricket would be within the land required permanently. There would also be overhead power lines above the playing field, which could restrict activities that require air space, such as kite flying. The main ES reported a major adverse effect, which is significant, given that there are no local alternatives, the playing fields are a valued community resource and some activities would be permanently compromised.
- 5.6.20 The provision of replacement playing fields will reduce the impact on the community. The permanent effect will be negligible and will, therefore, no longer be significant, as indicated on map CM-01-046 in the SES and AP2 ES, Volume 5, Community Map Book.

Effects arising from operation

- 5.6.21 The Turweston replacement playing fields will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.6.22 The provision of replacement playing fields will remove the permanent residual significant effect at Turweston playing fields reported in the main ES.

Cumulative effects

- 5.6.23 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

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

Existing baseline

- 5.6.25 The cultural heritage baseline for the assessment takes into account information collected for the main ES. This 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.
- 5.6.26 The land required for the provision of replacement playing fields covers the full extent of the area of ridge and furrow to the west of Turweston Glebe (asset reference NPBo60). The value of this asset is low. The land is adjacent to two other areas of ridge and furrow: around Ballabeg (asset reference NPBo99) and to the east of Turweston Glebe (asset reference NPBo61), both of which are of low value.
- 5.6.27 The land required for the amendment is outside of, but adjacent to, the Turweston Conservation Area (asset reference NPBo58). The land contributes to the setting of the conservation area as part of the rural character and historic landscape of the wider area. The Turweston Conservation Area contains two Grade II* listed buildings: Turweston House and St Mary's Church. These listed buildings are approximately 150m from the amendment. However, they are obscured in views to and from the land required for the amendment by properties along South Bank and Main Street. There are 11 Grade II listed buildings within 200m of the land required for the amendment. However, these buildings are also obscured in views to and from the land required for the amendment by properties along South Bank. The conservation area grouping, including the listed buildings, is of high heritage value.

Future baseline

Construction (2017)

- 5.6.28 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.6.29 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on cultural heritage.

Operation (2026)

- 5.6.30 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.6.31 None of the identified developments affect the assessment of the AP2 revised scheme's likely operation impacts on cultural heritage.

Effects arising during construction

- 5.6.32 The remains of the ridge and furrow (asset reference NPBo6o) to the west of Turweston Glebe, an asset of low value, was outside the land required temporarily or permanently for the original scheme. However, the asset is within the land required for the AP2 revised scheme, and will be removed by the amendment. This will constitute a high adverse impact and a moderate adverse effect, which is a new significant effect.

Effects arising from operation

- 5.6.33 The construction effect will remain but there will be no further impact from operation of the AP2 revised scheme.

Mitigation and residual effects

- 5.6.34 The draft Heritage Memorandum and the draft CoCP sets out the provisions that will be adopted to control effects on the ridge and furrow (see Volume 5: Appendix CT-003-000 of the main ES). There will be a moderate adverse effect which is residual and permanent as a result of the amendment where previously, as set out in the main ES, there was a neutral effect.

Cumulative effects

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

Volume 5 changes

- 5.6.36 Table 5 sets out the changes to the main ES, Volume 5, Appendix CH-003-014, as a result of the amendment.

Table 5: Changes to the Volume 5 Appendix for Cultural Heritage: Appendix CH-003-014 – Impact Assessment Table

Unique ID	Name	Designation(s)	Value	Construction Impacts			Operation Impacts		
				Nature of impact including mitigation	Scale of Impact	Effect	Nature of impact including mitigation	Scale of Impact	Effect
NPBo6o	Ridge and Furrow at Turweston Glebe	None	Low	Complete removal of this area of ridge and furrow within the land required, temporarily or permanently, for the construction of the AP2 revised scheme will result in the loss of the asset.	High Adverse	Moderate Adverse	The construction effect remains and there will be no further impact	No change	Neutral

Ecology

Scope, assumptions and limitations

- 5.6.37 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-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.6.38 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

- 5.6.39 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES.
- 5.6.40 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, CFA14, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.6.41 Turweston Manor Grassland Local Wildlife Site (LWS) (14.8ha) is located 300m north of the land required for the replacement playing fields. The site is designated for species-rich fen, of which parts qualify as a habitat of principal importance (lowland fen) and a local BAP habitat, and calcareous grassland, which may qualify as a habitat of principal importance (lowland calcareous grassland). Several plant species that are scarce in Buckinghamshire are known to be present. It is identified in the main ES as being of county/metropolitan value.

Habitats

- 5.6.42 The land required for the playing fields comprises poor semi-improved grassland (2.7ha) with scattered scrub, a small number of scattered trees and a hedgerow which bisects the area from north to south. Hedgerows border the land required to the west, north and east and the southern boundary comprises a hedgerow with scattered trees. The hedgerows form part of a network and are assessed as being of district/borough value in the main ES.
- 5.6.43 The other habitats present are identified in the main ES as being of no more than local/parish value.

Protected and/or notable species

- 5.6.44 There are no new baseline data relevant to this amendment. The species and valuations reported in the main ES remain unchanged.

Future baseline

Construction (2017)

- 5.6.45 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.6.46 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on ecology.

Operation (2026)

- 5.6.47 Volume 5: Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.6.48 None of the identified developments affect the assessment of the AP2 revised scheme's likely operational impacts on ecology.

Effects arising during construction

Avoidance and mitigation measures

- 5.6.49 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES).

Designated sites

- 5.6.50 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

- 5.6.51 The amendment will result in the loss of approximately 200m of hedgerow and a small number of broadleaved trees as well as the conversion of 2.7ha of poor semi-improved grassland to amenity grassland. The habitat loss will contribute to the fragmentation of the hedgerow network. The main ES reports that habitat loss and fragmentation arising from the original scheme will result in a permanent adverse effect on the conservation status of hedgerow that will be significant at the district/borough level. The loss of an additional 200m of hedgerow will result in a different significant effect but will not change the level of significance reported in the main ES.
- 5.6.52 It is unlikely that any other effects on habitats of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in SES and AP2 ES, Volume 5, Appendix EC-003-002.

Protected and/or notable species

- 5.6.53 The amendment will not give rise to new or different significant effects on protected or notable species and will not change the level of significance of the effects reported in the main ES.

- 5.6.54 It is unlikely that any other effects on species 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-003-002.

Cumulative effects

- 5.6.55 There are no new or different likely significant cumulative effects for ecology during construction 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.

Mitigation and residual effects

Other mitigation measures

- 5.6.56 In accordance with the main ES new hedgerows connected to existing habitat within the landscape will be created to compensate for the losses of wildlife corridors that hedgerows provide. The hedgerow replanting will be in accordance with the Ecological Principles of Mitigation (Volume 5, Appendix CT-001-000/2 of the main ES). 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.

Summary of likely residual effects

- 5.6.57 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

- 5.6.58 There are no new or different significant effects on ecological receptors during operation as a result of the amendment.

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

- 5.7.1 The main ES reported a major adverse effect on community due to the temporary and permanent use of Turweston playing fields for construction and operation of the original scheme. The provision of replacement playing fields at Turweston Glebe as part of the AP2 revised scheme will reduce the impact on the community. The permanent effect will be negligible and will, therefore, no longer be significant. The temporary significant effect will remain as reported in the main ES, since the replacement playing fields will not be provided until construction of the route in the area has been completed.
- 5.7.2 The remains of the ridge and furrow to the west of Turweston Glebe, an asset of low value, will be removed by the amendment. These are the fragmentary remains of the medieval open field system associated with Turweston. This will constitute a high adverse impact and a moderate adverse effect on cultural heritage, which is a significant residual effect.

