HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and Additional Provision 2 Environmental Statement

Volume 2 | Community forum area report

CFA12 | Waddesdon and Quainton

July 2015

SES and AP2 ES 3.2.1.12

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Department for Transport

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

AECOM ARUP ATKINS CAPITA

ERM ineco Mott MacDonald PARSONS BRINCKERHOFF TEMPLE

High Speed Two (HS2) Limited,
One Canada Square,
London
E14 5AB

Details of how to obtain further copies are available from HS2 Ltd.

Telephone: 020 7944 4908

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.gov.uk/hs2

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Contents

List of figures

List of tables

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, where relevant, the and AP1 ES;

- Volume 4: off-route effects. This reports new or different likely significant off-route effects arising 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 undertaken since the submission of the Bill; and
- changes to the design or construction assumptions which do not require changes to the Bill.

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 are 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; and
- changes to the design or construction assumptions which do not require changes to the Bill.

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:

- a revised location for the National Grid substation near Quainton;
- access arrangements, e.g. amendments to the locations, alignments and/or width of some access tracks proposed by the original scheme;
- roads and Public Rights of Way (PRoW): changes to the locations of temporary diversions or permanent realignments; and
- changes to balancing ponds including additional ponds, resized ponds and relocation of ponds.

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).

1.1.11 In order to differentiate between the original proposals and subsequent changes, the following terms are used:

- 'the original scheme' - the Bill scheme submitted to Parliament in November 2013, which was assessed in the main ES;
- 'the AP1 revised scheme' - the original scheme as amended by the AP 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

Ecology

2.1.1 Additional trapping, radio tracking and thermal imaging surveys of bat populations in the Bernwood Forest area have been undertaken in this area since production of the main ES (September 2013). In addition other bat surveys and surveys for great crested newt and white-clawed crayfish have been undertaken.

2.1.2 Details of all survey work and desk-study information gathered since September 2013, which is relevant to this area, are provided in SES and AP2 ES Volume 5: Appendix EC-001-002 and Volume 5: Ecology Map Series EC-04; EC-05; EC-06 and EC-11.

2.1.3 A summary of the supplementary ecological information that is relevant to the SES assessment is included within Section 3 under 'Ecology'.

2.1.4 The SES and AP2 ES Volume 5: Appendix EC-002-002 provides a summary of additional baseline survey data collected since September 2013, which has resulted in no change to the conclusions of the main ES. Volume 5: Appendix EC-003-002 of the SES and AP2 ES identifies additional local/parish level effects which occur as a consequence of SES changes but are not significant.

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

2.2.1 There are no design changes or construction assumptions in the Waddesdon and Quainton area (CFA12) 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 Design changes in other CFAs affect CFA12, 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. Consequently the movement of excavated material by heavy goods vehicle (HGV) will be altered in this CFA and traffic flows will differ in comparison to the original scheme. The assessment in relation to this is presented in Section 3: 'Assessment of changes' under traffic and transport.

2.3 Topics included in the SES assessment

2.3.1 The changes described above in Sections 2.1 to 2.2 require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: community; ecology; sound, noise and vibration, and traffic and transport.

3 Assessment of changes

3.1 Community

Introduction

3.1.1 This section of the report describes the environmental baseline in relation to community 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 impacts on residential properties, community resources, amenity, open space and PRoW.

Scope, assumptions and limitations

3.1.2 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.

Changes of relevance to this assessment

3.1.3 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
- change to landscape earthworks near Lower Boddington in CFA15 (SES-015-001).

3.1.4 Whilst originating in other CFAs, these SES design changes have altered predicted HGV traffic flows in the Waddesdon and Quainton area during construction, in comparison to the original scheme. The main traffic and transport impacts associated with these SES design changes and relevant to the community assessment are on the following roads, which are no longer proposed to be used for the movement of excavated material:

- The Broadway (Grendon Underwood); and
- Grendon Road/Buckingham Road (Edgcott).

3.1.5 These changes have been assessed as they are considered to have the potential to result in new or different likely significant community effects.

Environmental baseline

Existing baseline

3.1.6 The village of Grendon Underwood is located approximately 5km west of Quainton. It is a linear development centred along Main Street. St Leonard's Church is situated in the north of the village on the Broadway.

3.1.7 The village of Edgcott is situated approximately 6km to the north-west of Quainton. It is centred on Buckingham Road and Grendon Road.

Future baseline

Construction (2017)

3.1.8 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 5.3).

Operation (2026)

3.1.9 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 5.3).

Effects arising during construction

Avoidance and mitigation measures

3.1.10 The assessment of the SES scheme has assumed that measures detailed in the main ES (Volume 2 Section 5.4) and in the draft CoCP (Volume 5: Appendix CT-003-000) will be implemented.

Assessment of impacts and effects

Temporary effects

3.1.11 The main ES reported a moderate adverse temporary significant effect for St Leonard's Church in Grendon Underwood due to a combination of:

- a significant noise effect due to HGV traffic using the Broadway; and
- significant effect due to increases in HGV movements along the Broadway to access several construction compounds in CFA13.

3.1.12 As a result of SES design changes, there will no longer be a significant noise effect or a significant traffic and transport effect on the Broadway. This removes the moderate adverse significant effect on the amenity of St Leonard's Church, which was reported in the main ES.

3.1.13 The main ES reported a major adverse temporary significant effect on 40 residential properties located on Grendon Road and Buckingham Road in Edgcott due to the combination of:

- a significant noise effect due to the HGV traffic using Grendon Road and Buckingham Road; and
- a significant effect due to increases in HGV movements along these aforementioned roads to access several construction compounds in CFA13.

3.1.14 As a result of SES design changes, there will no longer be a significant noise effect or a significant effect due to the increase in HGV movements on Grendon Road and Buckingham Road. This removes the major adverse residual significant effect on residential amenity, which was reported in the main ES.

3.1.15 The main ES reported a moderate adverse temporary significant effect on Edgcott Village Hall located on Buckingham Road due to the combination of:

- a significant noise effect due to HGV traffic using Buckingham Road; and

- significant effect due to increases in HGV movements along Buckingham Road to access several construction compounds in CFA13.

3.1.16 As a result of SES design changes, there will no longer be a significant noise effect or a significant effect due to increase in HGV movements on Buckingham Road. This removes the moderate adverse residual significant effect on the amenity of Edgcott Village Hall, which was reported in the main ES.

Other mitigation measures

3.1.17 No change to the mitigation measures reported in Volume 2, CFA12 of the main ES is required.

Cumulative effects

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

Summary of likely residual significant effects

3.1.19 The SES design changes will remove the residual significant effects on amenity for St Leonard's Church on the Broadway in Grendon Underwood, residential properties on Grendon Road and Buckingham Road in Edgcott, and the village hall in Edgcott. Other residual significant effects reported in Volume 2, CFA12 of the main ES remain unchanged.

Effects arising from operation

3.1.20 There are no new or additional significant effects associated with the operation of the SES scheme on community receptors in this CFA.

3.2 Ecology

Introduction

3.2.1 This section of the report provides a description of the environmental baseline in relation to ecology that is relevant to the assessment. It then identifies any new or different likely residual significant environmental effects as a result of the changes introduced in Section 2 compared to the original. 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 amendment.

Changes of relevance to this assessment

3.2.4 The only changes of relevance to this assessment is the new environmental baseline information relating to bats obtained since September 2013.

Environmental baseline

Existing baseline

3.2.5 The ecological baseline for the assessment takes into account baseline information collected in support of the main ES, which included field survey data, aerial photography and relevant existing information gathered from national organisations and from regional and local sources. A full list of data sources which informed the main ES is provided in Volume 5; Appendices 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. Supplementary information relevant to the assessment in this area includes additional survey work for bats.

3.2.7 The bat surveys carried out in CFA12 and CFA13 in 2014 were designed to confirm and supplement the baseline data from 2012/13 surveys on woodland bats in the Bernwood Forest area. Survey extent was increased in 2014 to provide baseline data for areas not surveyed during the 2012 and 2013 field season, including to the south of the Edgcott Road. Early and late-season surveys were carried out where access permitted, particularly April and October. Automated surveys, transects, paired sampling, trapping and radio tracking surveys were carried out as in previous years. In addition, thermal imaging and infra-red filming was carried out to provide detailed information on flight behaviour along and where bats cross the HS2 route. Details of the methodologies used for additional bat surveys and the results of these surveys are provided in Volume 5: Appendix EC-004-002 of the SES and AP2 ES.

3.2.8 A summary of the baseline information relevant to the assessment is provided below. Further details of additional baseline information obtained since September 2013 is provided in the 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 and EC-11. For those receptors described in the main ES, further details are provided in Volume 2, CFA12, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

3.2.9 There has been no change to the baseline information relating to designated sites as set out in Volume 2, CFA12 Section 7.3 of the main ES.

Habitats

3.2.10 There has been no change to the baseline information relating to habitats as set out in Volume 2, CFA12 Section 7.3 of the main ES.

Protected and/or notable species

3.2.11 The main ES identified a population of Bechstein's bat associated with woodland and intervening habitat north and south of the HS2 route, as well as an assemblage of bats associated with woodland habitats (Brandt's, brown long-eared, Daubenton's and whiskered bats), between Edgcott Road and Calvert Jubilee Nature Reserve[1] (in CFA13). It also identified the presence of populations of barbastelle, serotine, noctule, Leisler's, common pipistrelle, soprano pipistrelle and Nathusius' pipistrelle bats.

3.2.12 These populations are reported in the main ES as being of national value for Bechstein's bat; of regional value for the assemblage of bats associated with woodland habitat and a population of barbastelle bat; and of county/metropolitan value for all other populations and assemblages of bats, except for those that were identified on a precautionary basis which are of up to county/metropolitan value.

3.2.13 Additional surveys undertaken in 2014 (Volume 5: Appendix EC-004-002 of the SES and AP2 ES) have identified additional roosts to those recorded in the main ES. These results do not alter the valuation of bat populations and assemblages presented in the main ES, as adequate information was available to establish the likely size and range of bat populations present. However, the updated baseline information provides further clarity on key crossing points and bat behaviour at these crossing points, which are relevant to the assessment of likely significant effects of the scheme.

3.2.14 A total of 55 tree roosts and four building roosts were identified during the 2014 radio-tracking surveys, in CFA12 and CFA13. These are in addition to those reported in the main ES and include active roosts for Bechstein's, Brandt's, brown long-eared, Daubenton's, Natterer's and whiskered bat. Five new maternity roosts for Bechstein's bat and two new maternity roosts for Natterer's bat were identified.

3.2.15 The 2014 surveys identified flightlines for additional species. This information does not change the value of bat assemblages or populations reported in the main ES; however, it is relevant to the consideration of new or different significant effects. The main additional findings were as follows:

- bats were regularly recorded flying at canopy height (between 5m and 10m) in the vicinity of key bat crossing locations identified in the main ES including at Edgcott Road, Grendon Junction and Benfield's overbridge;
- almost 100% of bats were recorded flying above the Costello underbridge and approximately 40% of bats flew over or along the existing Aylesbury Link railway line at low levels in July. It was previously assumed that the majority of bats were passing through the Costello underbridge;
- bats were recorded flying underneath Benfield's overbridge, but it was not possible to quantify the number of bats flying beneath the overbridge during thermal imaging surveys as surveyors were recording activity north and south of the bridge;
- surveys confirmed that higher levels of bat activity and greater species

[1] Calvert Jubilee Nature Reserve is also designated a Local Wildlife Site.

diversity were associated with wooded habitat close to the Aylesbury Link railway line to the north of Edgcott Road, compared to more open farmland to the south. However, high levels of *Myotis* bat activity was recorded in a small area of habitat immediately south of Edgcott Road overbridge;

- 2014 data confirmed key crossing points of the HS2 route identified in previous surveys for Bechstein's and other *Myotis* bat, but a high level of activity of *Myotis* species was also recorded at School Hill and Edgcott Road overbridges;
- an additional flightline for Bechstein's bat along a hedgerow which runs between Grendon and Doddershall woods and the existing Aylesbury Link railway line was recorded;

3.2.16 Natterer's bats that roost close to Doddershall House foraged in habitat to the north and commuted along a nearby section of the Aylesbury Link railway line; and

- bat activity recorded in the vicinity of Sheephouse, Grendon, Doddershall and Finemere woods differed from what was reported in the main ES as follows:
  - lower levels of bat activity was recorded at Hewin's Wood, along Bridleway GUN/28, along the Mega Ditch[2] and in the vicinity of Benfield's overbridge; and
  - higher levels of bat activity including Bechstein's bat was recorded north and south of Benfield's overbridge along Edgcott Road, Grendon Junction and adjacent to the existing Aylesbury Link Railway) between Sheephouse Wood and Calvert Jubilee.

3.2.17 The Upper Thames branch of Butterfly Conservation provided additional records for butterfly species, including those that are of Principal Importance for Biodiversity and/or notable in Buckinghamshire on or adjacent to the HS2 route. The relevant records within the land required for the scheme were for black hairstreak at Grendon Junction where their presence was reported in the main ES. More distant records were from Finemere Wood, Grendon Wood and Doddershall Wood, Hewin's Wood and Sheephouse Wood; all are more than 100m from the scheme, except for areas required for ecological mitigation.

Future baseline

Construction (2017)

3.2.18 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Operation (2026)

3.2.19 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

[2] Deepened and widened diversion of the Muxwell Brook close to Sheephouse Wood and adjacent to parts of the Bridleway GUN/25, containing scattered scrub and wetland vegetation.

Effects arising during construction

Avoidance and mitigation measures

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

3.2.21 Section 7.4 of the main ES includes avoidance and mitigation measures that are relevant to the SES scheme. In summary they are:

- three underbridges, of which Footpath CAG/2 underbridge and Adam's accommodation underbridge will replicate existing crossing points for bats, and Footpath QUA/26 accommodation underbridge will provide a potential crossing point for commuting bats;
- while not exclusively designed for bats, seven overbridges[3] in CFA12 and CFA13 will provide connectivity across the HS2 route that will limit severance between existing habitats for bats and other species;
- ensuring no loss of habitat from Sheephouse Wood Site of Special Scientific Interest (SSSI), which is adjacent to the HS2 route and used by foraging and roosting bats; and
- minimising habitat loss within the Mega Ditch which provides a sheltered and unlit corridor for commuting and foraging bats.

Assessment of impacts and effects

Designated sites

3.2.22 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

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

Species

3.2.24 The main ES concluded that habitat fragmentation would have an adverse effect on the conservation status of Bechstein's bat and on the conservation status of other *Myotis* species associated with woodland. Surveys in 2014 identified greater activity of *Myotis* bats and an additional flightline for Bechstein's bat in the vicinity of Edgcott Road. The scheme will remove habitat along the existing Aylesbury Link railway line between Edgcott Road and the River Ray that is likely to provide habitat connectivity for bats moving to Finemere Wood and other woods to the east of the HS2 route. The loss of an additional Bechstein's bat flightline, potentially also used by other *Myotis*

[3] Bridleway QUA/28A overbridge, Edgcott Road overbridge, Bridleway QUA/36 accommodation green overbridge, Bridleway GUN/28 accommodation green overbridge, Footpath SCL/13 green overbridge, Calvert green overbridge; and School Hill green overbridge

species, that was not identified in the main ES means there will be a different significant effect on Bechstein's and *Myotis* bats. However, there will be no change in the level of significance of the effects arising from construction reported in the main ES. Prior to mitigation, there remains an adverse effect on Bechstein's bat significant at the national level and on other *Myotis* species significant at the regional level.

3.2.25 The new ecology baseline information does not identify 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 the new ecology baseline are listed in Volume 5: Appendix EC-002-001 of the SES and AP2 ES. No new or different significant effects on rare butterflies are likely to occur because the new data confirms areas where colonies will be affected and these were reported in the main ES.

Cumulative effects

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

Other mitigation measures

3.2.27 Measures to address the effects of habitat fragmentation on bats caused by the construction phase of the scheme are described in Volume 2: Section 7.5 of the main ES. They comprise linear planting on five[4] of the seven overbridges that will be provided between the Edgcott Road and School Hill, as well as linear planting to link these crossing points.

