

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and Additional Provision 2 Environmental Statement

Volume 2 | Community forum area report

CFA6 | South Ruislip to Ickenham

July 2015

SES and AP2 ES 3.2.1.6



HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement and
Additional Provision 2 Environmental Statement

Volume 2 | Community forum area report

CFA6 | South Ruislip to Ickenham

July 2015

SES and AP2 ES 3.2.1.6



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 Description of changes to the design or construction assumptions	10
2.4 Updates to traffic models	11
2.5 Corrections to the main ES	11
2.6 Topics included in the SES assessment	15
3 Assessment of changes	16
3.1 Air quality	16
3.2 Ecology	18
3.3 Traffic and transport	21
Part 2: Additional Provision 2 Environmental Statement	24
4 Summary of amendments	24
5 Assessment of amendments	27
5.1 Overhead power line diversion in London Borough of Hillingdon (AP2-006-001)	27
5.2 Summary of new or different likely residual significant effects as a result of the amendment	30
6 Combined effects of amendments in this CFA due to changes in traffic flows	31
List of figures	
Figure 1 Locations of design changes not requiring a change to the Bill in CFA6	9
Figure 2: Locations of amendments in CFA6	26

List of tables

Table 1: Summary of changes to the design or construction assumptions not requiring a change to the Bill in CFA6	8
Table 2: Summary of corrections to the main ES in CFA6	12
Table 3: Summary of amendments in CFA6	25

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

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

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

SES and AP2 ES Volume 2 - CFA6, South Ruislip to Ickenham

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

Structure of this report

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

Part 1 provides supplementary environmental information relating to:

- new baseline information with respect to European Protected Species surveys, additional cultural heritage and ecology data relating to ancient woodlands, geophysical and walkover surveys for cultural heritage undertaken since the submission of the Bill;
- changes to the design or construction assumptions which do not require changes to the Bill;
- updates to traffic models; 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, 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;
 - an update to the West London Highway Assignment Model (WeLHAM) traffic model which relates only to construction; and
 - corrections to the main ES.
- 1.1.4 There is only one design change requiring assessment within this SES which relates to the temporary provision of an operational railhead control tower at West Ruislip.
- 1.1.5 The changes are described in Part 1 under a series of sub-headings and assessed on a topic by topic basis using the same approach adopted in the main ES.
- 1.1.6 The purpose of the SES is to provide an assessment of any new or different likely significant environmental effects arising from the changes described.
- 1.1.7 The AP2 ES reports the likely significant effects of amendments to the design of the scheme, which require the use of land outside the original limits of the Bill, additional access rights, or other extensions to the powers conferred by the Bill, making it necessary to submit an Additional Provision to the Bill.
- 1.1.8 There is only one amendment requiring assessment within this AP2 ES which relates to the overhead power line diversion in London Borough of Hillingdon.
- 1.1.9 The AP2 ES assesses each amendment separately for all relevant topics. The purpose of the AP2 ES is to provide an assessment of any new or different likely significant environmental effects arising from the amendments.
- 1.1.10 The standard measures that will be used to mitigate likely significant adverse environmental effects during construction and operation of the scheme are described in the main ES, Volume 1, Section 9 and the draft Code of Construction Practice

(CoCP) submitted in support of the Bill. Implementation of these measures has been assumed in this SES and AP2 ES.

1.1.11

It should be noted that, since submission of the Bill, the scheme design has been revised by SES design changes, amendments described in the AP1 ES (AP1 amendments) and amendments described in the AP2 ES (AP2 amendments). In order to differentiate between the original proposals and subsequent changes, the following terms are used:

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

Cultural heritage

2.1.1 Since the main ES was produced it has been identified that a number of heritage assets were omitted from the original Heritage Gazetteer and Impact Assessment Table but were included in the ES map book. The missing assets can be found in the SES and AP2 ES, Volume 5: Appendix CH-002-006 Heritage Gazetteer and Appendix CH-003-006 Impact Assessment Table.

2.1.2 The additional baseline data does not generate any new or different significant effects. Consequently effects on cultural heritage are not considered in Section 3 below.

Ecology

2.1.3 Surveys for bats, great crested newt and hazel dormouse have been undertaken in this area since production of the main ES (September 2013). In addition, a review of historic mapping has been undertaken for the woodland areas in the vicinity of Newyear's Green Covert to assist in determining if these areas represent ancient woodland.

2.1.4 Details of all survey work and desk-study information gathered since September 2013 which is relevant to this area is provided in the SES and AP2 ES Volume 5: Appendix EC-001-001 and EC-002-001 and the SES and AP2 ES Volume 5 map series EC-04 to EC-06; and EC-12.

2.1.5 The additional baseline data does not generate any new or different significant effects. The changes in status of woodland at Newyear's Green Covert are reported in Section 3.

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

2.2.1 Table 1 provides a summary of the changes to the design or construction assumptions in the South Ruislip to Ickenham CFA (CFA6) and Figure 1 shows the location.