- 5.7.3 The amendment does not change the significant residual environmental effects or mitigation as set out in the main ES (Volume 2, CFA14) for any other topic.

5.8 Realignment of Footpath BD8 (AP2-014-005)

- 5.8.1 The Bill provides for a temporary diversion of Footpath BD8 to the east of, and alongside, the route close to the A43 Oxford Road overbridge. The diversion would be in place for approximately six months, adding an additional 800m to the length of the footpath. Following construction, the footpath would then be permanently reinstated approximately 400m to the east of the route, under Turweston Viaduct, adding an additional 700m to the length of the footpath (refer to map CT-06-066 in main ES Volume 2, CFA14 Map Book).
- 5.8.2 Since submission of the Bill, and in discussion with landowners, a requirement to relocate the footpath diversion further from the route has been identified. The diverted footpath will cross under Turweston viaduct and link with Bridleway BD10 on the western side of the route (refer to maps CT-05-066 and CT-06-066 in the SES and AP2 ES Volume 2, CFA14 Map Book). The temporary diversion during construction will add approximately 800m to the length of the footpath and the permanent diversion will add approximately 700m to the length of the footpath, which is the same as in the original scheme.
- 5.8.3 Approximately 300m² of additional land outside of Bill limits will be required permanently for the amendment.
- 5.8.4 The footpath diversion is minor and 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; traffic and transport; and water resources and flood risk assessment. However, there were changes where reassessment was considered to be required in respect of cultural heritage and ecology.

Cultural heritage

Scope, assumptions and limitations

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

Existing baseline

- 5.8.6 The cultural heritage baseline for the assessment takes into account information collected for 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. Historic mapping and other available historic data sources have also been reviewed to verify the status of a number of sites in the vicinity of the route that the Woodland Trust believes to be ancient woodland, but which are not currently listed on the ancient woodland inventory.

- 5.8.7 The diverted footpath lies partially within an area of earthworks indicative of probable historical water management systems in the valley floor of the Great River Ouse (asset reference NPBo63), an asset of moderate value. These may represent post medieval water management from mills or other industry. There is also a good potential for the presence of paleoenvironmental remains.
- 5.8.8 Versions Farm (asset reference NPBo69), a low value asset, is located approximately 90m to the south-west of the land required for the amendment, at its closest point. It is an example of a farmstead built after the change in farming practices from an open field system to an enclosed field system. The wider agricultural landscape setting contributes to its value. There are cropmarks indicative of prehistoric or Romano British settlement activity to the south of Versions Farm (asset reference NPBo68). This asset is of moderate value.
- 5.8.9 An area of ridge and furrow (asset reference NPBo62), which is of low value, is located approximately 90m to the south-east of the land required for the amendment, on the opposite side of the River Great Ouse. Turweston Airfield (asset reference NPBo54) is located approximately 450m to the east of the land required for the amendment, at its closest point, on the opposite side of the River Great Ouse. This asset is of moderate value.

Future baseline

Construction (2017)

- 5.8.10 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.8.11 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on cultural heritage.

Operation (2026)

- 5.8.12 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.8.13 None of the identified developments affect the assessment of the AP2 revised scheme's likely operation impacts on cultural heritage.

Effects arising during construction

- 5.8.14 The diversion of Footpath BD8 included in the original scheme resulted in no significant effects on cultural heritage. The realignment of Footpath BD8 in the AP2 revised scheme will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES since the only area of the amendment not within the original scheme does not encroach onto any of the heritage assets previously identified or alter their settings.

Effects arising from operation

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

Mitigation and residual effects

- 5.8.16 There will be no change to the mitigation and residual effects reported for cultural heritage in Volume 2 of the main ES.

Cumulative effects

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

Ecology

Scope, assumptions and limitations

- 5.8.18 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-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.8.19 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

- 5.8.20 The ecological baseline of the land required for the footpath diversion has been based on field data collated for the main ES, additional survey work for bats and otter undertaken since September 2013, aerial photography and relevant existing information gathered from national organisations and from regional and local sources including: Cambridgeshire and Northamptonshire Wildlife Trust; Northamptonshire Biodiversity Records Centre and the Northamptonshire Bat Group.
- 5.8.21 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, CFA14, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.8.22 Turweston Manor Grasslands LWS (14.8ha) is relevant to the amendment. The site is designated for species-rich fen (of which parts qualify as a habitat of principal importance and a local BAP habitat), and calcareous grassland, which may qualify as a habitat of principal importance. This site is adjacent to land required for the footpath diversion. This site is of county/metropolitan value as reported in the main ES.

Habitats

- 5.8.23 A single hedgerow crosses the land required for the footpath diversion. This hedgerow contributes to the wider hedgerow network, which is reported in the main ES as being of district/borough value.
- 5.8.24 The land required for the footpath diversion (approximately 0.3ha), comprises arable land to the north of Versions Farm. The arable land is of up to local/parish value, as reported in the main ES.

Protected and/or notable species

- 5.8.25 The bat assemblage associated with the River Great Ouse near Turweston may utilise the land required for the footpath diversion for commuting or foraging. This assemblage is of county/metropolitan value as reported in the main ES.
- 5.8.26 The otter population using the River Great Ouse and its tributaries is reported in the ES to be of up to county/metropolitan value. Habitat suitable for otter is present along the River Great Ouse adjacent to the land required for the footpath diversion.

Future baseline

Construction (2017)

- 5.8.27 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.8.28 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on ecology.

Operation (2026)

- 5.8.29 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.8.30 None of the identified developments affect the assessment of the AP2 revised scheme's likely operational impacts on ecology.

Effects arising during construction

Avoidance and mitigation measures

- 5.8.31 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

- 5.8.32 The main ES reports a permanent loss of 4.3ha (29%) of Turweston Manor Grasslands LWS as a result of the original scheme, which is significant at county/metropolitan level. The footpath diversion is located adjacent to the LWS and there will be no additional habitat loss from the LWS. Therefore, 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

- 5.8.33 The main ES reports a loss of a total of 5.7km of important hedgerows as a result of the original scheme within CFA14, which is significant at district/borough level, and will result in the fragmentation of the hedgerow network. The loss of an additional 10m of hedgerow will not change the level of significance of the effects reported in the main ES.
- 5.8.34 It is unlikely that any other effects on habitats of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in SES and AP2 ES, Volume 5, Appendix EC-003-002.

Protected and/or notable species

- 5.8.35 The main ES reports that the original scheme would result in a permanent adverse effect on the assumed great crested newt population north of Turweston which is significant at county/metropolitan level. The extent of additional habitat affected by the amendment is small (300m²) and of low quality. The amendment will give rise to a different significant effect on this great crested newt population but will not change the level of significance of the effects reported in the main ES.
- 5.8.36 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-003-002.

Cumulative effects

- 5.8.37 There are no new or different likely significant cumulative effects for ecology during construction 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.

Mitigation and residual effects

Other mitigation measures

- 5.8.38 New habitat that will be suitable for great crested newt will be created to the west and east of Westbury viaduct (approximately 8ha) and to the north of Turweston (approximately 2ha), as reported in the main ES. This will provide further habitat for populations that may be present in ponds that could not be surveyed. New habitats will include the provision of replacement ponds, terrestrial habitat and hibernation features sufficient to maintain the favourable conservation status of a population, if present.

Summary of likely residual effects

- 5.8.39 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

5.8.40 There are no new or different significant effects on ecological receptors during operation as a result of the amendment.

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

5.9.1 The realignment of Footpath BD8 will not result in new or different significant effects and will not change the level of significance of the environmental effects or the proposed mitigation as set out in the main ES (Volume 2, CFA14).