3.2.28 In response to the new baseline data, appropriate measures involving planting parallel to, but set back from, the HS2 route between Edgcott Road overbridge and the River Ray, will be provided within existing Bill limits. These measures will act to mitigate impacts on the additional flightline identified during 2014 surveys, and maintain connectivity with Finemere Wood and other woods to the east of the HS2 route. The implementation of these additional measures alongside those described in the main ES will ensure that there is no significant effect on the conservation status of the bat species concerned.

Summary of likely residual significant effects

3.2.29 No new or different residual effects on ecological receptors occur as a consequence of the updated survey data. The significant residual effects of the SES scheme in this area are therefore unchanged from those reported in the main ES.

Effects arising from operation

Avoidance and mitigation measures

3.2.30 As stated in the main ES, the green bridges and other crossing points of the scheme for bats (noted in respect of 'Avoidance and mitigation measures' for construction

[4] , Bridleway QUA/36 accommodation green overbridge, Bridleway GUN/28 accommodation green overbridge, Footpath SCL/13 green overbridge, Calvert green overbridge; and School Hill green overbridge

effects, above) will act to reduce the risk of bats being struck by trains during the operational phase. In addition the SES scheme will include appropriate planting parallel to, but set back from the HS2 route between Edgcott Road overbridge and the River Ray.

Assessment of impacts and effects

Designated Sites

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

Habitats

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

Species

3.2.33 The main ES concluded that prior to mitigation the risk of bats being killed or injured by collisions with passing trains and associated turbulence would have an adverse effect on the conservation status of Bechstein's bat that would be significant at up to the national level, and on other woodland bat species at up to the regional level (see Volume 2: Section 7.5 of the main ES).

3.2.34 As reported in the main ES, radio tracking surveys in 2012 and 2013 demonstrated that bats crossed the HS2 route at the Costello underbridge, linking roosts and foraging areas in Finemere Wood, Grendon Wood and Doddershall Wood, the former to the east of the HS2 route and the latter two to the west. Given the continuity of habitat on either side of the underbridge it was considered likely that bats passed though the underbridge. However, the 2014 thermal imaging surveys showed that the majority of bats utilising this crossing point do not pass under the Costello underbridge (which would be replaced by the Footpath GAC/2 underbridge when the scheme is constructed). Approximately 40% of bats using the existing flightline are crossing the existing Aylesbury Link railway alignment at less than 8m above current track level. The updated baseline data suggests that bats (including Bechstein's bat) may cross the HS2 route at this location in the operational phase, at a height that would potentially put them at risk of being struck by trains or affected by vortices created by passing trains.

3.2.35 The updated understanding of bat flightlines in the vicinity of the Costello underbridge and to the north of Edgcott Road results in a different significant effect on Bechstein's bat and other *Myotis* bat species. However, this will not change the level of significance of the effects reported in the main ES, which prior to mitigation remains an adverse effect significant at the national level.

3.2.36 The main ES reported limited activity of Bechstein's and other *Myotis* bats to the south of Edgcott Road. Greater amounts of activity of Bechstein's bat and other *Myotis* bats were recorded in 2014 in the vicinity of Edgcott Road than in previous years. Data also indicates that bats are likely to fly north along vegetation on the existing Aylesbury Link railway line to reach roosts and foraging habitat in Finemere Wood. Appropriate measures to maintain connectivity with Finemere Wood and other

woods to the east of the HS2 route will ensure that a suitable alternative flight line at a safe distance from passing trains will remain available during operation.

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 development.

Other mitigation measures

3.2.38 Green bridges and underpasses will provide safe crossing points for bats during the operational phase of the SES scheme. Additional measures to address impacts of the operational phase on bats are described in Volume 2: Section 7.5 of the main ES. Vegetation management involving periodic removal of trees and scrub along the HS2 route will deter bats from flying close to trains. The Sheephouse Wood mitigation structure was included within the mitigation in the main ES to provide a physical barrier to stop bats coming into contact with trains, as they emerge from the wood.

3.2.39 However, there is also a requirement for additional mitigation. This is required to address the risk of bats being killed or injured by collisions with passing trains and associated turbulence at CAG/2 underbridge and between the Edgcott Road and the River Ray.

3.2.40 At the southern edge of Sheephouse Wood the Sheephouse Wood mitigation structure will be extended 50m southwards over the CAG/2 underbridge. The extension will provide a physical barrier to prevent bats crossing the HS2 route alignment at this location coming into contact with passing trains. In combination with the CAG/2 underbridge, it will provide a safe crossing point for the Bechstein's bat and other *Myotis* species utilising this flightline, and remove the significant effect from potential collision with trains at this location.

3.2.41 Regular management of vegetation to remove trees and scrub adjacent to the SES scheme between Edgcott Road overbridge and the River Ray will be undertaken in addition to the locations where vegetation management was specified in the main ES. This will deter bats from flying close to trains, and reduce the risk of collision with trains to a level that is not significant.

3.2.42 The Mega Ditch, which abuts the Greatmoor Energy from Waste (EfW) facility, forms part of the mitigation strategy for Bechstein's and other woodland bats described in the main ES. Together with the crossing points to be created in CFA12 and CFA13 as part of the wider bat mitigation strategy in this area described in the main ES, the Mega Ditch provides connectivity for bats between Grendon and Doddershall woods and Sheephouse Wood.

3.2.43 The operational lighting strategy for the EfW facility will be subject to approval via a planning condition. At present the potential for light spillage into the Mega Ditch is unknown. As a precaution, provision will be made for providing appropriate measures to avoid any light spillage into the Mega Ditch that would have the potential to result in disturbance of bat populations using the Mega Ditch as a flightline to move between roosts and foraging areas.

3.2.44 The combination of additional mitigation measures described above alongside those proposed in the main ES will reduce the effects of the SES scheme to a level where there will be no significant effect on the conservation status of Bechstein's bat or other bat populations concerned.

Summary of likely residual significant effects

3.2.45 No new or different residual effects on ecological receptors occur as a consequence of the updated ecology baseline. The significant residual effects of the SES scheme in this area are therefore unchanged from those reported in the main ES.

3.3 Sound, noise and vibration

Introduction

3.3.1 This section of the report describes the environmental baseline in relation to sound, noise and vibration 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 and compared to the original scheme. Consideration is given to indirect noise effects as a result of construction traffic.

Scope, assumptions and limitations

3.3.2 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.

3.3.3 Local assumptions for the assessment of operational sound, noise and vibration are as described in the main ES (Volume 2, CFA12, Section 11).

Changes of relevance to this assessment

3.3.4 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
- change to landscape earthworks near Lower Boddington in CFA15 (SES-015-001).

3.3.5 Whilst originating in other CFAs, these SES design changes have altered predicted HGV traffic flows in the Waddesdon and Quainton area during construction, in comparison to the original scheme.

Environmental baseline

Existing baseline

3.3.6 The baseline sound, noise and vibration information for CFA12 will not change as a result of the SES changes. The baseline is described in the main ES (Volume 5: Appendix SV-002-012).

Future baseline

Construction (2017)

3.3.7 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 11.2).

Operation (2026)

3.3.8 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 11.2).

Effects arising during construction

Avoidance and mitigation measures

3.3.9 The assessment of the SES scheme has assumed that the general measures detailed in Section 11 of the draft CoCP (Volume 5: Appendix CT-003-000) in the main ES will be implemented.

Assessment of impacts and effects

Residential receptors: indirect effects

3.3.10 As a result of the SES design changes, the likely significant indirect noise effect reported in the main ES on about 40 dwellings caused by construction traffic along Grendon Road/Buckingham Road, where they pass through Edgcott, will no longer occur.

Non-residential receptors: indirect effects

3.3.11 As a result of the SES design changes, the likely significant indirect noise effects reported in the main ES on non-residential receptors along the following local roads caused by construction traffic will no longer occur:

- Grendon Road/Buckingham Road where they pass through Edgcott affecting Edgcott Village Hall (CSV12-N04); and
- The Broadway in Grendon Underwood affecting St Leonard's Church (CSV12-N05).

Other mitigation measures

3.3.12 No other mitigation measures are proposed for the SES scheme.

Cumulative effects

3.3.13 There are no new or different likely significant cumulative effects for construction sound, noise and vibration as a result of the SES changes acting in combination with the SES or in AP1, or as a result of any relevant committed development.

Summary of likely residual significant effects

3.3.14 As a result of the proposed SES changes likely residual significant noise effects arising from construction traffic on Grendon Road / Buckingham Road and The Broadway in Grendon Underwood identified in the main ES will no longer occur.

Effects arising from operation

3.3.15 The SES scheme results in no changes to operation and consequently there are no changes to the operational sound, noise and vibration significant effects reported in the main ES and AP1 ES as a result of combined effects of changes in this CFA and others.

3.4 Traffic and transport

Introduction

3.4.1 This section of the report provides a description of the environmental baseline in relation to traffic and transport that is relevant to the assessment. In addition, it identifies any new or different likely significant traffic and transport environmental effects as a result of the changes described in Section 2 compared to the original scheme.

Scope, assumptions and limitations

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

Changes of relevance to this assessment

3.4.3 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
- change to landscape earthworks near Lower Boddington in CFA15 (SES-015-001).

3.4.4 Whilst originating in other CFAs, these SES scheme changes have altered predicted HGV traffic flows in the Waddesdon and Quainton area during construction in comparison to the original scheme.

3.4.5 The roads mainly affected by these SES scheme changes will be:

- the A41, between Blackgrove Road and the boundary with CFA11;
- The Broadway (Grendon Underwood); and
- Buckingham Road/Grendon Road/Edgecott Road, between Main Street and Perry Hill.

3.4.6 All three roads will no longer be used for the movement of excavated material, resulting in a decrease in HGV movements on these roads. Whilst the A41 between The Broadway (Grendon Underwood) and Blackgrove Road will still be used for the movement of excavated material, the HGV flows on this section of road will be reduced.

3.4.7 The A41, between The Broadway (Grendon Underwood) and the boundary with CFA13, will, however, now be used for the movement of excavated material resulting

in an increase in HGV flows on this section of road. Perry Hill, between Buckingham Road and the boundary with CFA13 will no longer be used for the movement of excavated material. The assessment for Perry Hill is reported in Volume 2, CFA13, Section 12 of the SES and AP2 ES.

3.4.8 These changes have been assessed as they are considered to have the potential to result in new or different likely significant effects on traffic and transport.

Environmental baseline

Existing baseline

3.4.9 The existing baseline for traffic and transport is set out in Volume 2, CFA12 (Section 12.3) of the main ES. There is no change to the existing baseline as reported in the main ES.

Future baseline

Construction

3.4.10 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 12.3).

Operation (2026 and 2041)

3.4.11 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES (Volume 2, CFA12, Section 12.3).

Effects arising during construction

Avoidance and mitigation measures

3.4.12 Avoidance and mitigation measures are set out in Volume 2, CFA12, Section 12 of the main ES.

Assessment of impacts and effects

Temporary effects

3.4.13 The changes in the SES scheme result in amended HGV traffic flows compared to the original scheme in this CFA. The amended HGV flows will generate new or different significant effects and change the level of significance of the effects reported in the main ES in relation to delays to vehicle users and congestion at the following junctions:

- A41 Akeman Road with Station Road - decrease in traffic flow resulting in a minor adverse significant effect (reported as a major adverse significant effect in the main ES);
- A41 Bicester Road with Blackgrove Road and Waddesdon Hill - decrease in traffic flow resulting in a minor adverse significant effect (reported as a major adverse significant effect in the main ES); and
- A41 Aylesbury Road with The Broadway - decrease in traffic flow resulting in a minor adverse significant effect (reported as a major adverse significant effect in the main ES).

3.4.14 In addition, the amended HGV flows will result in the removal of significant effects in relation to delays to vehicle users and congestion at the following junctions:

- Grendon Road with Edgcott Road and Marsh Gibbon Road - (reported as a moderate adverse significant effect in the main ES);
- Edgcott Road with Main Street and The Broadway - (reported as a moderate adverse significant effect in the main ES); and
- Perry Hill with Buckingham Road and Lawn Hill - (reported as a moderate adverse significant effect in the main ES).

3.4.15 The amended HGV flows also result in new or different significant effects and change the level of significance of the effects reported in the main ES in relation to traffic-related severance[5] for non-motorised users, at the following locations:

- A41, between The Broadway (Grendon Underwood) and Blackgrove Road - decrease in HGV flows will result in a moderate adverse significant effect (reported as a major adverse effect in the main ES described under 'A41 Aylesbury Road/Akeman Road/High Street (Waddesdon), Bicester Road, east of The Broadway'); and
- A41, between the boundary of CFA13 and The Broadway (Grendon Underwood) - increase in HGV flows will result in a moderate adverse significant effect (a non-significant effect under the original scheme).

3.4.16 In addition, the amended HGV flows will result in the removal of significant effects in relation to traffic related severance for non-motorised users at the following locations:

- A41, between Blackgrove Road and the boundary with CFA11 - (reported as a major adverse significant effect in the main ES described under 'A41 Aylesbury Road/Akeman Road/High Street (Waddesdon), Bicester Road, east of The Broadway' in the main ES);
- The Broadway - (a major adverse significant effect reported in the main ES); and
- Buckingham Road/Grendon Road/Edgcott Road - (a major adverse significant effect reported in the main ES).

Permanent effects

3.4.17 Permanent effects of construction on traffic and transport are reported under operation.

Other mitigation measures

3.4.18 No changes to mitigation measures reported in Volume 2, CFA12 of the main ES are required.

[5] 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.

Cumulative effects

3.4.19 Cumulative effects are reported in Volume 2, CFA12, Section 12 of the main ES. The above assessment has taken into account these cumulative effects, including planned development by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in other areas.

Summary of likely residual effects

3.4.20 Amended HGV flows as a consequence of the SES scheme will result in minor residual adverse significant effects with regards to delay to vehicle users and congestion for the junctions of A41 Akeman Road with Station Road, A41 Bicester Road with Blackgrove Road and Waddesdon Hill, and A41 Aylesbury Road with The Broadway (all major adverse significant effects reported in the main ES), and the removal of residual adverse significant effects at the junctions of Grendon Road with Edgcott Road and Marsh Gibbon Road, Edgcott Road with Main Street and The Broadway, and Perry Hill with Buckingham Road and Lawn Hill (all moderate adverse significant effects reported in the main ES).

3.4.21 In addition, the amended HGV flows will result in moderate residual adverse significant effects in relation to traffic-related severance for non-motorised users at the A41, between The Broadway (Grendon Underwood) and Blackgrove Road (a major adverse effect reported in the main ES) and the A41, between the boundary of CFA13 and The Broadway (Grendon Underwood) previously a non-significant effect. There will also be removal of residual significant effects at the A41, between Blackgrove Road and the boundary with CFA11, The Broadway, and Buckingham Road/Grendon Road/Edgcott Road (all major adverse significant effects reported in the main ES).

3.4.22 The significant effects that result from construction of the scheme are shown on Map Series TR-03-056 of the SES and AP2 ES (Volume 5, Traffic and Transport Map Book).

Effects arising from operation

3.4.23 There will be no changes arising from the SES scheme during operation, consequently there will be no new or different likely residual significant effects arising from operation of the SES scheme compared to those reported in Volume 2, CFA12, Section 12 of the main ES.