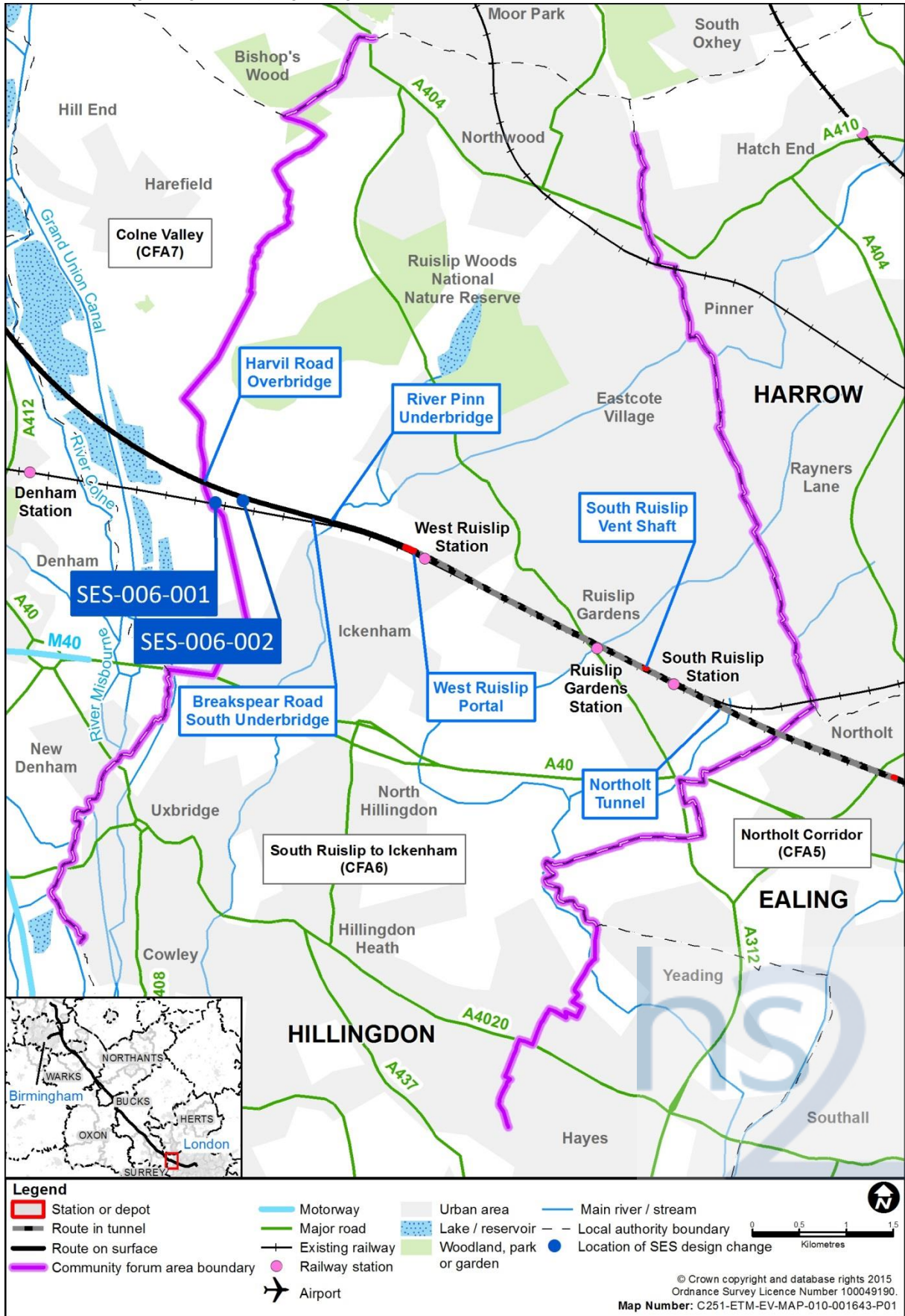
Table 1: Summary of changes to the design or construction assumptions not requiring a change to the Bill in CFA6

Name of design change or construction assumption	Description of the original scheme	Description of the SES scheme
<p>Review of material import and construction programme in CFA6</p> <p>SES-006-001</p>	<p>An indicative construction programme was included in the main ES, Volume 2, CFA6, Section 2.3 that illustrated the indicative periods for each core construction activity in this area.</p>	<p>Since submission of the Bill, the phasing of the import of structural fill material has been reviewed to reduce peak traffic movements associated with the construction of design elements served from Harvil Road and Swakeleys Road.</p>
<p>The temporary provision of an operational railhead control tower at West Ruislip</p> <p>SES-006-002</p>	<p>The Bill provides for the West Ruislip railhead, located at the Northolt tunnel and earthworks main construction compound to be used for the delivery and movement of materials to and from the worksites during construction.</p>	<p>The provision of a 12m high temporary operational railhead control tower covering an area of approximately 100m² at West Ruislip to enable the efficient management of the train operations during construction.</p>
<p>Use of Euro VI¹ Heavy Goods Vehicles (HGV)</p> <p>SES-006-003</p>	<p>The original scheme allowed for any Euro standard engine to be used in HGVs transporting excavated material.</p>	<p>In order to mitigate impacts on local air quality in areas where there is action in place to meet EU limit values through the introduction of Low Emission Zones (such as the London Low Emission Zone), HS2 Ltd will require HGVs entering these designated Zones during construction, for the purposes of transporting excavated material, to be powered by Euro VI (or lower emission) engines.</p>

¹ Euro VI engines are required to have substantially lower emissions of NOx and particulate matter than older engines.

SES and AP2 ES Volume 2 - CFA6, South Ruislip to Ickenham

Figure 1 Locations of design changes not requiring a change to the Bill in CFA6



2.3 Description of changes to the design or construction assumptions

Review of material import and construction programme in CFA6 (SES-006-001)

- 2.3.1 The Bill provides for construction vehicles to use Harvil Road and Swakeleys Road. The main ES notes that this would result in temporary changes in traffic flows and delays to vehicle users on these routes (refer to maps CT-05-019a-L1 and CT-06-019a-L1 in main ES Volume 2, CFA6 Map Book).
- 2.3.2 Since submission of the Bill, review and rescheduling of construction activities has led to fewer of these occurring at the same time. This in turn will result in a net reduction of HGV flows in the SES scheme when compared to the original scheme. These changes result in reductions in HGV peak traffic flows on Harvil Road and Swakeleys Road.
- 2.3.3 The design change results in new or different significant effects for air quality and traffic and transport and these are reported in Section 3.