5.10 Provision of a green bridge at Radstone, changes to environmental mitigation and realignment of PRow (AP2-014-006)

5.10.1 The Bill provides for the creation of approximately 7ha of lowland calcareous grassland and scrub in an ecological compensation area. This would be provided as mitigation for impacts on the Helmdon Disused Railway SSSI which is crossed by the route. Approximately 0.8ha of the SSSI, of which 0.1ha is lowland calcareous grassland, would be directly affected by the original scheme (refer to main ES map CT-06-067 in main ES Volume 2, CFA14 Map Book). The Bill also provides for a physical barrier to be constructed on both sides of the route as it crosses the Helmdon Disused Railway SSSI to reduce the risk of Natterer's bats that roost near Radstone being struck by passing trains.

5.10.2 Since submission of the Bill, ecological surveys in 2014 in the Radstone area have identified that the Helmdon Disused Railway SSSI is more important for the movement of Natterer's bat than previously identified. The AP2 revised scheme includes the provision of an approximately 24m-wide green bridge at Radstone that will follow the route of the Helmdon Disused Railway SSSI to enable bats using this flight path to fly safely over the AP2 revised scheme. Brackley culvert will also be enlarged to make it suitable for use as a bat route.

5.10.3 The location and extent of the ecological mitigation area included in the original scheme to compensate for the severance and direct loss of part of the Helmdon Disused Railway SSSI has also been revised in consultation with Natural England. Limestone will be used to create a mosaic of calcareous grassland and scrub across the green bridge to provide continuity of habitat for bats and to replicate the habitat of the SSSI. A smaller area than the 7ha of calcareous grassland included in the original scheme is required, due to improvements in ecological connectivity provided by the green bridge. Ecological mitigation will also be included on the embankments on both sides of the route. An area of approximately 1ha of ecological compensation (woodland planting) included in the original scheme will be maintained adjacent to Fox Covert LWS and Helmdon Disused Railway SSSI to enhance these existing habitats.

5.10.4 Approximately 2ha of landscape mitigation planting proposed for the original scheme will be removed. Additional hedgerow habitat mitigation will be provided to encourage the movement of bats towards the green bridge. The hedgerow planting will also provide visual screening for the village of Radstone.

- 5.10.5 Footpath AX15 overbridge will be removed and the footpath diverted along a field boundary adjacent to Hall Farm and over the green bridge. Footpath AX7 will be combined with Footpath AX15 and permanently diverted over the green bridge. The existing bridge that carries Bridleway AX14 over the Helmdon Disused Railway SSSI will be demolished and the green bridge constructed to the north. The green bridge will be approximately at existing ground level, with the base of the Helmdon Disused Railway SSSI cutting approximately 8m below (refer to AP2 maps CT-05-067 and CT-06-067 in the SES and AP2 ES Volume 2, CFA14 Map Book).
- 5.10.6 The estimated duration of demolition works and construction of the green bridge is nine months. Approximately 1.9ha of land outside of existing Bill limits will be required permanently for the works. Approximately 9.2ha of land within Bill limits is no longer required, and will be removed from the Bill.
- 5.10.7 The provision of the green bridge at Radstone, changes to environmental mitigation and realignment of PRoW 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; land quality; traffic and transport and socio-economics. However, there were changes where reassessment was considered to be required in respect of: agriculture, forestry and soils; cultural heritage; ecology; landscape and visual assessment; sound, noise and vibration; and water resources and flood risk assessment.

Agriculture, forestry and soils

Scope, assumptions and limitations

- 5.10.8 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

- 5.10.9 The land affected by the original scheme has soil types in the Ragdale association, as described in the main ES (main ES, Volume 2, CFA14, Section 3). These soils are characterised by slowly permeable seasonally waterlogged clayey and fine loamy over clayey soils of WC⁶ III. The quality of the agricultural land is moderate Subgrade 3b i.e. it is not of the BMV agricultural quality.
- 5.10.10 Two holdings will be affected by the amendment: Radstone Manor (main ES reference CFA14/18), which is an arable farm, extending to approximately 4.01ha; and Hall Farm (CFA14/24), which is an 8.2ha arable and grazing holding.

Future baseline

Construction (2017)

- 5.10.11 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.

⁶ The Wetness Class of a soil is classified according to the depth and duration of waterlogging in the soil profile and has six bands.

- 5.10.12 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on agriculture, forestry and soils.
- 5.10.13 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.
- 5.10.14 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)

- 5.10.15 Volume 5: Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.10.16 None of the identified developments affect the assessment of the AP2 revised scheme's likely operational impacts on agriculture, forestry and soils.

Effects arising during construction

- 5.10.17 The net reduction in agricultural land required permanently extends to 9.2ha and is assessed as Subgrade 3b, which is not BMV land. The reduction in the area of non-BMV land will not alter the major adverse significant effect on BMV land reported in the main ES.
- 5.10.18 The temporary effect of the original scheme on Radstone Manor was assessed as major/moderate adverse, which is significant, due to the proportion of the holding removed. The impact on Radstone Manor will be reduced, since the area of agricultural land required temporarily will be 9.2ha less than in the original scheme. However, the area of agricultural land required during construction (83.5ha) still represents more than 20% of the area farmed. The temporary effect therefore remains as major/moderate adverse, which is significant, as reported in the main ES.
- 5.10.19 The permanent effect of the original scheme on Radstone Manor was assessed as moderate adverse, which is significant, due to the proportion of the holding removed. The total area of agricultural land required permanently for the AP2 revised scheme at Radstone Manor will reduce from 42.5ha to 33.4ha, which represents less than 10% of the total area farmed. This will reduce the magnitude of impact of land required from the holding from medium to low, and the significance of effect from moderate adverse to minor adverse, which is not significant (see map AG-01-035a in the SES and AP2 ES, Volume 5, Agriculture, Forestry and Soils Map Book).
- 5.10.20 The additional impact on Hall Farm will be minimal. There is a permanent requirement for a further 400m² of agricultural land from this holding. The temporary effect will

remain moderate adverse, which is significant. The permanent effect will remain minor adverse which is not significant.

Effects arising from operation

- 5.10.21 The provision of a green bridge at Radstone, changes to environmental mitigation and realignment of PRoW will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.10.22 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.
- 5.10.23 The amendment will reduce the permanent effect on Radstone Manor, resulting in the removal of the likely residual significant effect reported in the main ES. The level of significance of the temporary effect on this holding will remain as reported in the main ES. The permanent effect on Hall Farm will remain as reported in the main ES and is not significant.

Cumulative effects

- 5.10.24 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

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

Existing baseline

- 5.10.26 The cultural heritage baseline for the assessment takes into account information collected for the main ES. This 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. Historic mapping and other available historic data sources have also been reviewed to verify the status of a number of sites in the vicinity of the route that the Woodland Trust believes to be ancient woodland, but which are not currently listed on the ancient woodland inventory.
- 5.10.27 There are a number of heritage assets relevant to the assessment. The Helmdon disused railway (asset reference NPBo75), which forms part of the line of the former Great Central Railway (asset reference NPBo03), runs through the land required for the amendment in a cutting. There is an original railway bridge that spans an existing

cutting to the east of Hall Farm. Both are low value assets (asset references NPBo75 and NPBo03).