Part 2: Additional Provision 2 Environmental Statement

4 Summary of amendments

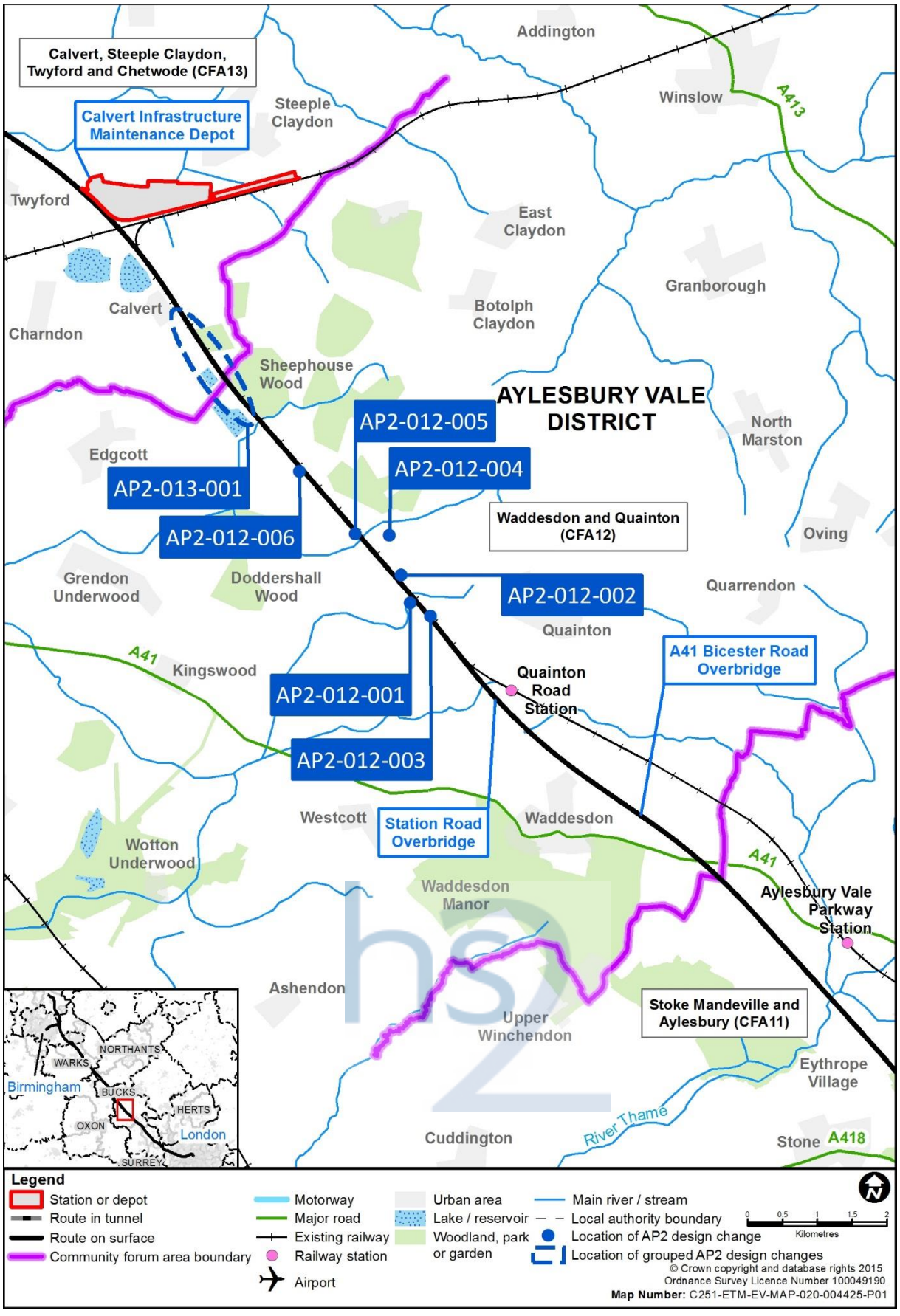
4.1.1 Table 1 provides a summary of the amendments in the Waddesdon and Quainton CFA (CFA12). Figure 1 shows the locations.

Table 1: Summary of amendments in CFA12

Name of amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 revised scheme
Additional land for drainage south of Footpath QUA/26 accommodation underbridge AP2-012-001	The original scheme utilises an existing drainage ditch south of Footpath QUA/26 accommodation underbridge.	Drainage for Footpath QUA/26 accommodation underbridge will be modified. The drainage works will require regrading of the ditch downstream of Footpath QUA/26 accommodation underbridge. The amendment will permanently require land outside Bill limits.
Balancing pond at Footpath QUA/26 accommodation underbridge AP2-012-002	A section of railway drainage north of Footpath QUA/26 accommodation underbridge discharges into one proposed balancing pond south-east of the accommodation underbridge.	The balancing pond proposed in the original scheme will be reduced in size. Part of the railway drainage will be redirected to a new balancing pond at Footpath QUA/26 accommodation underbridge. The amendment will permanently require land outside Bill limits.
Extension of Bridleway QUA/28A overbridge to carry farm vehicles AP2-012-003	A bridleway overbridge is constructed along the line of the existing Bridleway QUA/28A for use by walkers and horse riders.	The proposed Bridleway QUA/28A overbridge will be extended, widened and the surface improved so that it will be suitable for farm vehicles. The amendment therefore requires a change of land use which resulted in a need to change the powers conferred by the Bill.
Revised location for the National Grid substation near Quainton AP2-012-004	The National Grid substation is located north-west of the HS2 route, close to Edgcott Road overbridge.	The National Grid substation and associated access will be moved to a new location immediately east of the location proposed in the original scheme. A new balancing pond and ditch outfall will discharge to the nearby River Ray. Footpath QUA/35/2 will be permanently realigned. The amendment will permanently require land outside Bill limits.
Balancing pond at Adam's accommodation underbridge AP2-012-005	A section of railway drainage north of Footpath QUA/26 accommodation underbridge discharges into one proposed balancing pond south-east of the accommodation underbridge at this location.	The balancing pond proposed in the original scheme will be reduced in size. Part of the railway drainage will be redirected to a new balancing pond at Adam's accommodation underbridge. A turning head will be constructed east of the pond. The amendment will permanently require land outside Bill limits.
Diversion of Greatmoor Energy from Waste facility access road AP2-012-006	The proposed route of the Energy from Waste (EfW) facility access route was known and land identified for its diversion. However, powers over this land for permanent diversion of the access road were not included in the Bill.	Since submission of the Bill, the EfW access road has been constructed along the proposed HS2 route between Bridleway QUA/36 accommodation green overbridge and Bridleway GUN/28 accommodation green overbridge. The access road will be diverted

Name of amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 revised scheme
		to run alongside the HS2 route. The amendment therefore requires a change of land use which resulted in a need to change the powers conferred by the Bill.
Bridleway diversion and footpath upgrades at Calvert Landfill site AP2-013-001	Construction of the original scheme alongside the existing Aylesbury Link rail line displaces bridleways CAG/3/1, GUN/25/1 and SCL/18/2 which are diverted parallel to the HS2 route.	The diversion for bridleways SCL/18/2, CAG/3/1, and GUN/25/1, which runs parallel to the HS2 route, will be designated a footpath only and not a bridleway. An alternative bridleway route will be provided to the west of Calvert Landfill site, which will have a permanent requirement for land outside the Bill limits. The amendment affects both CFA12 and CFA13.

Figure 1: Locations of amendments in CFA12



5 Assessment of amendments

5.1 Additional land for drainage south of Footpath QUA/26 accommodation underbridge (AP2-012-001)

5.1.1 The Bill has no provision for regrading the ditch (known as Doddershall Brook) south of Footpath QUA/26 accommodation underbridge (refer to map CT-05-051 in main ES Volume 2, CFA12 Map Book).

5.1.2 Since submission of the Bill, it has been identified that additional land will be required to deepen the existing ditch south of Footpath QUA/26 accommodation underbridge. The section of ditch that will be affected is west of the HS2 route and approximately 100m long. The drainage works will require regrading and widening of a ditch from a point 30m north of where it is crossed by Footpath QUA/24 to the track running east from Doddershall House (refer to map CT-05-051 in the SES and AP2 ES Volume 2, CFA12 Map Book).

5.1.3 The estimated duration of construction is one month and will be the same as the original scheme. Approximately 0.1ha of additional land (including the ditch) is required permanently for regrading the ditch. Approximately 600m^2 is outside the original limits of the Bill.

5.1.4 The additional land for drainage works 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: agriculture, forestry and soils; air quality; community; land quality; landscape and visual assessment; socio-economics; sound, noise and vibration; and traffic and transport. However, reassessment was considered to be required in respect of: cultural heritage; ecology; and water resources and flood risk assessment.

Cultural heritage

Scope, assumptions and limitations

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

Existing baseline

5.1.6 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which included walk-over survey, geophysical survey, remote-sensing data, and data from national and local registers. A full list is provided in Volume 2, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical and walk-over surveys for archaeology.

5.1.7 The section of ditch to be regraded is within the Doddershall medieval landscape (asset reference[6] WAD136), an asset of moderate heritage value and partially in the

[6] Asset reference: a unique code for each cultural heritage asset identified within the study area; further detail on these assets can be found in the gazetteer in Volume 5: Appendix CH-002-012 of the main ES.

south-eastern edge of the Doddershall deserted medieval village (asset reference WAD063), an asset of high heritage value. The amendment is surrounded by a highly sensitive historic landscape with a number of heritage assets being assessed to be of moderate or high value. These include two areas of ridge and furrow (asset references WAD0128 and WAD059) to the south and east of the amendment both of moderate value, and the Doddershall deserted medieval village extending to the north-west. Also part of the landscape and approximately 300m to the south-west are the grounds of Doddershall House (asset reference WAD067), which includes two Grade II listed structures with the house itself Grade II* listed (asset reference WAD066). These are assets of moderate and high heritage value respectively.

Future baseline

Construction (2017)

5.1.8 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 6.3).

Operation (2026)

5.1.9 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 6.3).

Effects arising during construction

5.1.10 The amendment will result in additional ground work in a historically sensitive area, principally regrading of an existing ditch. However, given the extent of groundwork already proposed in this area the addition of this comparatively small area will not change the significant effects reported in the main ES: a moderate adverse effect on Doddershall medieval landscape (asset reference WAD136), a major adverse effect on Doddershall deserted medieval village (asset reference WAD063) , a moderate adverse effect on one area of ridge and furrow (asset reference WAD0128) and a major adverse effect on Doddershall House (asset reference WAD066) . No significant effects were reported in the main ES for one area of ridge of furrow (asset reference WAD059) and the grounds of Doddershall House (asset reference WAD067).

5.1.11 The regrading of the existing ditch will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

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

Mitigation and residual effects

5.1.13 There will be no change to the mitigation and residual effects reported in Volume 2 of the main ES or the AP1 ES.

Cumulative effects

5.1.14 There are no new or different likely significant cumulative effects for cultural heritage as a result of the proposed amendment acting in combination with another

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

Ecology

Scope, assumptions and limitations

5.1.15 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.

5.1.16 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

5.1.17 The ecological baseline of the land required for regrading of the ditch has been based on field data collated since September 2013, additional survey work for bats and great crested newt undertaken from April 2014 to October 2014, 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 (BBOWT); the Amphibian and Reptile Group for Buckinghamshire; North Bucks Bat Group, and the Bernwood Forest Bechstein's Project.

5.1.18 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 Part 1 of this report; with further details provided in Volume 5: Appendix EC-001-002 of the SES and AP2 ES. For those receptors described in the main ES, further details are provided in Volume 2, CFA12, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

5.1.19 One non-statutory site is relevant to the amendment: Grendon and Doddershall Meadows Local Wildlife Site (LWS) (24.5ha). It is designated for diverse grassland, scrub and pond habitats. Plants that are uncommon in Buckinghamshire are present. The amendment is situated within the LWS, which is of county/metropolitan value.

5.1.20 There are no other statutory or non-statutory designated nature conservation sites or ancient woodlands relevant to the assessment. Statutory and non-statutory designated sites are described in the main ES, Volume 2, CFA12, Section 7 and are shown on maps EC-01-025b to EC-01-028a, Volume 5, Ecology Map Book.

Habitats

5.1.21 Grendon and Doddershall Meadows LWS contains an extensive area of unimproved neutral grassland likely to qualify as lowland meadow, which is a habitat of principal importance. Species composition varies and wetter areas contribute to the diversity of

grassland habitats. The grassland is identified in the main ES as being of county/metropolitan value.

5.1.22 The ditch, known as Doddershall Brook, is a tributary of the Tetchwick Brook. A section of the ditch with associated scrub and trees is in the land required for the amendment. It has channel characteristics that are of little ecological interest and is likely to be of low value for fish and invertebrates. Other habitat in the amendment comprises improved grassland. These areas of habitat were not described in the main ES and are unlikely to exceed local/parish value.

5.1.23 Habitats surrounding the land required for the amendment are described in the main ES, Volume 2, CFA12, Section 7 and are shown on Maps EC-02-025b to EC-02-028a, Volume 5, Ecology Map Book.

Protected and/or notable species

5.1.24 A potential great crested newt population identified in the main ES as being associated with unaccessed land in and adjacent to Grendon and Doddershall Meadows LWS is relevant to this amendment. Owing to the extent of suitable habitat and connectivity between ponds at this location, it is reasonable to assume that a medium-sized population may be present. Based on the extent of both terrestrial and aquatic habitat it is unlikely that the potential metapopulation would exceed county/metropolitan value.

5.1.25 A population of grass snake is potentially present at Grendon and Doddershall Meadows LWS that could meet criteria for county importance. The potential population is identified as being of up to county/metropolitan value in the main ES.

5.1.26 The assemblage of notable plants at Grendon and Doddershall Meadows LWS includes county rare and county scarce species and is identified in the main ES as being of county/metropolitan value.

5.1.27 Locations of species records for CFA12 are illustrated in the main ES on Maps EC-01 to EC-12, Volume 5, Ecology Map Book.

Future baseline

Construction (2017)

5.1.28 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Operation (2026)

5.1.29 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

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

Designated sites

5.1.31 The original scheme would result in 11.6ha of habitat loss at Grendon and Doddershall Meadows LWS. The main ES reports a permanent adverse effect on site integrity which would be significant at county/metropolitan level. The amendment requires the regrading of a ditch that is adjacent to the LWS resulting in the loss of an additional 600m² of habitat from the LWS. The additional loss comprises approximately 300m² of unimproved neutral grassland for which the site is designated, the remaining habitat comprises improved grassland and a ditch. The amendment will result in a different significant effect on Grendon and Doddershall Meadows LWS due to the additional loss of unimproved neutral grassland. However, it will not change the level of significance of the effects reported in the main ES.

Habitats

5.1.32 The original scheme would result in 11.6ha of habitat loss at Grendon and Doddershall Meadows LWS. The main ES reports a permanent adverse effect on the conservation status of unimproved neutral grassland that would be significant at county/metropolitan level. The amendment requires the regrading of a ditch that is adjacent to the LWS resulting in the loss of an additional 600m² of habitat from the LWS. The additional loss comprises approximately 300m² of unimproved neutral grassland for which the site is designated, the remaining habitat comprises improved grassland and a ditch. The amendment will result in a different significant effect on Grendon and Doddershall Meadows LWS due to the additional loss of unimproved neutral grassland. However, it will not change the level of significance of the effects reported in the main ES.

Species

5.1.33 The main ES reported that the original scheme would result in the loss of a single pond and suitable terrestrial habitat for great crested newt, habitat suitable for notable plant species and a large population of grass snake at Grendon and Doddershall Meadows. In all cases the effect was significant at up to the county/metropolitan level. The amendment will result in the loss of approximately 300m² of additional terrestrial habitat for these species groups. The amendment will result in a different significant effect on great crested newt, grass snake and notable plant species. However, this will not change the level of significance of the effects reported in the main ES.

5.1.34 It is unlikely that the amendment will result in any other 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 AP2 revised scheme are listed in SES and AP2 ES Volume 5: Appendix EC-002-002.

Cumulative effects

5.1.35 There will be a combined loss within the Grendon and Doddershall Meadows LWS arising from this amendment combined with a further amendment for balancing ponds at Footpath QUA/26 accommodation underbridge AP2-12-002, see Section 5.3. The combined additional habitat loss will be approximately 0.15ha, of which the loss of lowland meadow is approximately 0.12ha. This will result in a different significant effect on Grendon and Doddershall Meadows LWS. However, this will not change the

level of significance of the effects, reported in the main ES at the county/metropolitan level.