The temporary provision of an operational railhead control tower at West Ruislip (SES-006-002)

- 2.3.4 The Bill provides for the West Ruislip railhead, located at the proposed Northolt tunnel and earthworks main construction compound within the South Ruislip to Ickenham area (CFA6) to be used for the delivery and movement of materials to and from the compound during construction (refer to map CT-05-019a in the main ES Volume 2, CFA6 Map Book).
- 2.3.5 Since submission of the Bill, it has been determined that a 12m high temporary operational railhead control tower covering an area of approximately 100m² is required at the railhead within the Northolt tunnel and earthworks main construction compound within CFA6, to manage train operations throughout the construction period.
- 2.3.6 The provision of the railhead control tower in CFA6 is not considered to make changes that require reassessment of the effects or proposed mitigation as set out in the main ES with respect to any environmental topics.

Use of Euro VI Heavy Goods Vehicles (SES-006-003)

- 2.3.7 The original scheme allowed for any Euro standard engine to be used in HGVs transporting excavated material.
- 2.3.8 In order to mitigate impacts on local air quality, in areas where there is action in place to meet EU limit values through the introduction of low emission zones (such as the London Low Emission Zone), HS2 Ltd will require HGVs entering these designated Zones during construction, for the purposes of transporting excavated material, to be powered by Euro VI (or lower emission) engines.
- 2.3.9 The SES scheme in this CFA is assessed on the basis of the HS2 policy regarding use of HGVs powered by Euro VI (or lower emission) engines.

- 2.3.10 The change in construction assumption results in new or different significant effects for air quality and this is reported in Section 3.

2.4 Updates to traffic models

- 2.4.1 The assessment of the traffic effects of the SES scheme changes within the Kilburn (Brent) to Old Oak Common area (CFA₄), and the South Ruislip to Ickenham area (CFA₆) requires updated traffic modelling. The highway traffic model base used for the main ES was the 2012 WeLHAM developed by Transport for London (TfL). However, since 2013 there have been major revisions to the WeLHAM model by TfL and HS2 Ltd to provide an improved forecasting capability. This revised model has been used to provide an updated baseline and in the assessment of the SES scheme changes during construction for CFA₄, CFA₅ and CFA₆.
- 2.4.2 The results of this assessment of the SES scheme for this CFA are reported where they result in new or different significant effects.
- 2.4.3 The results from the revised model have also been used in the assessment of any consequential effects on the traffic related topics including air quality, community, sound noise and vibration and socio-economics.

2.5 Corrections to the main ES

- 2.5.1 Since submission of the Bill, the need for a number of corrections in the contents of the main ES has been identified. Table 2 provides a list of those instances where there has been a need to correct the Volume 2 CFA report for CFA₆ because of the potential to alter the significant environmental effects reported in the main ES or a factual inaccuracy relating to significant effects has been identified. The table gives the location of the correction in the main ES, the reason for the correction, replicates the text from the main ES, where applicable provides revised text, and identifies whether the correction changes a significant effect reported in the main ES. Where relevant, these corrections have been taken into account in the technical assessments contained within Section 3 of this SES.

Table 2: Summary of corrections to the main ES in CFA6

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
<p>Traffic and transport</p> <p>Paragraph 12.4.21, Volume 2, CFA6 of the main ES</p> <p>And</p> <p>Paragraph 12.5.1, Volume 2, CFA6 of the main ES</p>	<p>The assessment incorrectly assumed that Breakspear Road South would be closed for reconstruction of the railway underbridge. There are no plans to reconstruct the existing bridge.</p>	<p>Paragraph 12.4.21, seventh bullet point:</p> <p>Ladygate Lane – major adverse effect (HGV);</p> <p>Paragraph 12.5.1, second bullet point:</p> <p>reconstructed railway underbridge over Breakspear Road South with improved headroom; and</p>	<p>None</p> <p>(Text referring to Ladygate Lane and the reconstructed overbridge on Breakspear Road South is no longer relevant)</p>	<p>Yes.</p> <p>Major adverse traffic severance reported in the main ES on Ladygate Lane (between Breakspear Road and Bury Street) will be removed</p> <p>No mitigation required</p>
<p>Sound, noise and vibration</p> <p>Table 18, Paragraph 11.4.19, Volume 2, CFA6 of the main ES</p>	<p>The attenuation provided by the noise fence barrier located between the proposed route and the residential properties in the vicinity of The Greenway and Hoylake Crescent was underestimated. The sound levels have been recalculated with the corrected barrier. As a result, the number of dwellings that form the significant effect is reduced from approximately 200 to approximately 100.</p>	<p>Table 18, under Location and details:</p> <p>Ickenham. Approximately 200 dwellings and associated shared community open areas in the vicinity of the Greenway, Hoylake Crescent, Pynchester Close, Bushey Road and Copthall Road West. Forecast increases in sound due to the railway are likely to cause a moderate adverse effect on the acoustic character of the area around the closest properties. The effect on the acoustic character of residential areas that are located further from the railway would be a minor effect.</p>	<p>Table 18, under Location and details:</p> <p>Ickenham. Approximately 100 dwellings and associated shared community open areas in the vicinity of The Greenway, Bushey Road and Hoylake Crescent. Forecast increases in sound due to the railway are likely to cause a moderate adverse effect on the acoustic character of the area around the closest properties. The effect on the acoustic character of residential areas that are located further from the railway would be a minor effect.</p> <p>(See SES and AP2 ES, Volume 5 SV-004-006 for updated calculations and SES and AP2 ES, Volume 5: Map series SV-02 for assessment locations)</p>	<p>Yes.</p> <p>The correction has resulted in a 50% reduction in the number of impacted dwellings that form this significant operational airborne noise effect.</p> <p>Mitigation is as described in the main ES.</p>
<p>Sound, noise and vibration</p>	<p>The research facility at Ickenham was identified in the main ES as</p>	<p>Table 19, under Type of</p>	<p>Table 19, under Type of significant</p>	<p>Yes, the type of significant effect is changed from a groundborne vibration</p>