- 5.10.28 The wider area within the land required for the amendment is part of the upper Radstone historic landscape (asset reference NPBo97), an asset of high value. The landscape comprises the shrunken medieval settlement of Radstone (asset reference NPBo89), also a high-value asset, the southern part of which is within the area required for the amendment. The northern part, which includes the village and Grade I listed St Lawrence Church, is adjacent to the land required for the amendment. There is an area of ridge and furrow (asset reference NPBo95) to the south of the village which is also a component part of the historic landscape and falls within the land required for the amendment.
- 5.10.29 There are three sets of cropmarks to the east of the land required for the amendment. The cropmarks to the north of Fox Covert (Whitfield) (asset reference NPBo85) are associated with finds of Romano British and medieval settlement. Those to the east of Fox Covert (Whitfield) indicate an area of prehistoric settlement. The cropmarks east of Radstone (asset reference NPBo88) are enclosures potentially associated with a prehistoric and/or Romano British settlement. All are assets of moderate value.
- 5.10.30 Lower Radstone (asset reference NPBo87), a high value asset, is located approximately 660m to the north-east of the land required for the amendment. It comprises the extensive earthworks of a deserted medieval village, with cropmarks that also suggest the presence of prehistoric and/or Romano British activity.
- 5.10.31 Hall Farm (asset reference NPBo84) is adjacent to the southern edge of the land required for the amendment. This is an example of a constituent part of a post-enclosure farmstead. It is an asset of low value.
- 5.10.32 Fox Covert (Whitfield) (asset reference NPBo103) has been identified as likely to be added to the ancient woodland inventory since submission of the main ES. The woodland has a high heritage value. Further information is provided in the SES.

Future baseline

Construction (2017)

- 5.10.33 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.10.34 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on cultural heritage.

Operation (2026)

- 5.10.35 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.10.36 None of the identified developments affect the assessment of the AP2 revised scheme's likely operation impacts on cultural heritage.

Effects arising during construction

- 5.10.37 The only asset that will be directly affected during construction is the Helmdon disused railway (asset reference NPBo75), where the historic bridge will be demolished to accommodate the green bridge. The impact on this asset from the amendment is considered to be low adverse with a negligible adverse effect. The footpath diversions fall within the area of the original scheme. The amendment will not, therefore, give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES with respect to cultural heritage.

Effects arising from operation

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

Mitigation and residual effects

- 5.10.39 There will be no change to the mitigation and residual effects reported in Volume 2 of the main ES.

Cumulative effects

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

Ecology

Scope, assumptions and limitations

- 5.10.41 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-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.10.42 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

- 5.10.43 The ecological baseline of the land required for the green bridge at Radstone, changes to environmental mitigation and realignment of PRoW has been based on: field data collated for the main ES; the additional survey work for bats and great crested newt undertaken from April 2014 to September 2014 referred to in Section 3.2; aerial photography; and relevant existing information gathered from national organisations and from regional and local sources including: Buckinghamshire and Milton Keynes Environmental Records Centre; Cherwell District Council; Thames Valley

Environmental Records Centre; Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust; Northamptonshire Biodiversity Records Centre; Northamptonshire Bat Group; and the Oxfordshire Bat Group.

- 5.10.44 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, CFA14, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

- 5.10.45 There is one statutory designated site that lies partially within land required for the amendment. Helmdon Disused Railway SSSI (16.6ha) is designated for lowland calcareous grassland, a habitat of principal importance. The site supports scarce plant species and a rich butterfly fauna, including the nationally scarce wood white and five nationally declining species. It is of national value, as reported in the main ES.
- 5.10.46 There is one non-statutory designated site relevant to the amendment. Fox Covert (Whitfield) LWS (1.6ha) is designated for its semi-natural broadleaved woodland. This site is adjacent to land required for the amendment and the southern part of the LWS is within the land required for the construction of the scheme. It is identified in the main ES as being of county/metropolitan value.
- 5.10.47 Approximately 0.6ha of Fox Covert (Whitfield) has been identified as likely to be ancient woodland since submission of the main ES, as detailed in the SES. For the purposes of this assessment it is assumed that it will be added to the ancient woodland inventory. This likely ancient woodland is outside the land required for the scheme.

Habitats

- 5.10.48 Only a small area of the land required for the amendment that lies within Helmdon Disused Railway SSSI is calcareous grassland. Lowland calcareous grassland is a habitat of principal importance and is rare in Northamptonshire, as stated in the main ES. As calcareous grassland is the principal reason for the designation of the site, this habitat is of national value.
- 5.10.49 Since submission of the main ES, the northern 0.6ha of Fox Covert (Whitfield) has been identified as likely to be added to the ancient woodland inventory. As identified in the main ES, the woodland is the principal reason for the designation of the site and is therefore of county/metropolitan value.
- 5.10.50 An important hedgerow under the Hedgerow Regulations 1997⁷ is within land required for the amendment and is part of the same hedgerow network evaluated for the main ES. The hedgerow network is of district/borough value.
- 5.10.51 Part of an unnamed woodland block (1.2ha), located on the western side of Radstone Road and to the south of Radstone, is within land required for the amendment. As identified in the main ES, this woodland is of small size and recent origin. It is of local/parish value.

⁷ Hedgerow Regulations 1997 (SI 1997 No. 1160). London, Her Majesty's Stationery Office.

- 5.10.52 The main ES reports that semi-improved neutral grassland on damp soils recorded in the base of the cutting of the Helmdon Disused Railway SSSI is of local/parish value. The plant communities associated with damp soils are not a special feature of the SSSI and similar grassland is likely to be widespread on damp or nutrient-rich soils.
- 5.10.53 An area of semi-improved neutral grassland is located within land required for the amendment, south of Radstone. It is identified in the main ES as being of local/parish value.
- 5.10.54 Patches of scrub at the top of the Helmdon Disused Railway SSSI cuttings are present within land required for the amendment. The main ES reports that these are of local/parish value.
- 5.10.55 A section of Radstone Brook is within the land required for the amendment, south of Radstone. This watercourse is identified in the main ES as being of local/parish value.
- 5.10.56 As stated in the main ES the arable land within and adjacent to that required for the amendment is of local/parish value.

Protected and/or notable species

- 5.10.57 The 2014 surveys indicate that the Helmdon Disused Railway SSSI, Radstone Brook, pasture, watercourses, intact hedgerows and woodlands present within and adjacent to the land required for the amendment provide roosting, foraging and commuting habitat for Natterer's bats. The Church of St Lawrence, Radstone and an adjacent residential property support a large Natterer's bat maternity colony. These roosts are approximately 120m from the land required for the amendment. The 2014 surveys recorded maximum count of over 220 bats emerging from the church and a higher proportion of bats commuting south towards the route in comparison with the 2013 surveys. Natterer's bats are classified as common and widespread species in the UK. The population is confirmed in the SES scheme as being of regional value.
- 5.10.58 Seven species of bat (in addition to Natterer's bat) are known to utilise the area within and adjacent to the land required for the amendment for roosting, foraging and commuting. These included Leisler's bat and serotine which are scarce species, and noctule bat, which is uncommon. The bat assemblages associated with the habitat at Radstone and the Helmdon Disused Railway SSSI, adjacent watercourses and hedgerows within and adjacent to land required for the amendment are of county/metropolitan value, as reported in the main ES.
- 5.10.59 Habitat suitable for foraging and hibernating reptiles is present in hedgerows, scrub, woodland edges and rough grassland habitats within land required for the amendment. As part of the precautionary assessment it is assumed that common reptiles are present within the area of amendment; they are assessed as part of the potential reptile populations occurring near Radstone that are identified in the main ES as being of up to county/metropolitan value.
- 5.10.60 The land required for the amendment is known to be utilised by badgers. As identified in the main ES badger populations throughout the area are of local/parish value.
- 5.10.61 Other species present are identified in the main ES as being of no more than local/parish value.

Future baseline

Construction (2017)

- 5.10.62 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.10.63 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on ecology.

Operation (2026)

- 5.10.64 Volume 5: Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.10.65 None of the identified developments affect the assessment of the AP2 revised scheme's likely operational impacts on ecology.