Mitigation and residual effects

Other mitigation measures

5.1.36 The mitigation measures included in the main ES includes the creation of approximately 30ha of lowland meadow on fields adjacent to the LWS. This level of provision was precautionary and the area is large enough to address the loss of this habitat associated with the original scheme, the AP1 revised scheme, this amendment and amendment AP2-012-002.

5.1.37 The translocation of the additional lowland meadow area to be lost will be undertaken where appropriate through application of the ecological principles of mitigation in Volume 5, Appendix CT-001-000/2 of the main ES. Following implementation there will be no significant adverse effect on the conservation status of lowland meadow.

5.1.38 The areas of lowland meadow creation included within the main ES will also provide suitable replacement terrestrial habitat for amphibians and reptiles. These measures will ensure that there is no significant adverse effect on great crested newt and grass snake.

Summary of likely residual effects

5.1.39 With the implementation of the mitigation measures proposed the new or different ecological effects arising from the AP2 revised scheme are reduced to a level where they are not significant. The significant effects of the AP2 revised scheme are therefore unchanged from those reported in the main ES or the AP1 ES.

Effects arising from operation

5.1.40 The amendment will not give rise to any new or different operational effects.

Water resources and flood risk assessment

Scope, assumptions and limitations

5.1.41 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.

Existing baseline

5.1.42 The baseline water resources and flood risk information for the Waddesdon and Quainton area is described in the main ES (Volume 2, CFA Report 12, Section 13.3).

5.1.43 The ditch (known as the Doddershall Brook) that will be regraded is a tributary of the Tetchwick Brook. The Tetchwick Brook is classified as an ordinary watercourse. The ditch is not classified under the Water Framework Directive (WFD) and the status is assumed from the downstream Tetchwick Brook (WFD water body reference GB106039030070). The Tetchwick Brook has a current overall status of Poor and the

objective for 2027 is Good. This watercourse is considered to be a moderate value receptor[7].

5.1.44 The site is underlain by the Oxford Clay Formation classified as unproductive strata. There are isolated areas of Alluvium superficial deposits directly beneath the drainage channels. The superficial deposits are likely to be in hydraulic connectivity with local watercourses and are likely to hold only limited groundwater. The Alluvium is classified as a Secondary A aquifer.

5.1.45 According to Environment Agency records, there are no licensed surface water or groundwater abstractions. There are no reported private, unlicensed surface water or groundwater abstractions in this area. There is the potential for further unlicensed abstractions to exist, as a licence is not required for abstraction volumes below 20m^3 per day.

5.1.46 The ditch regrading extends to the Doddershall House access road. The Doddershall Brook does not have associated Environment Agency Flood Zones along the extent of the regrading works, but Flood Zones 2 and 3 are defined immediately downstream of the Doddershall House access road. Consequently, the channel works have the potential to affect the risk of flooding along the Doddershall Brook. No properties are at risk from river flooding in the study area.

5.1.47 The agreed data set for surface water flooding is the updated Environment Agency Flood Map for Surface Water. The Doddershall Brook and its tributaries have an associated surface water floodplain. The extent of the 1 in 1000 years return period (0.1% annual probability) rainfall event flood outline correlates with Flood Zone 3 downstream of the access road, and may therefore be used to provide an indication of the risk of flooding from the Doddershall Brook. The land use in the floodplain around the HS2 route is largely made up of arable farmland and pasture (moderate value receptor).

Future baseline

Construction (2017)

5.1.48 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 13.3).

Operation (2026)

5.1.49 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 13.3).

Effects arising during construction

5.1.50 During regrading of the Doddershall Brook there is a potential for temporary impacts to the surface watercourse due to sediment mobilisation or spills that may affect downstream water quality. The measures set out in the draft CoCP will help ensure that significant effects during construction will be avoided.

[7] For examples of receptor value see Table 43 in the main ES SMR Addendum (Volume 5, Appendix CT-001-000/2).

5.1.51 Superficial deposits, which may contain shallow groundwater, are present in the catchment of the Doddershall Brook. The superficial deposits are likely to be in hydraulic connectivity with the local watercourses. The regrading of the channel will be constructed using good practice as described in Section 16 of the draft CoCP which will ensure no groundwater contamination occurs.

5.1.52 The regraded channel section will be designed and constructed such that there is no loss in channel capacity that could result in a change in the risk of flooding at the location of the amendment, or significant change in downstream conveyance which could result in a change in downstream flood risk. This will ensure no significant effect on the risk of flooding from the Doddershall Brook.

5.1.53 The proposed regrading of the ditch 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 or the AP1 ES, which were reported as not significant.

Effects arising from operation

5.1.54 The proposed regrading of the Doddershall Brook 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 or the AP1 ES, which were reported as not significant.

Mitigation and residual effects

5.1.55 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. 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.

5.1.56 Design of the regraded channel section will consider the objectives of the WFD as described in the river basin management plan. This may include the use of soft engineering solutions for bank and channel design, where reasonably practicable.

5.1.57 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.

5.1.58 There are no new or different residual significant effects for water resources or flood risk as a result of proposed amendment, in comparison with the main ES.

Cumulative effects

5.1.59 There are no new or different likely significant cumulative effects for water resources or flood risk as a result of the regrading of the Doddershall Brook 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.

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

5.2.1 The additional land for drainage south of Footpath QUA/26 accommodation underbridge does not change the significance of the environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA12, Waddesdon and Quainton).

5.3 Balancing ponds at Footpath QUA/26 accommodation underbridge (AP2-012-002)

5.3.1 The Bill provides for a section of railway drainage north of Footpath QUA/26 accommodation underbridge. This drainage will discharge into a balancing pond south-east of the accommodation underbridge (refer to maps CT-05-051 and CT-06-051 in main ES Volume 2, CFA12 Map Book).

5.3.2 Since submission of the Bill, it has been identified that an additional outfall and balancing pond will be required in order to drain this section of railway. There will be an additional balancing pond north of Footpath QUA/26 accommodation underbridge. The balancing pond proposed in the original scheme will remain but will be reduced in size by about half. The new balancing pond will be the larger of the two ponds (refer to maps CT-05-051 and CT-06-051 in the SES and AP2 ES Volume 2, CFA12 Map Book).

5.3.3 The estimated duration of construction is three months and does not extend the construction duration of Doddershall embankment reported in the main ES. Approximately 0.4ha of additional land is required permanently for the works and is outside of the Bill limits.

5.3.4 The additional railway drainage works 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: 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

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

Existing baseline

5.3.6 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which included walkover 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 walkover surveys for archaeology.

5.3.7 The new balancing pond is partially in Doddershall deserted medieval village (asset reference WAD063) on the junction of two historic hedgerows that form part of a hedgerow complex (asset reference WAD062) to the north of the deserted medieval village. It is also partially within the wider Doddershall medieval landscape (asset reference WAD136). This is a highly sensitive historic landscape, with the deserted village being an asset of high heritage value and the historic landscape and hedgerow complex an asset of moderate heritage value.

5.3.8 The baseline resources are described in the main ES (see CFA report 12, Section 6 and Volume 5, Appendix CH-001-012).

Future baseline

Construction (2017)

5.3.9 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 6.3).

Operation (2026)

5.3.10 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 6.3).

Effects arising during construction

5.3.11 The additional drainage outfall and balancing pond will result in additional groundworks in an archaeologically sensitive area with the potential for removal of archaeological remains associated with Doddershall deserted medieval village (asset reference WAD063) and the Doddershall medieval landscape (asset reference WAD136). It will also result in the removal of an additional stretch of historic hedgerow (asset reference WAD062). However, the main ES has already reported a high impact and major adverse significant effect on Doddershall deserted medieval village, a medium impact and moderate effect significant on Doddershall medieval landscape and a high impact and major adverse significant effect on the historic hedgerow due to the original scheme.

5.3.12 The proposed additional drainage outfall and balancing pond will give rise to a different significant effect with additional groundworks in an archaeologically sensitive area. However, this amendment will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

5.3.13 The additional balancing pond at Footpath QUA/26 accommodation underbridge will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

5.3.14 There will be no change to the mitigation reported in Volume 2 of the main ES. The proposed balancing ponds will give rise to a different residual significant effect with the potential permanent removal of additional archaeological remains associated with Doddershall Medieval Village (asset reference WAD063) and the Doddershall Medieval landscape (asset reference WAD136) when compared to the original scheme

and the AP1 scheme. However, this will not change the level of significance of the effects reported in the main ES and the AP1 ES.

Cumulative effects

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

Ecology

Scope, assumptions and limitations

5.3.16 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.

5.3.17 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

5.3.18 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES, aerial photography and relevant existing information gathered from national organisations and from regional and local sources including Buckinghamshire and Milton Keynes Environmental Records Centre; BBOWT; the Amphibian and Reptile Group for Buckinghamshire; North Bucks Bat Group, and the Bernwood Forest Bechstein's Project.

5.3.19 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant new or updated baseline information provided in Volume 5: Appendix EC-001-002 of the SES and AP2 ES. For those receptors described in the main ES, further details are provided in Volume 2, CFA12, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

5.3.20 One non-statutory site is relevant to the amendment; Grendon and Doddershall Meadows LWS (24.5ha). It is designated for diverse grassland, scrub and pond habitats, and plants that are uncommon in Buckinghamshire are present. It is of county/metropolitan value. The balancing pond proposed in the amendment is located within the LWS.

5.3.21 There is no other statutory or non-statutory designated nature conservation site or ancient woodland relevant to the assessment. Statutory and non-statutory designated sites are described in the main ES, Volume 2, CFA12, Section 7 and are shown on Maps EC-01-025b to EC-01-028a, Volume 5, Ecology Map Book.

Habitats

5.3.22 Grendon and Doddershall Meadows LWS contains an extensive area of grassland likely to qualify as lowland meadow, which is a habitat of principal importance. The habitat within land required for this amendment is assumed to be predominantly unimproved neutral grassland, which is identified in the main ES as being of county/metropolitan value.

5.3.23 A section of ditch forming an unnamed tributary of the Tetchwick Brook is within the land required for the amendment. It is likely to be of low value for fish and aquatic invertebrates, and has channel characteristics that are of little ecological interest. This is not referred to specifically in the main ES and is unlikely to exceed local/parish value.

5.3.24 Other habitat adjacent to the land required for the additional balancing pond is predominantly arable land, and is part of the wider resource of arable land identified in the main ES as being of local/parish value.

5.3.25 Habitats surrounding the land required for the amendment are described in the main ES, Volume 2, CFA13, Section 7 and are shown on Maps EC-02-028b to EC-02-29, Volume 5, Ecology Map Book.

Protected and/or notable species

5.3.26 A potential great crested newt population identified in the main ES as being associated with unaccessed land in and adjacent to Grendon and Doddershall Meadows LWS is relevant to this amendment. Owing to the extent of suitable habitat and connectivity between ponds at this location, it is reasonable to assume that a medium-sized population may be present. Based on the extent of both terrestrial and aquatic habitat, it is unlikely that the potential metapopulation would exceed county/metropolitan value.

5.3.27 Grendon and Doddershall Meadows LWS is potentially suitable to support a population of grass snake that could meet criteria for county importance; the potential population is identified as being of up to county/metropolitan value in the main ES.

5.3.28 The assemblage of notable plants at Grendon and Doddershall Meadows LWS includes county rare and county scarce species and is identified in the main ES as being of county/metropolitan value.

5.3.29 Locations of species records for CFA12 are illustrated in the main ES on Maps EC-01 to EC-12, Volume 5, Ecology Map Book.

Future baseline

Construction (2017)

5.3.30 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Operation (2026)

5.3.31 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

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

Designated sites

5.3.33 The original scheme would result in 11.6ha of habitat loss at Grendon and Doddershall Meadows LWS. The main ES reports a permanent adverse effect on site integrity which would be significant at county/metropolitan level. The balancing pond will result in the loss of an additional 900m² of habitat within the LWS, assumed to be predominantly unimproved neutral grassland for which the site is designated. The amendment will give rise to a different significant effect on the LWS due to the additional loss of unimproved neutral grassland. However, there will be no change to the level of significance of the effects reported in the main ES.

Habitats

5.3.34 The main ES reports a permanent adverse effect on the conservation status of lowland meadow that is significant at the county/metropolitan level. As described above in the assessment of effects on designated sites, there will be an additional loss of approximately 900m² of lowland meadow from Grendon and Doddershall Meadows LWS. The additional loss of habitat caused by the amendment results in a different significant effect due to the additional loss of lowland meadow habitat. However, this does not change the level of significance of the effect on the conservation status of lowland meadow reported in the main ES.

5.3.35 It is unlikely that the amendment will result in any other effects on habitats of relevance at more than the local/parish level will occur. Additional local/parish level effects arising from AP2 revised scheme are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Species

5.3.36 The main ES reported habitat loss at Grendon and Dodderhsall Meadows LWS would result in significant adverse effects at the county/metropolitan level on populations of plant species, reptiles and great crested newt present at the site. The amendment will result in the additional loss of approximately 900m² of grassland habitat suitable for these species groups. This will result in a different significant effect on populations of great crested newt, reptiles and notable plants. However, this will not change the level of significance of the effects reported in the main ES.

5.3.37 It is unlikely that the amendment will result in any other effects on species receptors of relevance at more than the local/parish level. Additional local/parish level effects (i.e. in addition to those identified in the main ES) arising from the amendment are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Cumulative effects

5.3.38 There will be a combined loss from Grendon and Doddershall Meadows LWS arising from this amendment and the additional land for drainage south of Footpath QUA/26

accommodation underbridge (AP2-012-001), see Section 5.1. The combined additional habitat loss will be approximately 0.15ha, of which the loss of lowland meadow will be approximately 0.12ha. This will result in a different significant effect on Grendon and Doddershall Meadows LWS. However, this will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

Other mitigation measures

5.3.39 The mitigation measures presented in the main ES include the creation of approximately 30ha of lowland meadow on fields adjacent to the Grendon and Doddershall Meadows LWS. This level of provision was precautionary and the area is large enough to address the loss of lowland meadow habitat associated with the original scheme, the AP1 revised scheme, this amendment and amendment AP2-012-001.

5.3.40 The translocation of the additional lowland meadow area to be lost will be undertaken where appropriate through application of the ecological principles of mitigation in Volume 5, Appendix CT-001-000/2 of the main ES. Following implementation they will be no significant adverse effect on the conservation status of lowland meadow.

5.3.41 The areas of lowland meadow creation included within the main ES will also provide suitable replacement terrestrial habitat for amphibians and reptiles. These measures will ensure that there is no significant adverse effect on great crested newt and grass snake.

Summary of likely residual effects

5.3.42 With the implementation of the mitigation measures proposed the new or different ecological effects arising from the AP2 revised scheme are reduced to a level where they are not significant. The significant effects of the AP2 revised scheme in this area are therefore unchanged from those reported in the main ES or the AP1 ES.

Effects arising from operation

5.3.43 The proposed amendment will not give rise to any new or different operational effects.

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

5.4.1 The additional outfall and balancing pond north of Footpath QUA/26 accommodation underbridge will give rise to a different significant effect with respect to potential archaeological remains at Doddershall deserted medieval village. However, this will not change the level of significance of the major adverse significant effect reported in the main ES.

5.4.2 There will be no other changes to significance of the environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA12, Waddesdon and Quainton) with respect to this amendment.

5.5 Extension of Bridleway QUA/28A overbridge for farm vehicles (AP2-012-003)

5.5.1 The Bill provides for a bridleway overbridge along the route of Bridleway QUA/28A. The diverted Footpath QUA/24A will also cross the HS2 route via this overbridge (refer to maps CT-05-051 and CT-06-051 in main ES Volume 2, CFA12 Map Book).

5.5.2 Since submission of the Bill, a need to provide farm access across the HS2 route in this locality has been identified. The proposed overbridge for Bridleway QUA/28A and Footpath QUA/24A will be extended, widened and the surface improved so that it will be suitable for farm vehicles (refer to maps CT-05-051 and CT-06-051 in the SES and AP2 ES Volume 2, CFA12 Map Book).