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Table 19, Paragraph 11.4.22, Volume 2, CFA6 of the main ES	being subject to a significant operational groundborne vibration effect, however, as the property is also subject to a major airborne noise impact, it should have been identified as a significant operational combined airborne noise and groundborne vibration effect.	significant effect and source: Ground-borne vibration effect inside laboratory buildings due to the operation of train services on surface section of line.	effect and source: Airborne noise and ground-borne vibration effect inside laboratory buildings due to the operation of train services on surface section of line.	effect to a combined airborne noise and groundborne vibration effect. HS2 Ltd will continue to seek reasonably practicable measures to further reduce or avoid these significant effects. In doing so HS2 Ltd will continue to engage with stakeholders to fully understand the receptors, their use and the benefit of any measures. The outcome of these activities will be reflected in the Environmental Minimum Requirements (see Volume 1 and Volume 5: Appendix SV-004-006 of the main ES).
Air quality Section 4.4, Volume 2, CFA6 of the main ES Traffic inputs used in the construction assessment, reported in Volume 5: TR-001-000, Annex D, Table 16, of the main ES	The original method to derive annual average daily traffic (AADT) from peak hour traffic flows used in the air quality assessment was incorrect in this CFA: the HS2 construction HGV flows were overstated.	Section 4.4, Volume 2, CFA6 of the main ES	The change in the assessment is reported in Section 3.1 below.	Yes. There will no longer be any significant effects as a result of this correction in combination with the following factors: traffic flow changes due to the updated WeLHAM model; flow reductions due to the review and rescheduling of construction traffic (SES-006-001); and emissions reductions due to the use of Euro VI HGVs (SES-006-003) for transporting excavated material. No additional mitigation, other than that reported in the main ES, is required.
Community Section 5.4.18, Volume 2, CFA6 of the main ES	Reassessment of community effects following changes to the air quality assessment due to corrections to the AADT flows.	Residents on B467 Swakeleys Road (between the junction with the A40 and the junction with Harvil Road) are predicted to experience in-combination	Residents on B467 Swakeleys Road (between the junction with the A40 and the junction with Harvil Road) are predicted to experience in-combination effects as this road will be used by	Yes. There will be a different significant residual effect on community due to removal of the air quality effect on

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
		<p>effects as this road will be used by construction traffic. Significant increases in HGV traffic and the associated significant effects on road traffic noise and air quality will combine. The combination of these effects will coincide for approximately nine months and affect approximately 30 properties. This will give rise to a major adverse effect on the amenity of residents, which is significant.</p>	<p>construction traffic. Significant increases in HGV traffic and the associated significant effect from road traffic noise will combine. The combination of these effects will coincide for approximately nine months and affect approximately 30 properties. This will give rise to a major adverse effect on the amenity of residents, which is significant.</p>	<p>Swakeleys Road. However, this will not change the level of significance of the community effects reported in the main ES i.e. it remains major adverse.</p> <p>No additional mitigation, other than that reported in the main ES, is required.</p>

2.6 Topics included in the SES assessment

- 2.6.1 The changes described above in Sections 2.1 to 2.5 result in new or different significant effects in respect of: air quality; and traffic and transport. In addition, ecology is included in order to document the likely addition of land at Newyear's Green Covert to the ancient woodland inventory.

3 Assessment of changes

3.1 Air quality

Introduction

- 3.1.1 This section of the report describes the environmental baseline in relation to air quality that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the changes introduced in Section 2, compared to the original scheme.

Scope, assumptions and limitations

- 3.1.2 The assessment scope, key assumptions and limitations for air quality are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES as amended by the SMR Addendum 2 (SES and AP2 ES, Volume 5: Appendix CT-001 -000/3).

- 3.1.3 In order to help mitigate impacts on local air quality, in areas where there is action in place to meet EU limit values through the introduction of Low Emission Zones (such as the London Low Emission Zone), HS2 Ltd will require HGVs transporting excavated material and entering these designated zones during construction, to be powered by Euro VI (or lower emission) engines.

Changes of relevance to this assessment

- 3.1.4 The following changes are relevant to this assessment:

- the update of the WeLHAM model;
- update of the traffic flows following correction to the method to convert from peak hour flows to AADT for construction traffic;
- review of material import and construction programme in CFA6 (SES-006-001); and
- the use of Euro VI HGVs for the movement of excavated materials in the London Low Emission Zone (SES-006-003) and the other compounds outside the Low Emission Zone accessed via Swakeleys Road.

- 3.1.5 The update of the WeLHAM model has resulted in an update both to construction traffic flows and to the future baseline traffic flows, from which the future baseline air quality is predicted. The assessment of air quality impacts from construction traffic depends on both the predictions for the construction scenario and the future baseline case.

