



HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and
Additional Provision 2 Environmental Statement

Volume 2 | Community forum area report

CFA9 | Central Chilterns

July 2015

SES and AP2 ES 3.2.1.9



HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

**Supplementary Environmental Statement and
Additional Provision 2 Environmental Statement**

Volume 2 | Community forum area report

CFA9 | Central Chilterns

July 2015

SES and AP2 ES 3.2.1.9



Department for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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

AECOM

ARUP

ATKINS

CAPITA



ineco



**PARSONS
BRINCKERHOFF**



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

Copyright © High Speed Two (HS2) Limited, 2015, except where otherwise stated.

High Speed Two (HS2) Limited has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full via the HS2 website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact High Speed Two (HS2) Limited.



Printed in Great Britain on paper
containing at least 75% recycled fibre.

Contents

Structure of the HS2 Supplementary Environmental Statement and Additional Provision 2 Environmental Statement	1
Structure of this report	3
1 Introduction	5
Part 1: Supplementary Environmental Statement	7
2 Summary of changes	7
2.1 New environmental baseline information	7
2.2 Changes to the design or construction assumptions not requiring a change to the Bill	7
2.3 Corrections to the main ES	8
2.4 Topics included in the SES assessment	9
3 Assessment of changes	10
3.1 Community	10
3.2 Ecology	12
3.3 Sound, noise and vibration	15
3.4 Traffic and transport	17
Part 2: Additional Provision 2 Environmental Statement	20
4 Summary of amendments	20
5 Assessment of amendments	23
5.1 Change to land required in Mantle's Wood for the Chiltern tunnel north portal (AP2-009-001)	23
5.2 Summary of new or different likely residual significant effects	39
5.3 Realignment of Footpaths LMI/21 and GMI/23 (AP2-009-002)	39
5.4 Additional land for an access track to drainage infrastructure from the A413 Aylesbury Road (AP2-009-003)	39
6 Combined effects of amendments in this CFA due to changes in traffic flows	41

List of figures

Figure 1: Locations of amendments in CFA9

22

List of tables

Table 1: Summary of corrections to the main ES in CFA9

8

Table 2: Summary of amendments in CFA9

20

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

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

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

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

Structure of this report

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

Part 1 provides supplementary environmental information relating to:

- new baseline information with respect to European Protected Species surveys and additional ecology data relating to ancient woodlands, undertaken since the submission of the Bill;
- changes to the design or construction assumptions which do not require changes to the Bill; and
- corrections to the main ES.

Part 1 of each CFA report includes, where relevant:

- a description of the changes or updates within the CFA that have triggered the need for reassessment;
- an assessment of the environmental effects of the changes for relevant environmental topics considering the:
 - scope, assumptions and limitations of the SES assessment;
 - changes of relevance to the assessment;
 - environmental baseline;
 - effects arising during construction;
 - effects arising from operation; and
 - mitigation and residual effects; and
- a summary of any new or different likely residual significant effects as a result of the changes.

Part 2 provides environmental assessment information relating to proposed amendments to the design, which have resulted in the need to alter the powers conferred by the Bill. The following is included where relevant:

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

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

1 Introduction

- 1.1.1 The Bill for High Speed Rail between London and the West Midlands was submitted to Parliament together with the main ES in November 2013. The AP1 ES, which was submitted in September 2014, contained generally minor amendments to the design of the original scheme (i.e. the scheme submitted in November 2013). The Bill and associated Additional Provisions to the Bill, if enacted by Parliament, will provide the powers to construct, operate and maintain Phase One of HS2.
- 1.1.2 Since the submission of the main ES and AP1 ES, a number of changes or updates to environmental information and scheme design or assumptions have occurred, which may lead to new or different significant effects. These effects, depending on the type of change, are reported in the SES (Part 1) or AP2 ES (Part 2) of this document.
- 1.1.3 The SES contains updated environmental baseline information and scheme information relating to changes that have occurred within the current limits and powers of the Bill, and therefore do not require an Additional Provision to the Bill. This includes:
- additional environmental baseline information;
 - changes to the design or construction assumptions which do not require changes to the Bill; and
 - corrections to the main ES.
- 1.1.4 The changes are described in Part 1 under a series of sub-headings and assessed on a topic by topic basis using the same approach adopted in the main ES.
- 1.1.5 The purpose of the SES is to provide an assessment of any new or different likely significant environmental effects arising from the changes described.
- 1.1.6 The AP2 ES reports the likely significant effects of amendments to the design of the scheme, which require the use of land outside the original limits of the Bill, additional access rights, or other extensions to the powers conferred by the Bill, making it necessary to submit an Additional Provision to the Bill.
- 1.1.7 The amendments assessed within the AP2 ES for this CFA include:
- changes to land required in Mantle's Wood for the Chiltern tunnel north portal;
 - realignment of footpaths; and
 - additional land for an access track to drainage infrastructure.
- 1.1.8 The AP2 ES assesses each amendment separately for all relevant topics. The purpose of the AP2 ES is to provide an assessment of any new or different likely significant environmental effects arising from the amendments.
- 1.1.9 The standard measures that will be used to mitigate likely significant adverse environmental effects during construction and operation of the scheme are described in the main ES, Volume 1, Section 9 and the draft Code of Construction Practice (CoCP) submitted in support of the Bill. Implementation of these measures has been assumed in this SES and AP2 ES.

- 1.1.10 It should be noted that, since submission of the Bill, the scheme design has been revised by SES design changes, amendments described in the AP1 ES (AP1 amendments) and amendments described in the AP2 ES (AP2 amendments). In order to differentiate between the original proposals and subsequent changes, the following terms are used:
- ‘the original scheme’ - the Bill scheme submitted to Parliament in November 2013, which was assessed in the main ES;
 - ‘the AP1 revised scheme’ - the original scheme as amended by the 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 Surveys for bats, great crested newt and otter have been undertaken in this area since the production of the main ES (September 2013). In addition, habitat surveys have been undertaken at selected woodland locations to assist in determining if these areas represent ancient woodland.
- 2.1.2 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 SES and AP2 ES Volume 5 map series EC-04 and EC-05.
- 2.1.3 A summary of the supplementary ecological information that is relevant to the SES assessment is included within Section 3 under 'Ecology'. This includes details of all changes relating to the status of ancient woodland.
- 2.1.4 SES and AP2 ES Volume 5: Appendix EC-002-002 provides a summary of additional baseline survey data collected since September 2013, which has resulted in no change to the conclusions of the main ES. SES and AP2 ES Volume 5: Appendix EC-003-002 identifies additional local/parish level effects, which occur as a consequence of SES changes but are not significant.

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

- 2.2.1 There are no changes to the design or construction assumptions in the Central Chilterns area (CFA9) 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 CFA9, in particular the removal of the sustainable placement area at Hunt's Green Farm in the Dunsmore, Wendover and Halton area (CFA10). Consequently, the movement of excavated material by heavy goods vehicle (HGV) will change 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 Corrections to the main ES

- 2.3.1 Since submission of the Bill, the need for a number of corrections in the contents of the main ES has been identified. Table 1 provides a list of those instances where there has been a need to correct the Volume 2 CFA report for Central Chilterns because of the potential to alter the significant environmental effects reported in the main ES or a factual inaccuracy relating to significant effects has been identified. The table gives the location of the correction in the main ES, the reason for the correction, replicates the text from the main ES, where applicable provides revised text, and identifies whether the correction changes a significant effect reported in the main ES. Where relevant, these corrections have been taken into account in the technical assessments contained within Section 3 of this SES.

Table 1: Summary of corrections to the main ES in CFA9

Reference in the main ES	Description of correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Traffic and transport: Paragraph 12.4.13, Volume 2, CFA9 of the main ES.	A minor adverse effect during construction is reported for the junction of King's Lane with Frith Hill/Ballinger Road and Potter Row, with regard to delay and congestion to vehicle users. This, however, should not have been reported as a significant effect.	Fourth bullet point: King's Lane with Frith Hill/Ballinger Road and Potter Row (minor adverse effect).	Fourth bullet point removed, with no replacement text.	Yes. Removal of significant effect with regard to delay and congestion to vehicle users at the junction of King's Lane with Frith Hill/Ballinger Road and Potter Row. There are no changes to the mitigation required, as outlined in the main ES.
Traffic and transport: Paragraph 12.4.13, Volume 2, CFA9 of the main ES.	A moderate adverse effect during construction is reported for the junction of the B485 Chesham Road with Hyde Heath Road, with regard to delay and congestion to vehicle users. This, however, should have been reported as a minor adverse effect.	Sixth bullet point: The B485 Chesham Road with Hyde Heath Road (moderate adverse effect).	Sixth bullet point: The B485 Chesham Road with Hyde Heath Road (minor adverse effect).	Yes. Moderate adverse effect to minor adverse effect with regard to delay and congestion to vehicle users at the junction of B485 Chesham Road with Hyde Heath Road. There are no changes to the mitigation required, as outlined in the main ES.