5.5.3 The estimated duration of construction is one year and is the same as in the original scheme. The works will require a wider bridge and path leading up to the bridge from either side, compared to the original scheme. The carriageway width will be approximately 3.5m, with verges of 1.5m and 0.5m. The construction method will remain the same as reported in the original scheme.

5.5.4 The additional land required permanently is approximately 400m^2 and is within the original limits of the Bill. The additional land for the bridleway overbridge is in areas designated for landscape mitigation; however, the landscape mitigation remains adequate to mitigate effects reported in the main ES. The amendment therefore requires a change of land use which has resulted in the need to alter the powers conferred by the Bill.

5.5.5 The upgrade of Bridleway QUA/28A overbridge for farm traffic is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to any environmental topic.

5.6 Revised location for the National Grid substation near Quainton (AP2-012-004)

5.6.1 The Bill provides for the construction of a National Grid substation north-west of the HS2 route close to the Edgcott Road overbridge. The substation will supply electricity power to Quainton auto-transformer feeder station (refer to maps CT-05-051, CT-05-051-R1, CT-05-052, CT-06-051 and CT-06-052 in the main ES Volume 2, CFA12 Map Book).

5.6.2 Since submission of the Bill, a review of the connection complexities and construction constraints has been carried out. A revised location is proposed for the substation immediately east of the location identified in the main ES. In addition, there will be a cable sealing end compound[8] constructed to the north of the substation footprint proposed in the original scheme.

5.6.3 About 1.25km of overhead power lines will be temporarily rerouted to the east of the substation during its construction. On completion of the substation (including the

[8] A cable sealing end compound is used to join overhead power lines to underground cables. Such compounds may have some monitoring equipment but no power transformers and generally no switchgear

cable end sealing compound) the overhead power lines will be reinstated; they will be routed between the substation and the cable sealing end compound.

5.6.4 A balancing pond, which was not proposed in the original scheme, will be constructed to drain the access road and hard standing. The balancing pond will be located to the north of the final alignment of the overhead power lines, north of the substation and east of the cable sealing end compound. It will discharge to the nearby River Ray via a new ditch.

5.6.5 Exterior operational lighting, designed to minimise light spillage, will be installed at the substation. Lights will only be turned on when engineers need to attend the substation during the hours of darkness. It is estimated attendance will average once every six months. It is anticipated that lights will be illuminated for a short period of time.

5.6.6 Footpath QUA/35/2 will be permanently realigned prior to construction of the substation. The new route will follow existing field boundaries which are slightly further north of the substation site than the current footpath. The length of the footpath diversion will increase by about 30m compared to that reported in the main ES. For details of the AP2 revised scheme (refer to maps CT-05-051, CT-05-051-R1, CT-05-052, CT-06-051 and CT-06-052 in the SES and AP2 ES Volume 2, CFA12 Map Book).

5.6.7 The estimated duration of construction for the substation is two years which is the same as the original scheme. Diversion of the overhead power lines will take place during advanced works and will be the same as in the original scheme. The overall footprint of the land required will change. Approximately 14.7ha of additional land is required permanently for the works, which is outside Bill limits. However, there is approximately 2.8ha in the original scheme that is no longer required either temporarily or permanently.

5.6.8 The relocation of the National Grid substation 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; socio-economics; sound, noise and vibration; traffic and transport; and, water resources and flood risk assessment. However, reassessment was considered necessary in respect of: agriculture, forestry and soils; cultural heritage; ecology; and, landscape and visual assessment.

Main local alternatives

5.6.9 Six options for the location of the National Grid substation near Quainton were evaluated for the AP2 revised scheme:

- Option A - the original scheme, with the substation underneath the overhead power lines;
- Option B - relocate the substation south of and aligned with the overhead power lines;
- Option C - relocate the substation to the south of and aligned with the overhead power lines, and refine the land required for construction and operation of the AP2 revised scheme;

- Option D - relocate the substation south of and offset from the overhead power lines;
- Option E - relocate the substation north of and aligned with the overhead power lines; and
- Option F - relocate the substation north of and offset from the overhead power lines.

5.6.10 In Option A (the original scheme), the substation would be located underneath the existing alignment of the overhead power lines, making the design and construction sequencing untenable. This location would also have a permanent land requirement on Finemere Wood nature reserve. It was therefore considered other options should be explored.

5.6.11 Option B would require more land for construction compared to Option A, though the permanent area for the substation would be smaller. Owing to the substation being located south of the overhead power lines there are a number of benefits when compared with the alternatives, including a larger buffer area between the construction site and the Finemere Wood SSSI, a reduction in the length of the access road and a reduction of materials required due to the shorter length of the 400kV and 132 kV cables. There would be a potential temporary visual impact to residents of Middle Farm, Shipton Lee and footpath users near this farm.

5.6.12 Option C has many of the same characteristics of Option B. However, an adjusted overhead line alignment and substation position would result in a better balance of ecological, and landscape and visual impacts considering proximity to Finemere Wood SSSI and properties to the east. It allows construction of the overhead power lines diversion prior to transmission system outages[9] which removes risks to the HS2 construction programme. The positioning also has less impact on existing field boundaries compared with Option B.

5.6.13 Option D has many of the same benefits as options B and C, as it would also be situated south of the overhead power lines. However, four additional low-level towers would be required to make the connections to the overhead power lines. Therefore this option would be worse than options B and C with regard to landscape and visual impacts.

5.6.14 Option E would position the substation to the north of the overhead power lines. The land permanently required and construction boundary would encroach upon grassland in the Finemere Wood nature reserve and the construction boundary would sever bat flightlines. This severance would be greater than in Option A. While loss of hedgerows would be minimised, the increase in transmission line and substation infrastructure would adversely affect landscape character for the surrounding area. The construction boundary would be adjacent to the River Ray and in the Zone 2 and 3 floodplains; this option and Option F are potentially worse than other options with regard to water resources and flood risk.

[9] A planned switch of power to allow maintenance or installation of equipment.

5.6.15 Option F is similar to Option E as it is also located north of the overhead power lines. Despite the minimal loss of the hedgerows, extensive underground cabling would be required and cause an overall increased impact on the landscape character during construction. The construction boundary would encroach upon grassland in the Finemere Wood nature reserve. However, the key bat flightlines would not be impacted as they are in Option E. The construction boundary would directly encroach on the floodplain of the River Ray.

5.6.16 Based on the aforementioned appraisal, Option C is the preferred option given the following. It minimises the impacts on grassland in Finemere Wood nature reserve and the visual impacts on the landscape character of the surrounding area. It also avoids floodplain impacts that are associated with Option E and Option F and has less impact on the surrounding landscape features compared to OptionB. It follows that Option C has been adopted as part of the AP2 revised scheme.

Agriculture, forestry and soils

Scope, assumptions and limitations

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

Existing baseline

5.6.18 The land that would have been affected by the original scheme and that which will be affected by the AP2 revised scheme has soils in the Denchworth association. It is characterised by stoneless, clayey, wet and poorly drained soils of Wetness Class (WC) IV, which are classified as moderate quality agricultural land in Subgrade 3b.

5.6.19 Two holdings would be affected by revised location of the substation. Hill Farm (CFA12/11) is a 405ha arable, beef cattle and sheep farm. The second is conservation grassland in Finemere Wood nature reserve managed by BBOWT (CFA12/17). It extends to 32.8ha and is managed for nature conservation.

Future baseline

Construction (2017)

5.6.20 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 3.3).

5.6.21 Most existing environmental stewardship agreements will expire in 2015 and be replaced by a new environmental land management scheme (countryside stewardship) which is voluntary but competitive. It is more targeted than previous schemes, with its priorities being to protect and enhance biodiversity and water quality.

5.6.22 The widespread basic environmental management associated with entry level stewardship will be replaced by a new concept of greening introduced by Common Agricultural Policy reform, which will now be the main means by which farmers will provide environmental benefits in return for their direct support payments. Greening will encourage the retention of permanent grasslands, greater crop diversification and the creation of Ecological Focus Areas. These changes will affect the detailed

management of individual farm holdings but are not expected to change fundamentally the baseline circumstances described.

Operation (2026)

5.6.23 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 3.3).

Effects arising during construction

5.6.24 The additional 14.7ha of land that will be required permanently is all Subgrade 3b, and is not the best and most versatile (BMV) agricultural land. Although BMV land in the study area is a receptor of high sensitivity, no such land will be disturbed during construction and the effect on lower quality Subgrade 3b agricultural land is not significant.

5.6.25 Hill Farm will lose a further 14.7ha of land as a result of the amendment, taking the total area required during construction from this holding to 37.7ha. This represents 9.3% of the total holding and the temporary effect will remain as reported in the main ES - a minor adverse effect that is not considered significant. Once land required temporarily for the construction of the scheme is restored to agriculture, the total area removed permanently will be 27.3ha. This represents 6.7% of the total holding and, although the impact of land loss will increase as a result of this amendment, the overall effect on the holding remains not significant.

5.6.26 The area of grassland permanently removed from Finemere Wood nature reserve will be reduced from 3.1ha (10%) to 0.3ha (1%). Overall the significance of effect will alter from minor adverse to negligible, neither of which is considered significant.

Effects arising from operation

5.6.27 The revised location for the National Grid substation will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

5.6.28 No significant residual effects on agriculture, forestry and soils have been identified during construction or operation due to this amendment. No additional mitigation measures are proposed.

Cumulative effects

5.6.29 There are no new or different likely significant cumulative effects for agriculture forestry and soils 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

5.6.30 The assessment scope, key assumptions and limitations for cultural heritage 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.

Existing baseline

5.6.31 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which included walk-over survey, geophysical survey, remote-sensing data, and data from national and local registers. A full list is provided in Volume 2, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical and walkover surveys for archaeology.

5.6.32 The relocation of the National Grid substation will be constructed close to a number of heritage assets. Located 400m to the south of the amendment, are the Doddershall medieval landscape (asset reference[10] WAD136) and Doddershall deserted medieval village (asset reference WAD063), assets of moderate and high value respectively. These two assets cover a substantial area, which also includes Doddershall House (asset reference WAD066), an asset of high value, and its associated grounds (asset reference WAD067), an asset of moderate value. These are approximately 900m from the revised location for the National Grid substation.

5.6.33 To the north of the amendment there are a number of medieval features including the approximate location of a watermill (asset reference WAD083) and a fish pond bay (asset reference WAD084) both assets of low heritage value. Earthworks originating as a deserted medieval village and grange (asset reference WAD058) are an asset of moderate value. These lie approximately 500m to the west of the amendment at Shipton Lee.

5.6.34 The baseline resources are described in the main ES (see CFA12, Volume 2, Section 6.3 and Volume 5: Appendix CH-001-012).

Future baseline

Construction (2017)

5.6.35 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 6.3).

Operation (2026)

5.6.36 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 6.3).

Effects arising during construction

5.6.37 There were no significant effects reported in the main ES for the grounds of Doddershall House (asset reference WAD067), the approximate location of a watermill (asset reference WAD083), the pond bay at Lee Wood (asset reference WAD084) and the earthworks at Shipton Lee (asset reference WAD058). Significant effects were reported for Doddershall medieval landscape (asset reference WAD136) with a moderate adverse effect, Doddershall deserted medieval village (asset reference WAD063) with a major adverse effect and Doddershall House (asset reference WAD066) with a major adverse effect.

[10] Asset reference: a unique code for each cultural heritage asset identified within the study area; further detail on these assets can be found in the gazetteer in Volume 5: Appendix CH-002-011 of the main ES.

5.6.38 The revised location for the National Grid substation does not encroach onto any of the heritage assets previously identified or alter their settings. It will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

5.6.39 The revised location for the National Grid substation will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES and/or the AP1 ES.

Mitigation and residual effects

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

Cumulative effects

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

Ecology

Scope, assumptions and limitations

5.6.42 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.

5.6.43 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

5.6.44 The ecological baseline of the land required for relocation of the National Grid substation has been based on field data collated 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; BBOWT; North Bucks Bat Group; Bernwood Forest Bechstein's Project, and the Upper Thames (Berkshire, Bucks and Oxon) Branch of Butterfly Conservation.

5.6.45 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 Part 1 of this report; with further details provided in Volume 5: Appendix EC-001-002 of the SES and AP2 ES. For those receptors described in the

main ES, further details are provided in Volume 2, CFA12, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

5.6.46 Finemere Wood, a SSSI, (47.9ha) is located 85m from the land required for the amendment. It is designated for ancient woodland and its rich assemblage of plants and woodland birds, and invertebrates which have a highly localised distribution in southern England. This site is of national value.

5.6.47 One non-statutory site is relevant to the amendment. This is Grendon and Doddershall Meadows LWS (24.5ha) which is 380m from the land required for the substation and is designated for diverse grassland, scrub and pond habitats. It is of county/metropolitan value.

5.6.48 In addition to Finemere Wood SSSI, BBOWT's Finemere Wood nature reserve includes a large area of semi-improved grassland that is adjacent to the amendment. Finemere Wood nature reserve is largely species-poor. It is not subject to formal designation and therefore its value is described only in terms of its habitat quality below.

5.6.49 Statutory and non-statutory designated sites are described in the main ES, Volume 2, CFA12, Section 7 and are shown on Map EC-01-027, Volume 5, Ecology Map Book.

Habitats

5.6.50 The hedgerows within and adjacent to the land required for the substation are considered to be part of the resource of hedgerows in the wider area evaluated in the main ES and qualify as a habitat of principal importance[11]. Owing to the presence of established and important hedgerows, and to the habitat connectivity that they provide, the hedgerow network is identified in the main ES as being of district/borough value.

5.6.51 Other habitat within the land required for the amendment is predominantly arable and small areas of scrub and scattered trees. They form part of the resource of similar habitats that are of local parish value, as reported in the main ES.

5.6.52 A small area of seasonally wet grassland is partly within the land required for the amendment. This area is dominated by reed canary-grass and tufted hair-grass and no notable species were recorded during the phase 1 habitat survey. It is identified in the main ES and is of local/parish value.

5.6.53 Ancient lowland deciduous woodland is located to the north of the land required for the amendment and is part of Finemere Wood SSSI. It is of national value.

5.6.54 Areas of species-poor semi-improved grassland in Finemere Wood nature reserve are of district/borough value as reported in the main ES.

5.6.55 The amendment is within 200m of the River Ray. Its habitat quality is poor; characterised by a uniform channel, dense shading and limited growth of aquatic and marginal plants. It is identified in the main ES as being of local/parish value.

[11] Natural Environment and Rural Communities Act 2006 (Chapter 16).London. Her Majesty's Stationery Office.

5.6.56 Habitats surrounding the land required for the amendment are described in the main ES, Volume 2, CFA12, Section 7 and are shown on Maps EC-02-025b to EC-02-028a, Volume 5, Map Book Ecology.

Protected and/or notable species

5.6.57 As reported in the main ES, a population of Bechstein's bat associated with Grendon and Doddershall woods, Finemere Wood and Ham Home-cum-Hamgreen Wood, is of national value. The habitat within the land required for the substation is within the home range of this population and Bechstein's activity was recorded along the River Ray and hedgerows within 100m of the land required for this amendment. The additional hedgerows within the land required for the amendment could provide occasional roosting, foraging and commuting habitat for Bechstein's bats from the maternity colonies present in the nearby woodlands.

5.6.58 The revised location for the substation also lies within the home range of an assemblage of woodland bat species that is of regional value comprising Natterer's, Brandt's, whiskered and brown long-eared bats, as reported in the main ES. No flightlines for these species were recorded in the amendment area but they were recorded along the River Ray between Finemere Wood and Woodlands Farm, which is 85m from the land required for this amendment. Therefore it is possible that these species use hedgerows for roosting, foraging and commuting at the revised location for the substation.

5.6.59 Common and soprano pipistrelle bat flightlines were recorded along the River Ray and hedgerows in the proposed amendment. Populations of these species are both evaluated as being of up to county/metropolitan value, as identified in the main ES.

5.6.60 The main ES reports the presence of black hairstreak butterfly populations of regional value associated with scrub habitat at Finemere Wood and the River Ray, in the vicinity of the substation location proposed in the original scheme. Data provided since the publication of the main ES confirms that black hairstreak colonies are present in habitat adjacent to land required for the amendment. Given the continuity and proximity of these areas to the land required for the revised location, it is assumed that this species is present in hedgerows within land required for the amendment.