- 3.1.6 The HS2 HGV construction traffic flows used in the air quality assessment were overstated for the main ES. This, in turn, had the effect of overstating air quality impacts and the input data have since been revised.

Environmental baseline

Existing baseline

- 3.1.7 The baseline air quality information for South Ruislip to Ickenham is described in the main ES (Volume 2, CFA6, Section 4 and Volume 5: Appendix AQ-001-006). Details of the assessed receptors are provided within the SES and AP2 ES Volume 5: Appendix AQ-001-006 and SES and AP2 ES Volume 5: Map series AQ-01.

Future baseline

Construction (2017)

- 3.1.8 Future background pollutant concentrations have been sourced from the Department for Environment, Food and Rural Affairs (Defra) background maps for 2017. These maps show the prediction that NO₂ and PM₁₀ concentrations in 2017 will be lower than the 2012 baseline.
- 3.1.9 The future baseline air quality conditions for 2017 have been updated to reflect updates in the Defra maps and changes in the WeLHAM traffic model.

Effects arising during construction

Avoidance and mitigation measures

- 3.1.10 The use of HGVs powered by Euro VI (or lower emission) engines during construction, for the purposes of transporting excavated material, will reduce emissions of NO_x, PM₁₀ and PM_{2.5} relative to that assumed in the main ES.

Assessment of impacts and effects

Temporary effects

- 3.1.11 In the main ES, adverse impacts on air quality were predicted at some residential receptors alongside roads used by construction traffic vehicles.
- 3.1.12 In this revised assessment, as a result of the combination of factors referred to in paragraph 3.1.4, it is predicted that the significant air quality effects identified in the main ES are removed. The assessment supporting the conclusions of this assessment can be found in SES and AP2 ES, Volume 5: Appendix AQ-001-006.
- 3.1.13 Therefore the significant effects reported in the main ES at the following locations will be removed:
- Swakeleys Road, between the A40 Western Avenue and Breakspear Road South (multiple receptors);
 - Warren Road, close to the junction with Swakeleys Road;
 - Shorediche Close, at the property façades closest to Swakeleys Road;
 - Roker Park Avenue, close to the junction with Swakeleys Road;
 - Woodhall Close, at properties with rear building façades close to the A40 Western Avenue; and
 - Park Road, close to the junction with the A40 Western Avenue.

Permanent effects

- 3.1.14 There are no permanent effects anticipated to arise during construction of the SES scheme.

Other mitigation measures

- 3.1.15 No other mitigation measures during construction are required in relation to air quality.

Cumulative effects

- 3.1.16 There are no new or different likely significant cumulative effects for air quality as a result of the SES changes as a result of any relevant committed development interacting with the SES scheme.

Summary of likely residual significant effects

- 3.1.17 The residual significant effects on air quality reported in the main ES are now removed, due to the review and rescheduling of construction traffic, the correction to the traffic data and the commitment to use Euro VI vehicles for transporting excavated material.

Effects arising from operation

- 3.1.18 There are no changes in operation as a result of the SES scheme and consequently no new or different significant effects compared to those 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-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 3.2.3 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. This constitutes a 'reasonable worst-case' basis for the subsequent assessment. The precautionary approach to the assessment that has been adopted identifies the likely significant ecological effects of the SES scheme.

Changes of relevance to this assessment

- 3.2.4 The only change of relevance to the assessment is new baseline data from a review of historic mapping, which indicates that Newyear's Green Covert is likely to be ancient woodland, and added to the ancient woodland inventory.

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 is provided in the SES and AP2 ES, Volume 5: Appendix EC-001-001.
- 3.2.6 The assessment also takes into account a review of historic mapping and other data sources in relation to woodland at Newyear's Green Covert which has been undertaken since the submission of the main ES. A summary of the baseline information relevant to the assessment is provided below.

Designated sites

- 3.2.7 A review of historic mapping undertaken since the main ES has identified that the northern most section of Newyear's Green Covert is located to the south of a cluster of surviving ancient woodlands and is likely to be added to the ancient woodland inventory. It is approximately 2.2ha in extent and is within the land identified as required for the original scheme. It is considered as ancient woodland for the purpose of assessment.

Habitats

- 3.2.8 Woodland at Newyear's Green Covert was identified in the main ES as being of district/borough value. The likely addition of this area to the ancient woodland inventory does not change the value described in the main ES.

Protected and/or notable species

- 3.2.9 There has been no change in the baseline information relating to the protected/and or notable species that generates new or different significant effects.

Future baseline

Construction (2017)

- 3.2.10 No committed developments have been identified in this local area that will materially alter the baseline conditions in 2017

Operation (2026)

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

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Designated sites

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

Habitats

- 3.2.14 The section of Newyear's Green Covert that is likely to be added to the ancient woodland inventory is within the land identified as required for the scheme. However, the main ES assumed that Newyear's Green Covert would be retained, and therefore no effects on this area of woodland were reported in the main ES. No works will be undertaken within Newyear's Green Covert, and despite the likely addition of this area to the ancient woodland inventory no impacts (or resulting effects) on this receptor are expected to occur.

Protected and/or notable species

- 3.2.15 The updated baseline information will not give rise to new or different significant effects on protected and/or notable species and will not change the level of significance of the effects reported in the main ES.

Cumulative effects

- 3.2.16 There are no new or different likely cumulative effects for ecology as a result of the change in ancient woodland status, or as a result of any relevant committed development.

Other mitigation

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

Summary of likely residual significant effects

- 3.2.18 No new or different residual effects on ecological receptors occur as a consequence of the new information relating to the status of ancient woodland. The significant residual effects of the SES scheme in this area are therefore unchanged from those reported in the main ES.