Reference in the main ES	Description of correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Traffic and transport: Paragraph 12.4.15, Volume 2, CFA9 of the main ES.	A minor adverse effect during construction is reported for the B485 Frith Hill/Chesham Road between the A413 and Hyde Heath Road, with regard to traffic-related severance due to an increase in HGV flows. ¹ This, however, should have been reported as moderate adverse effect for the B485 Frith Hill/Chesham Road, between Hyde Heath Road and King's Lane only. Traffic flow on the B485 Frith Hill/Chesham Road, between the A413 and King's Lane does not give rise to a significant effect in relation to traffic-related severance for non-motorised users in the original scheme.	Sixth bullet point: 'B485 Frith Hill/Chesham Road, between A413 and Hyde Heath Road (minor adverse effect) due to an increase in HGV flow'.	Sixth bullet point deleted. New bullet point: ' B485 Frith Hill/Chesham Road, between Hyde Heath Road and King's Lane (moderate adverse effect) due to an increase in HGV flow'.	Yes. Minor adverse to moderate adverse for traffic related severance for non-motorised users on the B485 Frith Hill/Chesham Road between A413 and Hyde Heath Road. There are no changes to the mitigation required, as outlined in the main ES. Removal of a significant effect on the B485 Frith Hill/Chesham Road between the A413 and King's Lane. Whilst there is no longer a significant effect as a result of the original scheme, a new effect is reported in Section 3 due to the SES scheme resulting in changes to the movement of excavated material on this section of road.

2.4 Topics included in the SES assessment

- 2.4.1 The changes described above in Sections 2.1 to 2.3 result in new or different significant effects in respect of: community, sound, noise and vibration, and traffic and transport. In addition, changes related to the ancient woodland inventory are reported in the ecology section (Section 3.1.17).

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

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 and also compared to any relevant AP1 amendments. Consideration is given to impacts on residential properties, community resources, amenity, open space and public rights of way (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 Scope and Methodology Report (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. This includes the removal of the sustainable placement area at Hunt's Green Farm in CFA10 (SES-010-001).
- 3.1.4 Whilst originating in other CFAs, these SES scheme changes have resulted in changes to forecast HGV traffic flows in CFA9 during construction, in comparison to the original scheme. The main traffic and transport impact associated with these SES scheme changes and relevant to the community assessment is the increase in forecast HGV flows along the B485 Chesham Road/Frith Hill, between the A413 (east of Great Missenden) and King's Lane (South Heath). This route is proposed to be used for the movement of excavated material. This change has been assessed as it is considered to have the potential to result in new or different likely significant community effects.

Environmental baseline

Existing baseline

- 3.1.5 South Heath is located to the north-west of Hyde End and is centred on Frith Hill and Ballinger Road. The larger residential settlement of Great Missenden is located to the south-west of South Heath. Great Missenden is centred on the High Street contained between the existing Marylebone to Aylesbury Line and the A413. The B485 Chesham Road/Perry Hill provides a link between the two locations.

Future baseline

Construction (2017)

- 3.1.6 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA9, Section 5.3).

Operation (2026)

3.1.7 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA9, Section 5.3).

Effects arising during construction

Avoidance and mitigation measures

3.1.8 Avoidance and mitigation measures are set out in Volume 2, CFA9, Section 5.4 of the main ES. No further community avoidance or mitigation measures during construction are proposed in addition to those reported in the main ES.

Assessment of impacts and effects

Temporary effects

3.1.9 In addition to the significant residential amenity effects for properties in South Heath reported in the main ES, approximately 11 residential properties located on the B485 Chesham Road/Frith Hill (between the A413 and King's Lane) are predicted to experience in-combination effects arising from construction activities resulting from the SES scheme. These in-combination effects are:

- a significant indirect noise effect due to the construction traffic using the B485 Chesham Road/Frith Hill; and
- significant effects due to increases in HGV flows along the B485 Chesham Road (between the A413 and King's Lane).

3.1.10 A small number (approximately six) of these residential properties (located at Cudsden's Court) will also experience significant visual effects associated with the South Heath green tunnel including the construction access road, the construction compound and demolition activity. This visual effect was reported in the main ES.

3.1.11 The combination of these effects will occur during peak construction months and will introduce a new major adverse significant effect on the residential amenity of these properties on the B485 Chesham Road.

Permanent effects

3.1.12 The change to the movement of material has no permanent impacts and will not give rise to any new or different permanent significant effects and will not change the level of significance of the effects reported in the main ES.

Other mitigation measures

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

Cumulative effects

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

Summary of likely residual significant effects

- 3.1.15 The changes to the movement of excavated material will give rise to a new residual significant temporary effect (major adverse) for approximately 11 residential properties located on the B485 Chesham Road/Frith Hill (between the A413 and King's Lane). This significant effect will be experienced during the peak construction months.
- 3.1.16 Further information on the community construction effects are provided in SES and AP2 ES Volume 5: Appendix CM-001-009. The significant effects that result from construction of the SES scheme are shown on CM-01-030 in the SES and AP2 ES Volume 5, CFA9 Map Book, Community Map Book.

Effects arising from operation

- 3.1.17 The change to the movement of excavated material has no impact in operation and 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.

3.2 Ecology

Introduction

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

Scope, assumptions and limitations

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

Changes of relevance to this assessment

- 3.2.4 The only updated baseline data which are relevant to the assessment are updates to Natural England's ancient woodland inventory that have been made since submission of the main ES.

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 that informed the main ES is provided in Volume 2, CFA9, Section 7.1 of the main ES.
- 3.2.6 A summary of the baseline information relevant to the assessment is provided below. Further details of all baseline information obtained since September 2013 is provided in the SES and AP2 ES Volume 5: Appendix EC-001-002. For those receptors described in the main ES, further details are provided in Volume 2, CFA9, Section 7.3 and in Volume 5, including maps EC-04 to EC-05.

Designated sites

- 3.2.7 Hedgemoor and Farthings Wood Local Wildlife Site (LWS) is designated for deciduous woodland, parts of which qualify as habitats of principal importance and local Biodiversity Action Plan (BAP) habitat. Hedgemoor Wood to the west (8.1ha) contains broadleaved woodland, which although it contains old trees and wood banks that are of ecological interest, is not ancient woodland. Farthings Wood (4.8ha), which borders Hedgemoor Wood to the east, is a mixture of coniferous and broadleaved woodland, of which 4.1ha is ancient replanted woodland. The site is identified in the main ES as being of county/metropolitan value.
- 3.2.8 The 4.1ha of ancient replanted woodland within Farthings Wood includes two additional areas totalling 1.5ha, which have been added to the Natural England ancient woodland inventory since completion of the main ES. One of the additional areas added to the inventory is located immediately adjacent to the western edge of the land required for construction. The other is located 65m from the land required for construction.

Habitats

- 3.2.9 The main ES states that the woodland habitats within Hedgemoor and Farthings Woods LWS are of county/metropolitan value, with 20% of the total area of the habitat comprising ancient woodland. The 1.5ha of additional ancient woodland that has been added to the ancient woodland inventory increases the area of ancient woodland to 32% of the LWS. However, this does not change the value of the woodland habitats, which are still considered to be of county/metropolitan value, as reported in the main ES.

Protected and/or notable species

- 3.2.10 There has been no change in baseline information relating to protected and/or notable species that is relevant to the assessment.

Future baseline

Construction (2017)

- 3.2.11 The future baseline for construction in 2017 remains unchanged from that reported in the main ES (Volume 2, CFA9, Section 7.3).

Operation (2026)

- 3.2.12 The future baseline for operation in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA9, Section 7.3).