5.6.61 A medium sized metapopulation of great crested newt is present on land between the Finemere Wood nature reserve and the Calvert Landfill site and is approximately 300m from the land required for the amendment. No suitable ponds are present in or adjacent to the land required for the amendment (the ephemeral pond within the land required is unsuitable), but hedgerows in the land required for the amendment provide suitable terrestrial habitat. Any great crested newt within the land required for the amendment would be part of the wider metapopulation associated with breeding ponds between Finemere Wood nature reserve and the adjoining part of Calvert Estate and is of county/metropolitan value.

5.6.62 A population of barn owls recorded north-west of Quainton, which is assessed as being of county/metropolitan value in the main ES, is relevant to this amendment. Four potential barn owl nest sites are within 500m of the land required for the amendment. Given the connectivity and suitability of habitat on surrounding land required for the amendment, it is likely that the land required forms part of the home

range of this population. No confirmed or potential nest sites have been recorded within the land required.

5.6.63 As reported in the main ES, Grendon and Doddershall Meadows LWS and Woodlands Farm support assemblages of widespread reptiles that are of county/metropolitan value. Both are approximately 350m from land required for this amendment, and given the presence and connectivity of suitable grassland and hedgerows, it is possible that similar populations may be present in the northern part of the land required for the substation.

5.6.64 Badger populations have been recorded throughout the extent of the Aylesbury Link railway line where it is affected by the HS2 route. A territory was identified at Sheephouse Wood. As identified in the main ES the badger populations are of local/parish value. Given the presence of suitable habitat on land required for the amendment, this area may also support badgers.

5.6.65 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)

5.6.66 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Operation (2026)

5.6.67 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

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

5.6.69 There are no specific measures included as part of the amendment to avoid or reduce impacts to features of ecological value on the land required for the amendment.

Designated sites

5.6.70 No adverse effects on the integrity of Finemere Wood SSSI were predicted in the main ES. At its closest point land required for the substation and cable sealing compound is 85m from the SSSI and separated from it by the River Ray. 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

5.6.71 The main ES reports that the removal of important hedgerows and subsequent reduction in the proportion and extent of the hedgerow networks would result in an adverse effect on the conservation status of the hedgerow network that would be

significant at the district/borough level. Hedgerows approximately 230m long will be retained along the access track for the National Grid substation from the Edgcott Road, but the construction of the substation and cable sealing compound will involve the loss of an additional 685m of hedgerows. The amendment will result in a different significant effect on hedgerows. However, this will not change the level of significance of the effects reported in the main ES.

5.6.72 The amendment will result in the loss of an additional 14.2 ha of arable land as well as species-poor semi-improved grassland, scrub, scattered trees and wet grassland. The main ES concluded that it was unlikely effects on these habitat receptors would occur at more than the local/parish level. Changes affecting these habitats will not generate any new or different significant effects, or change the level of significance of the effects reported in the main ES.

5.6.73 It is unlikely that the amendment will result in any other effects on habitat receptors of relevance at more than the local/parish level. Additional local/parish level effects (i.e. in addition to those identified in the main ES) arising from the AP2 revised scheme are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Species

5.6.74 As reported in the SES, prior to mitigation the fragmentation of foraging and commuting habitat associated with the construction of the original scheme would result in a permanent adverse effect on the conservation status of the Bechstein's bat population that is significant at the national level; and on an assemblage of other woodland bats (Natterer's bat, Brandt's, whiskered and brown long-eared) that is significant at the regional level.

5.6.75 Bats were not recorded in the area required for the National Grid substation during detailed surveys carried out in 2012-2014, but it is within the home range and close to flightlines recorded for Bechstein's and other woodland bat species. Approximately 230m of hedgerow along the access track to the substation that could provide a flightline for from Edgcott Road to Finemere Wood will be retained. However, approximately 685m of hedgerow that is likely to be used by foraging bats will be removed. On a precautionary basis, due to the abundance of activity recorded nearby, the construction of the substation could result in a small reduction in habitat that is peripheral to more heavily used foraging areas. The loss of habitat suitable for foraging bats will result in a different significant effect on Bechstein's and other woodland bat species. However, the amendment will not change the level of significance of the effects reported in the SES.

5.6.76 The main ES reports that loss and fragmentation of habitat for black hairstreak will be a significant effect on the local the population of this species at the district borough level. The construction of the National Grid substation will remove approximately 685m of hedgerows assumed to contain blackthorn and therefore suitable for this species. The removal of additional suitable habitat will result in a different significant effect on black hairstreak. However, the amendment will not change the level of significance of the effects reported in the SES.

5.6.77 It is unlikely that the revised location for the National Grid substation 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 the AP2 revised scheme are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Cumulative effects

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

Mitigation and residual effects

Other mitigation measures

5.6.79 The retention of 230m of hedgerow habitat along the access track for the National Grid substation will retain a flightline potentially used by bats to reach foraging and roosting habitat in Finemere Wood.

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

Summary of likely residual effects

5.6.81 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 or the AP1 ES.

Effects arising from operation

Avoidance and mitigation measures

5.6.82 No specific measures will be required to avoid or reduce impacts to features of ecological value in the area of land required for the amendment.

Designated sites

5.6.83 The proposed 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

5.6.84 The proposed change 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.

Species

5.6.85 As described in Section 5.4.5, an appropriate lighting strategy will be provided to avoid light spillage onto the hedgerow between Edgcott Road and Finemere Wood that forms a potential flightline for bats. The proposed change will not give rise to new or different significant effects on Bechstein's and other woodland bat species and will not change the level of the significance of the effects reported in the main ES.

5.6.86 It is unlikely that the amendment will result in any new or different effects on species receptors of relevance at more than the local/parish level. Additional local/parish level

effects (i.e. in addition to those identified in the main ES) arising from SES changes are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Cumulative effects

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

Mitigation and residual effects

Other mitigation measures

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

Summary of likely residual effects

5.6.89 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.

Landscape and visual assessment

Scope, assumptions and limitations

5.6.90 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

5.6.91 The area of land required for the amendment is located within the Kingswood Wooded Farmland Landscape Character Area (LCA) and adjacent to the Finemere Hill LCA as described in the main ES (Volume 2, CFA12, Section 9).

5.6.92 Views north-east from Doddershall House, from dwellings south of Woodlands Farm and from Woodlands Farm (Viewpoint 141.2.001, Viewpoint 143.2.002 and Viewpoint 143.2.001), views south-west from dwellings near Middle Farm, Shipton Lee (Viewpoint 142.2.001) and west from the public highway south of Shipton Lee (Viewpoint 142.4.001) are located in close proximity to the area and are described in the main ES (Volume 2, CFA12, Section 9).

Future baseline

Construction (2017)

5.6.93 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 9.3).

Operation (2026)

5.6.94 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 9.3).

Effects arising during construction

Landscape assessment

5.6.95 Kingswood Wooded Farmland LCA was assessed as being affected by the original scheme and will also be affected by this amendment. The LCA has a wooded farmland character, is considered to be in good condition, of regional value and medium tranquillity. Therefore it is considered to be of high sensitivity to change. The main ES reported a major adverse significant effect during construction due to the loss of characteristic elements including mature vegetation and hedgerows and a reduction in tranquillity.

5.6.96 The revised location of the National Grid substation will give rise to additional loss of existing landscape features including trees, hedgerows and agricultural land on the site of the relocated substation and on the area of land required during its construction. However, these changes will affect a small part of the LCA and in the context of the large-scale works already taking place in the LCA the amendment will not give rise to a new or different significant effect or change the level of significance of the effects reported in the main ES.

5.6.97 Finemere Hill LCA was assessed as being affected by the original scheme. The LCA is in good condition, has a high level of tranquillity and is valued at a regional level. Therefore it is considered to be of a high sensitivity to change. The main ES reported a moderate adverse significant effect during construction because disturbance due to construction activity would reduce tranquillity, although there would be no loss of landscape elements.

5.6.98 Although the location of the works will change, the revised location of the substation to the adjoining field will not give rise to a new or different significant effect or change the level of significance of the effects reported in the main ES.

Visual Assessment

5.6.99 Viewpoint 142.2.001: view south-west from dwellings near Middle Farm, Shipton Lee was assessed as being significantly affected by the original scheme and will be further affected by this amendment. The main ES reported a moderate adverse significant effect due to the high visibility of the construction activity. The revised location for the substation will give rise to different significant effect as the construction works will be closer to receptors. This amendment will change the level of significance of the effects reported in the main ES from moderate to major.

5.6.100 Viewpoint 142.4.001: view west from public highway south of Shipton Lee was assessed as being significantly affected by the original scheme. The main ES reported a major adverse significant effect during construction due to the prominence of construction activity in the foreground of the view. The construction works associated with the substation will, despite their change in location, continue to take place immediately adjacent to the road and therefore the amendment will not give rise to a

new or different significant effect and will not change the level of significance of the effects reported in the main ES.

5.6.101 Viewpoints 141.2.001: view north-east from Doddershall House, 143.2.001: View north-east from Woodlands Farm and 143.2.002: View east from dwellings south of Woodlands Farm were assessed as being significantly affected by the original scheme. The main ES reported major adverse significant effects on views from viewpoints 143.2.001 and 143.2.002 due to construction work on the Edgcott Road overbridge, Adam's accommodation underbridge and Doddershall embankment, the substation and the Quainton auto-transformer feeder station. The main ES reported major adverse significant effects on viewpoint 141.2.001 during construction due to the loss of existing landscape features including trees, hedgerows and the close proximity of construction activities to receptors. The revised location of the National Grid substation will mean that the construction works within this part of the scheme will be located further from these receptors. Since the works on the substation will take place beyond the construction works on the Edgcott Road overbridge, Adam's underbridge and Doddershall embankment, these elements will partly screen the works on the substation and will be more prominent in the view than the substation works. The amendment will not give rise to new or different significant effects and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

Landscape assessment

5.6.102 Kingswood Wooded Farmland LCA was assessed as being affected by the original scheme. The main ES reported a major adverse significant effect during year 1 of operation due to presence of large-scale infrastructure and reduction in tranquillity. This was predicted to reduce to moderate adverse by year 15 of operation and non-significant by year 60 of operation, due to the screening effect of woodland mitigation planting. The original location and the revised location of the National Grid substation are both in the Kingswood Wooded Farmland LCA. The revised location of the National Grid substation will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Visual assessment

5.6.103 Viewpoint 142.2.001: view south-west from dwellings near Middle Farm, Shipton Lee was assessed as being affected by the original scheme and will be further affected by this amendment. The main ES reported a moderate adverse significant effect in year 1, reducing to non-significant by year 15 of operation due to the presence of the National Grid substation in the middle ground of the view and the Quainton auto-transformer feeder station and other infrastructure visible in filtered views beyond. The revised location of the National Grid substation will give rise to a different significant effect through the increased prominence of the substation in the view from this viewpoint. This amendment will change the level of significance of the effects reported in the main ES from moderate to major in year 1, reducing to moderate adverse in year 15 and year 60.

5.6.104 Viewpoint 142.4.001: view west from public highway south of Shipton Lee was assessed as being affected by the original scheme. The main ES reported a moderate adverse significant effect in year 1, reducing to non-significant by year 15 of operation

due to the presence of large-scale infrastructure in close proximity to the visual receptor. The substation will be further from the road, but will remain prominent in the view. The revised location of the National Grid substation 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

5.6.105 Viewpoint 141.2.001: view north-east from Doddershall House was assessed as being affected by the original scheme. The main ES reported moderate adverse significant effect in year 1, but reducing to non-significant by year 15 of operation due to the presence of overhead power lines and other infrastructure in the view. The revised location of the National Grid substation will be largely screened by the landscape earthworks, the route and the auto-transformer feeder station which will all lie between the viewpoint and the National Grid substation. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

5.6.106 Viewpoint 143.2.001: view north-east from Woodlands Farm was assessed as being affected by the original scheme. The main ES reported major adverse significant effects in year 1, remaining major adverse in year 15 and year 60 during operation due to the presence of the Grendon Underwood embankment, Adam's accommodation underbridge, the overhead line equipment, the Edgcott Road overbridge, the auto-transformer feeder station and the National Grid substation. The revised location of the National Grid substation will be further from this viewpoint, but other structures associated with HS2 will be located between the viewpoint and the substation. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

5.6.107 Viewpoint 143.2.002: view east from dwellings south of Woodlands Farm was assessed as being affected by the original scheme. The main ES reported major adverse significant effects in year 1 of operation, reducing to moderate adverse in year 15 and non-significant by year 60, due to the presence of overhead line equipment in filtered views. In the AP2 revised scheme, the substation will be located further away from Woodlands Farm than in the original scheme. Since the effects on this viewpoint reported in the main ES were mainly due to the presence of the overhead lines (rather than the presence of the National Grid substation) moving the substation further from the viewpoint will not change the level of the impact. 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.

5.6.108 The view of the amendment in the winter of year 1 of operation is illustrated on the photomontage shown in Figure LV-01-080 (SES and AP2 ES, Volume2, CFA12 Map Book).

Mitigation and residual effects

5.6.109 As part of this amendment there will be additional woodland planting around the substation, see map CT-06-051 in the SES and AP2 ES Volume 2, CFA12 Map Book. When the planting has matured, it will screen the substation from the north, south and west, but it will still be visible from the east because the planting proposed here will be too narrow to provide a substantial screen. Consequently, the residual significant effects will be as follows:

- during construction Viewpoint 142.2.001: view south-west from dwellings near Middle Farm, Shipton Lee will be closer to construction works, which will change the level of significance of the residual effect on this viewpoint) from moderate adverse (as reported in the main ES) to major adverse; and
- during operation Viewpoint 142.2.001: view south-west from dwellings near Middle Farm, Shipton Lee will be closer to the National Grid substation, which will change the level of significance of the residual effect on this viewpoint in:
  - year 1 from moderate adverse (as reported in the main ES) to major adverse; and
  - years 15 and 60 from non-significant (as reported in the main ES) to moderate adverse.

Cumulative effects

5.6.110 There are no new or different likely residual significant effects for landscape and visual amenity 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.

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

5.7.1 The revised location of the National Grid substation will give will increase the significance of two visual effects, as follows:

- during construction Viewpoint 142.2.001: view south-west from dwellings near Middle Farm, Shipton Lee will be closer to construction works, which will change the level of significance of the residual effect on this viewpoint) from moderate adverse (as reported in the main ES) to major adverse; and:
- during operation Viewpoint 142.2.001: view south-west from dwellings near Middle Farm, Shipton Lee will be closer to the National Grid substation, which will change the level of significance of the residual effect on this viewpoint in:
  - year 1 from moderate adverse (as reported in the main ES) to major adverse; and
  - years 15 and 60 from non-significant (as reported in the main ES) to moderate adverse.

5.7.2 There are no other new or different significant environmental effects or proposed mitigation due to the National Grid substation when compared to the main ES (Volume 2, CFA12, Waddesdon and Quainton).

5.8 Balancing pond at Adam's accommodation underbridge (AP2-012-005)

5.8.1 The Bill provides for a section of railway drainage north of Footpath QUA/26 accommodation underbridge. This drainage will discharge into a balancing pond south-east of the accommodation underbridge (refer to main ES maps CT-05-051 and CT-06-051 in main ES Volume 2, CFA12 Map Book).

5.8.2 Since submission of the Bill, it has been identified that an additional outfall and balancing pond will be required in order to drain this section of railway. The additional pond will be located west of the HS2 route at Adam's accommodation underbridge and take railway drainage from the north of the underbridge. In the original scheme this railway drainage would have discharged to a balancing pond south-east of Footpath QUA/26 accommodation underbridge (refer to maps CT-05-052 and CT-06-052 in the SES and AP2 ES Volume 2, CFA12 Map Book).

5.8.3 A turning head will be constructed on the east side of the balancing pond to allow vehicle access for maintenance. The turning head will be accessed from the farm access track between Edgcott Road and Woodlands Farm.