Effects arising from operation

- 3.2.19 No new or different effects on ecological receptors occur as a consequence of the changes in ancient woodland status.

3.3 Traffic and transport

Introduction

- 3.3.1 This section of the report describes the environmental baseline in relation to traffic and transport that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the changes introduced in Section 2, compared to the original scheme.

Scope, assumptions and limitations

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

Changes of relevance to this assessment

- 3.3.3 The changes of relevance to this assessment are:
- the review of material import and construction programme in CFA6 (SES-006-001); and
 - the correction to the assumption in the main ES that Breakspear Road South would be closed for reconstruction of the railway underbridge.
- 3.3.4 These are considered to have the potential to result in new or different likely residual significant effects for traffic and transport.

Environmental baseline

Existing baseline

- 3.3.5 The baseline traffic and transport information for South Ruislip to Ickenham is described in the main ES (Volume 2, CFA6, Section 12).
- 3.3.6 Existing traffic and transport conditions in the study area were undertaken in 2012. Supplementary traffic surveys were undertaken in 2014, at locations not previously surveyed but potentially now affected by the SES scheme.
- 3.3.7 The baseline for highway traffic conditions was provided by the TfL WeLHAM highway model. This has been revised to provide an updated traffic baseline for this assessment.
- 3.3.8 Further details of the revised baseline are presented in the SES and AP2 ES Volume 5: Appendix TR-001-000.

Future baseline

Construction

- 3.3.9 The future baseline for construction is described in the main ES, Volume 2, CFA6, Section 12. In addition, updated forecast future baseline schemes and traffic volumes have been incorporated within the updated WeLHAM model for the future construction year of 2021. No other changes to the traffic and transport future baseline are anticipated in the study area.

Operation (2026 and 2041)

- 3.3.10 The future baseline for operation is described in the main ES, Volume 2, CFA6, Section 12. In addition, updated forecast future baseline schemes and traffic volumes have been incorporated within the updated WeLHAM model for the future operational years of 2026 and 2041. No other changes to the traffic and transport future baseline are anticipated in the study area.

Effects arising during construction

Avoidance and mitigation measures

- 3.3.11 As the SES scheme reduces peak HGV flows during construction, no further mitigation is proposed beyond that set out in the main ES (Volume 2, CFA6, Section 12).

Assessment of impacts and effects

Temporary effects

- 3.3.12 The review and rescheduling of construction activities has led to fewer of these occurring at the same time. This in turn will result in a net reduction of HGV flows in the SES scheme when compared to the original scheme. Peak HGV trips on Harvil Road to and from the Northolt tunnel and earthworks main compound reduce from the assessed peak of 1360 two-way HGV trips/day reported in the main ES to a peak of 770 two-way HGV trips/day for the SES scheme. In addition the duration of the busy period reduces from the 12 month period reported in the main ES to 9 months. The HGV flows and busy periods for Breakspear Road South, High Road Ickenham and the other compounds accessed via Harvil Road in CFA 6 and 7 remain the same for the SES scheme as those reported in the main ES. As a consequence, the assessment has assumed as a worst-case that Swakeleys Road HGV flows have reduced from not more than 1860 two-way HGV trips/day in the original scheme to not more than 1460 two-way HGV trips/day in the SES scheme. However, it is not anticipated that the peak periods of activity associated with each compound within CFA 6 and 7 will all occur at the same time, and so the level of traffic is likely to be lower than this assumed level.
- 3.3.13 Despite these reductions in HGV peak traffic flows, the major adverse significant effects on Swakeleys Road and Harvil Road remain unchanged from the main ES.
- 3.3.14 The main ES incorrectly assumed that there would be a temporary closure of Breakspear Road South railway underbridge. This resulted in a major adverse significant severance² effect for non-motorised users on Ladygate Lane due to the diversionary effect of the closure. The correction results in the removal of this effect.

Permanent effects

- 3.3.15 Permanent effects of construction on traffic and transport are reported under operations.

² In the context of this traffic and transport section, Severance is used to relate to a change in ease of non-motorised users due to, for example, a change in travel distance or travel time or a change in traffic levels on a route that makes it harder for non-motorised users to cross. A reference to severance does not imply a route is closed to access.

Other mitigation measures

- 3.3.16 No changes to the mitigation measures reported in Volume 2, CFA6 of the main ES are proposed.

Cumulative effects

- 3.3.17 Cumulative effects are reported in Volume 2, CFA6, Section 12 of the main ES. The above assessment has taken into account these cumulative effects, including planned development by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in other areas.

Summary of likely residual significant effects

- 3.3.18 The change in the baseline and the reduction in construction traffic volumes in the Harvil Road area do not result in any new or different significant traffic and transport residual effects during construction.
- 3.3.19 Correction of the assessment reported in the main ES has resulted in of the removal of the major adverse significant residual severance effect for non-motorised users of Ladygate Lane.
- 3.3.20 The significant residual effects that result from construction of the AP2 Scheme are shown on map SES AP2 TR-03-009 in the SES and AP2 ES Volume 5, CFA6 Map Book.

Effects arising from operation

- 3.3.21 There are no changes in operation as a result of the SES scheme and consequently no new or different significant traffic and transport effects compared to those reported in the main ES.