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Designated sites

- 3.2.14 The main ES reported that the construction of Chiltern tunnel north cutting and the Farthings Wood culvert (dry valley) would result in the loss of approximately 3.5ha (27%) of woodland, 0.5ha of which is ancient replanted woodland. This was identified as likely to result in an adverse effect on the integrity of the Hedgemoor and Farthings Wood LWS, which would be significant at the county/metropolitan level.
- 3.2.15 Since publication of the main ES, two additional areas of woodland within the LWS totalling 1.5ha have been added to the ancient woodland inventory. The two additional ancient woodland areas are not within the land required for the original scheme, and through the implementation of the CoCP it is unlikely that they will be adversely affected. The change to the ancient woodland inventory will not give rise to any new or different significant effects on Hedgemoor and Farthings Wood LWS, which will continue to be subject to an adverse effect on site integrity that will be significant at the county/metropolitan level.

Habitats

- 3.2.16 The main ES reported an adverse effect on the conservation status of woodland habitats due to losses at Farthings Wood that would be significant at the county/metropolitan level. This included the loss of 0.5ha of ancient woodland. Ancient woodland is an irreplaceable resource.
- 3.2.17 None of the additional ancient woodland areas identified since publication of the main ES are within the land required for the original scheme, and through the implementation of the CoCP it is unlikely that the area of ancient woodland adjacent to the land required will be adversely affected.
- 3.2.18 The change to the ancient woodland inventory will not give rise to any new or different significant effects on woodland habitat at Farthings Wood, which will continue to be subject to an adverse effect on conservation status that will be significant at the county/metropolitan level.

Protected and/or notable species

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

Cumulative effects

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

Other mitigation measures

- 3.2.21 No additional mitigation measures (i.e. in addition to those identified in the main ES) are required. Ancient woodland is an irreplaceable resource; however, the areas of ancient woodland which have been added to the ancient woodland inventory since submission of the main ES will not be directly affected.

Summary of likely residual significant effects

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

Effects arising from operation

- 3.2.23 The new baseline data will not give rise to a new or different significant effect on ecological receptors during operation and will not change the level of significance of the effects 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, compared to the original scheme and also compared to any relevant AP1 amendments. Consideration is given to changes in indirect noise effects on residential receptors as a result of changes in construction traffic flows compared to the main ES.

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) and the SMR Addendum (Volume 5: Appendix CT-001-000) of the main ES.
- 3.3.3 Local assumptions and limitations for sound, noise and vibration are set out in Volume 2, CFA9, Section 11.3 of the main ES.

Changes of relevance to this assessment

- 3.3.4 Changes in other CFAs have resulted in changes to HGV movements in this CFA. This includes the removal of the sustainable placement area at Hunt's Green Farm in CFA10 (SES-010-001).

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

Environmental baseline

Existing baseline

- 3.3.6 The baseline is as described in the main ES (Volume 5: Appendix SV-002-009).

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, CFA9, Section 11.2).

Operation (2026)

- 3.3.8 The future baseline for construction in 2026 remains unchanged from that reported in the main ES (Volume 2, CFA9, Section 11.2).

Effects arising during construction

Avoidance and mitigation measures

- 3.3.9 Avoidance and mitigation measures are set out in Volume 2, CFA9, Section 11.3 of the main ES. No further sound, noise and vibration avoidance or mitigation measures during construction are proposed in addition to those reported in the main ES.

Assessment of impacts and effects

Residential receptors: indirect effects

- 3.3.10 The changes to construction traffic are likely to cause temporary adverse noise effects on residential receptors along B485 Chesham Road/Frith Hill (west of King's Lane) (CSV09-Co3). Approximately 11 dwellings located immediately adjacent to the road are forecast to experience an increase in outdoor noise levels of around 1 dB in an area where there is a high existing sound level during the peak months. This is a new significant effect because it is in addition to the adverse noise effects on residential receptors along local roads due to construction traffic identified in the main ES.

- 3.3.11 These adverse effects would be a change in the acoustic character of the area such that there is a perceived change in the quality of life. This is a new significant effect when assessed on a community basis taking account of the local context.

- 3.3.12 More detailed information regarding the construction sound, noise and vibration assessment for this amendment is available in the SES and AP2 ES Volume 5: Appendix SV-003-009.

Other mitigation measures

- 3.3.13 There are no changes required to the mitigation measures as set out in Volume 2, CFA9, Section 11.3 of the main ES.

Cumulative effects

- 3.3.14 There are no new or different likely cumulative effects for sound, noise and vibration as a result of the SES changes acting in combination with AP1 amendments or as a result of any relevant committed developments.

Summary of likely residual significant effects

- 3.3.15 The SES changes have resulted in changes to forecast traffic flows within CFA9 during construction. This will give rise to new significant indirect adverse noise effects on residential receptors immediately adjacent to B485 Chesham Road/Frith Hill (west of King's Lane) when assessed on a community basis taking account of the local context.

3.4 Traffic and transport

Introduction

- 3.4.1 This section of the report describes the environmental baseline in relation to traffic and transport that is relevant to the assessment. It then identifies any new or different likely significant 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. There is no change to the scope, assumptions and limitations as reported in 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. This includes the removal of the sustainable placement area at Hunt's Green Farm in CFA10 (SES-010-001).

- 3.4.4 Whilst originating in other CFAs, these SES design changes have resulted in changes to forecast HGV traffic flows within the Central Chilterns area during construction in comparison to those under the original scheme.

- 3.4.5 The main traffic and transport changes associated with the SES scheme changes are an increase in the number of HGV flows on the A413 between the boundary with the Chalfonts and Amersham area CFA8 and the B485 Chesham Road/Frith Hill. The A413, between the B485 Frith Hill and the boundary with CFA10, however, is no longer proposed to be used for the movement of excavated material, resulting in a decrease in HGV flows on this section of road. The B485 Chesham Road/Frith Hill, between A413 and King's Lane is now proposed to be used for the movement of excavated material, which results in an increase in HGV flows on this road.

Environmental baseline

Existing baseline

- 3.4.6 The existing baseline for traffic and transport remains the same as set out in Volume 2, CFA9, Section 12.3 of the main ES.

Future baseline

Construction

3.4.7 The future baseline for construction remains unchanged from that reported in the main ES, Volume 2, CFA9, Section 12.3.

Operation (2026 and 2041)

3.4.8 The future baseline for operation in 2026 and 2041 remain unchanged from that reported in the main ES, Volume 2, CFA9, Section 12.3.

Effects arising during construction

Avoidance and mitigation measures

3.4.9 Avoidance and mitigation measures are set out in Volume 2, CFA9, Section 12.4 of the main ES and remain unchanged.

Assessment of impacts and effects

Temporary effects

3.4.10 The SES scheme results in amended HGV traffic flows compared to those reported in the main ES taking into account the corrections in Table 1. The amended HGV flows remove the moderate adverse significant effect reported in the main ES, in relation to delays to vehicle users and congestion, at the junction of the A413 London Road with the A4128 Link Road.

3.4.11 The amended HGV flows also result in new and different significant effects in relation to traffic related severance for non-motorised users at the following locations:

- A413, between the boundary of CFA8 and the B485 Frith Hill: increase in HGV flows, resulting in a major adverse significant effect (a moderate adverse significant effect as reported in the main ES under the description 'A413/A413 Amersham Bypass, between A404 Whielden Lane and B485/Frith Hill/Chesham Road');
- A413 London Road, between the B485 Frith Hill/Chesham Road and the boundary of CFA10: decrease in HGV flows, which removes the major adverse effect reported in the main ES under the description 'A413 London Road/Nash Lee Road, between the B485 Frith Hill and the B4009 Nash Lee Road'; and
- B485 Frith Hill/Chesham Road, between the A413 and King's Lane - major adverse significant effect (compared to a non-significant effect in the original scheme) accounting for the correction in Section 2 (refer to map TR-03-053 in the SES and AP2 ES Volume 5, CFA9 Map Book, Traffic and Transport Map Book).

Permanent effects

3.4.12 Permanent effects of construction on traffic and transport are reported under effects arising from operation.

Other mitigation measures

- 3.4.13 There are no changes required to the mitigation measures as set out in Volume 2, CFA9, Section 12.4 of the main ES.

Cumulative effects

- 3.4.14 Cumulative effects are reported in Volume 2, CFA9, Section 12.4 of the main ES. The assessment has taken into account these cumulative effects, which include planned development and background traffic growth, as well as traffic and transport impacts of works being undertaken in other areas.