Effects arising during construction

Avoidance and mitigation measures

- 5.10.66 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES), which includes translocation of protected species where appropriate.
- 5.10.67 The land required for construction of the route has been narrowed where it crosses the Helmdon Disused Railway SSSI and Fox Covert (Whitfield) LWS in order to reduce the loss of habitat from these sites, as reported in the main ES.

Designated sites

- 5.10.68 The main ES reported that the construction of the Brackley south cutting will remove approximately 0.8ha (4.8%) of the SSSI, of which 0.1ha is lowland calcareous grassland. The cutting would also sever the southernmost 16% of the SSSI from the remainder. The fragmentation, which is 90m at its narrowest point, is likely to restrict the movement of species such as the wood white butterfly. Together these impacts would result in a permanent adverse effect on the integrity of the SSSI that is significant at the national level.
- 5.10.69 The amendment will require the construction of footings for the green bridge within the SSSI. This will result in an additional loss of up to 1.4ha from the SSSI of which almost 0.6ha is lowland calcareous grassland, for which the site is designated. The habitat loss will indirectly result in an increase in the effects of severance as the width of the fragmentation will increase to approximately 500m. Together these impacts will result in a different significant effect on the SSSI. However, this will not change the level of significance of the effects reported in the main ES.
- 5.10.70 The main ES reports that the original scheme would result in habitat loss and disturbance at Fox Covert (Whitfield) LWS which would result in a permanent adverse effect on site integrity which would be significant at county/metropolitan level. No additional impacts on the LWS are expected to arise from construction activities

associated with the amendment, as the LWS is 430m from the land required for the amendment. Therefore the effects described in the main ES remain unchanged.

Habitats

- 5.10.71 The main ES indicates that the original scheme would result in the loss of 0.1ha of lowland calcareous grassland leading to a permanent adverse effect on conservation status that would be significant at the national level. The amendment will result in the additional loss of almost 0.6ha of lowland calcareous grassland from the Helmdon Disused Railway SSSI. These areas have until recently been dominated by scrub and therefore are poor examples of the habitat for which the SSSI is designated. The extent of additional loss is greater in extent than the loss from the original scheme so the amendment will result in a different significant effect on this habitat. However, this will not change the level of significance of the effects reported in the main ES.
- 5.10.72 The main ES reports that the original scheme will result in woodland habitat loss at Fox Covert (Whitfield) that will be significant at county/metropolitan level. There will be no additional loss of semi-natural broadleaved woodland habitat at Fox Covert (Whitfield), and no loss to the area now identified as likely to be ancient woodland. The arable land immediately to the north of the woodland that was required to compensate for habitat loss from Helmdon Disused Railway SSSI in the original scheme is no longer required in the amendment. The amendment will therefore not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.10.73 The main ES reports that the Radstone Brook has been over-deepened and contains shallow, slow flowing water over silt substrate. The adverse effects on this habitat as a result of the original scheme would be unlikely to exceed significance at the local/parish level. The amendment will not give rise to a new or different significant effect on this habitat, and will not change the level of significance of the effects reported in the main ES.
- 5.10.74 The 9.2ha of land within Bill limits that is no longer required is agricultural land, as reported in the main ES, Volume 2, CFA14, Section 3.4. It is unlikely that any other effects on habitats of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in SES and AP2 ES, Volume 5, Appendix EC-003-002.

Species

- 5.10.75 As reported in the SES, surveys in 2014 recorded greater numbers of Natterer's bats using Helmdon Disused Railway SSSI than was reported in the main ES. The disused railway is now understood to be an important foraging habitat and flightline linking the maternity roost with important foraging areas to the south. The SES reports that prior to mitigation there would be a significant adverse effect on the conservation status of Natterer's bat that would be significant at the regional level. The amendment will result in the loss of an additional 1.4ha of scrub and grassland from the disused railway (total loss of approximately 2.2ha due to the AP2 revised scheme), and during construction the additional land required will sever the disused railway creating a gap of approximately 500m (previously 900m in the original scheme). During construction of the green bridge the amendment will therefore result in a different

significant effect on the Natterer's bat population at Radstone. However, there will be no change in the level of significance of the effects reported in the main ES.

- 5.10.76 As part of the precautionary assessment it is assumed in the main ES that habitat loss will result in a permanent adverse effect on the conservation status of the assumed reptile populations, which would be significant up to the county/metropolitan level. The extent of additional land (approximately 1.9ha) required for the amendment is limited and there is an abundance of retained suitable habitat nearby (including the margins of the arable field no longer required for calcareous grassland compensation). The amendment will result in a different significant effect but will not change the level of significance of the effects reported in the main ES.
- 5.10.77 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-003-002.

Cumulative effects

- 5.10.78 There are no new or different likely significant cumulative effects for ecology during construction 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.

Mitigation and residual effects

Other mitigation measures

- 5.10.79 The amendment provides for the construction of a green bridge at Radstone that will follow the route of the Helmdon Disused Railway SSSI. In addition under the amendment the compensation for the severance and loss of part of the SSSI has been revised in consultation with Natural England.
- 5.10.80 The original scheme included 7ha of arable land to the south of the Helmdon Disused Railway SSSI to provide compensation for the loss of 0.1ha of lowland calcareous grassland and the severance of the southernmost 16% of the SSSI.
- 5.10.81 The amendment includes the relocation of land that will provide compensation for the loss of lowland calcareous grassland at Helmdon Disused Railway SSSI. The replacement compensatory habitat creation identified in the amendment comprises 5.2ha of landscape earthworks situated on both sides of the route to the north of the SSSI. In addition, limestone will be used to create a mosaic of calcareous grassland and scrub across the green bridge to replicate the habitat of the SSSI, and provide suitable habitat connectivity for bats.
- 5.10.82 These measures are within land required for the construction of the AP2 revised scheme. As such, compensation will be provided after rather than during construction, requiring a greater period of time before functioning replacement habitat is available. In addition, the direct translocation of soils and plant material from the SSSI to adjacent land will no longer take place, since the area of compensation for the SSSI in the main ES has been removed. New grassland will be created in accordance with the Ecological Principles of Mitigation provided in Volume 5 Appendix CT-001-000/2. There will not be any significant temporary adverse effects on the integrity of the

SSSI. The area required to compensate for the loss of habitat from the SSSI in the AP2 revised scheme is smaller (5.2ha) since the green bridge will avoid the permanent fragmentation of the southernmost 16% of the SSSI. Following maturation of the habitats both in the calcareous grassland compensation area and on the green bridge, the impacts from habitat loss and fragmentation will be reduced to a level at which they will not result in a significant effect on the integrity of the site.

5.10.83 The construction of the green bridge and the maturation of the habitats planted across it will mitigate the potential effects of habitat fragmentation on the Natterer's bat population at Radstone. In order to reduce the time for establishment, replacement habitats will be created where reasonably practicable early within the construction of the AP2 revised scheme. In accordance with the ecological principles of mitigation provided in Volume 5 Appendix CT-001-000/2, appropriate measures will be provided to ensure that the temporary habitat severance that could fragment habitat for bats is addressed during construction. This is likely to include the retention of habitat corridors for as long as possible and the use of movable screens to provide connectivity between areas of vegetation used by commuting bats. The green bridge will be of sufficient width (approximately 25m) and at an appropriate height and alignment to replicate the existing flightpath for Natterer's bat. The approaches to the bridge and the structure itself will be planted to include linear scrub, a favoured habitat for Natterer's bat, and to link the bridge to suitable habitat in the SSSI and further afield. The cross-sectional dimensions of the Brackley Culvert will be increased to a minimum of 2m high and 2.5m wide, which will provide a structure of sufficient size for bats to use as flightpath beneath the route. Following maturation of the habitats across the green bridge, the impacts of fragmentation will be reduced to a level at which they will not result in a significant effect on the Natterer's bat population.