Part 2: Additional Provision 2 Environmental Statement

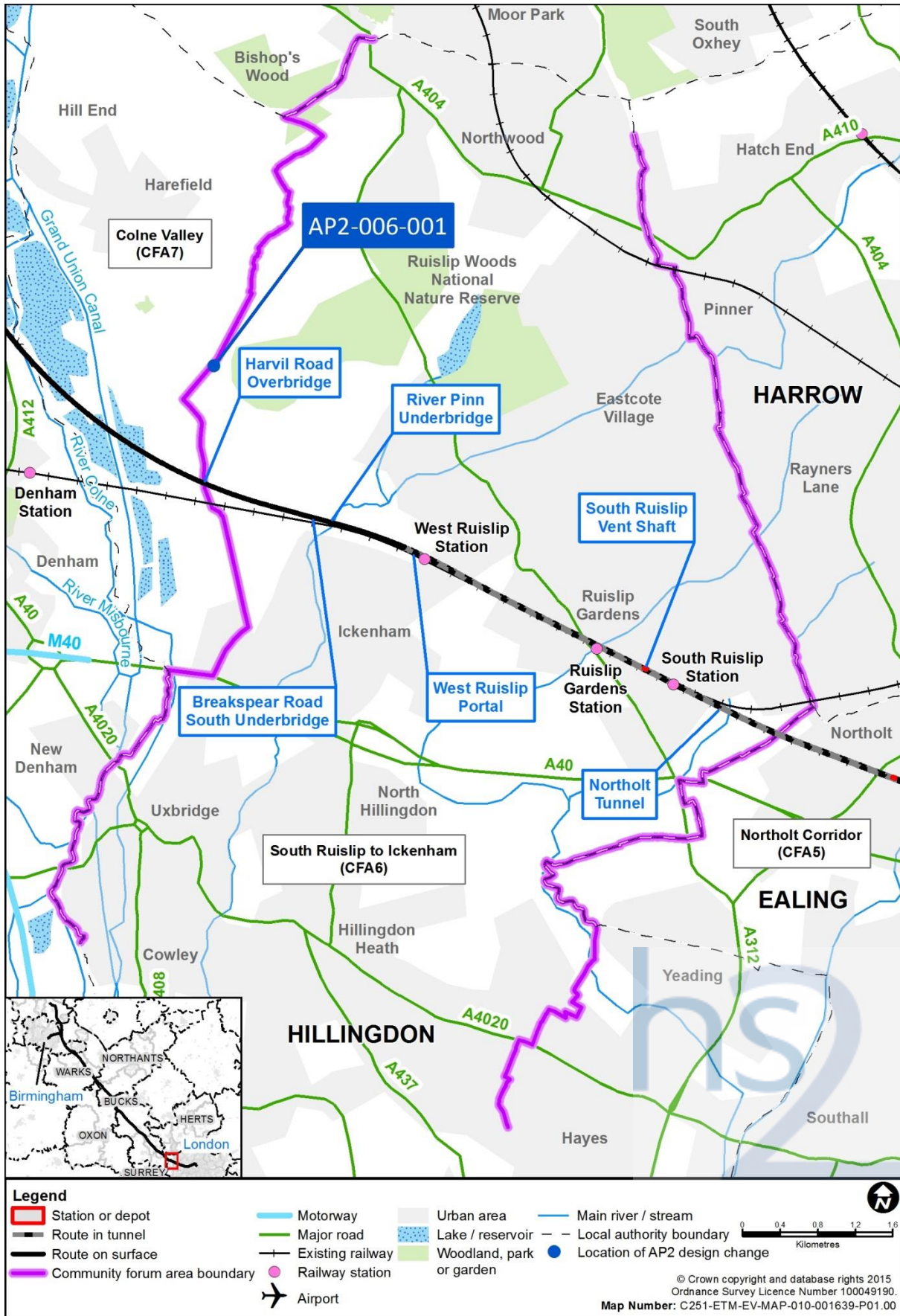
4 Summary of amendments

- 4.1.1 Table 3 provides a summary of the amendment in the South Ruislip to Ickenham CFA (CFA6) and Figure 2 shows the location.

Table 3: Summary of amendments in CFA6

Name of amendment	Description of the original scheme	Description of the AP2 revised scheme
Overhead power line diversion in London Borough of Hillingdon AP2-006-001	Provision of an area of land adjacent to pylon ZCo42 to allow for access and maintenance of the pylon during construction.	Additional land is required in order to provide a safe working area for access and maintenance of pylon ZCo42 during construction of the Harvil Road Chiltern Line Overbridge.

Figure 2: Locations of amendments in CFA6



5 Assessment of amendments

5.1 Overhead power line diversion in London Borough of Hillingdon (AP2-006-001)

- 5.1.1 The Bill provides for the temporary use of 0.5ha of land around pylon ZCo42 to allow for access to, and maintenance of, the pylon during construction (refer to map CT-05-019a-R1 in the main ES Volume 2, CFA6 Map Book and map CT-05-019b-R1 in the main ES Volume 2, CFA7 Map Book).
- 5.1.2 Since submission of the Bill, it has been identified that an additional area of approximately 0.3ha is required to the east of pylon ZCo42 in a semi-improved grassed field in order to provide a safe working area for access and maintenance of the pylon during construction of the Harvil Road Chiltern Line Overbridge (refer to map CT-05-019b-R1 in SES and AP2 ES Volume 2, CFA7 Map Book). This additional land required is outside the existing limits of the Bill, hence the need for this amendment.
- 5.1.3 The additional temporary land required around pylon ZCo42 is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES for: agriculture, forestry and soils; air quality; community; ecology; land quality; landscape and visual assessment; social economics; sound, noise and vibration; and traffic and transport. However there were changes where reassessment was considered to be required for cultural heritage and water resources and flood risk.