Summary of likely residual effects

- 3.4.15 The SES changes in other CFAs have resulted in a change to the routeing of excavated material by road, and amended HGV flows within this CFA.
- 3.4.16 These amended HGV flows result in the removal of the moderate significant adverse residual effect due to congestion and delays at the junction of the A413 London Road with the A4128 Link Road reported in the main ES.
- 3.4.17 The amended HGV flows give rise to a major adverse significant residual effect in relation to traffic related severance for non-motorised users at the A413, between the boundary of CFA8 and the B485 Frith Hill, changing the level of significance, (a moderate residual adverse significant effect reported in the main ES under the description 'A413/A413 Amersham Bypass, between A404 Whielden Lane and B485/Frith Hill/Chesham Road'), and at the B485 Frith Hill/Chesham Road, between the A413 and King's Lane (a non-significant effect in the original scheme, accounting for the SES correction to the main ES assessment in Section 2, Table 1 of this CFA report).
- 3.4.18 The SES scheme also removes the moderate adverse significant residual effect in relation to traffic related severance for non-motorised users at A413 London Road, between the B485 Frith Hill/Chesham Road and the boundary of CFA10, as reported in the main ES under the description 'A413 London Road/Nash Lee Road, between the B485 Frith Hill and the B4009 Nash Lee Road'.
- 3.4.19 The significant effects that result from construction of the SES scheme are shown on TR-03-053 in the SES and AP2 ES Volume 5, CFA9 Map Book, Traffic and Transport Map Book.

Effects arising from operation

- 3.4.20 The changes to the movement of excavated material have no impacts in operation and consequently 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.

Part 2: Additional Provision 2

Environmental Statement

4 Summary of amendments

Table 2 provides a summary of the amendments in the Central Chilterns CFA (CFA9) and Figure 1 shows the locations.

Table 2: Summary of amendments in CFA9

Name of amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 revised scheme
Change to land required in Mantle's Wood for the Chiltern tunnel north portal (AP2-009-001)	The permanent provision of the Chiltern tunnel north portal, located approximately 600m west of Hyde Heath including a portal building, access track and a 100m-long porous portal ² . This required approximately 6.2ha of land within Mantle's Wood area of ancient woodland.	Construction a 220m-long porous portal at the Chiltern tunnel north portal. The portal building will be relocated approximately 120m north-west along the HS2 route to accommodate the longer portal. The permanent access track to the portal building will be extended by approximately 120m in length and will be realigned closer to the track. The changes to the access track and the portal building location will reduce the area of ancient woodland required within Mantle's Wood by 0.26ha from that reported in the main ES. The earthworks around the portal will also be extended by 120m in length.
Realignment of Footpaths LMI/21 and GMI/23 (AP2-009-002)	The permanent diversion of Footpaths LMI/21 and GMI/23 along Hyde Heath Road.	The permanent provision of rights of access for an alternative route to avoid diversion along Hyde Heath Road. Footpaths LMI/21 and GMI/23 will be permanently diverted to an existing track through Mantle's Wood and linking back into the current alignment of Footpath GMI/23 adjacent to the HS2 route, east of Hyde Farm. This is a shorter route than the original scheme.

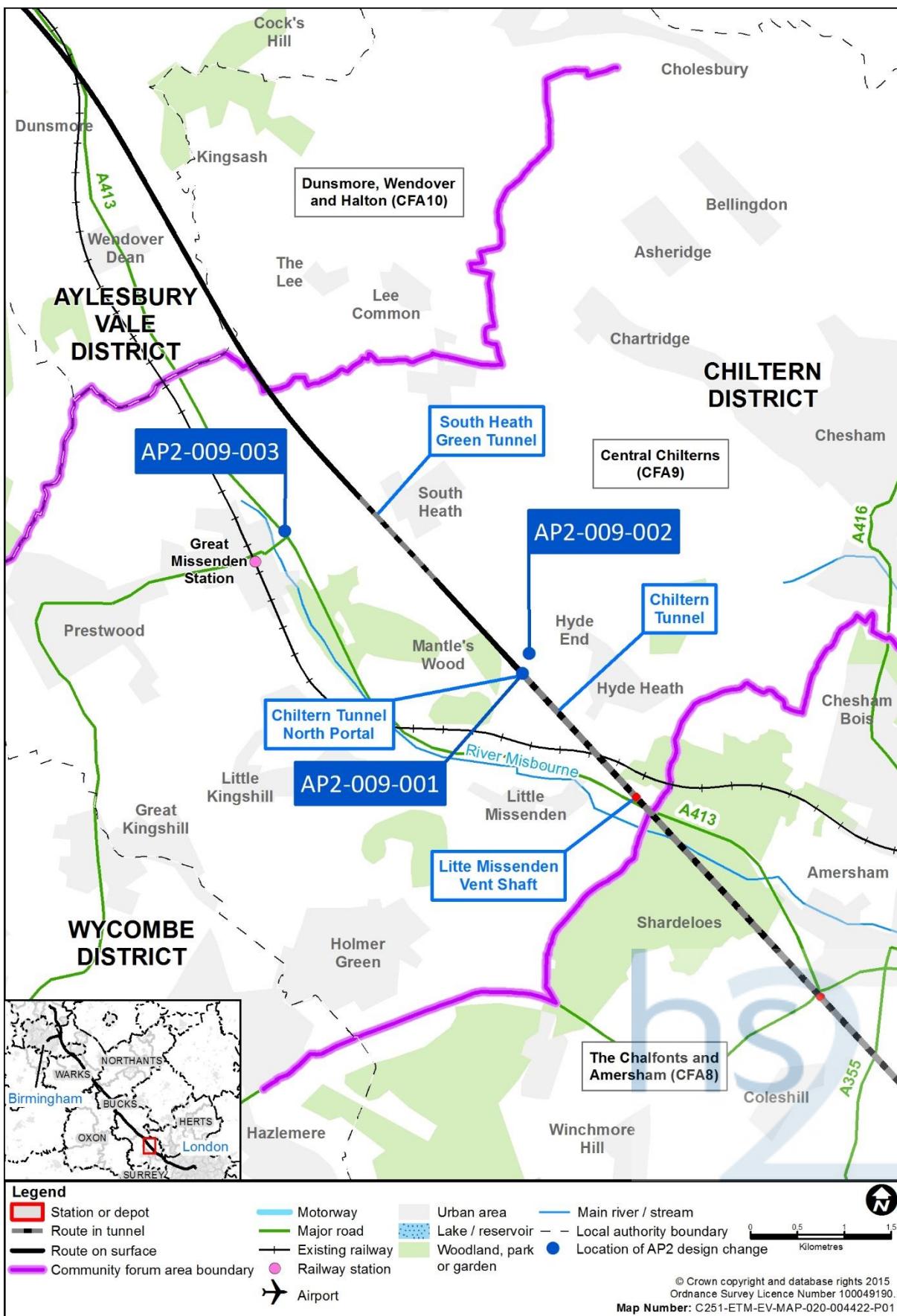
² Porous portals are perforated structures at tunnel portals. These are usually formed of concrete and designed to allow the passage of air from the tunnel. Their function is to reduce the build-up of air pressure when a high-speed train enters a tunnel.

SES and AP2 ES Volume 2 – CFA9, Central Chilterns

Name of amendment	Description of the original scheme or AP1 revised scheme	Description of the AP2 revised scheme
Additional land for an access track to drainage infrastructure from the A413 Aylesbury Road (AP2-009-003)	The permanent provision of a land drainage area adjacent to the A413 Aylesbury Road, approximately 100m to the north of its junction with the A4128 Link Road, on the northern side of Great Missenden. There is currently no access road to this land drainage area from the A413 Aylesbury Road.	The permanent requirement of additional land to construct an access road approximately 100m in length, to a land drainage area. The access road will be located off the roundabout at the junction of the A413 Aylesbury Road and the A4128 Link Road and will include a turning head and parking space for maintenance vehicles.