5.10.84 No further mitigation is required for effects on reptiles, given the abundance of retained suitable habitat nearby (including the margins of the arable field no longer required for calcareous grassland compensation).

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

Summary of likely residual effects

5.10.86 Following the implementation of the amendment and the changes to ecological mitigation and compensation, the residual effects of the AP2 revised scheme on the Helmdon Disused Railway SSSI, the conservation status of calcareous grassland and population of Natterer's bat and reptiles will be reduced to a level that is not significant, as reported in the main ES.

Effects arising from operation

Avoidance and mitigation measures

5.10.87 The green bridge and increase in size of the proposed culvert at Brackley proposed as part of this amendment will, once constructed, provide safe crossing points across the route of the scheme for bats.

Designated sites

- 5.10.88 There will be no change to the effects on designated sites during operation reported in Volume 2, CFA14 of the main ES.

Habitats

- 5.10.89 There will be no change to the effects on habitats during operation reported in Volume 2, CFA14 of the main ES.

Species

- 5.10.90 The main ES reported that there is a risk that Natterer's bats, as well brown long-eared and common pipistrelle bats, could be killed or injured as a result of collisions with passing trains or associated turbulence where the route crosses the Helmdon Disused Railway SSSI. Prior to mitigation this was assessed in the main ES as being an adverse effect on the conservation status that was significant for Natterer's bat at the regional level and at the county metropolitan level for other species. The original scheme included a combination of fencing, bunding and planting up to 8m above rail level to mitigate the risk of bats being struck by passing trains, so that no significant adverse effects on conservation status were expected.
- 5.10.91 Additional surveys of the Natterer's bat population at Radstone were carried out in 2014 to supplement the surveys in the main ES. As reported in the SES, these surveys showed that a greater proportion of the Natterer's bat population fly along the Helmdon Disused Railway SSSI and would be at risk of train strike as they crossed the route than was assumed in the main ES.
- 5.10.92 The green bridge and associated planting and the alterations made to the Brackley culvert will provide routes for bats to safely cross the route of the scheme. The amendment will result in there being no significant adverse effects on the conservation status of the population of Natterer's bat and other species of bat associated with the Helmdon Disused Railway SSSI.

Cumulative effects

- 5.10.93 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 as a result of any relevant committed development interacting with the AP2 revised scheme.

Mitigation and residual effects

Other mitigation measures

- 5.10.94 The original scheme included a combination of fencing, bunding and planting up to 8m above rail level to mitigate the risk of bats being struck by passing trains. With the provision of the green bridge proposed under the amendment, the measures outlined in the main ES are no longer required and will be removed from the scheme.
- 5.10.95 No additional mitigation measures (i.e. in addition to those identified in the main ES and SES) are required.

Summary of likely residual effects

- 5.10.96 Following the provision of the green bridge at Radstone and the changes to ecological mitigation and compensation, the residual effects of the AP2 revised scheme on bats will be reduced to a level where they will not be significant. This removes the residual effect identified in the SES.

Landscape and visual assessment

Scope, assumptions and limitations

- 5.10.97 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

- 5.10.98 The area of land required for the amendment is located within the Tove Catchment Undulating Claylands LCA as described in the main ES (Volume 2, CFA14, Section 9).
- 5.10.99 The following four representative viewpoints are also located close to the area and are described in the main ES (Volume 2, CFA14, Section 9):
- views from the network of PRoW to the south-east of Radstone (viewpoint 188.3.001);
 - views from Radstone Road, the adjacent residential properties in the vicinity of Hall Farm and the associated extents of PRoW (viewpoint 187.2.001);
 - views from the minor road on the southern edge of Radstone and the adjacent two storey residential properties (viewpoint 188.2.002); and
 - views from the road and adjacent two storey residential properties on the western edge of Radstone (viewpoint 190.2.002).

Future baseline

Construction (2017)

- 5.10.100 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2017, additional to those identified in the main ES.
- 5.10.101 None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on landscape and views.

Operation (2026)

- 5.10.102 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.10.103 None of the identified developments affect the assessment of the AP2 revised scheme's likely operational impacts on landscape and views.

Effects arising during construction

Landscape assessment

- 5.10.104 The Tove Catchment Undulating Claylands LCA was assessed as being affected by the original scheme and will also be affected by this amendment. This LCA is of fair condition and medium tranquillity, therefore it is considered to be of medium sensitivity to change. The main ES reported a moderate adverse significant effect during construction due to the removal of characteristic, long-established landscape components, extensive earthwork operations and introduction of construction plant into the rural landscape.
- 5.10.105 The construction of the green bridge at Radstone, changes to environmental mitigation and the realignment of PRow will add to the more general effects of earthworks grading and installation of rail infrastructure reported in the main ES. However, in the context of the wider large scale construction activity, this will represent a barely perceptible change to landscape character within the LCA. The amendment will not give rise to a new or different significant effect during construction and will not change the level of significance of the effects reported in the main ES.

Visual assessment

- 5.10.106 Viewpoint 188.3.001 (view looking west from PRow south-east of Radstone (located on PRow AX/012)) 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 activities visible in the middle ground including a PRow overbridge (Footpath AX15 overbridge) approximately 495m away and Bridleway AX16 accommodation overbridge (approximately 765m away and oblique views to the west of the realignment of Radstone Road over the route approximately 750m away (Radstone Road overbridge and associated Footpath AX7 realignment) in combination with more general construction activity and earthworks. A temporary material stockpile up to 5m in height (approximately 700m away) and a temporary site access will be located to the west of the viewpoint, though partially filtered by intervening vegetation. High levels of existing intervening vegetation such as the well vegetated dismantled railway and field boundary vegetation would filter and screen views towards the original scheme.
- 5.10.107 The construction of the green bridge at Radstone, changes to environmental mitigation and realignment of PRow will introduce additional construction activity, including the use of cranes, into views. However, this amendment will only represent a small change in the context of the overall construction works and will not give rise to a different significant effect or change the level of significance of the effects reported in the main ES.
- 5.10.108 Viewpoint 188.2.002 (view looking west from the southern edge of the village of Radstone) 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 activities visible in the middle ground from this viewpoint, including the realignment of Radstone Road over the route approximately 420m away (Radstone Road overbridge and associated Footpath AX7 realignment), the Radstone Road overbridge satellite compound to the west of the original scheme approximately

460m away and a PRow overbridge (Footpath AX15 overbridge) to the south of the viewpoint approximately 485m away, in combination with more general construction activity and earthworks. Although intervening vegetation associated with the stream and Radstone roadside to the south will be removed, vegetation associated with the settlement of Radstone and rising topography will screen and filter some elements in places.

- 5.10.109 The construction of the green bridge at Radstone, changes to environmental mitigation and realignment of PRow will introduce additional construction activity, including the use of cranes, into views. However, this amendment will only represent a small change in the context of the overall construction works and will not give rise to a different significant effect or change the level of significance of the effects reported in the main ES
- 5.10.110 Viewpoint 190.2.002 (views from the road and adjacent two storey residential properties on the western edge of Radstone) 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 activities visible in the foreground and middle ground, including the Radstone Road realignment over the route (Radstone Road overbridge and Footpath AX7 realignment approximately 750m away) and a PRow overbridge (Bridleway AX18 accommodation overbridge along with Footpath AX5 and Bridleway AX19 realignments, approximately 45m away), in combination with more general construction activity and earthworks.
- 5.10.111 The construction of the green bridge at Radstone, changes to environmental mitigation and realignment of PRow will introduce additional construction activity, including the use of cranes, into views. However, this amendment will only represent a small change in the context of the overall construction works and will not give rise to a different significant effect or change the level of significance of the effects reported in the main ES.
- 5.10.112 Viewpoint 187.2.001 (view looking east from Radstone Road adjacent to the residential property north of Hall Farm) was assessed as being affected by the SES scheme and will also be affected by this amendment. The SES reported a major adverse significant effect during construction as reported in Section 2.3. The construction of the green bridge at Radstone, changes to environmental mitigation and realignment of PRow will introduce additional construction activity, including the use of cranes, into views. However, this amendment will only represent a small change in the context of the overall construction works and will not give rise to a different significant effect or change the level of significance of the effects reported in the SES.