5.8.4 The estimated duration of construction is one month and does not extend construction durations at Adam's accommodation underbridge reported in the main ES. Approximately 200m^2 of additional land is required permanently for the works, which is outside of the limits of the Bill.

5.8.5 The additional railway drainage works 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: agriculture, forestry and soils; air quality; community; land quality; landscape and visual assessment; socio-economics; sound, noise and vibration; and traffic and transport. However, there were changes where reassessment was considered to be required in respect of: cultural heritage; ecology and water resources and flood risk assessment.

Cultural heritage

Scope, assumptions and limitations

5.8.6 The assessment scope, key assumptions and limitations for cultural heritage 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.

Existing baseline

5.8.7 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which included walk-over survey, geophysical survey, remote-sensing data, and data from national and local registers. A full list is provided in Volume 2, Section 6.3 of the main ES. In addition, the baseline has been updated with the results of additional survey work comprising geophysical and walkover surveys for archaeology.

5.8.8 The amendment lies outside of the boundary of any heritage assets. However, there are a number of heritage assets close to the proposed balancing pond at Adam's accommodation underbridge. Approximately 100m to the north is Woodlands Farm (asset reference WAD085) an asset of low heritage value. The farm has architectural and historic value with its agricultural setting adding to its importance.

5.8.9 Running along the north-east side of the amendment, approximately 40m away at its closest point is the disused Great Central Main Line (GCML) railway (asset reference WAD018), along with an associated underpass (asset reference WAD082) 90m to south-east. These are both assets of low heritage value.

5.8.10 Approximately 390m to the north-west of the amendments is the reputed site of a watermill (asset reference WAD083). This is assessed as being of low heritage value.

5.8.11 The boundary of the Doddershall medieval landscape (asset reference WAD136) is approximately 500m to the south of the amendment, with this assessed as being of moderate heritage value. The higher value components of this landscape lie over a kilometre away from the amendment.

5.8.12 The baseline resources are described in the main ES (see CFA report 12, Section 6 and Volume 5, Appendix CH-001-012).

Future baseline

Construction (2017)

5.8.13 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 6.3).

Operation (2026)

5.8.14 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 6.3).

Effects arising during construction

5.8.15 There were no significant effects reported in the main ES for Woodlands Farm (asset reference WAD085), the disused GCML railway (asset reference WAD018), along with an associated underpass (asset reference WAD082) and the reputed site of a watermill (asset reference WAD083). A significant effect was reported for Doddershall medieval landscape (asset reference WAD136) with the original scheme having a medium adverse effect.

5.8.16 The balancing pond at Adam's accommodation underbridge does not encroach onto any of the heritage assets previously identified or alter their settings, and therefore it will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

5.8.17 The balancing pond will not cause further impact on heritage assets during operation of the AP2 revised scheme. It will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

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

Cumulative effects

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

Ecology

Scope, assumptions and limitations

5.8.20 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.

5.8.21 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

5.8.22 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES, aerial photography and relevant existing information gathered from national organisations and from regional and local sources including: Buckinghamshire and Milton Keynes Environmental Records Centre; Berkshire, Buckinghamshire and Oxfordshire Wildlife Trust (BOWT); the Amphibian and Reptile Group for Buckinghamshire; North Bucks Bat Group; and the Bernwood Forest Bechstein's Project.

5.8.23 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 Part 1 of this report; with further details provided in Volume 5: Appendix EC-001-002 of the SES and AP2 ES. For those receptors described in the main ES, further details are provided in Volume 2, CFA12, Section 7.3 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

5.8.24 Three statutory and non-statutory sites are relevant to this amendment. They are Finemere Wood SSSI 370m to the north-east, Grendon and Doddershall Meadows LWS 370m to the north-east and Finemere Wood nature reserve 60m to the east. They are described in Section 5.6: Revised location for the National Grid substation near Quainton (AP2-012-004).

5.8.25 There are no other statutory or non-statutory designated nature conservation sites or ancient woodland relevant to the assessment. Statutory and non-statutory designated sites are described in the main ES, Volume 2, CFA12, Section 7 and are shown on Maps EC-01-025b to EC-01-028a, Volume 5, Ecology Map Book.

Habitats

5.8.26 One pond present in the land required for the amendment, and three ponds adjacent to it, support great crested newt and therefore qualify as habitats of principal importance. In addition, there are six ponds within 500m of the amendment which have not been surveyed. They are considered to be of up to district/borough value, as stated in the main ES.

5.8.27 The hedgerows within and in the vicinity of land required for the amendment are considered to be part of the resource of hedgerows in the wider that qualify as a habitat of principal importance under Section 41 of the Natural Environment and Rural Communities Act, 2006. The hedgerow network is identified in the main ES as being of district/borough value.

5.8.28 The balancing pond is situated in a small traditional orchard which is a habitat of principal importance and a local biodiversity action plan (BAP) habitat. The main ES states it contains less than ten trees and is of local/parish value.

5.8.29 Land required within the amendment is approximately 20m from the River Ray. Its habitat quality is poor, characterised by uniform channels, dense shading and limited growth of aquatic and marginal plants. It is considered to be of local/parish value, as stated in the main ES.

5.8.30 Other habitat within the land required for the amendment is predominantly semi-improved neutral grassland and scrub. As stated in the main ES, these habitats form part of a resource in the vicinity of the amendment that are of no more than local/parish value.

5.8.31 Habitats surrounding the land required for the amendment are described in the main ES, Volume 2, CFA12, Section 7 and are shown on Maps EC-02-025b to EC-02-028a, Volume 5, Ecology Map Book.

Protected and/or notable species

5.8.32 A population of Bechstein's bats, an assemblage of woodland bats and populations of common and soprano pipistrelle bats are relevant to the proposed amendment. As stated in the main ES they are respectively of national, regional and county/metropolitan value. Bats use linear habitat in the vicinity of the balancing pond as flightlines to move between roosts and foraging areas. These flightlines are along the River Ray, Aylesbury Link railway line, Akeman Street disused railway and the Mega Ditch; and bats fly across the proposed HS2 route at Grendon Junction and Benfield's overbridge. They were identified in surveys carried out in 2012-13 and are described in Volume 2, CFA12, Section 7 of the main ES. The main ES identified a small number of trees with high or moderate potential to support roosting bats present in land required for the balancing pond.

5.8.33 Surveys confirmed the presence of four ponds containing small or medium-sized populations of great crested newt; one pond is in the land required for the amendment and the remaining ponds are located approximately 60m south, 300m north-east and 450m north. The pond in the land required for the amendment is considered likely to be part of a metapopulation in the vicinity of Woodlands Farm that was identified in the main ES as being of county/metropolitan value.

5.8.34 As stated in the main ES, the River Ray has habitat suitable for otter that is relevant to this assessment. No otter holts have been recorded, but the field signs indicate that otters use the watercourses for foraging and commuting. As stated in the main ES the otter population is of district/borough value.

5.8.35 Surveys confirmed populations of common reptile species within land required for the amendment that are of county/metropolitan value, as stated in the main ES.

Future baseline

Construction (2017)

5.8.36 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Operation (2026)

5.8.37 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

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

Designated sites

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

Habitats

5.8.40 The construction of the balancing pond will result in the loss of an additional 55m length of native hedgerow. The main ES concluded that the loss of hedgerows in the vicinity of the amendment will result in a permanent adverse effect on the conservation status of hedgerows that will be significant at the district/borough level. The proposed balancing pond will result in a different significant effect on hedgerows. The amendment will not change the level of significance of the effects reported in the main ES.

5.8.41 The construction of the balancing pond will also result in the loss of a pond and approximately 0.1ha of a traditional orchard, both of which are habitats of principle importance. The main ES reported effects on these habitats at up to the local/parish level. The proposed balancing pond will result in a different significant effect on these habitats. However, this change will not change the level of significance of the effects reported in the main ES.

5.8.42 The amendment will not result in any other new or different effects on habitat receptors of relevance at more than the local/parish level. Additional local/parish level effects (i.e. in addition to those identified in the main ES) arising from SES changes are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Species

5.8.43 As reported in the main ES, in the absence of mitigation the original scheme would result in an adverse effect on the conservation status of a medium-sized metapopulation of great crested newt that is significant at the county/metropolitan level. The amendment will result in the removal of an additional, confirmed breeding pond. This will result in a different significant effect on the population of great crested

newt near Woodlands Farm. However, this will not change the level of significance level of the effects reported in the main ES.

5.8.44 The amendment will result in the loss of approximately 0.1ha of semi-improved neutral grassland in the traditional orchard that provides habitat for reptiles and terrestrial habitat for great crested newt. It will also involve removal of trees likely utilised by foraging bats and with potential for roosting bats, but Bechstein's roosts are unlikely to be present based on 2012-2014 survey data. However, these changes will not generate any new or different significant effects, or change the level of significance of effects reported in the main ES. Local/parish level effects which are in addition to those identified in the main ES are listed Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Cumulative effects

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

Mitigation and residual effects

Other mitigation measures

5.8.46 Compensatory habitat to address impacts on great crested newt populations near Woodlands Farm will be provided within approximately 30ha of ecological habitat creation area at Grendon and Doddershall Meadows, in accordance with the principles of mitigation identified within Volume 5 Appendix CT-001-000/2. This will include the provision of replacement ponds, terrestrial habitat and hibernation habitat sufficient to maintain the favourable conservation status of the population affected.

Summary of likely residual effects

5.8.47 With the implementation of the mitigation measures proposed, the new or different ecological effects arising from the AP2 revised scheme are reduced to a level where they are not significant. The significant effects of the AP2 revised scheme in this area are therefore unchanged from those reported in the main ES or the AP1 ES.

Effects arising from operation

5.8.48 The amendment will not give rise to any new or different operational effects.

Water resources and flood risk assessment

Scope, assumptions and limitations

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

5.8.50 The assessment reviews the potential impact of the proposed balancing pond in close proximity to or within the floodplain of the River Ray and the potential impact of new outfalls on surface water flow and quality.

5.8.51 No specific hydraulic modelling has been undertaken within the study area for any source of flood risk.

Existing baseline

5.8.52 The baseline water resources and flood risk information for CFA12 is described in the main ES (Volume 2, CFA Report 12, Section 13).

5.8.53 There is one WFD water body within the study area: the 'River Ray and tributaries north-east of Grendon Underwood' (WFD water body reference GB106039030100). The River Ray is classified as a main river. The current overall status of this water body is moderate. The Environment Agency predicts that by 2027, the River Ray will be of Good status. This watercourse is considered to be a high value receptor.

5.8.54 The site is underlain by the Ancholme Group, which is classified as unproductive strata. There are areas of Alluvium superficial deposits directly underlying the River Ray. The superficial deposits are likely to be in hydraulic connectivity with the local watercourse and are likely to only contain limited groundwater. The Alluvium is classified as a Secondary A aquifer.

5.8.55 According to Environment Agency records, there are no licensed surface water or groundwater abstractions within 1km of the amendment. There are no reported private, unlicensed surface water or groundwater abstractions within 1km of the amendment. There is the potential for unlicensed abstractions to exist, as a licence is not required for abstraction volumes below 20m^3 per day.

5.8.56 The proposed balancing pond is located immediately adjacent to the mapped extent of Flood Zone 2 of the River Ray as shown by the Environment Agency Flood Zone maps. The land use in the floodplain around the HS2 route is largely made up of arable farmland and pasture (moderate value receptor). No properties are at risk from river flooding, but the access road to Woodlands Farm is crossed by the flood zones.

5.8.57 The proposed balancing pond does not lie in an area at risk of surface water flooding. There is no significant risk of flooding in the area of the amendment from groundwater, sewers or artificial water bodies. These sources are therefore excluded from the assessment.

Future baseline

Construction (2017)

5.8.58 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 13.3).

Operation (2026)

5.8.59 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 13.3).

Effects arising during construction

5.8.60 Replacement floodplain storage will be provided at the crossings of the River Ray to mitigate for any potential increase in the risk of flooding at these river crossings. Replacement floodplain storage areas will also mitigate for temporary loss of floodplain storage resulting from the construction works in the floodplain. The

replacement floodplain storage areas proposed in the original scheme are shown on maps CT-06-047 to CT-06-053 (Volume 2, CFA12 Map Book of the main ES). Although shown immediately adjacent to the extent of flood zone 2 a precautionary approach has been take in this assessment. The proposed replacement floodplain storage areas could be adjusted if necessary to compensate for any loss in floodplain due to the pond footprint, taking into account the modelled 1 in 100 years return period (1% annual probability) plus climate change floodplain. Sufficient land is available for the adjustment within the land potentially required during construction for additional replacement floodplain storage if required. All replacement floodplain storage will be provided prior to the construction of built structures in the floodplain. As a result, the risk of flooding from the River Ray will not change and there is no new or different flood risk effect.

5.8.61 Superficial deposits, comprising Alluvium, which may contain shallow groundwater, are present in the catchments of the River Ray. The superficial deposits are likely to be in hydraulic connectivity with the local watercourse. In all cases the new balancing ponds, drainage and outfalls will be constructed using good practice as described in Section 16 of the draft CoCP which will ensure no contamination to surface water or groundwater occurs.

5.8.62 The assessment has concluded that the balancing pond at Adam's accommodation underbridge and its outfalls will not give rise to new or different significant effects during construction and will not change the level of significance of the effects reported in the main ES or the AP1 ES, which were not significant.

Effects arising from operation

5.8.63 Drainage has been designed to limit run-off from the railway to existing run-off rates and to limit the effect on water quality so that here will be no significant adverse effects on the quality and flow characteristics of surface water courses and groundwater bodies during operation and management.

5.8.64 The proposed balancing pond and outfalls will not give rise to new or different significant effects during operation and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Mitigation and residual effects

5.8.65 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.

5.8.66 Generic design measures will be implemented to avoid significant adverse effects on the 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.

5.8.67 There are no new or different likely residual significant effects for water resources or flood risk as a result of the proposed amendment, in comparison with the main ES, the SES and the AP1 ES.

Cumulative effects

5.8.68 There are no new or different significant cumulative effects for water resources or flood risk as a result of the amendment acting in combination with another amendment in AP2, or as a result of any relevant committed development interacting with the AP2 revised scheme.

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

5.9.1 The balancing pond at Adam's accommodation underbridge does not change the significance of the environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA12, Waddesdon and Quainton).

5.10 Diversion of Greatmoor Energy from Waste facility access road (AP2-012-006)

5.10.1 The proposed route of the Greatmoor EfW facility access road, between Edgcott Road and the waste facility is along part of the HS2 route. The Bill identified land needed for diversion of the access road, but powers were limited to provision of environmental mitigation (refer to maps CT-05-052 and CT-06-052 in main ES Volume 2, CFA12 Map Book).

5.10.2 Since submission of the Bill, the EfW access road has been constructed. The affected section of the EfW access road will be permanently diverted parallel to the HS2 route, between Bridleway QUA/36 accommodation green overbridge and Bridleway GUN/28 accommodation green overbridge. No change to either green overbridge is proposed. The revised section of the EfW access road is south-east of Upper Greatmoor Farm and will be routed west of the HS2 route and across the HS2 route via Bridleway/28 accommodation green overbridge (refer to map CT-05-052 in the SES and AP2 ES Volume 2, CFA12 Map Book). Any lighting of the EfW access track would be designed to ensure that it does not adversely impact known Bechstein's bat and *Myotis* bat flightlines in the vicinity. This would be achieved through implementation of appropriate measures which may include: the use of luminaires with full horizontal cut-off design so that all light will be directed downwards; control of duration of lighting; landscape planting; and/or use of close boarded fencing.

5.10.3 The estimated duration of construction is three months, which is the same as original scheme. Approximately 0.4ha of additional land is required permanently for the diverted access road; the land is within the original limits of the Bill. However, the amendment requires a change of land use which results in a need to change the powers conferred by the Bill.

5.10.4 Diverting the Greatmoor EfW facility access road is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: agriculture, forestry and soils; air quality; community; cultural heritage; 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 ecology.