SES and AP2 ES Volume 2 – CFA9, Central Chilterns

Figure 1: Locations of amendments in CFA9



5 Assessment of amendments

5.1 Change to land required in Mantle's Wood for the Chiltern tunnel north portal (AP2-009-001)

- 5.1.1 The Bill provides for the Chiltern tunnel north portal, which will be permanently located approximately 600m west of Hyde Heath and include a 100m long porous portal, portal building and access track. This requires approximately 6.2ha of land permanently within Mantle's Wood LWS which is ancient woodland (refer to map CT-05-031, CT-05-032, CT-06-031 and CT-06-032 in main ES Volume 2, CFA9 Map Book).
- 5.1.2 Since submission of the Bill and following additional aerodynamic modelling of the Chiltern tunnel, the need for a 220m-long porous portal at the north entrance of the tunnel to reduce air pressure has been identified. This requires extending the porous portal by 120m in length. The portal building will be relocated approximately 120m north-west to accommodate the longer portal. The permanent access track to the portal building will be extended by approximately 120m and will be brought closer, to within 15m, of the HS2 route. The engineering earthworks around the portal will also be extended by approximately 120m and will be built to the height of the embankment (refer to maps CT-05-031, CT-05-032, CT-06-031 and CT-06-032 in the SES and AP2 ES Volume 2, CFA9 Map Book). These works will be carried out largely within the land already required for the original scheme.
- 5.1.3 The works are estimated to take up to six months longer than the original scheme. The changes to the access track and portal building location will result in an overall net reduction in the land required by approximately 0.26ha compared to the main ES. Consequently, the AP2 revised scheme requires a total of 5.94ha of land within the Mantle's Wood area of ancient woodland.
- 5.1.4 The amendment requires approximately 0.37ha less ancient woodland than the original scheme. This has been achieved by moving the access track closer to the HS2 route. However, the change in location of the access track requires a different parcel of land (0.11ha) permanently that is outside the Bill limits. This parcel of land does not include ancient woodland.
- 5.1.5 The revised north portal of the Chiltern tunnel and associated infrastructure 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; land quality; socio-economics; traffic and transport; and water resources and flood risk assessment. However, reassessment is considered to be required in respect of: air quality; community; cultural heritage; ecology; landscape and visual assessment; and sound, noise and vibration.

Air quality

Scope, assumptions and limitations

- 5.1.6 The assessment scope, key assumptions and limitations for air quality are set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1 of the main ES) and the SMR Addendum (Volume 5: Appendix CT-001-000/2 of the main ES) as amended by the SMR Addendum 2 (Volume 5: Appendix CT-001 -000/3 of the SES and AP2 ES). This amendment has potential implications for dust impacts associated with construction activity. Changes in traffic flows during construction are not sufficiently large to meet the criteria for assessment.

Existing baseline

- 5.1.7 The baseline conditions with regard to air quality have been updated from those reported in the main ES based on the Department for Environment, Food and Rural Affairs (Defra) background concentrations maps which provide estimates of background concentrations of NO₂, PM₁₀ and PM_{2.5} for 1km grid squares across the UK.
- 5.1.8 The Defra background concentrations maps indicate average background concentrations in close proximity to the amendment³. Average background concentrations in the area are better than the relevant air quality standards. There are no relevant air quality management areas within the vicinity of the amendment.
- 5.1.9 There are no statutory designated nature conservation sites near the Central Chilterns area that could potentially be affected by changes in air quality as a result of the amendment. There are also no non-statutory designated sites near the Chiltern tunnel north portal that could potentially be affected by changes in air quality as a result of the amendment.

Future baseline

Construction (2017)

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

Operation (2026)

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

Effects arising during construction

- 5.1.12 Whilst the level of earthworks, construction and trackout⁴, as a result of the extension of the tunnel portal, will differ slightly to that assessed in the main ES, it will not change the level of significance of the dust related impacts.

³ Defra (2014), 2011 Based Background Maps for NO_x, NO₂, PM₁₀ and PM_{2.5}; <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011>

⁴The transport of dust and dirt from the construction / demolition site onto the public road network, where it may be deposited and then resuspended by vehicles using the network. This arises when heavy duty vehicles (HDVs) leave the construction / demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

- 5.1.13 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. The supporting assessment for this conclusion can be found in SES and AP2 ES, Volume 5, Appendix AQ-001-009.

Effects arising from operation

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

Mitigation and residual effects

- 5.1.15 Emissions to the atmosphere will be controlled and managed during construction through the implementation of the CoCP. The assessment of the amendment has assumed that the general measures detailed in Section 7 of the draft CoCP (Volume 5: Appendix CT-003-000 in the main ES) will be implemented.

- 5.1.16 No additional avoidance and mitigation measures are required for the amendment during construction and operation in relation to air quality. The amendment will result in no change in the likely residual significant effects reported in the main ES.

Cumulative effects

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

Community

Scope, assumptions and limitations

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

Existing baseline

- 5.1.19 Mantle's Wood, a community resource north of Little Missenden and west of Hyde Heath, is an area of woodland and designated LWS. It is owned by the Forestry Commission and currently leased to a private tenant. The wood is promoted as a place to visit by the Woodland Trust and is partly accessible to local residents for walking by two local PRoW (Footpaths LMI/17 and LMI/21).

Future Baseline

Construction (2017)

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

Operation (2026)

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

Effects arising during construction

- 5.1.22 The main ES reported a significant moderate adverse permanent effect at Mantle's Wood, which is a LWS, because approximately 31% of the wood (approximately 6.2ha out of 20ha) was required for the tunnel portal and cutting, severing the north and south of the wood. Access was also restricted due to the permanent stopping up of one of the PRoW (Footpath LMI/21) and the rerouting of Footpath LMI/17. Survey data from August 2012 and information received from Great Missenden Parish Council indicates that Mantle's Wood is a valued community resource.
- 5.1.23 This amendment reduces the overall land required within Mantle's Wood by approximately 0.26ha. This decreases the land lost at Mantle's Wood to 5.94ha (approximately 28% of the area of Mantle's Wood). The realignment of Footpaths LMI/21 and GMI/23 (see amendment AP2-009-002 described in Section 5.3) will maintain access to the wood.
- 5.1.24 Whilst there is a small decrease in the area of Mantle's Wood, which is required for the construction of the tunnel portal and cutting, given that approximately a third of Mantle's Wood is required permanently, the effect at Mantle's Wood remains moderate adverse and significant. This is the same as that reported in the main ES (refer to SES and AP2 ES Volume 5: Appendix CM-001-009).

Effects arising from operation

- 5.1.25 The proposed amendment at the Chilton tunnel north portal will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES and the AP1 ES.

Mitigation and residual effects

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

Cumulative effects

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

Cultural heritage

Scope, assumptions and limitations

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

Existing baseline

- 5.1.29 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which included walk-over surveys, geophysical surveys, remote sensing data, and from data collected from national and local registers. A full list is provided in Volume 2, Section 6.3 of the main ES.

- 5.1.30 The amendment is within the Mantle's Wood ancient woodland (asset reference⁵ CC019), an asset of high heritage value. Within the wood there is potential for well preserved archaeological remains of woodland management and industries typically found within woodlands, as well as small settlements. Within this woodland, approximately 150m to the north-east of the HS2 route, is the Mantle's Wood earthworks (asset reference CC109) which may be medieval in origin and associated with Mantell's Manor (asset reference CC018). The Mantle's Wood earthwork (asset reference CC109) is an asset of high heritage value. Mantle's Farm (asset reference CC018) is approximately 420m to the south of the route and may incorporate medieval features and buried archaeology of the medieval manor.
- 5.1.31 The baseline resources are described in the main ES (see Volume 2, CFA9, Section 6.3 and Volume 5, Appendix CH-001-009).

Effects arising during construction

- 5.1.32 The land required for the amendment is 0.26ha less than the original scheme. However, there remains the loss of 5.94ha of land within Mantle's Wood (asset reference CC019), which will have a significant effect on the asset's heritage value. In the main ES the effect was reported as significant, with a high impact and major adverse effect. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

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

Mitigation and residual effects

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

Cumulative effects

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

Ecology

Scope, assumptions and limitations

- 5.1.36 The assessment scope for ecology is as set out in Volume 1 of the SES and AP2 ES. The key assumptions and limitations, and the methodology for determining significance of effects are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.

⁵ Assets within the study areas are identified with a unique reference code, CCXXX; further detail on these assets can be found in the gazetteer in the main ES Volume 5: Appendix CH-002-009.

- 5.1.37 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

- 5.1.38 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES. In addition, it takes into account additional survey work for bats and updates to Natural England's ancient woodland inventory, which have occurred since September 2013.
- 5.1.39 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant new or updated baseline information provided in SES and AP2 ES Volume 5: Appendix EC-001-002. For those receptors described in the main ES, further details are provided in Volume 2, CFA9, Section 7.3 and in SES and AP2 ES Volume 5 CFA9 Map Book, including maps EC-04 and EC-05.