Effects arising from operation

Landscape assessment

- 5.10.113 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 and bridges, along with the movement and sound of trains, reducing to non-significant by year 15 and year 60 of operation. The omission of the footbridge to carry Footpath AX15 across the route and the introduction of a green

bridge structure and the relocation of calcareous grassland within the setting of Radstone 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

- 5.10.114 Viewpoint 188.3.001 (view looking west from PRow south-east of Radstone (located on PRow AX/012)) 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 year 1 of operation due to the presence of Radstone Road highway embankment and overbridge, Footpath AX15 overbridge, false cutting earthworks embankments, views of the upper elements of trains and overhead line equipment and change in land use. The amendment will remove the original scheme proposal for a footbridge associated with the diverted alignment of Footpath AX15 and will introduce a revised route for Footpath AX15 across the proposed green bridge on the alignment of the Helmdon disused railway. This change will result in the introduction of a more substantial bridge structure to the cutting south of Radstone. However, the extent of visual influence of the bridge will largely be limited to the immediate setting of the cutting due to the screening afforded by surrounding landscape earthworks. The amendment will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES.
- 5.10.115 Viewpoint 187.2.001 (view looking east from Radstone Road adjacent to the residential property north of Hall Farm) 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 year 1 of operation due to the presence of Footpath AX15 overbridge, false cutting earthworks embankments, views of the upper elements of trains and overhead line equipment and change in land usage.
- 5.10.116 The amendment will remove the original scheme proposal for a footbridge associated with the diverted alignment of Footpath AX15 and will introduce a revised route for Footpath AX15 across the proposed green bridge on the alignment of the Helmdon disused railway. This change will result in the introduction of a more substantial bridge structure to the cutting south of Radstone. However, the extent of visual influence of the bridge will largely be limited to the immediate setting of the cutting due to the screening afforded by surrounding landscape earthworks. The amendment will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES.
- 5.10.117 Viewpoint 188.2.002 (view looking west from the southern edge of the village of Radstone) 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 year 1 of operation due to the presence of Radstone Road highway embankment and overbridge, Footpath AX15 overbridge, false cutting earthworks embankments, views of the upper elements of trains and overhead line equipment and change in land use. The amendment will remove the original scheme proposal for a footbridge associated with the diverted alignment of Footpath AX15 and will introduce a revised route for Footpath AX15 across the proposed green bridge on the alignment of the Helmdon disused railway. This change will result in the introduction of a more substantial bridge structure to the cutting south of Radstone. However, the

extent of visual influence of the bridge will largely be limited to the immediate setting of the cutting due to the screening afforded by surrounding landscape earthworks. The reduction in the extent of planting will be apparent. The amendment will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES.

- 5.10.118 The view of the amendment in the winter of year 1 of operation is illustrated on the photomontage shown in Figure LV-01-286 (SES and AP2 ES Volume 2, CFA14 Map Book).
- 5.10.119 Viewpoint 190.2.002 (view looking south-west from a minor road on the western edge of the village of Radstone) 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 year 1 of operation due to the presence of Radstone Road highway embankment and overbridge, Bridleway AX18 accommodation overbridge and associated Footpath AX5 and Bridleway AX19 realignments, false cutting earthworks embankments, views of the upper elements of trains and overhead line equipment and change in land use. The amendment will result in the introduction of a more substantial bridge structure to the cutting south of Radstone. However, the extent of visual influence of the bridge will largely be limited to the immediate setting of the cutting due to the screening afforded by surrounding landscape earthworks, although the reduction in the extent of planting will be apparent in this viewpoint. The amendment will not give rise to a new or different significant effect during operation and will not change the level of significance of the effects reported in the main ES.
- 5.10.120 Viewpoint 187.2.001 (view looking east from Radstone Road adjacent to the residential property north of Hall Farm) 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 year 1 of operation due to the presence of Footpath AX15 overbridge, false cutting earthworks embankments, views of the upper elements of trains and overhead line equipment and change in land usage. By year 15 and beyond to year 60 of operation, planting established as part of the scheme will have matured, largely screening the scheme including the overhead line equipment. This will reduce effects to being non-significant. The amendment will remove the original scheme proposal for a footbridge associated with the diverted alignment of Footpath AX15 and will introduce a revised route for Footpath AX15 across the proposed green bridge on the alignment of the Helmdon disused railway. This change will result in the introduction of a more substantial bridge structure to the cutting south of Radstone. The green bridge at Radstone will be visible, most notably from Hall Farm and Bridleway AX14. The amendment will give rise to a different significant effect during year 1 of operation but will not change the level of significance of the effects reported in the main ES. By year 15 and beyond to year 60 of operation, planting established as part of the scheme will have matured, largely screening the scheme including the overhead line equipment. This will reduce effects to being non-significant.

Mitigation and residual effects

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

- 5.10.122 The amendment will include additional groups of trees at both ends of the green bridge at Radstone to assist visual screening and integration of the structure. It will also include selected areas of tree planting to soften the overall appearance of the earthworks. The overall function of mitigation measures will remain as reported in the main ES and SES.

Cumulative effects

- 5.10.123 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

- 5.10.124 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.
- 5.10.125 Local assumptions and limitations for sound, noise and vibration are set out in Volume 2 Report CFA14 of the main ES.

Existing baseline

- 5.10.126 The baseline sound, noise and vibration information for CFA14 will not change as a result of this amendment. The baseline is described in the main ES (Volume 5, Appendix SV-002-014).

Future baseline

Construction (2017)

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

Operation (2026)

- 5.10.129 Volume 5, Appendix CT-004-000 of the SES and AP2 ES provides details of the developments that are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.10.130 None of the identified developments affect the assessment of the AP2 revised scheme's likely operation impacts on sound, noise and vibration.

Effects arising during construction

- 5.10.131 The closest sensitive receptors to the land required for the amendment are residential properties including Hall Farm, located approximately 200m to the west of the proposed green bridge, and are represented by assessment location 266596 (see main ES, Volume 5, Appendix SV-003-014 and map SV-03-034a in the sound, noise and

vibration Volume 5 map book (Part 2 of 4). The main ES reported no significant effects around this assessment location for construction of the original scheme.

- 5.10.132 The works to construct the green bridge at Radstone, changes to environmental mitigation and realignment of PRoW do not represent a substantial intensification of the works reported in the main ES. Due to this and the lack of proximity to the nearest noise sensitive receptor, the outcomes of the assessment reported in the main ES remain unchanged.
- 5.10.133 The amendment will not, therefore, give rise to any new or different significant effects from those reported in the main ES.

Mitigation and residual effects

- 5.10.134 The avoidance and mitigation measures are presented in the main ES Volume 2, CFA14. There are no new or different residual construction effects for sound noise and vibration as a result of the amendment, in comparison with the main ES.

Effects arising during operation

- 5.10.135 The amendment will not give rise to any new or different significant effects in comparison to those reported in the main ES.