Ecology

Scope, assumptions and limitations

5.10.5 The assessment scope for ecology is as set out in Volume 1 of the SES and AP2 ES. The key assumptions and limitations, and the methodology for determining significance of effects are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

5.10.6 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. This constitutes a 'reasonable worst-case' basis for the subsequent assessment. The precautionary approach to the assessment that has been adopted identifies the likely significant ecological effects of the aAP2 revised scheme.

Existing baseline

5.10.7 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES, aerial photography and relevant existing information gathered from national organisations and from regional and local sources including: Buckinghamshire and Milton Keynes Environmental Records Centre; BBOWT; North Bucks Bat Group; Bernwood Forest Bechstein's Project, and the Upper Thames (Berkshire, Bucks and Oxon) Branch of Butterfly Conservation.

5.10.8 A summary of the baseline information relevant to the assessment of the amendment is provided below This takes account of any relevant new or updated baseline information provided in Part 1 of this report; with further details provided in Volume 5: Appendix EC-001-002 of the SES and AP2 ES. For those receptors described in the main ES, further details are provided in Volume 2, CFA12, Section 7 and in Volume 5, including maps EC-01 to EC-12.

Designated sites

5.10.9 Finemere Wood SSSI (47.9ha) to the east of the HS2 route is 285m west of the EfW access road and separated from land required for the amendment by the Aylesbury Link railway line. It is designated for ancient woodland and assemblages of plants, woodland birds and invertebrates.

5.10.10 A single non-statutory site is relevant to the assessment; it is of county/metropolitan value. This is an unnamed Biological Notification Site (BNS) (0.7ha), comprising a track leading to the Aylesbury Link railway line, is located 110m south of land required for the amendment. The main ES reports that this site contains areas of calcareous vegetation that is scarce in the north of Buckinghamshire. The BNS is partly within the land required for construction of the scheme.

5.10.11 There are no other statutory or non-statutory designated nature conservation sites or ancient woodland relevant to the assessment. Statutory and non-statutory designated sites are described in the main ES, Volume 2, CFA12, Section 7 and are shown on Maps EC-01-025b to EC-01-028a, Volume 5, Ecology Map Book.

Habitats

5.10.12 The southern section of the EfW access road diversion, incorporating part of the Akeman Street disused railway, passes through an area of immature semi-natural broadleaved woodland (1.03ha). This is a habitat of principal importance and is of local/parish value.

5.10.13 Other habitat within the land required for the amendment is partly scrub and semi-improved neutral grassland along the Aylesbury Link railway line, and is part of the wider resource of scrub and grassland identified in the main ES as being of local/parish value.

5.10.14 The hedgerows adjacent to the land required for the amendment are considered to be part of the resource of hedgerows in the wider area evaluated in the main ES and qualify as a habitat of principal importance. Owing to the presence of established and important hedgerows, and to the habitat connectivity that they provide, the hedgerow network is identified in the main ES as being of district/borough value.

5.10.15 A single pond is located within 10m of land required for the diversion. It is assessed as part of the wider resource of ponds which are identified in the main ES as being of district/borough value.

Protected and/or notable species

5.10.16 The amendment is within an area that is identified in the main ES as providing foraging and commuting habitat for high numbers and diversity of bats.

5.10.17 The Bechstein's bat population relevant to the amendment is identified in the main ES as being of national value. Surveys have confirmed flightlines for Bechstein's bat associated with movement between roosts and foraging areas in Grendon Wood and Doddershall Wood to the west of the HS2 route, and Finemere Wood and Sheephouse Wood both to the east. The flightlines are formed by vegetation along the existing Aylesbury Link railway line the Mega Ditch and the Footpath GUN/35 and key crossing points at Grendon Junction and Benfield's overbridge.

5.10.18 This habitat, consisting largely of woodland and scrub, is used by an assemblage of woodland bats including Brandt's, brown long-eared, Daubenton's, Natterer's, whiskered bats. The assemblage is of regional value as reported in the main ES.

5.10.19 The main ES reports that the assemblage of common reptiles near the Aylesbury Link railway line is of county/metropolitan value. The area of scrub and grassland within the amendment is likely to provide habitat used by this assemblage.

5.10.20 A potential metapopulation of great crested newt, present in ponds close to the Akeman Street disused railway north of Woodham, is identified in the main ES as being of up to county/metropolitan value. The pond within 10m of the access road diversion and grassland (on the alignment of the access road diversion) may provide suitable aquatic and terrestrial habitat to support this metapopulation.

5.10.21 As stated in the main ES, the areas of blackthorn scrub associated with the Akeman Street disused railway and Grendon Junction, partially within land required for the amendment, form part of the habitat resource that supports colonies of black hairstreak butterfly of regional value.

5.10.22 The main ES states that scrub and grassland habitat associated with the Akeman Street disused railway and Grendon Junction, partially within land required for the amendment, supports an invertebrate assemblage of up to regional value.

5.10.23 The western end of the EfW access road diversion passes across Muxwell Brook that is assessed as part of the wider resource of watercourses reported in the main ES as of local/parish value. The brook supports low numbers and densities of aquatic invertebrates. The assemblage is of local/parish value as stated in the main ES.

Future baseline

Construction (2017)

5.10.24 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Operation (2026)

5.10.25 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA12, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

5.10.26 The assessment assumes implementation of the draft CoCP, including the translocation of protected species where appropriate.

5.10.27 As stated in the main ES, the following measures have been incorporated as part of the design of the scheme to avoid or reduce impacts to features of ecological value:

- the Adam's accommodation underbridge, near the River Ray, provides a crossing point for bats;
- while not exclusively designed for bats the Bridleway QUA/36 accommodation green overbridge and Bridleway GUN/28 accommodation green overbridge will provide physical structures over the railway that will limit severance between existing habitats used by bats;
- Footpath CAG/2 underbridge, at the Muxwell Brook at the south western corner of Sheephouse Wood SSSI will extend the access currently provided by Costello's underbridge and retain its value as a crossing point for commuting bats; and
- minimising habitat loss in the Mega Ditch, which provides a sheltered and unlit corridor for commuting and foraging bats.

5.10.28 As stated in the SES (see Section 3.2), planting parallel to, but set back from, the HS2 route between Edgcott Road overbridge and the River Ray, will be provided. This will mitigate impacts on the additional flightline identified during 2014 surveys and maintain connectivity with Finemere Wood and other woods to the east of the HS2 route.

Designated sites

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

Habitats

5.10.30 The land required for the construction of the EfW access road is within Bill limits. It comprises part of the area of linear scrub and grassland and a small area of immature woodland along both sides of the Aylesbury Link railway line. The main ES reports that the loss of such habitat is unlikely to result in significant effects, as the habitats are only of relevance at the local/parish level. The proposed change 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.

Species

5.10.31 The main ES reports that, in the absence of mitigation, habitat fragmentation associated with the construction of the original scheme will result in a permanent adverse effect on the conservation status of the Bechstein's bat population that is significant at the national level. It states that the effect on the conservation status of the assemblage of woodland bats (other than Bechstein's) is significant at the regional level. The provision of access to the EfW at the proposed location does not require additional habitat removal but will involve the construction of a road that will be an additional source of habitat fragmentation to that considered in the main ES. The proposed change causing additional fragmentation of bat flightlines will result in a different significant effect on Bechstein's and other woodland bat species. However, this will not change the level of significance of the effects reported in the main ES

5.10.32 It is unlikely that the amendment will result in any other effects on species receptors of relevance at more than the local/parish level. Additional local/parish level effects (i.e. in addition to those identified in the main ES) arising from the AP2 revised scheme are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Cumulative effects

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

Mitigation and residual effects

Other mitigation measures

5.10.34 There is a requirement for additional mitigation to address the potential effects of habitat fragmentation caused by the EfW access road diversion on bat flightlines from Grendon Wood and Doddershall Wood to woods on the opposite side of the HS2 route.

5.10.35 Additional planting will be provided to reduce the gap in vegetation between the Bridleway Gun/28 accommodation green overbridge and vegetation currently adjoining Hewin's Wood, which are respectively east and west of the EfW access road.

This additional planting will minimise the gap in suitable habitat and encourage bats to fly over the road, thus maintaining use of existing flightlines that pass across the access road alignment. In addition measures to provide habitat connectivity for bats during construction and the period while planting becomes established will be implemented, as set out in the Ecology technical note - Ecological principles of mitigation, Volume 5, Appendix CT-001-000/2 of the main ES.

Summary of likely residual effects

5.10.36 No new or different residual effects on ecological receptors occur as a consequence of the design changes. The significant residual effects of the SES scheme in this area are therefore unchanged from those reported in the main ES or the AP1 ES.

Effects arising from operation

Avoidance and mitigation measures

5.10.37 As reported in the SES (see Section 3.2) additional mitigation measures to address the effects of habitat fragmentation on bats will be provided, including the provision of green bridges. These structures will provide locations at which bats can cross the HS2 route during the operation of the scheme without risk of being struck by trains.

5.10.38 In addition, the main ES reports that vegetation management will be carried out to a width of approximately 20m from the boundary of the operational railway, where necessary, to remove tall vegetation and hence reduce the risk of bats flying close to trains. This includes the area between Bridleway QUA/36 accommodation green overbridge and Bridleway GUN/28 accommodation green overbridge where the EfW access road will be situated. The construction of the access road will result in a narrowing of the area where vegetation management is required as it will act as a buffer between the HS2 route and habitat used by bats.

5.10.39 No avoidance and mitigation measures additional to those reported in the main ES are proposed

Designated sites

5.10.40 The amendment will not result in any operational effects on designated sites 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 AP2 revised scheme are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Habitats

5.10.41 The amendment will not result in any operational 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 AP2 revised scheme are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Species

5.10.42 The main ES stated that it is possible that night-time lighting associated with the Greatmoor EfW facility could result in some light spillage into the Mega Ditch that could affect bats. Any lighting of the EfW access road diversion would be undertaken in a sensitive manner, as detailed in the description of the amendment. However,

taking a precautionary approach there would remain the potential for light spillage at the southern end of the Mega Ditch. Prior to mitigation, this could permanently disrupt the flightlines of bats across the Bridleway GUN/28 accommodation green overbridge and affect the connectivity between maternity colonies of Bechstein's bats in Finemere Wood, Grendon Wood and Doddershall Wood.

5.10.43 Prior to mitigation, the amendment will therefore result in a different significant effect on Bechstein's and other *Myotis* bat species due to the potential for additional light spillage on habitats providing flightlines for bats. However, this will not change the level of significance of the effects on Bechstein's and other woodland bat species, at the national and regional level respectively, reported in the SES.

5.10.44 It is unlikely that the amendment will result in any other 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 and SES) arising from the AP2 revised scheme are listed in Volume 5: Appendix EC-002-002 of the SES and AP2 ES.

Cumulative effects

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

Mitigation and residual effects

Other mitigation measures

5.10.46 As reported in the SES, provision will be made to avoid light spillage into the Mega Ditch that would have the potential to result in disturbance of bats. With these measures incorporated alongside the mitigation measures described in the main ES, the effects will be reduced to a level where they will not adversely affect the conservation status of the species concerned.

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

Summary of likely residual effects

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

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

5.11.1 The diversion of Greatmoor EfW facility access road does not change the significance of the environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA12, Waddesdon and Quainton).

5.12 Bridleway diversion and footpath upgrades at Calvert Landfill site (AP2-013-001)

5.12.1 The Bill provides for bridleways CAG/3/1, GUN/25/1 and SCL/18/2 near Calvert Green, to be diverted from their existing locations and instead run parallel to the HS2 route (refer to maps CT-05-054 and CT-06-054 in main ES Volume 2, CFA13 Map Book).

5.12.2 Since submission of the Bill it has been agreed with Buckinghamshire County Council that the diverted bridleways should not lie between the HS2 route and the access road to Calvert Landfill site as it is unsuitable for horse riders. An alternative bridleway route has been agreed that lies in both CFA12 and CFA13. The permanent new bridleway route will pass west of Calvert Landfill site via bridleways GUN/35/1, GUN/36/1 and GUN/36/2, and footpaths GUN/24/1, GUN/23/1, CAG/1/1, EDG/12/1, CAG/4/3 and CAG/5/1, all of which will be upgraded to bridleway status. Hedges may be trimmed and low-hanging tree limbs removed. About 3.2km of footpath will be upgraded to bridleway. The additional length of the permanent bridleway diversion compared to the original scheme will be about 2.2km, refer to maps CT-05-054, CT-06-054, CT-05-054-L1, and CT-06-054-L1 in the SES and AP2 ES Volume 2, CFA13 Map Book.

5.12.3 The PRoW diversion that will run parallel to the HS2 route and was proposed in the original scheme will still be implemented, but it will be a footpath and not a bridleway.

5.12.4 The estimated duration of construction is three months, which is the same as the original scheme. The PRoW diversions will be permanent and require approximately 0.7ha of land outside of Bill limits.

5.12.5 The bridleway diversion and footpath upgrade at Calvert Landfill site 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: agriculture forestry and soils; air quality; community; ecology; land quality; landscape and visual assessment; socio-economics; sound, noise and vibration; and water resources and flood risk assessment. However, there are changes where reassessment was considered to be required in respect of: cultural heritage and traffic and transport.

5.12.6 The full assessment of potential effects for this amendment, which is in both CFA12 and CFA13, is reported in the SES and AP2 ES Volume 2 report for CFA13 Section 5.1. Significant effects are predicted for traffic and transport in the Waddesdon and Quainton area, consequently these are reported below, together with the summary of the significant environmental effects.

Traffic and transport

Scope, assumptions and limitations

5.12.7 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. There is no change to the scope, assumptions and limitations as reported in the main ES.

Existing baseline

5.12.8 The environmental baseline for traffic and transport is set out in Volume 2, Section 12 in CFA12 and CFA13 of the main ES. There is no change to the existing baseline as reported in the main ES.

Future baseline

Construction

5.12.9 The future baseline for construction remains unchanged from that reported in the main ES (Volume 2, Section 12.3 in CFA12 and CFA13).

Operation (2026 and 2041)

5.12.10 The future baselines for operation in 2026 and 2041 remain unchanged from those reported in the main ES (Volume 2, Section 12.3 in CFA12 and CFA13).

Effects arising during construction

5.12.11 The bridleway diversions and footpath upgrades at Calvert Landfill site will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES or the AP1 ES.

Effects arising from operation

5.12.12 The amendment will result in three new, permanent, minor adverse significant effects at the following PRoW for equestrians, in relation to increased travel distances due to the 2.2km diversion in total (refer to SES and AP2 ES Volume 5, Map TR-04-068, Traffic and Transport Map Book). The affected bridleways are:

- Bridleway GUN/25/1 (in CFA12);
- Bridleway CAG/3/1 (almost entirely in CFA12); and
- Bridleway SCL/18 (in CFA13).

Mitigation and residual effects

5.12.13 No changes to the mitigation described in the main ES (Volume 2 Sections 12 in CFA12 and CFA13) are required.

5.12.14 The bridleway diversions result in new minor adverse significant residual effects on equestrians due to increased travel distances at PRoW GUN/25/1, CAG/3/1 and SCL/18.

5.12.15 The significant effects that result from operation of the scheme are shown on map TR-04-068 (SES and AP2 ES Volume 5, CFA13 Traffic and Transport Map Book).

Cumulative effects

5.12.16 Cumulative effects are reported in Volume 2, Sections 12 in CFA12 and CFA13 of the main ES. The above assessment has taken into account these cumulative effects, including planned development by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in other areas.

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

5.13.1 The bridleway diversion and footpath upgrades at Calvert Landfill site will result in three new, permanent, minor adverse significant residual effects for equestrians due to increased travel distances at PRoW GUN/25/1, CAG/3/1 and SCL/18 that were not reported in the main ES. However, the amendment will provide a more suitable bridleway route for horse riders during operation and will increase the total length of bridleways in the locality.

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 in Section 3 and there are no further combined effects to report.

High Speed Two (HS2) Limited
One Canada Square
London E14 5AB

T 020 7944 4908
E hs2enquiries@hs2.org.uk