Designated sites

- 5.1.40 Mantle's Wood LWS is partially within the land required for the tunnel portal, portal building and access road. It is designated for deciduous woodland, parts of which qualify as a habitat of principal importance under Section 41 of the Natural Environment and Rural Communities Act, 2006⁶, and a local (BAP) habitat. It has been managed for forestry and is predominantly conifer plantation that qualifies as ancient replanted woodland (17.1ha in area, and comprising 85% of the LWS). In the north-western part of the wood there remains broadleaved ancient semi-natural woodland with as many as 30 ancient woodland indicator species. The ancient semi-natural woodland is distributed across three areas totalling 3.2ha (15% of the LWS area). It is identified in the main ES as being of county/metropolitan value.
- 5.1.41 Hedgemoor and Farthings Wood LWS (which consists of two distinct woodlands, Hedgemoor Wood and Farthings Wood) is adjacent to the western boundary of the land required for the amendment. It is designated for deciduous woodland, parts of which qualify as habitats of principal importance and local BAP habitat. Hedgemoor Wood to the west (8.1ha) contains broad-leaved (but not ancient) woodland, although it contains old trees and woodbanks that are of ecological interest. Farthings Wood (4.8ha), which borders Hedgemoor Wood to the east, is a mixture of coniferous and broadleaved woodland, of which the north-eastern 4.1ha (32% of the LWS) is ancient replanted woodland. This is an increase in the extent of ancient woodland within the LWS of 1.5ha compared to that reported main ES (as reported in Section 2.1), but the site remains of county/metropolitan value.

⁶ Natural Environment and Rural Communities Act 2006 (Chapter 16). London. Her Majesty's Stationery Office.

- 5.1.42 There are no other statutory designated nature conservation sites or other areas of ancient woodland relevant to the assessment. Statutory and non-statutory designated sites are described in the main ES, Volume 2, CFA9, Section 7.3 and are shown on Maps CT-10-017 to CT-10-018, Volume 5, CFA9 Map Book, Ecology Map Book.

Habitats

- 5.1.43 The additional land required for the amendment comprises areas of arable land which is assessed as being of local/parish value in the main ES.
- 5.1.44 The areas of ancient woodland within Mantle's Wood and Farthings Wood are of county/metropolitan value as reported in the main ES. Ancient woodland is an irreplaceable resource.
- 5.1.45 The areas of semi-natural broadleaved woodland, which do not form part of the ancient woodland located within the designated sites described above, are assessed in the main ES as being of district/borough value.
- 5.1.46 Habitats surrounding the land required for the amendment are described in the main ES, Volume 2, CFA9, Section 7.3 and are shown on Maps EC-02-021b to EC-02-079a, Volume 5, CFA9 Map Book, Ecology Map Book.

Protected and/or notable species

- 5.1.47 The main ES reports that the bat assemblages using the woodland and hedgerows around Mantle's Wood are of district/borough value. Surveys recorded foraging and commuting activity of at least six species of bat, including low numbers of uncommon species (Leisler's bat and serotine), which indicates that the habitat around Mantle's Wood has value for foraging and commuting. It is assumed that bat tree roosts for common species are also present within Mantle's Wood.
- 5.1.48 A badger population is known to utilise Mantle's Wood, and the land required for the Chiltern tunnel north portal extension. As reported in the main ES, the badger population in the area is of local/parish value.
- 5.1.49 There are no other protected or notable species of relevance to this amendment.
- 5.1.50 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)

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

Operation (2026)

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

Effects arising during construction

Avoidance and mitigation measures

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

Designated sites

- 5.1.54 The main ES identifies that habitat loss and increased isolation arising from the original scheme would result in a permanent adverse effect on the integrity of the Mantle's Wood LWS that would be significant at the county/metropolitan level. There will be a 0.26ha net reduction in the area of land required from within the LWS as a result of the amendment. This comprises the retention of 0.37ha habitat on the north-west boundary of the LWS and an additional area of habitat loss of 0.11ha also on the north-west boundary of the LWS compared with the original scheme. However, 5.94ha of the LWS will still be permanently required for the AP2 revised scheme. The amendment will therefore result in a slightly different significant effect on the LWS. However, the amendment will not change the level of significance of the effects reported in the main ES.
- 5.1.55 The main ES identified that Hedgemoor and Farthings Wood LWS would be subject to an adverse effect on site integrity that will be significant at the county/metropolitan level. The land required for the amendment is outside of the LWS, and therefore with implementation of the CoCP the amendment is unlikely to result in any new or different significant effect on Hedgemoor and Farthings Wood LWS.

Habitats

- 5.1.56 The main ES reports the removal of 6.2ha of ancient woodland from Mantle's Wood and concludes that the resultant adverse effect on conservation status would be significant at the county/metropolitan level. The amendment will result in a 0.26ha net reduction in the extent of ancient woodland in Mantle's Wood compared with the original scheme. However, under the AP2 revised scheme, 5.94ha of the ancient woodland at Mantle's Wood will still be permanently lost. The amendment will therefore result in a slightly different significant effect on the conservation status of ancient woodland. However, the amendment will not change the level of significance of the effects reported in the main ES.
- 5.1.57 The main ES reported an adverse effect on the conservation status of woodland habitats due to losses at Farthings Wood that would be significant at the county/metropolitan level. This included the loss of 0.5ha of ancient woodland. Ancient woodland is an irreplaceable resource. The amendment results in no change to the extent or location of ancient woodland losses at Farthings Wood, and through the implementation of the CoCP it is unlikely that the area of ancient woodland adjacent to the land required will be adversely affected.
- 5.1.58 The ancient woodland areas at Farthings Wood are adjacent to the land required for the amendment. However, through the implementation of the CoCP it is unlikely that the area of ancient woodland adjacent to the land required will be adversely affected.

- 5.1.59 It is unlikely that any other adverse effects on habitats significant at a greater than local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in SES and AP2 ES Volume 5: Appendix EC-002-002.

Protected and/or notable species

- 5.1.60 The main ES reports that the original scheme would result in an adverse effect on the bat assemblage in the Mantle's Wood area that is significant at a district/borough level. There will be an overall reduction in the extent of woodland habitat lost, and these losses will occur in different locations. This could potentially lead to a different significant effect on the bat assemblage utilising the Mantle's Wood area, and will not change the level of significance of the effects reported in the main ES.
- 5.1.61 It is unlikely that any other adverse effects on protected and/or notable species significant at greater than local/parish level will occur. Additional local/parish level effects arising from survey data collected since the main ES are listed in SES and AP2 ES Volume 5: Appendix EC-002-002.

Cumulative effects

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

Mitigation and residual effects

Other mitigation measures

- 5.1.63 Given the amendment will result in an overall reduction in ancient woodland and LWS loss, no additional mitigation measures (i.e. additional to those identified in the main ES) are required.

Summary of likely residual effects

- 5.1.64 The net reduction in the loss of ancient woodland at Mantle's Wood by 0.26ha as a result of this amendment will result in two slightly different effects. There will be a slightly different significant effect on the conservation status of ancient woodland in Mantel's Wood and a slightly different effect on the Hedgemoor and Farthings Wood LWS. However, there remains a loss of 5.94ha of ancient woodland from Mantle's Wood and consequently there remains permanent adverse significant effects on these two receptors at the county/metropolitan level. The amendment will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

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

Landscape and visual assessment

Scope, assumptions and limitations

5.1.66 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

5.1.67 The area of land required for the amendment is located within the Misbourne Upper North Landscape Character Area (LCA) and the Hyde Heath North LCA, west of the Chiltern tunnel north portal, which are both located in the Chilterns Area of Outstanding Natural Beauty (AONB), as described in the main ES (Volume 2, CFA9, Section 9.3).

5.1.68 The following viewpoints are located in close proximity to the Chiltern tunnel north portal and are described in the main ES (Volume 2, CFA9, Section 9.3):

- Viewpoint o86.2.001: view south-west from Bullbaiters Lane and Bridleway LM/27/1;
- Viewpoint o87.2.001: view north-east from residential properties on Hyde Lane;
- Viewpoint o87.2.002: view north from Hyde Lane and adjacent residential properties;
- Viewpoint o87.3.003: view north from PRoW (Footpath LMI/21) which will be stopped up during construction;
- Viewpoint o88.2.001: view south from Hyde Heath Road and residential properties on Chesham Road;
- Viewpoint o88.4.002: view south-west from Hyde Heath Road;
- Viewpoint o88.4.003: view south-west from Hyde Heath Road; and
- Viewpoint o88.2.004: view south-east from Footpath GMI/23/6 and the Hyde.