Cultural heritage

Scope, assumptions and limitations

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

Environmental baseline

Existing baseline

- 5.1.5 The baseline cultural heritage information for South Ruislip to Ickenham is described in the main ES (Volume 2, CFA6, Section 6). The additional area of land required is adjacent to pylon ZCo42. This land is located approximately 300m to the west of Bayhurst Wood (asset reference RUl0383) an ancient woodland of high value. Approximately 350m to the south east is a post medieval farmstead named Park Lodge Farm (asset reference RUl022) this is an asset of low value. The nearest archaeological evidence comprises Palaeolithic finds recorded in an area of Thames Terrace Gravel Deposits found along the line of the River Colne approximately 400m to the south (asset reference RUl015). There have also been Roman finds (asset reference RUl013) located 550m to the south and a Roman settlement, identified during an archaeological investigation (asset reference RUl014). There is a potential

³ Cultural heritage assets are identified with a unique reference code, RUIXXX; further detail on these assets can be found in the gazetteer in Volume 5 of the main ES: Appendix CH-002-006

for associated unrecorded Roman archaeology in the area of the overhead power line diversion in Hillingdon.

Future baseline

Construction (2017)

- 5.1.6 The SES and AP2 ES Volume 5: Appendix CT-004-000 provides details of the developments which are assumed to have been implemented by 2017. None of the identified developments affect the assessment of the AP2 revised scheme's likely construction impacts on heritage assets.

Operation (2026)

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

Effects arising during construction

- 5.1.8 The additional land required for the overhead power lines diversion has the potential to impact remains associated with the Thames Terrace Deposits (asset reference RUI015), remains associated with Roman settlement (asset reference RUI014) and remains associated with Bronze Age cremation activity (asset reference RUI021). These potential impacts will not give rise to any new or different significant effect as a major adverse significant effect is reported in the main ES from the construction of the scheme for these assets.

Effects arising from operation

- 5.1.9 The amendment makes no changes in operation and consequently there are no new or different operational effects for cultural heritage as a result of the proposed amendment.

Mitigation and residual effects

- 5.1.10 There are no new or different likely significant residual effects associated with the amendment and no changes to the effects and mitigation reported in the main ES.

Cumulative effects

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

Water resources and flood risk assessment

Scope, assumptions and limitations

- 5.1.12 The assessment scope, key assumptions and limitations for the water resources and flood risk assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.1.13 It has been assumed that the proposed temporary land use will not include any work below ground and that activities in this area will not take place close to local surface

water features. Therefore, there is no pathway for impacts on groundwater or surface water bodies during construction or operation and hence these receptors have not been considered further.

- 5.1.14 The assessment reviews the potential impact of using the proposed additional land as a safe working area for access and maintenance of the pylon on flood risk in particular.

Existing baseline

- 5.1.15 The baseline information for water resources in the South Ruislip to Ickenham area is described in the main ES Volume 2, CFA6, Section 13 and Volume 5.
- 5.1.16 The temporary land to be used adjacent to the proposed overhead power line diversion is located almost entirely within Flood Zone 3 and is therefore considered to be the same as or less than a 1 in 100 annual probability (1%) of flooding from rivers. In addition, there are areas at risk of surface water flooding. Further details on the risk of flooding in this location are presented in the CFA6 Flood Risk Assessment (Volume 5: Appendix WR-003-006) and CFA7 Flood Risk Assessment (Volume 5: Appendix WR-003-007) of the main ES.

Future baseline

Construction (2017)

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

Operation (2026)

- 5.1.18 Current projections to the 2080s indicate that climate change may affect the future baseline against which the impacts of the AP2 revised scheme on surface water and groundwater resources have been assessed. There may be changes in the flow and water quality characteristics of surface water and groundwater bodies as a result of changes in climate. However, except for flood flows described below, these changes will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.
- 5.1.19 Further information on the potential additional impacts of climate change for water resources and flood risk is provided in Sections 7 and 8 of Volume 1 and Table 13 of Volume 5: Appendix CT-009-000 of the main ES.

Effects arising during construction

- 5.1.20 The additional temporary land required adjacent to the proposed overhead power line diversion is located within an area at risk of flooding from surface water and rivers. The amendment is concerned with access to additional land during construction and will not result in any significant construction works such as the deposition of material. Adjacent land within the area at risk of flooding consists primarily of low vulnerability agricultural land. Lower Lodge, a more vulnerable residential dwelling, is located within Flood Zone 3 approximately 440m downstream of the proposed amendment. The amendment is not considered to consist of any activities that will impact the risk of flooding.

- 5.1.21 The amendment will not give rise to new or different significant effects on water resources or flood risk during construction and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

- 5.1.22 The amendment will not give rise to new or different significant effects for water resources or flood risk during operation and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.1.23 The draft CoCP sets out the measures and standards of work that will be applied to the construction of the AP2 revised scheme (see the main ES, Volume 5, Appendix CT-003-000). These will provide effective management and control of the impacts during the construction period.
- 5.1.24 There are considered to be no further measures required to mitigate adverse effects on water resources or flood risk.
- 5.1.25 The proposed amendment will not give rise to new or different significant residual effects for water resources or flood risk and will not change the level of significance of the effects reported in the main ES.

Cumulative effects

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

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

- 5.2.1 The use of the additional temporary land required around pylon ZCo42 does not give rise to any new or different likely residual significant effects or change the significance of the environmental effects or proposed mitigation as set out in the main ES (Volume 2, CFA6, South Ruislip to Ickenham).

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 the previous sections 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

X12