Water resources and flood risk assessment

Scope, assumptions and limitations

- 5.10.136 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.
- 5.10.137 It has been assumed in undertaking the assessment that works on the new bridge will include the need for pile foundations to be constructed.

Existing baseline

- 5.10.138 The baseline water resources and flood risk information for the Newton Purcell to Brackley area is described in the main ES (Volume 2, CFA14, Section 13).
- 5.10.139 The Radstone Brook is located south of Radstone. It flows north-eastwards and will be crossed by the route at SWC-CFA14-07 and SWC-CFA14-16 to SWC-CFA14-18 (as shown on Map WR-01-021 in the main ES, Volume 5, Water Resources and Flood Risk Assessment Map Book). The Radstone Brook is an Ordinary watercourse. Its current overall status⁸, under the WFD, is Moderate Potential while the objective for 2027 is Good Potential.
- 5.10.140 The site is underlain by the Great Oolite Group - specifically the Blisworth Limestone Formation comprising Limestone and classified as a Principal aquifer. The current overall status⁹ under the WFD, is Poor status while the objective for 2027 is Good status.

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

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

- 5.10.141 The site is largely overlain by Glacial Till superficial deposits, except directly under the Radstone Brook. These superficial deposits are classified as unproductive strata and are not likely to contain groundwater.
- 5.10.142 There are no licensed groundwater or surface water abstractions and no reported private, unlicensed abstractions within 1km of the route in this area. There is the potential for unlicensed surface water or groundwater abstractions to exist, as a licence is not required for abstraction volumes below 20m³ per day.
- 5.10.143 The route will cross the Helmdon Disused Railway SSSI, which is designated for calcareous grassland. There is one spring within 1km of this area of the route, located 845m west of the proposed route at 14.0m AOD.
- 5.10.144 There are areas at risk of surface water flooding along the cutting of the Helmdon Disused Railway SSSI. However, the amendment will not require works in the base of the cutting. The amendment does not lie within an area at risk of flooding from any further source, and does not cross any watercourses. As a result, there will be no new or different significant effects for flood risk relative to the main ES and the AP1 ES arising during construction or from operation.

Future Baseline

Construction (2017)

- 5.10.145 The potential cumulative effects arising from committed developments in relation to water resources and flood risk have been considered as part of this assessment of the construction and operation of the AP2 revised scheme. The future baseline for construction in 2017 remains unchanged from that reported in the main ES.

Operation (2026)

- 5.10.146 Current projections to the 2080s indicate that climate change may affect the future baseline against which the impacts of the AP2 revised scheme on surface water and groundwater resources have been assessed. There may be changes in the flow and water quality characteristics of surface water and groundwater bodies as a result of changes in climate. However, these changes will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.10.147 Further information on the potential additional impacts of climate change for water resources and flood risk is provided in Sections 7 and 8 of Volume 1 and Table 13 of Volume 5, Appendix CT-009-000 of the main ES.
- 5.10.148 No committed developments have been identified in this local area that will materially alter the baseline conditions in 2026.

Effects arising during construction

- 5.10.149 Piling for construction of the abutments of the green bridge at Radstone in the AP2 revised scheme has the potential to impact on groundwater quality. This is due to the migration of fluids or suspended bedrock particles giving rise to raised turbidity. At the scale of the classified Great Oolite groundwater body any turbid groundwater will be attenuated within the limestone and diluted in regional flow. The overall impact on

the groundwater body as a whole is deemed to be negligible, which for this high value receptor would be a neutral effect and therefore not significant.

- 5.10.150 Any migration of turbid groundwater to surface water is likely to be a slow process. It will allow natural attenuation within the limestone and dilution to reduce turbidity to levels that will not significantly affect surface water quality. Therefore, the impact of any change in groundwater quality in the wider groundwater body on surface water and water dependent habitats will be negligible. No change to the significant effects reported in the main ES is anticipated.
- 5.10.151 The provision of a green bridge at Radstone, changes to environmental mitigation and realignment of PRow will not give rise to new or different significant effects on water resources or flood risk during construction and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

- 5.10.152 Installation of abutments for the green bridge at Radstone in the AP2 revised scheme has the potential to cause groundwater mounding due to groundwater flow being constricted beneath the bridge.
- 5.10.153 In the main ES, Volume 5, Technical Appendices CFA14 Water Resources Assessment a conceptualisation is presented of the groundwater flow direction and groundwater divide in this area. The only receptor downstream of the proposed green bridge is the Radstone Brook, which flows over the unproductive Glacial Till superficial deposits, and is not believed to be dependent on the underlying Great Oolite aquifer in this area.
- 5.10.154 The dimensions of the bridge abutments are small in comparison with the extent of the Blisworth Limestone in this area. It is expected that the water will flow under and around the piles.
- 5.10.155 Although groundwater flow local to the bridge abutment may be disturbed, there are unlikely to be significant permanent effects on the Blisworth Principal aquifer or sensitive down-gradient receptors. The effect will be negligible and therefore not significant.
- 5.10.156 The provision of a green bridge at Radstone, changes to environmental mitigation and realignment of PRow will not give rise to new or different significant effects for water resources or flood risk during operation and will not change the level of significance of the effects reported in the main ES or AP1 ES.

Mitigation and residual effects

- 5.10.157 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.
- 5.10.158 Generic design measures will be implemented to avoid significant adverse effects on the quality and flow characteristics of surface water courses, groundwater bodies and flood risk. These 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.

- 5.10.159 The green bridge at Radstone, changes to environmental mitigation and realignment of PRoW will not give rise to new or different significant residual effects for water resources or flood risk during operation and will not change the level of significance of the effects reported in the main ES.

Cumulative effects

- 5.10.160 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 provision of a green bridge at Radstone, changes to environmental mitigation and realignment of PRoW will reduce the total area of land required permanently at Radstone Manor farm from 42.5ha to 33.4ha. The area required for the AP2 revised scheme is less than 10% of the total area farmed, removing the significant residual effect on the holding that was reported in the main ES.
- 5.11.2 The SES reported a new residual effect on the Natterer's bat population at Radstone that is significant at the regional level. The amendment will reduce this effect to a level where it is not significant.
- 5.11.3 The amendment does not change the significance of the residual environmental effects or mitigation as set out in the main ES (Volume 2, CFA14) for any other topic.

5.12 Footpath AX7 diversion (AP2-014-007)

- 5.12.1 The Bill provides for Footpath AX7 to remain open during construction. It would then be permanently diverted approximately 200m to the west across the realigned Radstone Road. The diversion would increase the length of the footpath by approximately 300m. This footpath would follow a field boundary close to Manor Farm (refer to CT-05-067 and CT-06-067 in main ES Volume 2, CFA14 Map Book).
- 5.12.2 Since submission of the Bill, a requirement to route Footpath AX7 further from Manor Farm has been identified. For the AP2 revised scheme the footpath will follow the existing Footpath AX7 south until it reaches the earthworks adjacent to the route. It will then follow the base of the embankment and join Footpath AX15 to the east and then divert south over the proposed green bridge at Radstone (refer to amendment AP2-014-006 in Section 5.4 and CT-05-067, CT-06-067 and CT-06-066-L1 in the SES and AP2 ES Volume 2, CFA14 Map Book).
- 5.12.3 The construction works required will be similar to those for the original scheme. The diversion will add approximately 500m to the existing Footpath AX7. The land required is within the original limits of the Bill. However, the Bill powers will need to be amended to change the route of the diversion.

- 5.12.4 The minor realignment of the footpath is not likely to make changes that require a reassessment of the effects or proposed mitigation as set out in the main ES with respect to any environmental topics.

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 above and there are no further combined effects to report.

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