5.1.69 The amendment will introduce a new viewpoint into the area during operation (viewpoint AP2.087.3.004: view north-west from PRoW (Footpath LMI/17)) to address the view from a permanently realigned footpath during operation. This viewpoint is on the eastern edge of Mantle's Wood (as reported in SES and AP2 ES, Volume 5: Appendix LV-001-009). The foreground of the view is of trees and the edge of Mantle's Wood which together screen longer views.

Future baseline

Construction (2017)

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

Operation (2026)

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

Effects arising during construction

Landscape assessment

- 5.1.72 Misbourne Upper North LCA and Hyde Heath North LCA were assessed as being affected by the original scheme. Misbourne Upper North LCA has a medium level of tranquillity, is of national value owing to its location within the Chilterns AONB, is in fair condition and is considered to be of high sensitivity to change. The main ES reported a major adverse significant effect during construction due to the removal of woodland and field hedgerows, which would result in the disruption of field patterns, altering key characteristics of the landscape.
- 5.1.73 Hyde Heath North LCA has a medium level of tranquillity, is of national value owing to its location within the Chilterns AONB, is in fair condition and 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 woodland and field boundaries, the presence of large scale construction activity and an increase in the movement of construction traffic along the A413, Chesham Road and Hyde Heath Road (accessing the portal).
- 5.1.74 The amendment is located in the Misbourne Upper North LCA and the Hyde Heath North LCA. The amendment to the Chiltern tunnel north portal will give rise to a slight change in the effects as a result of an increase in the period of construction and a net reduction of approximately 0.26ha in the total area of ancient woodland to be removed from Mantle's Wood. There will be no net increase in the area required for construction. Overall, the amendment will affect a small proportion of both LCAs immediately adjacent to the HS2 route and the remaining part of Mantle's Wood will buffer the amendment from the wider landscape. Consequently, this 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.

Visual assessment

- 5.1.75 The construction of the portal and portal building will take place approximately 120m north-west of the portal works assessed in the main ES but the footprint of the works will not be increased. The scale of the works will become closer to residential receptors in Hyde Lane and at the residential property The Hyde, south and north of the site (viewpoints 087.2.001, 087.2.002 and 088.2.004). However, in the original scheme, construction of the deep cuttings would have taken place in this location. The construction works will be visible from other viewpoints in the vicinity (viewpoints 086.2.001, 087.3.003 (until it is stopped up for the diversion works), 088.2.001 and 088.4.002). In all of these viewpoints, construction activity associated with the amendment will be seen in or against a background of large scale construction works. The viewpoints are considered individually in the following paragraphs.
- 5.1.76 Viewpoint 086.2.001: view west from Bullbaiters Lane and Bridleway LM/27/1 towards Mantle's Wood was assessed as being affected by the original scheme. The main ES reported a major adverse significant effect during construction due to the removal of a field boundary on the east side of Mantle's Wood, the partial loss of woodland,

opening up views of the access road to the Chiltern tunnel north portal and potential elevated views of construction works from Footpath LM/27/1. The increased extent of the construction works to the west and the small reduction in woodland removed from Mantle's Wood will not be visible from this location and 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.

- 5.1.77 Viewpoint o87.2.001: view north-east from residential properties on Hyde Lane, and Viewpoint o87.2.002: view north from Hyde Lane and adjacent residential properties were assessed as being affected by the original scheme. The main ES reported a moderate adverse significant effect on viewpoint o87.2.001 and a major adverse significant effect on viewpoint o87.2.002 during construction due to demolitions, the removal of vegetation and the construction of the Footpath GMI/27 accommodation overbridge. The construction of the Chiltern tunnel north portal will increase the scale of works taking place in this location. However, this amendment will be viewed in the context of other works previously assessed and will result in only a minor change to the view and 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.
- 5.1.78 Viewpoint o87.3.003: view north from PRoW (Footpath LMI/21) which will be stopped up during construction was assessed as being affected by the original scheme. This footpath will be permanently diverted from the start of construction to Footpath LMI/17 but will remain open until the diversion works take place. This assessment relates only to the period while the footpath remains open. The main ES reported a major adverse significant effect during construction due to the construction of the Chiltern tunnel north portal, the construction of the route in the cutting and the removal of a substantial portion of Mantle's Wood. The increase in the scale of construction at the new tunnel portal location and the reduction in the area of Mantle's Wood to be removed will result in a minor alteration to the view, but 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.
- 5.1.79 Viewpoint o88.2.001: view south from Hyde Heath Road and residential properties on Chesham Road, Viewpoint o88.4.002: view south-west from Hyde Heath Road and Viewpoint o88.4.003: view south-west from Hyde Heath Road were both assessed as being affected by the original scheme. The main ES reported moderate adverse significant effects on these viewpoints due to the construction of the embankment and the Footpath GMI/27 accommodation overbridge and associated mitigation earthworks. The amendment will move the Chiltern tunnel north portal further from viewpoint o88.4.002 but does not change the distance from viewpoints o88.2.001 or o88.4.003. The reduction in Mantle's Wood will not be apparent from these viewpoints and furthermore, views of this part of the route from both viewpoints are filtered by intervening vegetation. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.1.80 Viewpoint o88.2.004: view south-east from PRoW (Footpath GMI/23/6) and residential property The Hyde was assessed as being affected by the original scheme. The main ES reported major adverse significant effects on this viewpoint due to the removal of woodland, the presence of the green tunnel (south) satellite compound at Chesham

Road, material stockpiles, cranes and construction of a balancing pond. The alteration in the location of the Chiltern tunnel north portal and reduction to the extent of woodland removed will not be apparent from this viewpoint due to the screening effect of intervening vegetation. The amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

Landscape assessment

- 5.1.81 Misbourne Upper North LCA and Hyde Heath North LCA were assessed as being affected by the original scheme and will be also be affected by this amendment. The main ES reported a moderate adverse significant effect in year 1 of operation on the Misbourne Upper North LCA due to the loss of ancient woodland, the presence of the deep cutting, the severance of Hyde Lane and the reduction in tranquillity caused by trains. The main ES similarly reported a moderate adverse significant effect in year 1 of operation on the Hyde Heath North LCA due to the presence of the deep cutting, the Chiltern tunnel north portal and the portal building and the reduction in tranquillity caused by trains. The main ES predicted that effects on both LCAs would be reduced to non-significant by year 15 when mitigation planting has become well established.
- 5.1.82 The amendment to the Chiltern tunnel north portal will give rise to a slight change in the effect on Misbourne Upper North LCA and Hyde Heath North LCA when compared to that reported in the main ES. However, the portal and portal building will be in a deep cutting which will, with the mitigation planting proposed in the main ES, help to integrate the new structures into the wider landscape. Existing vegetation will partially enclose the tunnel portal and building and the area adjacent will become more open. Therefore, this amendment will not give rise to new or different significant effects or change the level of significance of the effects reported in the main ES.
- 5.1.83 Viewpoint 086.2.001: view south from Bullbaiters Lane and PRoW (Bridleway LM/27/1) towards Mantle's Wood was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect in year 1 of operation as a result of the presence of the Chiltern tunnel north portal and associated access road. The effect would reduce by year 15 of operation to non-significant due to the screening effect of the belt of vegetation on the earthwork parallel to Footpath LMI/17. The amendment will slightly change the effect because the Chiltern tunnel north portal will be located further from this viewpoint but will remain visible in year 1 of operation, although there would be a net reduction in woodland from Mantle's Wood . Therefore, the amendment will not give rise to new or different significant effects or change the level of significance of the effects reported in the main ES.
- 5.1.84 Viewpoint 087.2.001: view north-east from Hyde Lane and adjacent residential properties was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse significant effect in year 1 of operation on viewpoint 087.2.001 due to the loss of woodland,

which would open up views towards the original scheme. This effect would reduce to non-significant by year 15, when mitigation planting had matured. The amendment will slightly change the effect as the portal building will be located closer to viewpoint 087.2.001, although views will be filtered through existing hedgerows and the northern edge of Farthing's Wood. Mitigation woodland planting between Farthing's Wood and Mantle's Wood will, when mature, screen the portal from receptors in Hyde Lane. Therefore, 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.

- 5.1.85 Viewpoints 087.2.002: view north from Hyde Lane and adjacent residential properties was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a major adverse significant effect during year 1 of operation, reducing to a non-significant effect by year 15, due to the proximity of the original scheme to the viewpoint and the openness of views. The amendment will slightly change the effect because the increased portal length and the relocation of the tunnel portal building will bring the AP2 revised scheme closer to residential receptors on Hyde Lane. However, this amendment will be seen in the background of the view, beyond the wide cutting and the Footpath GMI/27 overbridge of the original scheme. Therefore, 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.
- 5.1.86 An additional viewpoint has been identified in this assessment. Viewpoint AP2.087.3.004: view north-west from PRoW (Footpath LMI/17) replaces Viewpoint 087.3.003: view north from PRoW (Footpath LMI/21) which will be permanently stopped up and consequently is not assessed in operation (the main ES reported a major adverse effect in year 1 of operation on viewpoint 087.3.003). The Chiltern tunnel north portal, the portal building and the access road will be visible in a deep cutting from a short section of the footpath. It will be a new feature that will be incongruous in the context of the existing view of Mantle's Wood; therefore, the magnitude of change will be high. The high magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new major adverse significant effect in the winter of year 1 of operation. Mitigation planting, under the original scheme, at the eastern end of the portal cutting will partially screen the portal from this viewpoint by year 15 and effects will be reduced to non-significant.
- 5.1.87 Viewpoint 088.2.001: view south from Hyde Heath Road and residential properties on Chesham Road was assessed as being affected by the original scheme. The main ES reported a significant moderate adverse effect in winter of year 1, reducing to non-significant by year 15 due to the presence of the Hyde Lane overbridge and the realignment of Chesham Road. The amendment will bring the tunnel portal closer to this viewpoint, but views of the scheme in this location are largely screened by intervening woodland. Consequently, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.1.88 The main ES reported non-significant effects on Viewpoint 088.4.002: view south-west from Hyde Heath Road, Viewpoint 088.4.003: view south-west from Hyde Heath Road and Viewpoint 088.2.004: View south-east from PRoW (Footpath GMI/23/6) and

residential property The Hyde during operation because all views of the original scheme would be screened or filtered by intervening vegetation. The amendment will relocate the tunnel portal and building closer to viewpoints o88.2.004 and o88.4.003 and further from viewpoint o88.4.002, but intervening vegetation, unaffected by the original scheme, will screen views of the tunnel portal and portal building from these viewpoints. 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.

Mitigation and residual effects

- 5.1.89 The assessment of the amendment has assumed that the general measures detailed in Section 7 of the draft CoCP (Volume 5: Appendix CT-003-000 in the main ES) will be implemented. No additional mitigation measures (i.e. in addition to those identified in the main ES) are required.

- 5.1.90 There are no new or different residual significant construction or operational effects as a result of the amendment.

Cumulative effects

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

Sound, noise and vibration

Scope, assumptions and limitations

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

- 5.1.93 The assumptions for the assessment of sound, noise and vibration are as described in the main ES (Volume 2, CFA9, Section 11.4).

Existing baseline

- 5.1.94 The baseline as described in the main ES (Volume 5: Appendix SV-002-009).

Future baseline

Construction (2017)

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

Operation (2026)

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

Effects arising during construction

- 5.1.97 The closest sensitive receptors to the works are residential properties such as Mantle's Farm, located approximately 275m to the south of the works and are represented by

assessment location 380955 (see map SV-03 in the main ES, Volume 5, CFA9 Map Book, Sound, Noise and Vibration). Construction works associated with the Chiltern tunnel north portal site clearance and track slab are the activities resulting in the highest forecast noise levels at the receptor. The main ES did not identify any likely significant adverse noise effects as a result of the construction works around the Chiltern tunnel north portal.

- 5.1.98 The works associated with the amendment do not represent a substantial intensification of the construction works reported in the main ES. Due to this and the lack of proximity to the nearest noise sensitive receptor, the outcomes of the assessment reported in the main ES remain unchanged.
- 5.1.99 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.

Effects arising from operation

- 5.1.100 The main ES did not identify any adverse effects from operational noise or vibration at residential or non-residential properties in the vicinity of the Chiltern tunnel north portal.
- 5.1.101 An assessment has been undertaken to determine whether operational noise levels from the AP2 revised scheme would result in a likely new or different significant effect, using the significance criteria detailed in the main ES (Volume 5, Appendix SV-001-000).
- 5.1.102 The amendment reduces the operational sound levels at the properties in the vicinity of the Chiltern tunnel north portal. The amendment does not change the operational vibration levels. As previously mentioned, the main ES did identify any operational noise and vibration effects in this area and therefore, the outcomes of the assessment reported in the main ES remain unchanged.
- 5.1.103 The amendment will not give rise to a new or different significant effect from those reported in the main ES.

Mitigation and residual effects

- 5.1.104 There are no new or different residual construction or operational significant effects or additional mitigation measures required as a result of the amendment, in comparison with the main ES and the AP1 ES.

Cumulative effects

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

5.2 Summary of new or different likely residual significant effects

- 5.2.1 The amendment to increase the length of the Chiltern tunnel north portal will result in a slightly different significant effect on the conservation status of ancient woodland in Mantel's Wood and a slightly different effect on the Mantle's Wood LWS. The main ES reported permanent adverse effects on these two receptors which is significant at a county/metropolitan level. The amendment will not change the level of significance of the effect reported in the main ES.
- 5.2.2 A new viewpoint (Viewpoint AP2.087.3.004: view north-west from PRoW (Footpath LMI/17)) was identified as a result of the amendment. There will be a major adverse significant effect on this viewpoint during operation in the winter of Year 1. Mitigation planting will screen the viewpoint from the portal by Year 15 when the effect will be reduced to not significant.

5.3 Realignment of Footpaths LMI/21 and GMI/23 (AP2-009-002)

- 5.3.1 The Bill provides for Footpaths LMI/21 and GMI/23 to be permanently diverted along Hyde Heath Road (refer to map CT-05-031 and CT-06-031 in main ES Volume 2, CFA9 Map Book).
- 5.3.2 Since submission of the Bill, the need for a permanent alternative route to avoid diversion along Hyde Heath Road has been identified. Footpaths LMI/21 and GMI/23 will instead be permanently diverted to an existing track through Mantle's Wood and linking back into the current alignment of Footpath GMI/23 adjacent to the HS2 route, east of Hyde Farm. This is a shorter route than in the original scheme (refer to map CT-05-031, CT-05-032, CT-06-031 and CT-06-032 in the SES and AP2 ES Volume 2, CFA9 Map Book). No works to upgrade the standard of the existing track are proposed. Approximately 450m of this track is located within Mantle's Wood on land outside the limits of the Bill, hence the requirement for this amendment.
- 5.3.3 The amendment is not considered to make changes that require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

5.4 Additional land for an access track to drainage infrastructure from the A413 Aylesbury Road (AP2-009-003)

- 5.4.1 The Bill provides for a permanent land drainage area adjacent to the A413 Aylesbury Road, approximately 100m to the north of its junction with the A4128 Link Road, on the northern side of Great Missenden (refer to map CT-06-033 in main ES Volume 2, CFA9 Map Book). The Bill did not provide for access to the land drainage area from the A413 Aylesbury Road.
- 5.4.2 Since submission of the Bill, the need for a permanent access road for the land drainage area off the A413 has been identified, along with a turning head and parking space for maintenance vehicles. The access will be off the northern side of the roundabout at the junction of the A413 Aylesbury Road and A4128 Link Road. It will then run parallel to the A413 Aylesbury Road north west for approximately 100m to the land drainage area (refer to map CT-05-033 and CT-06-033 in the SES and AP2 ES Volume 2, CFA9 Map Book).

- 5.4.3 Approximately 0.24ha of additional land is required permanently for the access road. The additional land needed to meet this requirement is not included in the Bill, hence the need for this amendment. Any vegetation will be cleared and topsoil stripped within the working area and temporarily stored nearby. The area required for the access road will be excavated and then the road constructed. The topsoil will be reinstated or reused elsewhere in the AP2 revised scheme.
- 5.4.4 The amendment is not considered to make changes that require a reassessment of the environmental effects or mitigation as set out in the main ES with respect to any environmental topics.

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

- 6.1.1 All of the effects of the changes proposed in this CFA have been described 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

X15